NOTICE: That a Regular Meeting of the District of Barriere Municipal Council will be held at District Hall, 4936 Barriere Town Road, in Barriere, B.C. on June 23, 2025, at 5:30pm for the transaction of business listed below.

Daniel Drexler, Chief Administrative Officer

AGENDA

"We acknowledge and respect the indigenous peoples of Simpcw First Nation within whose lands we are meeting today."

1. **ADOPTION OF AGENDA**

   That Council approve the June 23, 2025, Regular Council Meeting Agenda.

2. **ADOPTION OF MINUTES**

   a. That Council adopt the minutes of the June 9, 2025, Regular Council Meeting.

3. **PETITIONS AND DELEGATIONS**

   a. Barriere Foodbank – Sherrie Dilley re: Barriere Foodbank Statistics and Overview

4. **BYLAWS and POLICIES** – *none scheduled*

   a. DRAFT Zoning Bylaw No. 111, Amendment Bylaw No. 257 – 1st reading
   **with attached staff report*

5. **STAFF REPORTS**

   a. Departmental Updates – Department Heads
   **submitted for information*

   b. Strategic Priorities Fund – D. Drexler, CAO
   Recommendation: THAT Council instructs Staff to pursue Capital Option _____ for the Strategic Priorities Fund application and prepare the necessary cost estimates to be funded from operating funds or surplus. AND FURTHER THAT Council instructs Staff to pursue a wastewater and/or water utility infrastructure development plan under the Capacity Building stream.

   c. 2024 Annual Water Report – C. Matthews, Public Works Manager
   Recommendation: THAT Council approve the 2024 Annual Water Report.

6. **CORRESPONDENCE**

   a. For Information

   b. For Action

      i. Yellowhead Pioneer Residence Society – Grant Application

7. **COUNCIL REPORTS**

8. **MAYOR'S REPORT**

9. **PUBLIC INQUIRIES**

10. **NOTICE OF MOTION**

11. **CONVENE INTO CLOSED SESSION**
    Pursuant to Sections 90(1)(c)(k)(2)(b) of the Community Charter, that the public interest requires that persons other than Council Members and required staff be excluded from the meeting and that Council continues the meeting in closed session to discuss confidential matters.

12. **RECONVENE OPEN MEETING**

13. **BUSINESS ARISING FROM CLOSED SESSION** *(if required)*

14. **NEXT MEETING** – *Regular Council Meeting – July 21, 2025 @ 5:30pm*

15. **ADJOURNMENT**

DISTRICT OF BARRIERE
MINUTES OF A REGULAR COUNCIL MEETING
Held on Monday, June 9, 2025 at 5:30pm in the Council Chambers at Municipal Hall
4936 Barriere Town Road, Barriere, B.C.

"We acknowledge and respect the indigenous peoples of Simpcw First Nation within whose traditional lands we are meeting today."

Present:	Mayor Rob Kerslake Councillor Judy Armstrong Councillor Scott Kershaw Councillor Donna Kibble Councillor Louise Lodge Councillor Brody Mosdell
Regrets:	Councillor Colin McInnis

Staff: Chris Matthews, Public Works Manager Tasha Buchanan, Corporate Officer

Mayor Kerslake called the meeting to order at 5:30pm

1. **ADOPTION OF AGENDA**

Moved by Councillor Lodge
Seconded by Councillor Mosdell
That Council approve the June 9, 2025, Regular Council Meeting Agenda.

CARRIED

2. **ADOPTION OF MINUTES**

a. Moved by Councillor Lodge
Seconded by Councillor Mosdell
That Council adopt the minutes of the May 26, 2025, Regular Council Meeting.

CARRIED

3. **PETITIONS AND DELEGATIONS**

a. Taseko Mines Yellowhead Project Update – Jenny Maloney, Administrator

Ms. Maloney provided a power point presentation that had included in the agenda.
In addition, Council, staff and the public were invited to an Open House scheduled on June 25, 2025 at 4:30pm – 6:30pm at the BBC. Dinner will be provided.

b. Barriere ATV & SxS Club Introduction – Curtis Riffel, President

Mr. Riffel introduced himself as the President of the newly formed 'Barriere ATV & SxS Club" and provided an overview of the Club's goals and objectives which includes Barriere adopting the necessary bylaws to accommodate legal use of ATV & SxS on Barriere roadways.

It was noted that the regulations to permit this use is slightly different than that of the legislation for golf cart usage on municipal roadways.

Q: What trail areas are you focusing on in the Barriere area?

A: *That is something the Club is exploring at the moment and Mr. Riffel noted his personal preference that there would be access to the lakes through Leonie.*

Moved by Councillor Lodge
Seconded by Councillor Armstrong
THAT the feasibility of permitting legal use of ATV & SxS on Barriere's roadways be reviewed in Council's next Strategic Planning session later this year.

CARRIED

4. **BYLAWS and POLICIES** – *none scheduled*

5. **STAFF REPORTS**

a. Departmental Updates – Department Heads
**submitted for information*

Council was provided an overview of the written report with the following additions:

- Cpl. Camalush, Barriere RCMP has been scheduled to attend the next Regular Council Meeting on June 23, 2025.
- Suggested UBCM Meetings were as follows:
  - Minister of Health re: Physician Retainment and BC Ambulance Juliet Car
  - MoTI – Louis Creek Passing Lane Status
  - Ministry of Energy and Mines re: Power Grid

TNRD Area Directors and Chief Lampreau will be invited to attend any meetings scheduled by the District of Barriere.

b. Parks Vandalism Update – C. Matthews, Public Works Manager
**submitted for information*

An overview of the written report was provided which noted that a large number of vandalism incidents, all ranging in severity, have occurred in Barriere's parks over the last few months. A number of police files have been created and one incident is being pursued through the Restorative Justice Program. It was reported that since the washrooms have been being closed at 3pm, the severity and volume of incidents have decreased. It was agreed that the District continue with closing the washrooms at this earlier timeframe and to reassess once again at a future meeting.

c. Cemetery Memorial Wall Proposal – T. Buchanan, Corporate Officer
**handout available at meeting*

As previously reported by the Mayor, Mr. Derek Stamer and family have requested that the District permit the construction of a permanent memorial wall in the Barriere Cemetery and has indicated that it is a project that he and his family will fund as a donation. A preliminary concept was reviewed and it was suggested that options and details be presented to Council for approval at a future meeting.

Moved by Councillor Lodge
Seconded by Councillor Armstrong
THAT Council accept the proposal of a cemetery memorial wall installation at the expense of a benefacting resident, in principal, AND directs staff to work with the benefacting resident on a design concept for Council approval at a future meeting.

CARRIED

6. **CORRESPONDENCE**

   a. For Information

   b. For Action - *none submitted*

7. **COUNCIL REPORTS**

   a. Councillor Armstrong reported that she attended the ATV & SxS Club information meeting last week.

   b. Councillor Kibble provided a verbal update on the following:
      - the Museum's Annual Demo Day with the school is being held this month.
      - Is pleased to see Council's planted 'Barriere Blooms' gardens in Fadear Park.

   c. Councillor Lodge provided a verbal update on the following:
      - Participated in the Beanie Bay Bash Fundraiser for the North Thompson Communities Foundation.
      - Attended the Fire Hall practice where the new Bush Truck was delivered.
      - Participated in a Rec Committee Meeting.

   d. Councillor Mosdell reported that he had participated in a Rec Committee Meeting.

8. **MAYOR'S REPORT**

   The Mayor provided a verbal report on the following:
   - He delivered the new Bush Truck to the Fire Hall
   - Heard a resident concerns regarding the unfinished property construction on Oriole as well as the automated sprinkler times regulated in the District's Water Bylaw.

9. **PUBLIC INQUIRIES** – *none presented*

10. **NOTICE OF MOTION** – *none presented*

11. **NEXT MEETING** – *Regular Council Meeting – June 23, 2025 @ 5:30pm*

12. **ADJOURNMENT**

Moved by Councillor Armstrong that the meeting adjourn at 6:42pm

CARRIED

Mayor Rob Kerslake

T. Buchanan, Corporate Officer

JUN 12 2025
RECEIVED

DISTRICT OF BARRIERE

Application to Appear Before Council or Committee

Anyone wishing to be placed on an agenda to address Council or a Committee may apply by delivering a request in writing to the Chief Administrative Officer before 12:00 noon on the Monday preceding the week of the meeting. Delegations are contacted after the Agenda is finalized to confirm if scheduled or referred to a committee or future meeting. Council meetings are held on the first and third Monday at 7:00 p.m., at Municipal Hall. Special Meetings are held at other times as required.
4936 Barriere Town Road, P.O. Box 219, Barriere, B.C., V0E 1E0
Phone: 250-672-9751, Email: inquiry@barriere.ca

FAX: (250) 672-9708

Date: 12 June 2025

Name of Applicant: Sherrie Dilley

On Behalf of: Barriere Foodbank
(Organization, Business, Self. etc.)

Mailing Address:

Local Street Address:

Telephone Number: (604) 404-5253 or ( )

Issue Applicant Wishes Addressed:
Advise council of new foodbank stats and growing need in the community

Applicant's Relevant Information:
Operations Manager, Barriere foodbank

(Provide additional information in an attachment if required)

Preferred Forum (Council or Committee) Appearance Date:

Note:
* Council, Committee of the Whole and Committee meetings are public meetings; unless the public interest required closure to the public pursuant to the Local Government Act.
* This form will become part of the public record and will be distributed to Council, staff, media and the public.
* The information on this form is collected in order to respond to your request to appear before Council. If you have any questions about the collection and use of this information, please contact the Chief Administrative Officer, Municipal Hall.
* The Agenda is posted online and at Municipal Hall. The complete package is available for viewing at the Municipal Hall.

FOR DISTRICT USE ONLY

Scheduled Council or Committee Appearance Date: Agenda Number: Back-Up Received

District of Barriere

REPORT TO COUNCIL
Request for Decision

Date: June 23, 2025	**File:** 530.20/Rpts
To: Council	**From:** Corporate Officer
Re: DRAFT General Zoning Amendment Bylaw No. 257	
Recommendation: THAT Council give Zoning Bylaw No. 111, Amendment Bylaw No. 257 first reading.	

Purpose To further amend the District of Barriere Zoning Bylaw No. 111 by adding a definition and removing three permitted uses within two zones.

Background The District of Barriere Zoning Bylaw No. 111 currently lists the following as permitted uses within the Yellowhead Corridor Commercial (C2), and Industrial (I) zones:

Yellowhead Corridor Commercial (C2):

10.1 PERMITTED USES

	Principal Uses	*Accessory Uses*
	• Large Single Retail store • Retail sales outlet or attraction that caters to the travelling public • Motorized and non-motorized vehicle services, including associated retail sales and repair (e.g. service station) • Personal service shop • Office • Restaurant • Entertainment Establishment • Motel • Hotel • Campground • Restaurant • Veterinary clinic or animal hospital, including pet boarding and breeding kennels	• Dwelling units in the principal commercial building • Accessory buildings • Accessory retail sales
Bylaw 160	• RV Park	
	Permitted Uses - Site Specific	
	• 4369 Conner Rd at the south corner of Kamloops St. - an additional principal use of a maximum of three dwelling units	
Bylaw 165	• 4347 Yellowhead Highway – an additional principal use of "Cannabis Sales"	
Bylaw 188	• 3732 & 3752 Enterprise Way (Lots 1 & 2 – LCIP) – C2 / I split zone with a site-specific exemption to prohibit Wrecking & Storage of Automobiles as a permitted use in this C2/I Zone.	

Industrial (I):

13.1 PERMITTED USES

Principal Uses	*Accessory Uses*
• Industrial Workshops • Industrial Offices • Manufacturing Industry • Service Industry • Retail sales of industrial/agricultural equipment • Wholesale Commercial • Warehousing • Restaurant – maximum 140 square metres gross floor area • Mini Storage • Contractor's yard • Sawmill • Ready-mix concrete plants and asphalt plants • Storage of logs, lumber, wood chips, sand, gravel, ore, concentrates, gas and petroleum products • Rail spur • Public Works yards • Wrecking and storage of automobiles • Agricultural/Horticultural	• Dwelling Unit • Accessory buildings • Minor Retail sales directly associated with a Principal use
• 3820 Enterprise Way *Bylaw No. 227	• An additional principal use of "Cannabis Sales"

The C2 zone spans the length of the Yellowhead Hwy 5 (Zoning Map Attached – shown in red). This C2 zoning currently permits the use of a "RV Park" and a "Campground". The RV Park and Campground uses are defined as follows:

> ***"RV Park"*** *means premises where RVs are used for:*
> *(i) the temporary accommodation of travelers in RVs; or,*
> *(ii) the longer term accommodation of residents in RVs, including Park Model RVs, on designated fully serviced sites,*
>
> *both approved through the District Development Permit approval process.*

and;

> ***"Campground"*** *means premises used for the temporary accommodation of travelers in trailers, recreational vehicles, campers or tents.*

The Industrial zone encompasses the Barriere Industrial Park (Gilbert Dr. area), Gilbert Smith sawmill, Barriere Towing and the majority of the properties in the LCIP (see attached Zoning Map – shown in grey).
This Industrial zoning permits the use of "*Wrecking and storage of automobiles*", unless, through a site-specific zoning amendment, is excluded as a permitted use.

Some properties are dual zoned, meaning that they can be either C2 or Industrial; again may include site-specific permissions or exclusions.

Summary

In a number of past discussions of Council, it was suggested that due to regulatory challenges of RV Parks and Wrecking and storage of automobiles, including unsightly conditions along the highway corridor and the resulting lack of assessed value on these prime (and limited) properties that these uses be removed.
Campgrounds also pose a lack of assessed value issue, along with potential incompatibility with neighbouring Commercial and Residential uses.

To address Council's concerns, the most appropriate solution would be to remove RV Parks, Wrecking and Storage of Automobiles and Campgrounds as permitted uses within the Bylaw's listed zones.

The District of Barriere Zoning Bylaw No. 111 currently does not define "*Wrecking and Storage of Automobiles*", nor has a definition of a "tow yard". The proposed definition encompasses a standard definition of "*Wrecking and Storage of Automobiles*" and includes 'towed vehicles' as tow yards often store a number of wrecked, damaged and undrivable vehicles for a lengthy period of time; sometimes permanently if the vehicle's owner never claims the vehicle. This results in the tow yard essentially appearing much like a traditional "wrecking yard".

RV Parks, permitted in C2 zoning, are further regulated in the Zoning Bylaw as follows:

> *3.16 RV PARK REGULATIONS*
>
> *(a)* ***Provision of an appropriate Wastewater System –*** *RVs staying in the RV Park for longer than one week must be provided with a wastewater disposal service option, approved by the District of Barriere or other legislatively responsible authority.*
> *(b)* ***Provision of an appropriate Water System –*** *RVs staying in the RV Park for longer than one week must be provided with a potable water service option, approved by Interior Health or other legislatively responsible authority.*
> *(c)* ***Spacing –*** *RVs must have a minimum 3.0m separation from any adjacent RV or structure.*
> *(d)* ***Heating/Cooking Appliances –*** *Any heating/cooking appliances (wood or otherwise) that are not part of the original certified manufactured RV, shall be in accordance with the regulations of the authority having jurisdiction and proof of such shall be provided, upon request, to the District of Barriere.*
> *(e)* ***Vehicle Lane Access –*** *Lane width accessing RV sites must be a minimum of 6m (5m if one way) to allow emergency vehicles (e.g. fire truck, ambulance) to safely access a site in an emergency.*
> *(f)* ***Structures/additions*** *constructed adjacent to or connected to an RV must provide safe ingress and egress from the RV in case of emergency and may be subject to a safety inspection by the District of Barriere.*
> *(g)* ***A Development Permit is required*** *for all RV Parks, whether or not they were existing at the time of passage of this bylaw.*

Site Specific Zoning:

Zoning Bylaws only permit uses that are specifically listed as a "Permitted Use" or "Accessory Use" in their respective zone. While some uses rely on municipal staff interpretation to determine if a specific use can *reasonably* fall under a listed permitted use, a property owner desiring to use their property for a use not listed in their property's zone, require an approved "Site-Specific" zoning amendment.

Excluding RV Parks, Wrecking & Storage of Automobiles, and Campgrounds as permitted uses within the Zoning Bylaw, would result in the requirement of a site-specific zoning amendment in

order for a property owner to establish the use on their property.

Site-Specific Zoning can be appropriate when a local government doesn't necessarily wish to prohibit a specific use but wishes to consider it on a case-by-case basis by way of a public process through a zoning amendment.

An example of this is "*Cannabis Sales*". Cannabis Sales is defined in the District's Zoning Bylaw but is not listed as a permitted use in any zone. Applicants who wish to establish a Cannabis Sale use, must apply (and be successful) for a site-specific zoning amendment. As noted in the Industrial Zone chart on the previous page of this report, the chart lists the additional permitted, site-specific use for the applicable addresses. These instances were approved by Council through the site-specific Zoning Amendment process. There was one case where a site-specific zoning amendment was unsuccessful.

Legal Non-Conforming Use:

Barriere currently has three (3) operating RV Parks within their permitted zoning and have been operating since prior to the District of Barriere's Incorporation in 2007. There are also two operating tow yards and there are a few wrecking yards in the Barriere Industrial Park. There are no currently operating "Campgrounds" in the District's boundaries. The "Campground" use was added to the C2 Zone at the time of the initial adoption of Zoning Bylaw No. 111, due to DeeJay Mobile Home and 'Campground' operating an actual campground along with their RV Park use. That particular property is no longer operating as a campground and is now just named "DeeJay Mobile Home and RV Park".

Should Council adopt proposed Bylaw No. 257 that removes these uses in their prospective zones, the current operations can continue to operate legally as a "legal non-conforming use". This means that should any of those specific properties cease to operate as a RV Park or Wrecking or Storage of Automobiles as defined, they would not be able to re-establish the use without going through the site-specific zoning amendment process. For clarity, should any of these properties change ownership, the use can legally continue.

Benefits or Impact

General – The amendment is intended to address Council's concerns regarding unsightly premises and prevents an increase in enforcement measures should additional properties establish as a new RV Park, Wrecking Yard, Tow Yard, or Campground.

Finances – ensures available, highly visible and prime commercial/industrial land can maximize their potential assessed value in order to reduce the burden on the residential tax base.

Risk Assessment
Compliance: Does not contravene the District's current Strategic Plan and Official Community Plan

Risk Impact: Low

Next Steps / Communication

- Should Council proceed with 1st reading of the draft Bylaw Amendment, public advertising with be published and the draft bylaw amendment will be brought back to Council for additional readings and adoption at a future meeting.

Attachments

- Draft Zoning Bylaw No. 111, Amendment Bylaw No. 257
- Zoning Map

Recommendation

THAT Council give Zoning Bylaw No. 111, Amendment Bylaw No. 257 first reading.

Alternative Options

1. Council could choose not to proceed with any of the proposed amendments.
2. Council could choose to make amendments to the draft Bylaw as presented prior to first reading.
3. Council could choose to proceed with first reading and make amendments to the draft Bylaw at second reading.

Prepared by:
T. Buchanan, Corporate Officer

Reviewed by:
D. Drexler, Chief Administrative Officer

DISTRICT OF BARRIERE

DRAFT - BYLAW NO. 257

A BYLAW TO FURTHER AMEND "DISTRICT OF BARRIERE ZONING BYLAW NO. 111"

WHEREAS a sufficient number of small changes, have been compiled by the District since Zoning Bylaw No. 111 and a number of amendment Bylaws have been adopted to warrant a comprehensive amendment to the bylaw at this time;

AND WHEREAS the desirable changes in uses of Land and Buildings have been considered by Council over the past few months;

AND WHEREAS the zoning amendment conforms to the District of Barriere Official Community Plan;

AND WHEREAS a public hearing is not required per Section 464 (2) of the *Local Government Act*;

NOW THEREFORE, the Council of the District of Barriere, in open meeting assembled, enacts as follows:

1. CITATION

1.1 This bylaw may be cited as "*District of Barriere Zoning Bylaw No. 111 Amendment Bylaw No. 257*".

2. PURPOSE

2.1 In DIVISION ONE – DEFINITIONS, as amended, is further amended by the addition of the following:

"***Wrecking and Storage of Automobiles***" means the wrecking, salvaging, dismantling, or storage of vehicles, vehicle parts, vehicle frames or vehicle bodies and includes the storage of inoperable or unlicensed vehicles and the storage of towed vehicles, but excludes services associated with a ***Service Station***.

2.2 In DIVISION TEN - YELLOWHEAD CORRIDOR COMMERCIAL (C2) ZONE, Section 10.1 – PERMITTED USES, the following are removed as a permitted use under "Principal Uses":

i. **RV Park**
ii. **Campground**

2.3 In DIVISION THIRTEEN – INDUSTRIAL (I) ZONE, Section 13.1 – PERMITTED USES, the following are removed as a permitted use under "Principal Uses":

i. **Wrecking and storage of automobiles**

READ A FIRST TIME this day of , 2025

READ A SECOND TIME this day of , 2025

READ A THIRD TIME this day of , 2025

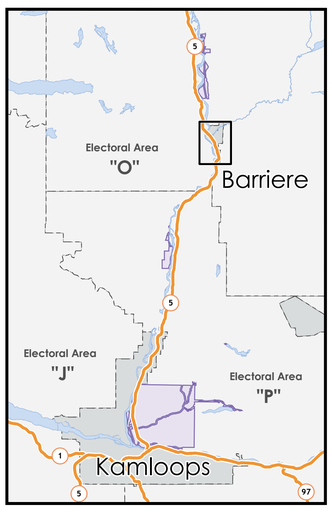
RECONSIDERED AND ADOPTED this day of , 2025

Mayor

Corporate Officer

DISTRICT OF BARRIERE
Zoning Map

- C1 — Downtown Core Commercial
- C1/R — Downtown Core Commercial/Residential
- C1/RM — Downtown Core Commercial/Residential Multi-Family
- C2 — C2 Yellowhead Corridor Commercial
- C2/R — Yellowhead Corridor Commercial/Residential
- LIC/R — Light Industrial Commercial/Residential
- I — Industrial
- I/C2 — Industrial/Yellowhead Corridor Commercial
- CR — CR Country Residential
- R — Residential
- RM — Residential Multi-Family
- MH — Mobile Home Park
- SH — Small Holding
- OS — Open Space
- P1 — Recreational
- P2 — Institutional
- TR — Transportation - Rail



DATA SOURCES

Electoral Areas and Municipal Boundaries - TNRD
Facility, Library, Landmark, and Service - TNRD
Community Park - TNRD
Civic Address - Member Municipality
Transportation - GeoBC
Waterbody - GeoBC
First Nation Boundary - GeoBC
Parcel - LandSure (LTSA)
Feature Name - BC Gazetteer

1:10,000
Projection: Albers Equal Conic
Datum: NAD83

N

0 0.5 1
Kilometers

THE DISTRICT OF BARRIERE

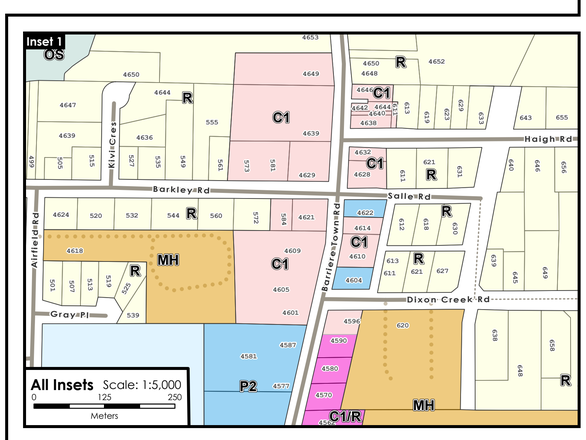
(250) 672-9751
inquiry@barriere.ca

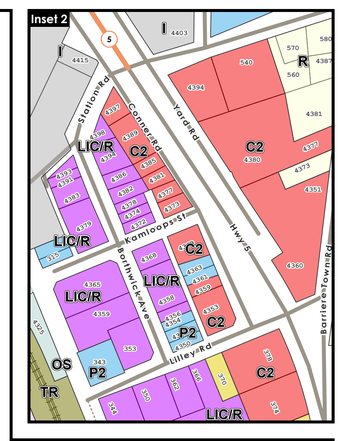
4936 Barriere Town Road
Barriere, British Columbia
V0E 1E0

Map Generated: 2024-06-26

Inset 1

Inset 2





District of Barriere

REPORT TO COUNCIL

Date: June 23, 2025	
To: Council	**From:** Department Heads
Re: Departmental Updates	

CORPORATE OFFICER:

General:

- Participated in a Block Party Working Group Meeting
- Submitted annual Recycle BC reporting. The District of Barriere currently collects curbside recycling material from 796 residential properties.
- Facilitated a Board of Variance Hearing on June 19th, 2025. The application was approved by the Board allowing a minor variance in an accessory building roof height.
- Tax Deadline reminder E-News emails have been sent once a week this month.

Recreation & Events:

- Block Party was held Saturday, June 21st. Thank you to all those who helped make the day a memorable one.
- Canada Day in Barriere – July 1st, 2025 @2pm: Fadear Park Bandshell.

UBCM 2025 (Victoria):

- At the last Council Meeting, Council agreed on which Ministry Meetings to request and their respective topics. Staff will ensure these requests will be submitted prior to the July 2nd deadline.
- Registration for the September 22-26, 2025 Convention opens July 2nd, 2025.

PUBLIC WORKS MANAGER:

Roads:

- Grading to be done on Dixon Creek Road
- Crack sealing treatments scheduled for next month. To be done in-house.

Parks:

- Bandshell women's washroom repairs scheduled for June 23 to 30.

Utilities:

- Water consumption is averaging 2500 m3/day
- Dustin Doherty is enrolled in the Wastewater Treatment Level III training course in anticipation of our new wastewater treatment plant.

Environmental Services:

- Five used dumpsters were purchased and have been delivered.

Facilities:

- Business Centre Unit #4 renovations nearing completion –Flooring and baseboards done. Remaining electrical to be finished this week.

New Wastewater Treatment Plant

- Received draft letter of authorization from MOE for the new works
- Prior to construction we will be doing a preliminary dig at SRS for Archeology Rist Mitigation this summer
- Funds spent to date $323,636. Grant funding $7M

FIRE CHIEF:

Fire Department:

- 13 Day Wildfire Deployment in Fort Nelson, Bush truck returned from northern BC on Tuesday June 17th
- Duty Chief from Thursday June 5th, 2025, to June 11th, 2025 – Lt. Baggio
- Duty Chief from Wednesday June 11th to June 17th, 2025 – Cap. Tom Jackson
- Command Truck is currently with two of the members in Olds, Alberta for Heavy Rescue Training
- Open House / Carwash on June 19th was a success
- Attended Grad Parade

Training:

- June 5th, 2025 – Truck inspections NFPA 1911 and cleaned/washed all trucks
- June 12th Hose Testing
- June 16th Wildland Training

Incidents:

- June 15th Rural Rescue – stood down by BCAS

FireSmart Updates:

- FireSmart information booth at the Open House on June 19th
- Home Assessment (on volunteer time) has been completed – FireSmart Coordinator and a Local FireSmart Representative attended together
- Vehicle decals were purchased and added to Command truck 1

Weather:

Wildfire Summer Outlook

- - Northeast corner drought level – high –
- - Interior drought level – high –
- - As of June 9th 2025 323,427ha have been burned due to wildfires in BC
- - During the remainder of this week we are expecting lightning strikes to hit and start more fires
- - We are also expecting lightning and thunderstorms in July and August 2025]

River Forecast Center

- - Interior has reports of high North Thompson River and washouts on HWY 5

Heat Update 2025

- - Same heat warning as in 2024
- - Expecting the heat to continue for the remainder of the summer
- - Heat to be expected the same for summer of 2026

CHIEF ADMINISTRATIVE OFFICER:

- A "Year in Review" – PowerPoint presentation

**submitted for information*

District of Barriere

REPORT TO COUNCIL
Request for Decision

Date: June 23, 2025	**File:** 530.20/Rpts
To: Council	**From:** Chief Administrative Officer
Re: Strategic Priorities Fund 2025	
Recommendation: THAT Council instructs Staff to pursue Capital Option _____ for the Strategic Priorities Fund application and prepare the necessary cost estimates to be funded from operating funds or surplus. AND FURTHER THAT Council instructs Staff to pursue a wastewater and/or water utility infrastructure development plan under the Capacity Building stream.	

Purpose

For Council to consider options for applying for the Strategic Priorities Fund (SPF).

Background

The District has been successful in past years with applications to the SPF in particular regarding extending water and wastewater utility services.

The SPF is an application-based funding program, which pools a portion of the annual Canada Community-Building Fund (CCBF) for strategic investments that are considered large in scale, regional in impact, or innovative and support the CCBF national objectives of productivity and economic growth, a clean environment, and strong cities and communities.

This intake of the SPF program will see an investment of up to $125 million to support infrastructure and capacity building projects in communities across the province.

The 2025 SPF program guidelines (see attached) include the following options for the 2025 edition of the capital portion of the program:

> Public Transit • Local Roads, Bridges and Active Transportation • Community Energy Systems • Drinking Water • Solid Waste • Wastewater and Stormwater • Regional and Local Airports • Short-Line Rail • Short-Sea Shipping • Broadband Connectivity • Brownfield Redevelopment • Resilience • Tourism Infrastructure • Cultural Infrastructure • Recreation and Sport Infrastructure • Fire Halls and Fire Trucks

The capacity building stream allows for the following:

> Asset Management, Long-Term Infrastructure Planning, and Integrated Community Sustainability Planning.

Municipalities are limited to one (1) capital infrastructure application and one (1) capacity building application for a total of two (2) SPF applications.

The fund would cover up to 100% of net eligible costs of approved projects up to a maximum federal Canada Community-Building Fund contribution of $7 million.

The application deadline is September 12, 2025.

If successful, the project must start within 2 years of approval and must be completed within 5 years of approval.

A capital project application will require cost estimates, ideally for a Class B (+/- 15-25%) or higher to ensure that project budgets are controlled and the project is feasible to be complete within 5 years.

Based on Council's strategic plan, Staff has been working on a 20-year capital plan that includes District utilities, roads, facilities, fleet & equipment, IT, and fire/emergency services. A conservative estimate at this point shows the need for approximately $30Million in that 20-year timespan which would need to be funded through the District's own revenue sources (taxation, utility rates, etc.) or from outside revenues such as grants.

Capital Project Options

Priorities that have been identified which could fit into the SPF capital program:

1. Water Utility
   We are aware that roughly 11km of AC watermain needs to be replaced ($1Mil per kilometer). Engineers have indicated that we are at the end-of-life expectancy. However, when physically inspecting the water main at various locations over the past years, the watermain was still in good condition. As the community grows, a future well may also be needed. ($500k)

2. Wastewater Utility
   As wastewater is relatively new, there is no real need for replacements of current assets; however, there are opportunities for expanding the utility in the downtown core and connecting subdivisions like Riverwalk/Bradford to the system which would enable future developments and densification options. ($2.5Mil to $3.5Mil depending on project)

3. Fire Services
   Based on the current age of our equipment, a new Fire Engine will be required within 4-5 years (2030) to meet the Fire Underwriter Survey (FUS) regulations that we fall under (cost estimate for a new engine: $1Mil to $1.5Mil). Further, given the current Fire Hall size and age, it will not be possible to host a new engine at that hall as it is and either a substantial retrofit of the current property or a new fire hall would be needed at another location. (depending on location and/or retrofit vs new built, high level cost estimate: $3.5Mil to $5Mil)

Given the rather urgent need within the fire service for a new truck, and an updated hall (both within 5 years), staff would suggest for Council to consider this as the most critical item, and that Staff pursue working on the grant application to replace or retrofit the fire hall ahead of procuring a new truck or engine.

Capacity Building

Several options are available through the Capacity Building stream as part of the SPF that fit within Council's strategic plan. Most favourable to the District would be an updated wastewater and/or water utility infrastructure plan. These plans would help with determining our next steps in regard to future expansion and asset management of the utilities while providing a clear "next steps" list to Council.

Summary

In summary, the SPF provides an opportunity for the District to apply for grant funding that could be 100% funded. The most critical items for the District over the next 3-5 years are a new fire hall and a fire engine. To further build capacity and knowledge within the District, a second application for updating the wastewater and/or water utility infrastructure plans would be recommended to allow for future expansion and asset management planning.

Benefits or Impact

General

The SPF provides limited project funding to communities that could help offset costs to the tax and rate payers for projects that will be required.

Finances

A Class B or higher cost estimate would be ideal for a new or retrofitted hall to show the funders that Council has an immediate need for this project. The estimate and design would cost roughly $50,000. A low-cost budget expense ($1.5Mil) for 2028 for a firehall was included in the 5 year 2025-2029 Financial Plan Bylaw; however, based on recent discussions with other departments, this budget is expected to increase significantly.

Strategic Impact

Priority #2: Fiscally Responsible Operations
Goal 1. – Develop a District Facilities Roadmap
Actions to get us there:
a. Review current key facilities for long- and short-term use (Facility Assessments):
    a. Town Hall / SD73 partnership
    b. Fire Hall
    c. Works Yard
    d. BBC
    e. Lions Hall
    f. Old Chamber Building
    g. Solar Aquatics

Priority #3: Create Opportunities for Community Growth
Goal 3. Complete critical Utility Bylaw and Utility Master Plan revisions
The Results We Want to See:

a. Present a Wastewater Bylaw for Council consideration in 2025.
b. Present a Water Bylaw update for Council consideration in 2025.
c. Wastewater Master plan update is started by end of 2026, funding dependent.
d. Water Master Plan update is started by end of 2026, funding dependent.

Risk Assessment
Compliance: Strategic Priorities Fund 2025 Program Guidelines

Risk Impact: Low

Internal Control Process:
Staff will work on preparing the funding submissions based on Council's direction.

Next Steps / Communication

- Discuss potential applications with funders
- Draft funding submissions over the coming months
- Provide Council with an update in August (updated resolution would be required)
- Final submission before September 12, 2025.

Attachments

- Strategic Priorities Fund 2025 Program Guidelines

Recommendation

THAT Council instructs Staff to pursue Capital Option _____ for the Strategic Priorities Fund application and prepare the necessary cost estimates to be funded from operating funds or surplus.
AND FURTHER THAT Council instructs Staff to pursue a wastewater and/or water utility infrastructure development plan under the Capacity Building stream.

Alternative Options

1. Council could choose a different priority for the application to the SPF.
2. Council could choose not to apply to the SPF.

Prepared by:
D. Drexler, Chief Administrative Officer

STRATEGIC PRIORITIES FUND 2025

PROGRAM GUIDELINES

MAY 2025

UNION OF BC MUNICIPALITIES

UBCM

A STREAM OF THE CANADA COMMUNITY-BUILDING FUND IN BC

PURPOSE OF THE STRATEGIC PRIORITIES FUND

Provides funding for strategic investments that are large in scale, regional in impact or innovative and support the Canada Community-Building Fund national objectives of productivity and economic growth, a clean environment, and strong cities and communities.

ELIGIBLE APPLICANTS

All local governments outside of Metro Vancouver.

ELIGIBLE CAPITAL INFRASTRUCTURE STREAM CATEGORIES

Public Transit • Local Roads, Bridges and Active Transportation • Community Energy Systems • Drinking Water • Solid Waste • Wastewater and Stormwater • Regional and Local Airports • Short-Line Rail • Short-Sea Shipping • Broadband Connectivity • Brownfield Redevelopment • Resilience • Tourism Infrastructure • Cultural Infrastructure • Recreation and Sport Infrastructure • Fire Halls and Fire Trucks

ELIGIBLE CAPACITY BUILDING STREAM CATEGORIES

Asset Management, Long-Term Infrastructure Planning, and Integrated Community Sustainability Planning.

APPLICATION LIMIT FOR MUNICIPALITIES

One (1) capital infrastructure application and one (1) capacity building application for a total of two (2) SPF applications

APPLICATION LIMIT FOR REGIONAL DISTRICTS

Total of four (4) applications with a maximum of three (3) capital infrastructure applications

AVAILABLE FUNDING

Up to 100% of net eligible costs of approved projects up to a maximum federal Canada Community-Building Fund contribution of $7 million.

For further questions on Strategic Priorities Fund program, please contact UBCM via e-mail at ccbf@ubcm.ca or by phone at 250-356-0930.

Canada Community-Building Fund Program Services
525 Government Street
Victoria, BC V8V 0A8

Table of Contents

1 PROGRAM OVERVIEW

The Strategic Priorities Fund (SPF) is one of three funding streams delivered through the Canada Community-Building Fund (CCBF) in British Columbia, formerly known as the Gas Tax Fund.

The current CCBF Agreement provides a ten-year commitment of federal funding for investments in local government infrastructure and capacity building projects.

The SPF is an application-based funding program, which pools a portion of the annual CCBF for strategic investments that are considered large in scale, regional in impact, or innovative and support the CCBF national objectives of productivity and economic growth, a clean environment, and strong cities and communities.

This fourth intake of the SPF program will see an investment of up to $125 million to support infrastructure and capacity building projects in communities across the province

1.1 PROGRAM GOALS AND OBJECTIVES

Capital Infrastructure Stream

The SPF-Capital Infrastructure stream provides grant funding specifically targeted for the capital costs of local government infrastructure projects that are large in scale, regional in impact, or innovative and support the national objectives of productivity and economic growth, a clean environment and strong cities and communities.

Capacity Building Stream

The SPF-Capacity Building stream provides grant funding for local government capacity building projects, including asset management, long term infrastructure planning and integrated community sustainability planning that support the national objectives and are large, regional in impact or innovative.

1.2 APPLICATION DEADLINE

The SPF intake will be open from May 20, 2025, to September 12, 2025. Applications can be submitted through UBCM's Program Information Management System (PIMS).

For help accessing PIMS, contact pims@ubcm.ca

1.3 AVAILABLE FUNDING

- Capital Infrastructure Stream: Up to $119 million is available
- Capacity Building Stream: Up to $6 million is available

1.4 LIMIT ON NUMBER OF APPLICATIONS

- Municipalities: Each Municipality may submit one (1) application under the Capital Infrastructure Stream and one (1) application under the Capacity Building Stream for a total of two (2) applications.
- Regional Districts: Each Regional District may submit four (4) applications with a maximum of three (3) applications under the Capital Infrastructure Stream.

1.5 FUNDING AMOUNT LIMIT

The SPF program can contribute a maximum of 100% of the cost of eligible activities – to a maximum of $7 million.

2 ELIGIBLE APPLICANTS

The SPF program is open to all local governments in British Columbia outside of Metro Vancouver.

A local government may sponsor an application for an Ultimate Recipient. This will count as one of that local government's application and the local government will be responsible for ensuring that all obligations under the CCBF SPF program are met – including program and project reporting.

Ultimate Recipients are defined as: a local government; a non-municipal entity, including for-profit, nongovernmental and not-for-profit organizations located and operating in British Columbia; and BC Transit.[1]

[1] Islands Trust and Okanagan Basin Water Board are considered eligible applicants under the SPF Capacity Building Stream

3 PROJECTS

3.1 PROJECT CATEGORIES

CAPITAL INFRASTRUCTURE STREAM	
Local Roads, Bridges and Active Transportation	Recreation and Sport Infrastructure
Wastewater and Stormwater	Drinking Water
Tourism and Culture Infrastructure	Community Energy Systems
Solid Waste	Public Transit
Short-sea Shipping and Short-line Rail	Resilience
Fire Hall and Fire Trucks	Broadband Connectivity
Regional and Local Airports	Brownfield Redevelopment

CAPACITY BUILDING STREAM
Asset Management Planning
Long-term Infrastructure Planning
Integrated Community Sustainability Planning - Housing Planning

Examples of eligible projects under each category can be found in Annex A of this program guide.

3.2 INELIGIBLE PROJECTS

Project works, which would otherwise be eligible, become ineligible if the project works have started prior to the date the project is included in a submitted SPF application. The project is deemed to have been started if a tender has been awarded, or work has commenced.

Furthermore, a SPF project will be deemed ineligible if:

- The project start date is later than two years after grant approval
- The project completion date is later than five years after grant approval

3.2.1 Ineligible Capital Infrastructure Stream Projects

- National Airport System
- Social Housing / Social Services
- Childcare / Daycare Centres
- Emergency Response Services (excluding fire hall infrastructure)

- City Halls / Public Works Buildings / Other Administrative Buildings
- Health Care Infrastructure (hospitals, convalescent and seniors' centers, care facilities)
- Facilities, including arenas, which would be used as the home of professional sports teams

3.2.2 Ineligible Capacity Building Stream Projects

- Projects that have been approved under the UBCM Asset Management Planning (AMP) grant program unless they are identified as a distinct or phased component of the overall project.

4 COSTS

4.1 ELIGIBLE COSTS FOR CAPITAL INFRASTRUCTURE STREAM

Eligible Expenditures are those associated with the acquiring, planning, designing, constructing, or renewal and rehabilitation of a tangible capital asset or natural asset in British Columbia.

Infrastructure is defined as a municipal or regional, publicly or privately owned tangible capital assets, or natural assets, in British Columbia primarily for public use or benefit.

In addition, eligible costs also include expenditures directly related to the joint communication activities and with federal project signage for CCBF funded projects.

4.1.1 Employee and Equipment Costs

The incremental costs of the Ultimate Recipient's employees or leasing of equipment may be included as Eligible Expenditures under the following conditions:

a. the Ultimate Recipient can demonstrate that it is not economically feasible to tender a Contract;
b. the employee or equipment is engaged directly in respect of the work that would have been the subject of the Contract; and,
c. the arrangement is approved in advance and in writing by UBCM.

If the use of own force employee or equipment costs is being considered, in addition to the application please provide a letter addressing the conditions above. Note that while most costs are eligible from the date of the application submission, own force employee and equipment costs are only eligible from date of UBCM approval

For the Capacity Building stream, incremental own force employee costs do not need separate approval but should be clearly identified as incremental and directly engaged in the work only for the duration of the project in the application.

4.1.2 Cost Estimate Classification Definitions

For capital infrastructure stream projects, the application form and detailed cost estimate template will ask the applicant to include the class of cost estimate for the project. Below is a definition of cost estimate classification.

Class A estimate (±10-15%): A detailed estimate based on quantity take-off from final drawings and specifications. It is used to evaluate tenders or as a basis of cost control during day-labour construction.

Class B estimate (±15-25%): An estimate prepared after site investigations and studies have been completed and the major systems defined. It is based on a project brief and preliminary design. It is used for obtaining effective project approval and for budgetary control.

Class C estimate (±25-40%): An estimate prepared with limited site information and based on probable conditions affecting the project. It represents the summation of all identifiable project elemental costs and is used for program planning, to establish a more specific definition of client needs and to obtain preliminary project approval.

Class D estimate (±50%): A preliminary estimate which, due to little or no site information, indicates the approximate magnitude of cost of the proposed project, based on the client's broad requirements. This overall cost estimate may be derived from lump sum or unit costs for a similar project. It may be used in developing long term capital plans and for preliminary discussion of proposed capital projects.

As provided by Engineers and Geoscientists of British Columbia, Budget Guidelines for Consulting Engineering Services

4.2 ELIGIBLE COSTS FOR CAPACITY BUILDING STREAM

The expenditures related to strengthening the ability of Local Governments to improve local and regional planning including capital investment plans, integrated community sustainability plans, integrated regional plans, housing needs assessments, and/or asset management plans.

Expenditures could include developing and implementing:

- Studies, strategies, plans or systems related to asset management, which may include software acquisition and implementation
- Studies, strategies, plans or systems related to housing or land use, including Housing Needs Assessments; and its relation to infrastructure service delivery
- Training directly related to asset management planning; and
- Long-term infrastructure plans

4.3 INELIGIBLE COSTS

- Legal fees
- Leasing costs
- Routine repair and maintenance costs
- Direct or indirect operating or administrative costs
- Purchase of land or any interest therein, and related costs
- For capacity building projects, routine or ongoing planning costs or planning activities
- Costs related to planning, engineering, architecture, supervision, management and other activities normally carried out by its staff
- Overhead costs, including salaries and other employment benefits of any employees of the Ultimate Recipient
- Taxes for which the Ultimate Recipient is eligible for a tax rebate and all other costs eligible for rebates
- Costs associated with healthcare infrastructure or assets
- The cost of leasing of equipment by the Ultimate Recipient and its direct or indirect operating or administrative costs of Ultimate Recipients

5 STACKING

The current SPF program is considered federal funds for the purpose of federal or provincial stacking rules. Although there are no specific rules in the SPF program for stacking with other grants, UBCM recommends the applicant consult with other grant programs to ensure stacking with SPF funding is allowable.

Strategic Priorities Fund and Community Works Funds can be stacked without restrictions.

6 PHASING OF PROJECTS

For large projects that require significant funding support, it is recommended that applicants consider an appropriately sized and scoped project application. Applicants should apply for a component of the project or identify how the project could be phased. Where a phase is submitted for funding consideration, each phase should independently result in outcomes which align with the SPF objectives. It is important to note that successful grant awards for phased projects do not ensure subsequent funding for future phases of the project.

If applying for a phase of a larger project, identify how the project will be phased. This should be demonstrated in the detailed cost estimate template, and the project descriptions must be organized to easily describe each of the distinct phases of the project, highlighting which phase is the subject of the funding request.

Please contact us at ccbf@ubcm.ca or 250-356-5134 if you are considering submitting a phased approach application.

7 APPLICATION REQUIREMENTS AND SUBMISSION

7.1 SUBMISSION OF APPLICATIONS

To submit an application applicants must have an account to access UBCM's Program Information Management System (PIMS). All applications must be submitted using the PIMS system.

Please contact pims@ubcm.ca to discuss obtaining access to PIMS.

7.2 REQUIRED APPLICATION CONTENTS

Applications must be received through the UBCM Program Information Management System (PIMS) and must include the following:

- Completed online application form
- Attached feasibility study and/or design report (for Capital Stream)
- Detailed cost estimate template (for Capital Stream)
- Map and/or drawings (for Capital Stream)
- Project Budget (for Capacity Building Stream)
- Current Council or Board resolution indicating support for the proposed activities and willingness to provide overall grant management and support any cost overruns
- Own force labour and/or equipment request (if applicable)

Optional Materials

Other relevant supplemental documentation.

8 REVIEW OF APPLICATIONS

8.1 SCREENING CRITERIA

Selection criteria are based on the program purposes and objectives listed below. These selection criteria form the basis of the scoring and ranking of applications. Note the criteria listed below are not listed in order of priority; applicants should provide full information in relation to all of the criteria that are relevant to the project for which funding is requested.

8.1.1 Capital Infrastructure Stream

Following screening criteria, applications will be sent for technical review. Scoring will be based primarily on:

- How much the project is expected to support the CCBF National Objectives of productivity and the economic growth; a clean environment; and strong cities and communities
- The timing of the project and its outcomes
- The capacity of the community to undertake, evaluate and document the project, and to operate and maintain it
- The degree to which the project develops or supports strategic infrastructure investment decisions or links to sustainability or capital investment plans
- The degree to which asset management practices were considered
- The degree to which the project uses sustainability principles or leads to sustainable outcomes (e.g., community service demand; resource recovery and environmental protection)
- The degree to which the project considers climate resilience
- The degree the project benefits more than one community or is identified as regional in impact
- The size or scale of the project in relation to the size of the community
- The degree to which the project reflects inter-jurisdiction cooperation
- The degree to which the innovative plan, process, method or technology supports the approach that will be used, and the additional risks associated with using this innovation
- The relative benefit of the innovative process, method or technology over existing processes, methods and technologies
- The degree to which the project enables, supports, or preserves housing, including affordable housing

8.1.2 Capacity Building Stream

Following screening criteria, applications will be sent for technical review. Scoring will be based primarily on:

- How the project is expected to align with the CCBF National Objectives of productivity and economic growth, a clean environment or strong cities and communities
- The degree to which the project is identified as large in scale
- The degree to which the project is considered regional in impact
- Contribution to innovation
- Long term thinking
- Integration with other plans, planning or sustainability activities
- Collaborative elements, including engaging community members and other partners
- Implementation program
- Monitoring and evaluation component
- Linkage to capital investment plans
- Contribution to efficient use of infrastructure and other resources
- Housing and growth considerations
- Climate impact considerations

9 GRANT MANAGEMENT AND APPLICANT RESPONSIBILITIES

Please note that grants are awarded to eligible applicants only and, as such, the applicant is responsible for completion of the project as approved and for meeting reporting requirements. Applicants are also responsible for proper fiscal management, including maintaining acceptable accounting records for the project. UBCM reserves the right to audit these records.

9.1 NOTICE FUNDING DECISION

Applicants will be notified after funding decisions have been made.

9.2 FUNDING AGREEMENTS

All grant approvals are subject to the execution of a funding agreement between the recipient and UBCM. The agreement will set out the roles and responsibilities of the parties including a deadline for completion of the project and other recipient obligations.

9.3 APPLICABLE LAW

Recipients are responsible for ensuring that all projects are implemented in accordance with all laws applicable in British Columbia and for ensuring that any required permits, licenses, or approvals are obtained.

9.4 COMMUNICATIONS AND SIGNAGE

Included within every signed funding agreement is a Communications Protocol which will outline responsibilities of the recipient for communications activities and signage requirements for capital projects.

9.5 CLAIMS AND PAYMENTS

The SPF is a claims-based funding program and as such approved funds will only be disbursed after an expense has been incurred and a claim is submitted. Approved grant funding is managed within the PIMS system by submitting a claim.

Payments will be made available to recipients in accordance with the terms and conditions of the funding agreement. Payments are also on condition of the following:

- That UBCM has received sufficient funds from Canada;
- That a holdback of 15% be placed on the project until such time as it is deemed complete; and
- The Ultimate Recipient is in compliance with the terms and conditions of the funding agreement.

9.6 PROJECT REPORTING

Successful applicants will be required to provide the following reporting:

TYPE OF REPORTING	WHAT/WHEN	FREQUENCY
Progress Report	When submitting a claim	As required
Final Report	When submitting final claim	Once
Annual Expenditure Report and Housing Report	Funds spent in prior year	Annually
Outcomes Report	Funds spent over life of project	As requested

ANNEX A: EXAMPLES OF ELIGIBLE PROJECTS

CAPITAL PROJECTS	
CATEGORY & DESCRIPTION	**EXAMPLES**
LOCAL ROADS, BRIDGES, & ACTIVE TRANSPORTATION The construction, renewal, or improvement of essential infrastructure such as roads, bridges and active transportation.	New construction and rehabilitation of: • Local roads • Bridges • Cycling lanes • Sidewalks paths • Overpasses, or underpasses • Tunnels • High occupancy lanes or transit lanes • Grade separations • Interchanges • Intersections • Roundabouts • Sound barriers • Snow fences • Intelligent transportation systems
DRINKING WATER Infrastructure that supports drinking water conservation, collection, treatment and distribution systems	• Drinking water treatment infrastructure • Wells • Transmission mains • Distribution pipes • Storage • Facilities • Smart meters
WASTEWATER AND STORMWATER Infrastructure that supports wastewater and storm water collection, treatment and management systems.	• Treatment • Storage • Transmission mains, collection pipes • Facilities
COMMUNITY ENERGY SYSTEMS Development, improvement, or renewal of infrastructure dedicated to energy generation or efficiency enhancement.	• Renewable electricity generators • Electric vehicle infrastructure/fleet vehicle conversion • Hydrogen infrastructure (generation, distribution, storage) • Wind/solar/thermal/geothermal energy systems • Alternative energy systems that serve local government infrastructure • Retrofit of local government buildings Use of natural infrastructure, such as natural vegetation for stormwater drainage, green roofs for insulation and reduced energy use, and trees for natural shading and cooling

CAPITAL PROJECTS	
CATEGORY & DESCRIPTION	**EXAMPLES**
PUBLIC TRANSIT Infrastructure which supports a shared passenger transport system which is available for public use.	Transit infrastructure such as: • Rail • Buses • Ferries • Para-transit vehicles • Rapid transit systems • Related facilities Intelligent transport systems such as: • Fare collection • Fleet management • Transit priority signaling • Real time traveler information system at stations and stops Related capital infrastructure including: • Bus lanes • Streetcar and trolley infrastructure • Storage and maintenance facilities • Security enhancement • Transit passenger terminals
SOLID WASTE Infrastructure that supports solid waste management systems including the collection, diversion and disposal of recyclables, compostable materials and garbage.	Solid waste diversion projects including: • Recycling • Composting and anaerobic digestion facilities Solid waste disposal projects including: • Thermal processes • Gasification, and landfill gas recovery • Solid waste disposal strategies that reduce resource use Solid waste management system infrastructure, including: • Facilities • Rolling stock • Collection bins
SPORT INFRASTRUCTURE & RECREATION INFRASTRUCTURE Sport infrastructure for community public use and in support of major athletic events; Recreational facilities or networks	Large facilities or complexes which support physical activity such as: • Arenas • Gymnasiums • Swimming pools • Sports fields • Tennis, basketball, volleyball or other sport-specific courts Other facilities that have physical activity as primary public use Community centers that offer programing to the community at large, including all segments of the population Networks of parks, fitness trails and bike paths

CAPITAL PROJECTS	
CATEGORY & DESCRIPTION	**EXAMPLES**
CULTURAL INFRASTRUCTURE Infrastructure that supports arts, humanities, and heritage. Infrastructure that supports opportunities to showcase the richness of Canada's diversity, including facilities aimed at supporting off-reserve Indigenous population	• Museums • The preservation of designated heritage sites • Local government owned libraries and archives • Facilities for the creation, production, and presentation of the arts • Infrastructure in support of the creation of a cultural precinct within an urban core • Aboriginal Friendship centres and Youth Centres • Indigenous arts centres • Indigenous traditional/ceremonial rooms or spaces • Construction and management of trails for preserving Indigenous traditions, including hunting and fishing • Centres to help commemorate residential school survivors
TOURISM INFRASTRUCTURE Infrastructure that attracts travelers for recreation, leisure, business or other purposes	• Convention centers • Exhibition hall-type facilities • Visitor centres
RESILIENCE Supports assets that increase a community's capacity to withstand, respond to, and rapidly recover from damage and disruptions caused by changing climate conditions.	Construction of public infrastructure and/or modification or reinforcement of existing public infrastructure including natural infrastructure that prevent, mitigate or protect against impacts of climate change, disasters triggered by natural hazards, and extreme weather. Building dams and dikes to reduce the risk of flooding Restoring wetlands and other natural infrastructure to redirect and capture rainwater Seismic upgrades Installing retaining walls, gabions, to control erosion Stabilizing of berms to protect roads from erosion and shifts in the ground.
BROADBAND CONNECTIVITY Infrastructure that provides internet access to residents, businesses, and/or institutions in British Columbia	• High-speed backbone • Point of presence • Local distribution within communities • Satellite capacity • Laying fibre optic cable to bring broadband Internet access to a community

CAPITAL PROJECTS	
CATEGORY & DESCRIPTION	**EXAMPLES**
BROWNFIELD REDEVELOPMENT Remediation or decontamination and redevelopment of a brownfield site within municipal boundaries, where the redevelopment includes: the construction of public infrastructure as identified in the context of any other category under the CCBF, and/or the construction of municipal use public parks and publicly-owned social housing.	New construction of public infrastructure as per the categories listed under the CCBF Agreement New construction of municipal use public parks and affordable housing
REGIONAL AND LOCAL AIRPORTS Airport related infrastructure for local and regional airports with year-round service (excludes National Airport System (NAS)	Development, enhancement or rehabilitation of: • Aeronautical and/or non-aeronautical infrastructure (includes runways, taxiways, aprons, hangars, terminal buildings etc.) • Non-aeronautical infrastructure such as groundside access, inland ports, parking facilities, and commercial and industrial activities
SHORT-LINE RAIL Railway related infrastructure for carriage of passengers or freight that offer year-round service	• Construction of lines to allow a railway to serve an industrial park, an intermodal yard, a port or a marine terminal • Construction, rehabilitation, or upgrading of tracks and structures, excluding regular maintenance, to ensure safe travel • Construction, development or improvement of facilities to improve interchange of goods between modes • Procurement of technology and equipment used to improve the interchange of goods between modes
SHORTSEA SHIPPING Infrastructure related to the movement of cargo and passengers around the coast and on inland waterways, without directly crossing an ocean	• Specialized marine terminal intermodal facilities or transshipment (marine to marine) facilities • Capitalized equipment for loading/unloading required for expansion of short-sea shipping • Technology and equipment used to improve the interface between the marine mode and the rail/highways modes or to improve integration within the marine mode including Intelligent Transportation Systems (ITS)
FIRE HALLS AND FIRE TRUCKS Fire Hall and fire truck infrastructure	• New fire hall (building) for housing fire-fighting apparatus and staff (may include attached dorms, basic training facilities, and administration areas) • Retro-fit and modernization of existing fire halls and attached building space • Eligible rolling stock as stand-alone purchases includes all types of fire engines, i.e. any trucks that are part of the fire department that respond to the actual emergency.

CAPACITY BUILDING PROJECTS	
CATEGORY & DESCRIPTION	**EXAMPLES**
ASSET MANAGEMENT Increase local government capacity to undertake asset management planning practices	Asset Management Practices Assessment Current State of Assets Assessment Asset Management Policy Asset Management Strategy Asset Management Plan Long-Term Financial Plan Asset Management Practices Implementation Plan Asset Management Plan Annual Report
INTEGRATED COMMUNITY SUSTAINABILITY PLANS Increase local government capacity to undertake integrated community sustainability plans	Integrated community sustainability plans Regional growth strategies Community development plans Community plans Housing Needs Assessments Housing Plans
LONG-TERM INFRASTRUCTURE PLANS Increase local government capacity to undertake long-term infrastructure planning.	Detail design documents and feasibility studies, through the appropriate infrastructure funding category Transportation plans Infrastructure development plans Liquid waste management plans Solid waste management plans Long-term cross-modal transportation plans Water conservation/demand management plans Drought management contingency plans Air quality plans GHG reduction plans Energy conservation plans

ANNEX B: SAMPLE ONLINE INFRASTRUCTURE APPLICATION

SECTION 1 PROJECT INFORMATION

1. Project Title

2. Project Category

3. Is this project the subject of a recent infrastructure grant application? (Yes/No) If yes: Provide the name of the program and status of application.

4. Project Rationale: Provide a brief project rationale outlining why the project is needed and how the project meets that need.

    - e.g. Why the project is needed could be: current facility needs replacement due to age, condition, increased service demands, meeting regulatory requirements etc.

5. Project Description: Provide a detailed list of the physical works and location of the project.

    - e.g. Build a wastewater effluent pipeline and outfall at north end of 20 Mile Bridge at Highway 10, including: 10km of force main, Pumping system, Outfall structure, Civil, mechanical and engineering works

6. Project Location: Include physical address, GPS coordinates or start and end points.

SECTION 2 REQUIRED DOCUMENTATION

7. Please attach the requested documents:

    - Detailed Cost Estimate Template
    - Maps and/or Drawings
    - Feasibility Study and/or Design Report
    - Board or Council Resolution Supporting the Application

Attach any other relevant information that would assist in the technical review of the application (max 20 MB limit per document)

8. How are you planning to secure all funds associated with this project? Provide evidence that funds have been secured or explain how and when funds will be secured.

    - e.g. Third reading of borrowing bylaw; confirmation of other grants such as Community Works Funds; reserve funds, etc.

Note that applications will not be considered until all funds have been secured for the project. UBCM will not consider cost overruns. Council and Board Resolutions supporting the application must clearly identify that the local government will consider any cost overruns to the project.

9. Class of Cost Estimate:

    a. Provide the class estimate A, B, C, D
    b. Provide the year the cost estimate was determined?
    c. How was the cost estimate determined?

- See program guide for examples of Cost Estimate Class.

10. What contingency plans are in place for increases in project costs or if external contributions are less than anticipated?

Note that SPF does not consider cost overruns

SECTION 3 PROJECT DETAILS

11. Has the project started? (Yes/No)

Project works which would otherwise be eligible, become ineligible if the project works have started prior to the date the project is included in a submitted SPF application. The project is deemed to have been started if a tender has been awarded or work has commenced.

12. Estimated project start date. Estimated construction start date.

13. Estimated project completion date.

14. Identify risks to meeting this timeline.

Please list all that are known and include your evaluation and proposed mitigation for each risk. (e.g. seasonal limitations to construction, detailed design work, public oppositions expected, referendum required, unconfirmed grants, siting not confirmed, environmental assessments, permitting, etc.)

15. Is there the intent to submit a request for the use of own force labour and equipment for this project? (Yes/No)

Please see program guide for how to submit a request for approval.

16. Is this project a phase or component of a larger project? (Yes/No)

- If yes: Is this phased approach reflected in the cost estimates and/or supporting documentation you have provided? (Yes/No)
- Please provide additional details on the phases, including funding for past and future phases and estimated timelines.

17. Have alternative options for the project been considered?

- If yes: If so, how were they compared or analyzed? Please Explain why the chosen option was selected.

18. Estimated Total Project Costs

19. Strategic Priorities Funding Request

20. Borrowing

21. Other Grants

22. Other Contributions

- e.g. In-kind contributions, legal fees, tax rebates, other

23. Internal Contributions

- e.g. Reserves, DCCs, etc..

SECTION 4 PROGRAM OBJECTIVES

In order to be eligible a project must align with one or more of the Canada Community-Building Fund National Objectives of Productivity and Economic Growth, Cleaner Environment, or Strong Cities and Communities.

Answer the following questions for each national objective that is applicable to the project or phase that is the subject of this application, identifying both quantitative and qualitative benefits.

24. Productivity and Economic Growth: Describe the measurable economic benefits of the project in the community.

    - e.g. Number of existing or confirmed jobs; increase in number of services/level of service.

25. Productivity and Economic Growth: Describe the non-measurable economic benefits of the project in the community.

    - e.g. Potential for future business/jobs, increasing tourism, services etc.

26. Cleaner Environment: Describe the environmental benefits of the project.

    - e.g. Reduction in GHG emissions, cleaner water, cleaner air, climate change mitigation etc.

27. Cleaner Environment: What environmentally sustainable considerations have been incorporated into the project?

    - e.g. Integration, connections with long term planning, climate change adaptation etc.

28. Strong Cities and Communities: Describe the community health, social, and cultural benefits of the project.

    - e.g. Promoting inclusive and accessible communities, improved drinking water quality etc.

29. Strong Cities and Communities: Describe how this project will advance the long-term goals and vision of the community as identified in applicable community plans.

Include a copy of the relevant sections of the community plan as supporting documentation. Identify relevant sections with page and paragraph numbers included.

SECTION 5 PROGRAM CRITERIA

In order to be eligible a project must meet at least one of the SPF Program Criteria: Large in Scale, Regional in Impact, or Innovative. Describe how the project subject to this application meets these criteria.

30. Large in Scale: Describe how the size, scale and/or benefits of the project is large in relation to the size of the community.

31. What is the population of community? (The community making the application.)

32. What is the population that will be directly served by this project?

33. Regional in Impact: Describe the degree to which this project supports interjurisdictional collaboration and coordination.

34. Does this project involve partnerships? (Yes/No)

    - e.g. P3, NGO, inter-agency etc.
    - If so, Identify the parties involved in the partnership and their roles. e.g. Sharing cost, governance, or delivery.

35. Regional in Impact: Describe the degree the project benefits more than one community, is identified as regional priority, and/or is regional in scope.

36. Innovation: Describe any innovative component(s) of the project.

37. Describe what research, planning, testing, technology, or methodology supports the approach that will be used, and the additional risks associated with using this innovation (include where it has been used, and the results).

38. Innovation: Describe the relative benefit of the innovative process, method or technology over existing practices.

SECTION 6 PROJECT PLANNING AND BENEFITS ASSET MANAGEMENT

ASSET MANAGEMENT

For more information on asset management tools, resources and best practices, including the document Asset Management for Sustainable Framework for BC, please visit Asset Management BC

39. How do you manage your infrastructure assets? Explain whether you have an asset management plan linked with a long-term financial plan, asset management policy, strategy, framework, and/or governance structure.

40. Does your local government have a long-term financial plan?

    a. How long-term is your financial plan (in years)?
    b. How does the financial plan relate to an Asset Management plan, Capital Works plan, Official Community Plan, and any other strategic community and corporate plans.

41. Describe how operation and maintenance will be funded over the lifecycle of the infrastructure subject to this application.

42. What proportion (%) of infrastructure replacement for this project will be funded through current financial revenues?

For the Asset Class subject to this application:

43. Is there an asset inventory/registry? (Yes/No)

    - If yes: Is it complete?
    - If yes: What year was it completed?

44. Has a condition assessment been completed?

    - If yes: What year was it completed?

45. Is there an asset management plan?

    - If yes: Is it complete?
    - If yes: What year was it completed?

- If yes: Is the plan linked your organizations long-term financial plan?

46. Additional Comments for the Asset Management Questions Listed Above:

47. What effects will the proposed project have on service levels and how will these be measured?

    - e.g. The water treatment plant upgrade will improve water quality– measured by the reduction in the number of boil water advisories, and improved levels of disinfection residuals and or by the number of residents with improved water quality and/or meet a provincial/federal standard.

48. Describe the long-term financial plan in place for renewal or replacement of the asset subject to this application?

COMMUNITY SERVICE DEMANDS

A community's demand for a service (existing or new) is a critical component in establishing the appropriate level of service. It is determined by various factors such as population growth, immigration/emigration, societal changes, changing demographics and changing community demands/expectations including the ability or desire to pay for the service.

49. Explain how community demands were used to identify the size and scope of project components and/or establish the appropriate service levels provided by the project.

    - e.g. Drinking Water: For design of the water main the average per capita demand of 400 L/day/person was used to size the proposed main.

50. How will this project enable, support or preserve housing supply, including affordable housing?

    - e.g. The investment in infrastructure which increases the capacity of communities to support, enable and preserve housing growth
    - e.g. increase capacity for wastewater system to support neighborhood expansion of xxx new housing units, or a drinking water project which increases the treatment capacity of a water treatment plant to accommodate population increases.

RESOURCE RECOVERY

51. Explain how resources are recovered and reused in this project. e.g. Collection of biogas, heat, or reclaimed effluent/water

ENVIRONMENTAL PROTECTION

52. What considerations have been or will be applied to protect the environment and/or reduce the demand on natural capital/resources?

    - e.g. Supporting water conservation, waste diversion, green building requirements, enhancing the natural areas.

CLIMATE RESILIENCE

53. How has this project considered climate risk and what considerations (climate mitigation and/or adaptation) have been considered and integrated into this project to make it more climate resilient.

OTHER CONSIDERATIONS

54. What, if any, regulatory requirements, or standards apply to this project? How will the infrastructure and/or service provided by this project affect these requirements?

Include how the current and proposed infrastructure or services differ in regulatory standards.

55. Describe the key project benefits(s) that led the community to make this project a priority for application for funding. (Include the key reason(s) why this project is important to the community.)

DETAILED COST ESTIMATE TEMPLATE

When submitting your SPF application, you are required to include the Strategic Priorities Fund Detailed Cost Estimate. This document is an excel spreadsheet and can be found on our website.

ANNEX C: SAMPLE ONLINE CAPACITY BUILDING APPLICATION FORM

SECTION 1 PROJECT INFORMATION

1. Project Title

2. Project Category

3. Has this project started?

Project works, which would otherwise be eligible, become ineligible if the project works have started prior to the date the project is included in a submitted SPF application. The project is deemed to have been started if a tender has been awarded or work has commenced.

4. Estimated project start date:

5. Estimated project completion date:

6. Project Rationale

Provide a brief project rationale outlining why the project is important to the community.

7. Project Description/Abstract

Briefly describe the proposed activities. Please also attach a detailed work plan and budget, and terms of reference or consultant's proposal. If you are providing supplemental documentation, please provide the page number in the document that you refer to.

For example: Deliverables include:

a. A ICSP inclusive of new digital mapping which will be available to the community through a District website;
b. A District wide sustainability framework against which to measure and assess development proposals; and
c. Communications and engagement strategy.

Phase 2 will develop a Long-term Infrastructure and Asset Management Plan, including:

a. GIS infrastructure inventory,
b. Infrastructure replacement evaluation and schedule,
c. Some infrastructure conditional assessments and identification of capital works;
d. A review of operation and maintenance to ensure long-term infrastructure integrity;
e. Some long-range financial planning.

SECTION 2 PROJECT COSTS AND SOURCES OF FUNDING

Note that SPF does not consider cost overruns

8. Estimated Total Project Cost

9. Strategic Priorities Funding Request

10. Ineligible Costs

11. Borrowing

12. Other Grants

13. Other Local Government Contributions

    - e.g. In-kind contributions, legal fees, tax rebates, other

14. With reference to the field, provide any other information to support responses above.

SECTION 3 PROJECT OUTCOMES AND OUTPUTS

15. Progress to Date: Summarize the progress to date related to overall asset management, integrated community sustainability planning, or long-term infrastructure planning within your community.

16. Process: What are the key steps/stages in completing the project?

    - e.g. public consultation, research, assessment, training.

17. Integration: In what ways does this project integrate with and/or align plans or activities?

18. Intended Deliverables: What deliverables, outputs or products will result from this project?

List any policies, practices, plans, or local government documents that will be developed or amended as a result of the project.

19. Intended Outcomes: What are the intended benefits that will result from this project? Please describe in detail.

    - e.g. Improved awareness of asset management, reduction in long term operating costs, increased sustainability, enhancements in overall community health and safety, increased or improved environmental protection, enhanced economic benefits, identifying current and future housing needs of a municipality or community, etc.

20. Implementation: Is there an anticipated implementation plan for the project? If yes, please describe.

21. Capacity: Describe how you plan to provide the appropriate resources required to manage and deliver the project. Please describe in detail.

    - e.g. Internal staffing compliment, External consultant, Training and education, etc.

22. Identify existing risks to the project.

    - e.g. Financial, Implementation, Staffing changes or Meeting timelines, etc.

SECTION 4 PROGRAM OBJECTIVES

In order to be eligible a project must align with one or more of the Canada Community-Building Fund National Objectives of Productivity and Economic Growth, Cleaner Environment, or Strong Cities and Communities. Describe how these objectives will be met.

23. Productivity and Economic Growth: Describe how this project will consider economic growth in the community.

    - e.g. Jobs / Construction Infrastructure and Development / Tourism / Movement of Goods / Community Facilities / Economic Development Opportunities / Improvements in Connectivity (IT) / infrastructure needed to support community growth

24. Cleaner Environment: Describe how this project will consider environmental benefits and impacts.

    - e.g. Protect the Environment / Environmental Improvements / Meets Regulatory Requirements / Green Energy Creation, Distribution/ Reduction in Negative Environmental Effects or Volume thereof / Improved Service Levels / On Side Demand Management

25. Strong Cities and Communities: Describe how this project will consider long-term goals and vision of the community.

    - e.g. Public Health and Safety / Healthy Living / Resiliency / Climate change / Meets Regulatory Requirements / Cultural, Creative or Recreational Opportunities / Increased Efficiency, Accessibility to an Essential Core Service / Increases Resiliency to Climate Change / Identify current and future housing needs and plans

SECTION 5 PROGRAM CRITERIA

In order to be eligible, a project must meet at least one of the program criteria of: Large in scale; Regional in impact; or Innovative. Please describe how you meet one or more of these criteria.

26. Large in scale: Describe how the project is considered large in scale and/or scope and will be integrated, relative to the size of the community, and provides benefits to large percentage of the population.

27. Regional in impact: Describe how this project is identified as regional in impact, a regional priority or leads to regional collaboration.

28. Contribution to Innovation: Describe any innovative research, planning, testing, technology, methodology or approaches that will be used, and how these innovative elements may be transferable to other jurisdictions.

SECTION 6 REQUIRED DOCUMENTATION

Prior to submitting the application to UBCM please ensure you have uploaded all mandatory attachments to this form. The maximum size per file upload is 20 MB.

If you are uploading large documents, please indicated in the application form what they are and where the reviewer should refer to find relevant information. It is preferred that only relevant information be uploaded.

If your resolution is not available at the time of application submission, please include the date it will be submitted by email.

29. Required Documents: Budget / Board or Council Resolution / Other

30. Notes for Required Documents

UNION OF BRITISH COLUMBIA MUNICIPALITIES

Victoria Office
525 Government Street
Victoria, BC V8V 0A8
250-356-5134 ccbf@ubcm.ca

Richmond Office
Suite 60 -10551 Shellbridge Way
Richmond, BC V6X 2W9
604-270-8226 ubcm@ubcm.ca

ANNUAL WATER REPORT

2024

TABLE OF CONTENTS

INTRODUCTION

The District of Barriere is working to continually improve the water system and public awareness to meet the changing needs of our community.

Water safety is of the utmost importance to the District of Barriere. The supply of good, clean drinking water has been taken for granted by the general public in Canada until events such as the Walkerton E. Coli outbreak brought the safety of the water supply into the public eye.

This report has been submitted to Interior Health and is posted on the District of Barriere website: www.barriere.ca

We are dedicated to providing safe, clean water to the residents of Barriere as indicated in the following report.

WATER UTILITY OBJECTIVES

- To ensure adequate supply of high-quality water to the community.
- To effectively treat the raw water to provide potable water of integrity to the community.
- To ensure the adequate delivery of high-quality potable water to all points within the system for domestic and emergency purposes.
- To ensure effective management of all water system aspects and provide excellent customer service and information to the community.
- To manage water demand by effectively assessing and managing water losses from leakage in the system.
- To develop an effective water conservation program for operations and the wider community.
- To maintain water rates that encourage conservation and resource awareness while providing quality accessible water to consumers.

PROVINCIAL REQUIREMENTS

All drinking water in the water system must meet the Canadian Guidelines for Drinking Water Quality. In British Columbia, the Ministry of Health regulates water suppliers through the Drinking Water Protection Act. This legislation ensures safe drinking water in the Province. It requires that the water supplier monitor the drinking water source and distribution system to ensure compliance with the Drinking Water Protection regulations and report all results to the Health Authority. Water monitoring, inspection and testing, emergency response planning, cross connection control and security standards are all regulated for persons operating a water system.

Changes in water systems must be approved by the Interior Health Authority (IHA), and conform to the District's specifications.

Under the *BC Water Act*, the District must acquire licenses for withdrawal from water bodies.

Under the *Community Charter*, the District may, by bylaw, regulate, prohibit, and impose requirements in relation to municipal service and public health. The District must make reports available to the public on request regarding fees imposed under this section.

SUPPLY SOURCES

Community Water Plant – Spruce Crescent

The District of Barriere's potable water system is supplied by a system of three wells, one being constructed during the 1990s, the second in 2019 and the third most recently in 2022. All three wells are in the northeast quadrant of the community, adjacent to the Barriere River. Two deep wells (DW2 & DW3) are located at the north end of Spruce Crescent, and a third production well (PW1), is located on Bradford Road. The wells are summarized in Table 3.1 below. The location of these wells can be seen on the overall water system plan on the following page.

Table 3.1: Barriere's Supply Wells

Well	Year Built	Pumping Capacity (L/s)	Approximate Depth (m)	Known Issues Or Concerns
PW1 Bradford Park	2019	20	91	High Iron, Manganese
DW2 Spruce Crescent	1997	44	35	Increasing evidence of iron and manganese - limited lifespan
DW3 Spruce Crescent	2022	32	45	Manganese periodically found over the Aesthetic Objectives.

WATER TREATMENT

The well water is injected with a chlorine solution at the pump stations such that it contains an approximate free residual chlorine concentration of 1.0 mg/L adjacent to the pump stations and has been measured to 0.8 mg/L at the more remote parts of the system.
In terms of the Interior Health Authority requirements, this treatment is satisfactory in a ground water source that is not under the influence of surface water, as these types of supply are given credit for filtration. Referencing the 4-3-2-1-0 requirements, the chlorine addresses the 4 and the 0, while the fact that the Spruce Well supply is a non-GWUDI well appears to be protected by a confining layer and addresses points 3, 2, and 1.

RESERVOIR STORAGE

The North reservoir is a rectangular concrete tank with sloping sides and a capacity of 1,540m^3 (406,560 USG). It is located at the north end of the community adjacent to Barriere Lakes Road and has a free water level of 451 meters. A 350mm diameter supply main connects the reservoir with the rest of the system at the intersection of Lodgepole Road and Barriere Lakes Road.

The South reservoir is a rectangular concrete tank and has a capacity of 1,300m^3 (343,200 USG). It is located at the south end of the community near the top of Mountain Road and has a free water level of 451 meters. A 250mm diameter supply main connects the reservoir with the rest of the system at Mountain Road.

DISTRIBUTION SYSTEM

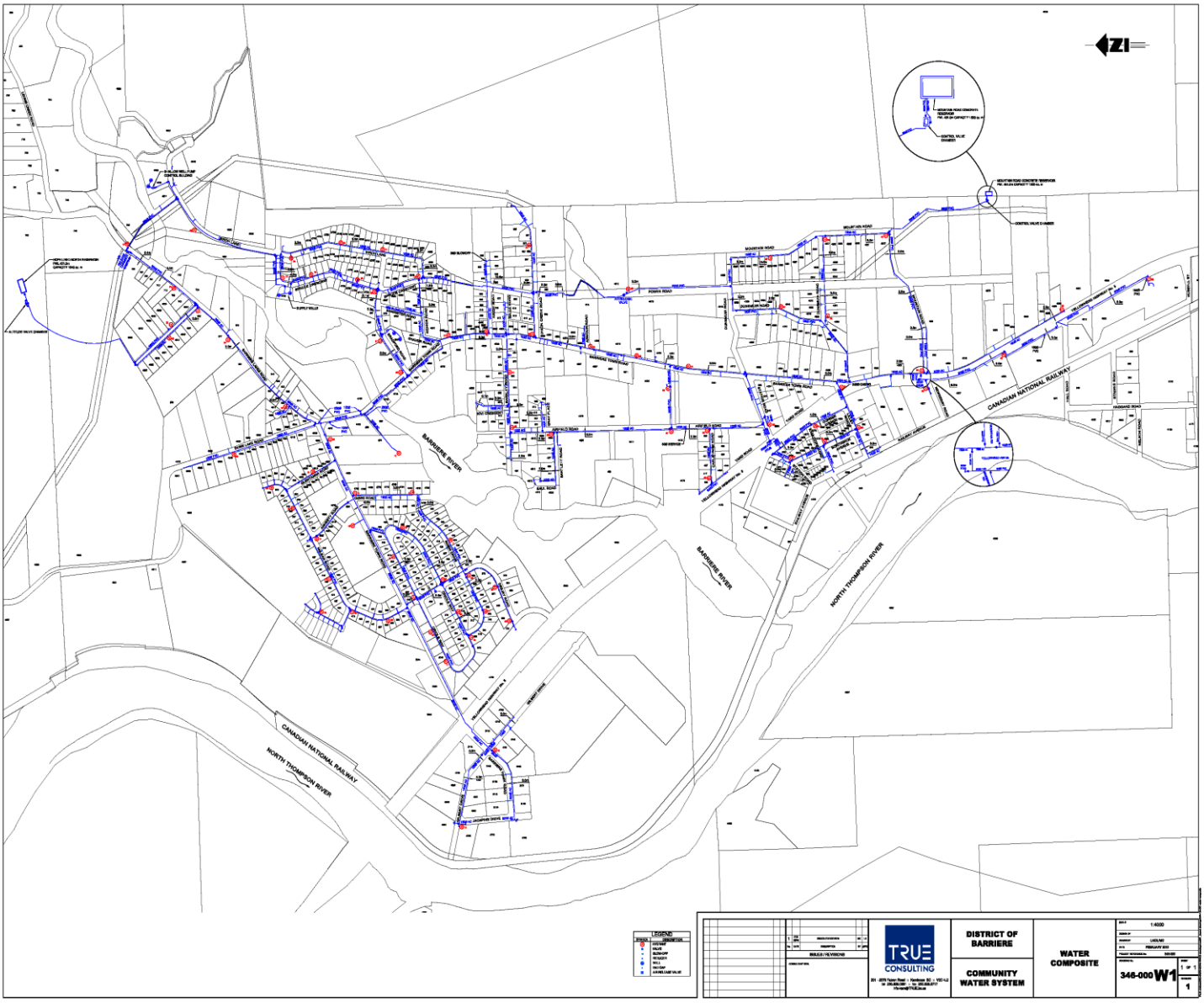
Approximately 25 Kilometers of watermain are joined together to create the District of Barriere water system. The water system has been undergoing upgrades to ensure the water quality is safe for consumption. The first upgrades were from 1966 onwards when the pipes were asbestos cement. Beginning in the 1980's the pipes began to be upgraded to PVC due to the potential health risks of leakage from decaying asbestos/cement pipe. The PVC pipes range in diameter from 100 mm to 350 mm and provide potable water to approximately 790 residential and 78 commercial service connections in Barriere.

The District irrigates four public parks (Fadear, Bradford, Oriole, Gray Place), four baseball fields, two green spaces, and the cemetery, during off-peak demand times using a total of 77 irrigation zones with an average of 3 sprinkler heads per zone. In addition, the school district operates and maintains irrigation for the three school fields in Barriere.

Several sections of pipe within the District's water supply system are undersized, limiting flows and negatively impacting fire protection and pressures in certain parts of the network. Piping has been upgraded at the High School intersection along Bradford Road, and from Barriere Town Road to Spruce Crescent.

The water distribution system is also shown on the District's webmap at www.barriere.ca

WATER SUPPLY SYSTEM



WATER SAMPLING AND TESTING

Bacteriological:
As required by the Interior Health Authority (IHA), staff takes weekly water samples for bacteriological testing for total coliforms and e-Coli bacteria. There are 3 different sampling sites used throughout Barriere; North, Centre, and South.

Full Spectrum Analysis:
Water samples have been sent from the source water for a full spectrum analysis. Parameters such as alkalinity, metals, pH, turbidity, and hardness are tested. *SEE ATTACHMENT 4*

Summary:
In 2024 the District of Barriere had no positive bacteriological testing results pertaining to Total Coliforms or E.Coli and remained in compliance throughout the entire year of 2024. In 2022, the District began analyzing and tracking manganese levels on a more frequent basis to observe trends during different operating periods and times of the year.

EMERGENCY RESPONSE PLAN

The District of Barriere's Emergency Response Plan for the water system was updated in 2023. It identifies several potential emergencies that could occur and provides a systematic approach on how the District will deal with those emergencies. The plan is available for public viewing at the District Office, 4936 Barriere Town Road.

WATER QUALITY COMPLAINTS

The District of Barriere received few complaints in 2024 in respect to the quality of water being provided. Our community water wells, especially the Bradford wells have elevated iron and manganese levels, which once combined with chlorine create a brownish precipitate that showed up throughout the distribution system, therefore creating an aesthetically unpleasing water quality. Although the water was still safe for human consumption, the District of Barriere along with the Interior Health authority (IHA), continued maintaining the water quality advisory (WQA) that was implemented in 2019. However, with the onboarding of DW3, IHA removed the WQA in December of 2022 and therefore, is no longer in effect.

Most of the complaints received in 2024 were the result of this iron/manganese precipitate getting dislodged from the water mains during our annual hydrant flushing program. This is a temporary issue that clears upon running a household tap for a short period of time. District staff continue to conduct annual watermain flushing as part of our continued commitment to providing safe, clean drinking water.

SYSTEM UPGRADES COMPLETED IN 2024

Barriere Water system

- Four new residential water services installed
- Five new hydrants, 280 m looped 250-mm PVC water main plus fifteen mainline valves at 4740 Yellowhead Highway.
- Installation of three new mainline valves on Barriere Town Road.
- Security fencing installed around the Community Water Plant.
- Leak detection completed in April. Three major leaks were detected and ultimately repaired.
- Six residential service line leaks were repaired.

POTENTIAL SYSTEM UPGRADES

- Biological manganese removal Water Treatment Plant.
- Complete source assessments for all water sources.
- Additional Production Well (DW4) as the municipalities' population grows.
- Upgrading the asbestos cement water main on Barriere Town Road, installed in 1966, from Bradford Rd. to Mountain Rd. to remove the bottleneck and balance North and South reservoirs.
- SCADA system installation to provide real-time data for monitoring and controlling the operation of our water system.
- Watermain looping to eliminate dead ends and builds resiliency.

CROSS CONNECTION CONTROL PROGRAM

The District of Barriere maintains a Cross Connection Control Program to prevent the potential backflow of non-potable water into the District's water distribution system. The Program is based on premises isolation to ensure there is a reliable barrier between private and public water systems. The program uses a priority approach with higher hazard ICI (Industrial, Commercial, and Institutional) service connections being first in line for inspections and compliance mandates, as well as residential connections with auxiliary water. The District of Barriere Water System Bylaw # 189 gives the District authority to implement this program.

All new ICI developments are required to be inspected for Cross Connections as a condition of the provision of water service.

Backflow prevention devices are documented and tracked by the District to ensure they are tested annually and in good working order. This annual testing must be carried out by a certified Backflow Assembly Tester. It is also worth noting that all residential outside hose bibs were confirmed to have vacuum breakers installed (2012) and all new builds are required to have them.

The District also monitors potential backflow situations through its water meter program. All service connections in the District must be metered. Our water meters will detect and flag backflow occurrences and provide additional information on time of occurrence, duration, and volume. If the situation were to occur, it would prompt immediate investigation and may trigger our Water System Emergency Response Plan.

2024 Summary Report

Total ICI Facilities/Premises (inc. District facilities and parks)	102
Total BFP's Tracked	45
Past Due Test Reports	24

Hazard (L/M/S)	Inspected Premises with CCs	Premises in Compliance
Sever	4	4
Moderate	16	11
Low	8	0
Total	28	15

The District will continue to improve and further implement its Cross Connection Control Program through inspections, tracking, program development and public education to eventually have all actual or potential cross connections identified and in compliance with our CCC Program.

OPERATOR CERTIFICATION

The District of Barriere currently employs three licensed operators, all in good standing with the EOCP. One Senior Utilities Specialist, who holds a Class 2 certification in Water Treatment and Water Distribution. One Water Technician 2, who holds a Class 1 certification in Water Treatment and Water Distribution, and Chlorine Handling Certification. One Water Technician 1, who holds a Class 2 certification in Water Distribution, Chlorine Handling Certification, and will be obtaining his Class 1 certification in Water Treatment soon. Our Wastewater Technician 2 is also the District of Barriere's cross connection control inspector and certified backflow assembly tester.

SUMMARY OF SOURCE WATER PROTECTION EFFORTS

The District of Barriere is currently working towards completing a wellhead protection plan to ensure a consistent effort is being made to protect our groundwater production wells. The wellhead protection plan assesses risks and makes recommendations with respect to source water protection. The plan notes that risks to production wells from activities within and outside the capture zone are perceived to be low. Another measure the District of Barriere has implemented is a property covenant on all surrounding residential homes which prohibits the use of fertilizers and pesticides. Further to this the District undertook a GWUDI/GARP study of its deep wells at the Spruce Crescent site to determine potential influences of the adjacent Barriere River. In addition, a Level I GARP Screening was completed for the Bradford PW1 in 2024 (See Attachment 4).

APPENDIX I

WATER CONSUMPTION (CUBIC METRES)

Month	2024 PW1	2024 DW2	2024 DW3	2023 PW1	2023 DW2	2023 DW3
January	270	12090	13169	455	11611	11350
February	261	15773	15697	460	10665	10434
March	218	22655	10899	435	12281	12458
April	541	12866	13072	335	16512	17139
May	237	19002	23695	380	20342	23788
June	269	19911	25363	634	22296	36172
July	2016	25981	38358	3369	19665	49066
August	3038	24134	30717	1498	22637	40969
September	167	17479	21405	484	19751	2192
October	370	12725	12454	263	12356	12398
November	268	10770	11114	300	10821	10163
December	292	12178	12371	292	10711	10578

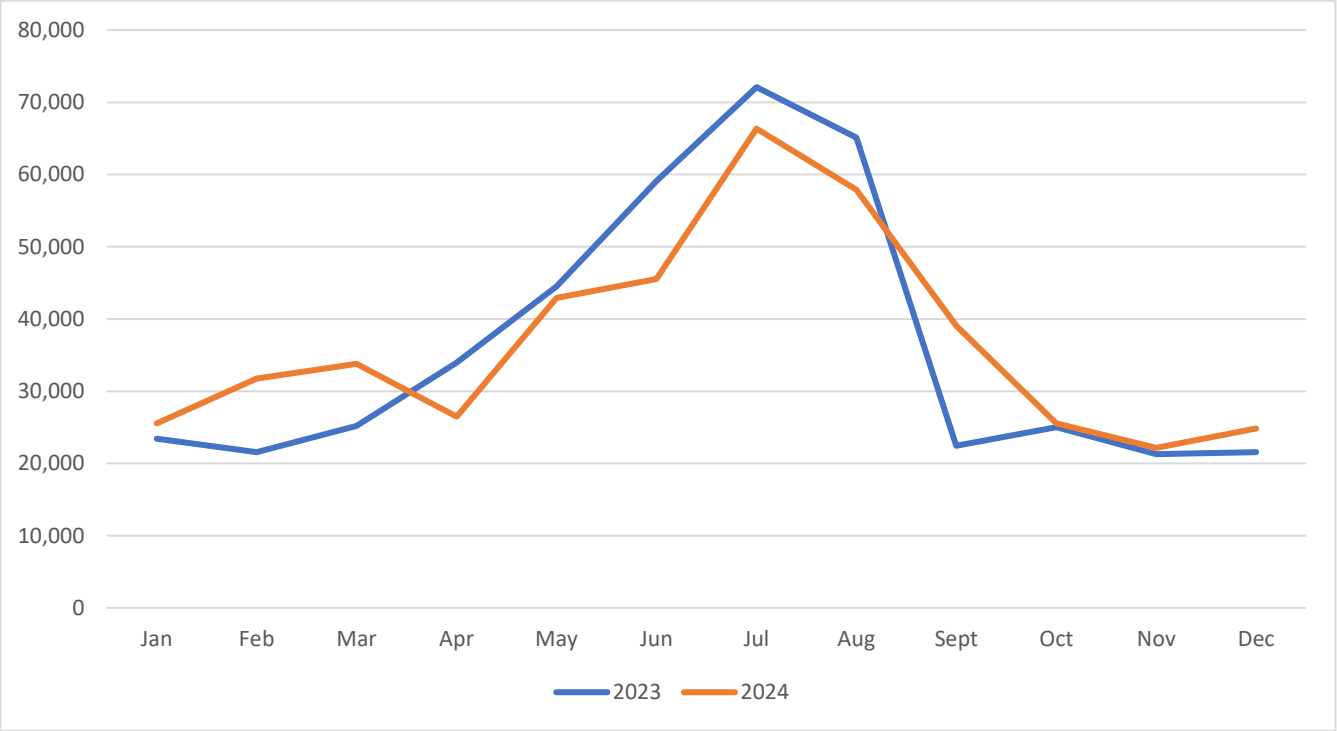
HISTORICAL ANNUAL WATER CONSUMPTION

Total Consumption for 2024: 441,825 cubic metres
Total Consumption for 2023: 435,260 cubic metres
Total Consumption for 2022: 382,660 cubic metres
Total Consumption for 2021: 386,849 cubic metres
Total Consumption for 2020: 312,417 cubic metres
Total Consumption for 2019: 452,792 cubic metres
Total Consumption for 2018: 552,371 cubic metres
Total Consumption for 2017: 601,764 cubic metres
Total Consumption for 2016: 462,902 cubic metres
Total Consumption for 2015: 538.725 cubic metres
Total Consumption for 2014: 536,108 cubic metres

APPENDIX II

WATER CONSUMPTION

2024 / 2023 Monthly Water Consumption



APPENDIX III

LOUIS CREEK INDUSTRIAL PARK (LCIP)

The District of Barriere has a small water system in the Louis Creek Industrial Park (LCIP) which is located 4 kilometers south of the town of Barriere. This water system serves only the businesses which are in the industrial park, along with 1 residential homeowner. The LCIP water system started production on June 1, 2020.

The water system consists of a 50-gpm production well, and a pump house where disinfection occurs. District utility staff attend this site daily where chlorine levels and flows are monitored. Weekly bacteriological samples are collected for analysis from an outside independent laboratory.

LCIP had no positive bacteriological testing results pertaining to Total Coliforms or E. Coli and remained in compliance throughout the entire year of 2023.

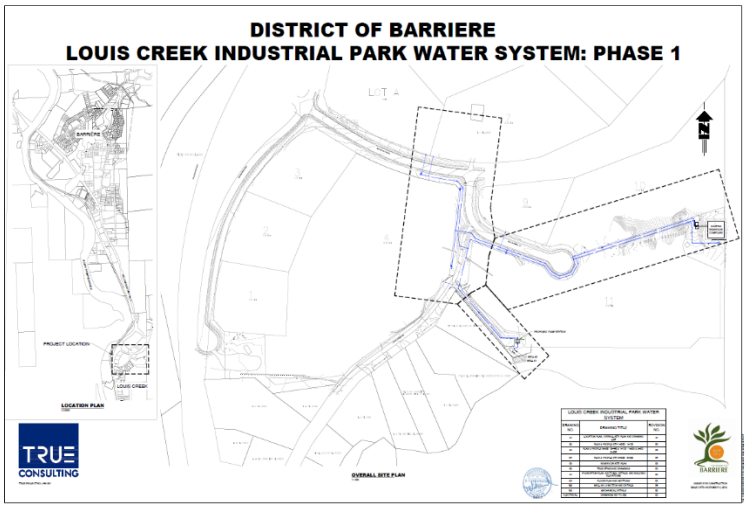
A new 1,410 m3 insulated steel reservoir including all underground piping and valves was installed and commissioned in 2023. The level sensor in the reservoir is powered using a 350-Watt solar panel. In addition, a 31 KVA diesel generator was installed at the pump house to provide backup power in case of an outage.

An extension to the watermain is proposed for 2025 to service the remaining industrial lots.

A full spectrum analysis of the raw water source was conducted in 2024 and is shown in Attachment 1 of this document.

LCIP WATER CONSUMPTION (CUBIC METERS)

Month	2023 LCIP	2023 LCIP
January	751	145
February	539	118
March	175	149
April	190	294
May	249	750
June	240	1131
July	531	2117
August	599	1108
September	642	1253
October	335	316
November	341	232
December	405	202



Total Consumption for 2024: 4,997 m3
Total Consumption for 2023: 8,030 m3

Interior Health Authority

Kamloops Health Centre
519 Columbia Street
Kamloops BC V2C 2T8
Canada

(250) 851-7340

Interior Health Authority

Facility Inspected:
District of Barriere Water System

Attention: District of Barriere

Site Address: Hwy 5 N
Barriere BC V0E 1E0

Site Phone: (250) 672-9751
Site Fax: (250) 672-9708
Site Email: cmatthews@barriere.ca

Inspection #: I-2023-180769-180769
Inspection Date: 14-Jul-2023 10:28
Completed Date: 14-Jul-2023 13:00
Inspected By: Diana Tesic-Nagalingam
Facility Type: District Municipality - Community LW
Risk Rating: Invalid
Inspection Type: Monitoring
Inspection Reasons: Monitoring
Infractions: 3

Delivery Method: Email

Opening Comments and Observations:
Routine inspection.

N/A = Not Applicable No = No Yes = Yes

District Municipality - Community LW

LW1 - Core

LW1.1 - Are the water system details up to date? Yes

District Municipality - Community LW - LW - Distribution & Storage

LWD1 - Water - Distribution & Storage

LWD1.1 - Is the water system preparing or following a Cross Connection Control Program? Yes

The District has cross-connection bylaw and most of the ICI customers are accounted for. One of the operators is a certified CCC inspector who is also responsible for administering the program.

Response: Cross connection program summary is to be outlined in the Annual Drinking Water Report.

LWD1.2 - Does the water system follow a distribution system maintenance and protection plan or otherwise conduct routine maintenance of the distribution system? Yes

Formal operation and maintenance plan for the District is still in the development stage.

Response: Discussed the importance to include leak detection and valve exercise tasks to the O&M manual for the District.

District Municipality - Community LW - LW - Emergency Response

LWE1 - Emergency Response

LWE1.1 - Does the Water Supplier have a written emergency response plan and contingency plan? [DWPA Section 10 & 15(a), DWPR Section 13] Yes

LWE1.2 - Does the water system have a system that will notify operators of a process failure or breach of the system? Yes

District Municipality - Community LW - LW - Monitoring & Reporting

LWM1 - Monitoring & Reporting

LWM1.1 - Is the Water Supplier monitoring its source water and the drinking water it provides for the parameters, and at the frequency, established by the regulations and by its operating permit? [DWPA Section 11] Yes

Monitoring for bacteriological parameters is in compliance with the Schedule B.

Response: Comprehensive testing for each source needs to be completed annually.

LWM1.2 - Does the Water Supplier prepare and make public an Annual report? [DWPA Section 15(b), DWPR Section 11] Yes

LWM1.3 - Is the distribution system manually monitored for chlorine? Yes

LWM1.4 - Is the distribution system manually monitored for turbidity? Yes

LWM1.5 - Are the Point of Entry / Point of Use devices being maintained and monitored? N/A

District Municipality - Community LW - LW - Operations & Management

LWO1 - Operations & Management

LWO1.1 - Does the Water Supplier hold a valid Operating Permit? Yes

LWO1.2 - Does the water system have a Water Master Plan, or acceptable planning process, to achieve compliance with Provincial Treatment Objectives? Yes

First stage of the Water Master Plan is completed.

Response: Projects completed: Drilling Well #3 and its successful connection to the distribution system, relocation of stand-by power for continuous supply of potable water. Addition of Well #3 to the potable water supply is currently resolving the issue with the elevated manganese (manganese is kept below AO).
In order to complete other listed projects within the Water Master Plan the District will look into available funding options.

LWO1.3 - Does the water system have an Asset Management Plan? **No**

Follow up by: 03-Aug-2024

- *LWO1.3A - An Asset Management Plan is beneficial to a water system to plan for capital costs associated with infrastructure improvements and replacement*

LWO1.4 - Does the water system have an Operator certified to the Treatment Classification of the system? [DWPA Section 9, DWPR Section12] N/A

LWO1.5 - Does the water system have an Operator certified to the Distribution Classification of the system? [DWPA Section 9, DWPR Section12] Yes

Facility is classified as a WD Level 2.

Response: There are two operators with Level 2 WD and one operator with Level 1 WD certification.

LWO1.6 - Does the Water Supplier have a succession plan to train, recruit and retain staff at the required certification levels? Yes

District Municipality - Community LW - LW - Source

LWS1 - Source

LWS1.1 - Has a source assessment been prepared for each source? **No**

Source assessment is intended to help water suppliers develop a better understanding of the risks to drinking water safety and availability. It also can help suppliers operate more effectively in working to ensure the best possible water quality and assured quantity. The Comprehensive Drinking Water Source-to-Tap Assessment Guideline, or a similar document, can be utilized for the process.

Follow up by: 03-Aug-2024

LWS1.2 - Has a source assessment response plan been prepared for each source?

LWS1.3 - Is the system following their assessment response plan?

LWS1.4 - Has a Ground water At Risk of containing Pathogens (GARP) assessment been completed? **No**

GARP assessment needs to be completed on all of the production wells.

Follow up by: 03-Aug-2024

Response: The operators are encouraged to compile data on raw water quality (bacteriological, turbidity, conductivity, pH, temperature, etc.) to help with the GARP assessment process.

District Municipality - Community LW - LW - Treatment

LWT1 - Treatment

LWT1.1 - Does the water treatment plant(s) (WTP) meet the Drinking Water Treatment Objectives (Microbial) for Surface Water? N/A

LWT1.2 - Do the conditions for filtration exemption of the Drinking Water Treatment Objectives (Microbial) for Surface Water continue to be met? N/A

LWT1.3 - Does the water treatment plant (WTP) meet the Provincial Treatment Objectives (Microbial) for Ground Water Supplies? N/A

There are no GARP studies completed on the District's ground water sources which will provide direction for water treatment requirements.

LWT1.4 - Do the conditions for filtration exemption of the Drinking Water Treatment Objectives (Microbial) for Ground Water continue to be met? N/A

Actions Taken

Actions Taken:

- Site visit

Received By: **Inspector:**

Paul Amos

Diana Tesic-Nagalingam, Environmental Health Officer

Interior Health Authority

Printed on: August 18, 202
1:48 PM

Kamloops Health Centre
519 Columbia Street
Kamloops BC V2C 2T8
Canada

(250) 851-7340

Interior Health Authority

Facility Inspected:
Louis Creek Industrial Park

Attention: District of Barriere

Site Address: Louis Creek Rd
Louis Creek BC V0E 2E0

Site Phone: (250) 672-9751
Site Fax: (250) 672-9708
Site Email: dborrill@barriere.ca

Inspection #: I-2023-180785-180785
Inspection Date: 14-Jul-2023 13:30
Completed Date: 14-Jul-2023 15:00
Inspected By: Diana Tesic-Nagalingam
Facility Type: District Municipality - Community SW
Risk Rating: Invalid
Inspection Type: Monitoring
Inspection Reasons: Monitoring
Infractions: 2

Delivery Method: Email

Opening Comments and Observations:
Routine inspection.

Yes = Yes N/A = Not Applicable No = No

District Municipality - Community SW

SW1 - Core

SW1.1 - Are the water system details up to date? Yes

District Municipality - Community SW - SW - Distribution & Storage

SWD1 - Distribution & Storage

SWD1.1 - Is the water system preparing or following a Cross Connection Control Program? Yes

SWD1.2 - Does the water system follow a distribution system maintenance and protection plan or otherwise conduct routine maintenance of the distribution system? Yes

District Municipality - Community SW - SW - Emergency Response

SWE1 - Emergency Response

SWE1.1 - Does the Water Supplier have a written emergency response plan and contingency plan? [DWPA Section 10 & 15(a), DWPR Section 13] Yes

SWE1.2 - Does the water system have a system that will notify operators of a process failure or breach of the system? Yes

Once the new reservoir is on-line it will be connected to the existing SCADA system.

District Municipality - Community SW - SW - Monitoring & Reporting

SWM1 - Monitoring & Reporting

SWM1.1 - Is the Water Supplier monitoring its source water and the drinking water it provides for the parameters, and at the frequency, established by the regulations and by its operating permit? [DWPA Section 11] — Yes

SWM1.2 - Does the Water Supplier prepare and make public an Annual report? [DWPA Section 15(b), DWPR Section 11] — N/A

SWM1.3 - Is the distribution system manually monitored for chlorine? — Yes

SWM1.4 - Is the distribution system manually monitored for turbidity? — Yes

SWM1.5 - Are the Point of Entry / Point of Use devices being maintained and monitored? — N/A

District Municipality - Community SW - SW - Operations & Management

SWO1 - Operations & Management

SWO1.1 - Does the Water Supplier hold a valid Operating Permit? — Yes

SWO1.2 - Does the water system have a Water Master Plan, or acceptable planning process, to achieve compliance with Provincial Treatment Objectives? — Yes

SWO1.3 - Does the water system have an Asset Management Plan?

SWO1.4 - Does the water system have an Operator certified to the Treatment Classification of the system? [DWPA Section 9, DWPR Section12] — N/A

SWO1.5 - Does the water system have an Operator certified to the Distribution Classification of the system? [DWPA Section 9, DWPR Section12] — Yes

SWO1.6 - Does the Water Supplier have a succession plan to train, recruit and retain staff at the required certification levels? — Yes

District Municipality - Community SW - SW - Source

SWS1 - Source

SWS1.1 - Has a source assessment been prepared for each source? — **No**

Complete source assessment for the production well utilizing Comprehensive Drinking Water Source-to-Tap Assessment Guideline or equivalent.

Follow up by: 15-Aug-2024

Response: Resources for water system operators: https://www2.gov.bc.ca/gov/content/environment/air-land-water/water/water-quality/drinking-water-quality/resources-for-water-system-operators

SWS1.2 - Has a source assessment response plan been prepared for each source?

SWS1.3 - Is the system following their assessment response plan?

SWS1.4 - Has a Ground water At Risk of containing Pathogens (GARP) assessment been completed? **No**

Follow up by: 17-Aug-2024

District Municipality - Community SW - SW - Treatment

SWT1 - Treatment

SWT1.1 - Does the water treatment plant(s) (WTP) meet the Drinking Water Treatment Objectives (Microbial) for Surface Water? N/A

SWT1.2 - Do the conditions for filtration exemption of the Drinking Water Treatment Objectives (Microbial) for Surface Water continue to be met? N/A

SWT1.3 - Does the water treatment plant (WTP) meet the Provincial Treatment Objectives (Microbial) for Ground Water Supplies? Yes

Currently the treatment consists of chlorination with contact time for virus reduction. If the subsequent GARP studies change the risk evaluation, the treatment will need to address newly identified risks to the ground water.

SWT1.4 - Do the conditions for filtration exemption of the Drinking Water Treatment Objectives (Microbial) for Ground Water continue to be met? Yes

Collect data on raw water turbidity to confirm that the conditions for filtration exemption are continuing to be met. This is in addition to periodic bacteriological monitoring of raw water.

Actions Taken

Actions Taken:

- Site visit

Closing Comments:

WIPN 33085 was drilled in 2010 and screened/developed in 2014. Depth of the well is 238 feet. New well is capable of producing 50 + USgpm. Surface seal is present (bentonite chip 18 feet deep).
System has a back-up power
New potable water reservoir is in the process of commissioning during the writing of this report.

Received By:

Paul Amos

Inspector:

Diana Tesic-Nagalingam, Environmental Health Officer

CERTIFICATE OF ANALYSIS

Work Order	:	**KS2404902**		
Client	:	**District of Barriere**	Laboratory	: ALS Environmental - Vancouver
Contact	:	Chris Matthews	Account Manager	: Caitlin Fountain
Address	:	PO Box 219 Barriere British Columbia Canada V0E 1E0	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	:	----	Telephone	: 250 372 3588
Project	:	District of Barriere Water	Date Samples Received	: 21-Nov-2024 12:23
PO	:	----	Date Analysis Commenced	: 22-Nov-2024
C-O-C number	:	----	Issue Date	: 03-Dec-2024 09:18
Sampler	:	Graham H		
Site	:	----		
Quote number	:	20DIOB100KS02 Water		
No. of samples received	:	1		
No. of samples analysed	:	1		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Ghazaleh Khanmirzaei	Analyst	Metals, Burnaby, British Columbia
Jon Fisher	Production Manager, Environmental	Inorganics, Waterloo, Ontario
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Monica Ko	Lab Assistant	Microbiology, Burnaby, British Columbia
Monica Ko	Lab Assistant	Inorganics, Burnaby, British Columbia

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key: CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
LOR: Limit of Reporting (detection limit).

Unit	*Description*
mg/L	milligrams per litre
-	no units
% T/cm	% transmittance per centimetre
AU/cm	absorbance units per centimetre
CU	colour units (1 cu = 1 mg/l pt)
NTU	nephelometric turbidity units
µS/cm	microsiemens per centimetre
pH units	pH units
MPN/100mL	most probable number per hundred millilitres
%	percent
meq/L	milliequivalents per litre

<: less than.
>: greater than.
Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	Spruce Crescent DW2 - Raw Water Analysis Pumphouse	----	----	----	----
					Client sampling date / time	21-Nov-2024 10:15	----	----	----	----
						KS2404902-001	----	----	----	----
						Result	----	----	----	----
Physical Tests										
Absorbance, UV (@ 254nm), unfiltered	----	E405/VA	0.0050	AU/cm		0.0110	----	----	----	----
Alkalinity, bicarbonate (as CaCO3)	----	E290/VA	1.0	mg/L		175	----	----	----	----
Alkalinity, carbonate (as CaCO3)	----	E290/VA	1.0	mg/L		<1.0	----	----	----	----
Alkalinity, hydroxide (as CaCO3)	----	E290/VA	1.0	mg/L		<1.0	----	----	----	----
Alkalinity, phenolphthalein (as CaCO3)	----	E290/VA	1.0	mg/L		<1.0	----	----	----	----
Alkalinity, total (as CaCO3)	----	E290/VA	1.0	mg/L		175	----	----	----	----
Colour, true	----	E329/VA	5.0	CU		<5.0	----	----	----	----
Conductivity	----	E100/VA	2.0	µS/cm		351	----	----	----	----
Hardness (as CaCO3), from total Ca/Mg	----	EC100A/VA	0.60	mg/L		190	----	----	----	----
Langelier index (@ 15°C)	----	EC105A/VA	0.010	-		0.279	----	----	----	----
Langelier index (@ 20°C)	----	EC105A/VA	0.010	-		0.354	----	----	----	----
Langelier index (@ 25°C)	----	EC105A/VA	0.010	-		0.424	----	----	----	----
Langelier index (@ 4°C)	----	EC105A/VA	0.010	-		0.104	----	----	----	----
Langelier index (@ 60°C)	----	EC105A/VA	0.010	-		0.872	----	----	----	----
Langelier index (@ 77°C)	----	EC105A/VA	0.010	-		1.07	----	----	----	----
pH	----	E108/VA	0.10	pH units		7.90	----	----	----	----
Solids, total dissolved [TDS]	----	E162/VA	10	mg/L		235	----	----	----	----
Turbidity	----	E121/VA	0.10	NTU		0.21	----	----	----	----
Transmittance, UV (@ 254nm), unfiltered	----	E405/VA	1.0	% T/cm		97.5	----	----	----	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID: Spruce Crescent DW2 - Raw Water Analysis Pumphouse	----	----	----	----
					Client sampling date / time: 21-Nov-2024 10:15	----	----	----	----
					KS2404902-001	----	----	----	----
					Result	----	----	----	----
Anions and Nutrients									
Ammonia, total (as N)	7664-41-7	E298/VA	0.0050	mg/L	0.0134	----	----	----	----
Bromide	24959-67-9	E235.Br-L/VA	0.050	mg/L	<0.050	----	----	----	----
Chloride	16887-00-6	E235.Cl/VA	0.50	mg/L	2.66	----	----	----	----
Fluoride	16984-48-8	E235.F/VA	0.020	mg/L	0.087	----	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318/VA	0.050	mg/L	0.066	----	----	----	----
Nitrate (as N)	14797-55-8	E235.NO3-L/VA	0.0050	mg/L	0.316	----	----	----	----
Nitrite (as N)	14797-65-0	E235.NO2-L/VA	0.0010	mg/L	<0.0010	----	----	----	----
Nitrogen, total organic	----	EC363/VA	0.050	mg/L	0.053	----	----	----	----
Sulfate (as SO4)	14808-79-8	E235.SO4/VA	0.30	mg/L	19.4	----	----	----	----
Cyanides									
Cyanide, strong acid dissociable (Total)	----	E333/WT	0.0050	mg/L	<0.0050	----	----	----	----
Organic / Inorganic Carbon									
Carbon, total organic [TOC]	----	E355-L/VA	0.50	mg/L	0.66	----	----	----	----
Microbiological Tests									
Coliforms, total	----	E010/VA	1	MPN/100 mL	<1	----	----	----	----
Coliforms, Escherichia coli [E. coli]	----	E010/VA	1	MPN/100 mL	<1	----	----	----	----
Ion Balance									
Anion sum	----	EC101A/VA	0.10	meq/L	4.00	----	----	----	----
Cation sum (total)	----	EC101A/VA	0.10	meq/L	4.21	----	----	----	----
Ion balance (APHA)	----	EC101A/VA	0.010	%	2.56	----	----	----	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	Spruce Crescent DW2 - Raw Water Analysis Pumphouse	----	----	----	----
					Client sampling date / time	21-Nov-2024 10:15	----	----	----	----
						KS2404902-001	----	----	----	----
						Result	----	----	----	----
Total Metals										
Aluminum, total	7429-90-5	E420/VA	0.0030	mg/L		<0.0030	----	----	----	----
Antimony, total	7440-36-0	E420/VA	0.00010	mg/L		<0.00010	----	----	----	----
Arsenic, total	7440-38-2	E420/VA	0.00010	mg/L		0.00118	----	----	----	----
Barium, total	7440-39-3	E420/VA	0.00010	mg/L		0.0183	----	----	----	----
Beryllium, total	7440-41-7	E420/VA	0.000100	mg/L		<0.000100	----	----	----	----
Bismuth, total	7440-69-9	E420/VA	0.000050	mg/L		<0.000050	----	----	----	----
Boron, total	7440-42-8	E420/VA	0.010	mg/L		<0.010	----	----	----	----
Cadmium, total	7440-43-9	E420/VA	0.0000050	mg/L		0.0000117	----	----	----	----
Calcium, total	7440-70-2	E420/VA	0.050	mg/L		41.1	----	----	----	----
Cesium, total	7440-46-2	E420/VA	0.000010	mg/L		<0.000010	----	----	----	----
Chromium, total	7440-47-3	E420/VA	0.00050	mg/L		0.00077	----	----	----	----
Cobalt, total	7440-48-4	E420/VA	0.00010	mg/L		<0.00010	----	----	----	----
Copper, total	7440-50-8	E420/VA	0.00050	mg/L		0.00516	----	----	----	----
Iron, total	7439-89-6	E420/VA	0.010	mg/L		<0.010	----	----	----	----
Lead, total	7439-92-1	E420/VA	0.000050	mg/L		0.000207	----	----	----	----
Lithium, total	7439-93-2	E420/VA	0.0010	mg/L		0.0017	----	----	----	----
Magnesium, total	7439-95-4	E420/VA	0.0050	mg/L		21.3	----	----	----	----
Manganese, total	7439-96-5	E420/VA	0.00010	mg/L		0.00283	----	----	----	----
Mercury, total	7439-97-6	E508/VA	0.0000050	mg/L		<0.0000050	----	----	----	----
Molybdenum, total	7439-98-7	E420/VA	0.000050	mg/L		0.00152	----	----	----	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID				
					Spruce Crescent DW2 - Raw Water Analysis Pumphouse	----	----	----	----
					Client sampling date / time				
					21-Nov-2024 10:15	----	----	----	----
					KS2404902-001	----	----	----	----
					Result	----	----	----	----
Total Metals									
Nickel, total	7440-02-0	E420/VA	0.00050	mg/L	<0.00050	----	----	----	----
Phosphorus, total	7723-14-0	E420/VA	0.050	mg/L	<0.050	----	----	----	----
Potassium, total	7440-09-7	E420/VA	0.050	mg/L	1.77	----	----	----	----
Rubidium, total	7440-17-7	E420/VA	0.00020	mg/L	0.00046	----	----	----	----
Selenium, total	7782-49-2	E420/VA	0.000050	mg/L	0.000203	----	----	----	----
Silicon, total	7440-21-3	E420/VA	0.10	mg/L	8.31	----	----	----	----
Silver, total	7440-22-4	E420/VA	0.000010	mg/L	<0.000010	----	----	----	----
Sodium, total	7440-23-5	E420/VA	0.050	mg/L	8.32	----	----	----	----
Strontium, total	7440-24-6	E420/VA	0.00020	mg/L	0.265	----	----	----	----
Sulfur, total	7704-34-9	E420/VA	0.50	mg/L	7.00	----	----	----	----
Tellurium, total	13494-80-9	E420/VA	0.00020	mg/L	<0.00020	----	----	----	----
Thallium, total	7440-28-0	E420/VA	0.000010	mg/L	<0.000010	----	----	----	----
Thorium, total	7440-29-1	E420/VA	0.00010	mg/L	<0.00010	----	----	----	----
Tin, total	7440-31-5	E420/VA	0.00010	mg/L	<0.00010	----	----	----	----
Titanium, total	7440-32-6	E420/VA	0.00030	mg/L	<0.00030	----	----	----	----
Tungsten, total	7440-33-7	E420/VA	0.00010	mg/L	<0.00010	----	----	----	----
Uranium, total	7440-61-1	E420/VA	0.000010	mg/L	0.00190	----	----	----	----
Vanadium, total	7440-62-2	E420/VA	0.00050	mg/L	0.00087	----	----	----	----
Zinc, total	7440-66-6	E420/VA	0.0030	mg/L	0.0103	----	----	----	----
Zirconium, total	7440-67-7	E420/VA	0.00020	mg/L	<0.00020	----	----	----	----

Please refer to the General Comments section for an explanation of any result qualifiers detected.

ALS Canada Ltd.

right solutions.
right partner.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **KS2404902**	Page	: 1 of 10
Client	: **District of Barriere**	Laboratory	: ALS Environmental - Kamloops
Contact	: Chris Matthews	Account Manager	: Caitlin Fountain
Address	: PO Box 219 Barriere BC Canada V0E 1E0	Address	: 1445 McGill Road, Unit 2B Kamloops, British Columbia Canada V2C 6K7
Telephone	: ----	Telephone	: 250 372 3588
Project	: District of Barriere Water	Date Samples Received	: 21-Nov-2024 12:23
PO	: ----	Issue Date	: 03-Dec-2024 09:15
C-O-C number	: ----		
Sampler	: Graham H		
Site	: ----		
Quote number	: 20DIOB100KS02 Water		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	*Method*	*Sampling Date*	*Extraction / Preparation*				*Analysis*			
			Preparation Date	*Holding Times* Rec	*Holding Times* Actual	*Eval*	*Analysis Date*	*Holding Times* Rec	*Holding Times* Actual	*Eval*
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) Spruce Crescent DW2 - Raw Water Analysis - Pumphouse	E298	21-Nov-2024	27-Nov-2024	28 days	6 days	✓	29-Nov-2024	28 days	8 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE Spruce Crescent DW2 - Raw Water Analysis - Pumphouse	E235.Br-L	21-Nov-2024	23-Nov-2024	28 days	2 days	✓	23-Nov-2024	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE Spruce Crescent DW2 - Raw Water Analysis - Pumphouse	E235.Cl	21-Nov-2024	23-Nov-2024	28 days	2 days	✓	23-Nov-2024	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE Spruce Crescent DW2 - Raw Water Analysis - Pumphouse	E235.F	21-Nov-2024	23-Nov-2024	28 days	2 days	✓	23-Nov-2024	28 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE Spruce Crescent DW2 - Raw Water Analysis - Pumphouse	E235.NO3-L	21-Nov-2024	23-Nov-2024	3 days	2 days	✓	23-Nov-2024	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE Spruce Crescent DW2 - Raw Water Analysis - Pumphouse	E235.NO2-L	21-Nov-2024	23-Nov-2024	3 days	2 days	✓	23-Nov-2024	3 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE Spruce Crescent DW2 - Raw Water Analysis - Pumphouse	E235.SO4	21-Nov-2024	23-Nov-2024	28 days	2 days	✓	23-Nov-2024	28 days	2 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	*Method*	*Sampling Date*	*Extraction / Preparation*				*Analysis*			
			Preparation Date	*Holding Times* Rec	*Holding Times* Actual	*Eval*	*Analysis Date*	*Holding Times* Rec	*Holding Times* Actual	*Eval*
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
Spruce Crescent DW2 - Raw Water Analysis - Pumphouse	E318	21-Nov-2024	27-Nov-2024	28 days	6 days	✓	29-Nov-2024	28 days	8 days	✓
Cyanides : Total Cyanide										
Opaque HDPE - total (sodium hydroxide)										
Spruce Crescent DW2 - Raw Water Analysis - Pumphouse	E333	21-Nov-2024	27-Nov-2024	14 days	6 days	✓	27-Nov-2024	14 days	6 days	✓
Microbiological Tests : Total Coliforms and E. coli (Enzyme Substrate)										
Sterile HDPE (Sodium thiosulphate)										
Spruce Crescent DW2 - Raw Water Analysis - Pumphouse	E010	21-Nov-2024	----	----	----		22-Nov-2024	30 hrs	24 hrs	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid)										
Spruce Crescent DW2 - Raw Water Analysis - Pumphouse	E355-L	21-Nov-2024	27-Nov-2024	28 days	6 days	✓	27-Nov-2024	28 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
Spruce Crescent DW2 - Raw Water Analysis - Pumphouse	E290	21-Nov-2024	23-Nov-2024	14 days	2 days	✓	23-Nov-2024	14 days	2 days	✓
Physical Tests : Apparent UV Absorbance and Transmittance by Spectrometry										
HDPE										
Spruce Crescent DW2 - Raw Water Analysis - Pumphouse	E405	21-Nov-2024	----	----	----		23-Nov-2024	3 days	2 days	✓
Physical Tests : Colour (True) by Spectrometer (5 CU)										
HDPE										
Spruce Crescent DW2 - Raw Water Analysis - Pumphouse	E329	21-Nov-2024	23-Nov-2024	3 days	2 days	✓	24-Nov-2024	3 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE										
Spruce Crescent DW2 - Raw Water Analysis - Pumphouse	E100	21-Nov-2024	23-Nov-2024	28 days	2 days	✓	23-Nov-2024	28 days	2 days	✓
Physical Tests : pH by Meter										
HDPE										
Spruce Crescent DW2 - Raw Water Analysis - Pumphouse	E108	21-Nov-2024	23-Nov-2024	0.25 hrs	43 hrs	× EHTR-FM	23-Nov-2024	0.25 hrs	46 hrs	× EHTR-FM

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	*Method*	*Sampling Date*	*Extraction / Preparation*				*Analysis*			
			Preparation Date	*Holding Times*		*Eval*	*Analysis Date*	*Holding Times*		*Eval*
				Rec	*Actual*			*Rec*	*Actual*	
Physical Tests : TDS by Gravimetry										
HDPE										
Spruce Crescent DW2 - Raw Water Analysis - Pumphouse	E162	21-Nov-2024	----	----	----		27-Nov-2024	7 days	6 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE										
Spruce Crescent DW2 - Raw Water Analysis - Pumphouse	E121	21-Nov-2024	----	----	----		23-Nov-2024	3 days	2 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved)										
Spruce Crescent DW2 - Raw Water Analysis - Pumphouse	E508	21-Nov-2024	26-Nov-2024	28 days	5 days	✓	26-Nov-2024	28 days	5 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved)										
Spruce Crescent DW2 - Raw Water Analysis - Pumphouse	E420	21-Nov-2024	26-Nov-2024	180 days	5 days	✓	28-Nov-2024	180 days	7 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Alkalinity Species by Titration	E290	1780430	1	17	5.8	5.0	✓
Ammonia by Fluorescence	E298	1785233	1	20	5.0	5.0	✓
Apparent UV Absorbance and Transmittance by Spectrometry	E405	1780996	1	4	25.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	1780434	1	17	5.8	5.0	✓
Chloride in Water by IC	E235.Cl	1780433	1	17	5.8	5.0	✓
Colour (True) by Spectrometer (5 CU)	E329	1780438	1	12	8.3	5.0	✓
Conductivity in Water	E100	1780431	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	1780432	1	17	5.8	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1780435	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1780436	1	17	5.8	5.0	✓
pH by Meter	E108	1780429	1	10	10.0	5.0	✓
Sulfate in Water by IC	E235.SO4	1780437	1	17	5.8	5.0	✓
TDS by Gravimetry	E162	1786605	1	20	5.0	5.0	✓
Total Coliforms and E. coli (Enzyme Substrate)	E010	1779273	2	18	11.1	10.0	✓
Total Cyanide	E333	1785403	1	16	6.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1785231	1	14	7.1	5.0	✓
Total Mercury in Water by CVAAS	E508	1783565	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1779678	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	1785232	1	9	11.1	5.0	✓
Turbidity by Nephelometry	E121	1780808	1	20	5.0	5.0	✓
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	1780430	1	17	5.8	5.0	✓
Ammonia by Fluorescence	E298	1785233	1	20	5.0	5.0	✓
Apparent UV Absorbance and Transmittance by Spectrometry	E405	1780996	1	4	25.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	1780434	1	17	5.8	5.0	✓
Chloride in Water by IC	E235.Cl	1780433	1	17	5.8	5.0	✓
Colour (True) by Spectrometer (5 CU)	E329	1780438	1	12	8.3	5.0	✓
Conductivity in Water	E100	1780431	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	1780432	1	17	5.8	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1780435	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1780436	1	17	5.8	5.0	✓
pH by Meter	E108	1780429	1	10	10.0	5.0	✓
Sulfate in Water by IC	E235.SO4	1780437	1	17	5.8	5.0	✓
TDS by Gravimetry	E162	1786605	1	20	5.0	5.0	✓
Total Cyanide	E333	1785403	1	16	6.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1785231	1	14	7.1	5.0	✓

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Control Samples (LCS) - Continued							
Total Mercury in Water by CVAAS	E508	1783565	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1779678	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	1785232	1	9	11.1	5.0	✓
Turbidity by Nephelometry	E121	1780808	1	20	5.0	5.0	✓
Method Blanks (MB)							
Alkalinity Species by Titration	E290	1780430	1	17	5.8	5.0	✓
Ammonia by Fluorescence	E298	1785233	1	20	5.0	5.0	✓
Apparent UV Absorbance and Transmittance by Spectrometry	E405	1780996	1	4	25.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	1780434	1	17	5.8	5.0	✓
Chloride in Water by IC	E235.Cl	1780433	1	17	5.8	5.0	✓
Colour (True) by Spectrometer (5 CU)	E329	1780438	1	12	8.3	5.0	✓
Conductivity in Water	E100	1780431	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	1780432	1	17	5.8	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1780435	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1780436	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	1780437	1	17	5.8	5.0	✓
TDS by Gravimetry	E162	1786605	1	20	5.0	5.0	✓
Total Coliforms and E. coli (Enzyme Substrate)	E010	1779273	1	18	5.5	5.0	✓
Total Cyanide	E333	1785403	1	16	6.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1785231	1	14	7.1	5.0	✓
Total Mercury in Water by CVAAS	E508	1783565	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1779678	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	1785232	1	9	11.1	5.0	✓
Turbidity by Nephelometry	E121	1780808	1	20	5.0	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	1785233	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	1780434	1	17	5.8	5.0	✓
Chloride in Water by IC	E235.Cl	1780433	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	1780432	1	17	5.8	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1780435	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1780436	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	1780437	1	17	5.8	5.0	✓
Total Cyanide	E333	1785403	1	16	6.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1785231	1	14	7.1	5.0	✓
Total Mercury in Water by CVAAS	E508	1783565	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1779678	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	1785232	1	9	11.1	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Coliforms and E. coli (Enzyme Substrate)	E010 ALS Environmental - Vancouver	Water	APHA 9223 (mod)	The enzyme substrate test simultaneously detects Total Coliforms and E. coli in a 100 mL sample after incubation at 35.0 ±0.5°C for either 18 or 24 hours (dependent on reagent used).
Conductivity in Water	E100 ALS Environmental - Vancouver	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 ALS Environmental - Vancouver	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 ALS Environmental - Vancouver	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
TDS by Gravimetry	E162 ALS Environmental - Vancouver	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC	E235.Cl ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Sulfate in Water by IC	E235.SO4 ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Alkalinity Species by Titration	E290 ALS Environmental - Vancouver	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 ALS Environmental - Vancouver	Water	Method Fialab 100, 2018	Ammonia in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021)
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 ALS Environmental - Vancouver	Water	Method Fialab 100, 2018	TKN in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021).
Colour (True) by Spectrometer (5 CU)	E329 ALS Environmental - Vancouver	Water	APHA 2120 C (mod)	Colour (True Colour) is determined by filtering a sample through a 0.45 micron membrane filter followed by analysis of the filtrate using the platinum-cobalt colourimetric method. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment.
Total Cyanide	E333 ALS Environmental - Waterloo	Water	ISO 14403 (mod)	Total or Strong Acid Dissociable (SAD) Cyanide is determined by Continuous Flow Analyzer (CFA) with in-line UV digestion followed by colourmetric analysis. Method Limitation: High levels of thiocyanate (SCN) may cause positive interference (up to 0.5% of SCN concentration).
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L ALS Environmental - Vancouver	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Apparent UV Absorbance and Transmittance by Spectrometry	E405 ALS Environmental - Vancouver	Water	APHA 5910 B (mod)	Apparent UV Absorbance is determined on an unfiltered sample by UV absorbance measurement in a quartz cell at 254 nm. The analysis is carried out without pH adjustment.
Total Metals in Water by CRC ICPMS	E420 ALS Environmental - Vancouver	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Mercury in Water by CVAAS	E508 ALS Environmental - Vancouver	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Hardness (Calculated) from Total Ca/Mg	EC100A ALS Environmental - Vancouver	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.
Ion Balance using Total Metals	EC101A ALS Environmental - Vancouver	Water	APHA 1030E	Cation Sum (using total metals), Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Saturation Index using Laboratory pH (Ca-T)	EC105A ALS Environmental - Vancouver	Water	APHA 2330B	Langelier Index provides an indication of scale formation potential at a given pH and temperature, and is calculated as per APHA 2330B Saturation Index. Positive values indicate oversaturation with respect to CaCO3. Negative values indicate undersaturation of CaCO3. This calculation uses laboratory pH measurements and provides estimates of Langelier Index at temperatures of 4, 15, 20, 25, 66, and 77°C. Ryznar Stability Index is an alternative index used for scale formation and corrosion potential.
Total Organic Nitrogen (Calculation)	EC363 ALS Environmental - Vancouver	Water	APHA 4500-NORG (TKN)/NH3-NITROGEN (NH3)	Total Organic Nitrogen is a calculated parameter. Total Organic Nitrogen = Total Kjeldahl Nitrogen - Ammonia.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 ALS Environmental - Vancouver	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 ALS Environmental - Vancouver	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Preparation for Total Organic Carbon by Combustion	EP355 ALS Environmental - Vancouver	Water		Preparation for Total Organic Carbon by Combustion

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QUALITY CONTROL REPORT

Work Order	: **KS2404902**	Page	: 1 of 13
Client	: District of Barriere	Laboratory	: ALS Environmental - Kamloops
Contact	: Chris Matthews	Account Manager	: Caitlin Fountain
Address	: PO Box 219 Barriere BC Canada V0E 1E0	Address	: 1445 McGill Road, Unit 2B Kamloops, British Columbia Canada V2C 6K7
Telephone	: ----	Telephone	: 250 372 3588
Project	: District of Barriere Water	Date Samples Received	: 21-Nov-2024 12:23
PO	: ----	Date Analysis Commenced	: 22-Nov-2024
C-O-C number	: ----	Issue Date	: 03-Dec-2024 09:17
Sampler	: Graham H		
Site	: ----		
Quote number	: 20DIOB100KS02 Water		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Ghazaleh Khanmirzaei	Analyst	Vancouver Metals, Burnaby, British Columbia
Jon Fisher	Production Manager, Environmental	Waterloo Inorganics, Waterloo, Ontario
Kim Jensen	Department Manager - Metals	Vancouver Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Vancouver Inorganics, Burnaby, British Columbia
Monica Ko	Lab Assistant	Vancouver Inorganics, Burnaby, British Columbia
Monica Ko	Lab Assistant	Vancouver Microbiology, Burnaby, British Columbia

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 1780429)											
FJ2403552-003	Anonymous	pH	----	E108	0.10	pH units	8.17	8.18	0.122%	4%	----
Physical Tests (QC Lot: 1780430)											
FJ2403552-003	Anonymous	Alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	104	104	0.385%	200%	----
		Alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0.00%	200%	----
		Alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0.00%	200%	----
		Alkalinity, phenolphthalein (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		Alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	104	104	0.385%	20%	----
Physical Tests (QC Lot: 1780431)											
FJ2403552-003	Anonymous	Conductivity	----	E100	2.0	µS/cm	1420	1410	0.423%	10%	----
Physical Tests (QC Lot: 1780438)											
KS2404902-001	Spruce Crescent DW2 - Raw Water Analysis Pumphouse	Colour, true	----	E329	5.0	CU	<5.0	<5.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 1780808)											
FJ2403543-001	Anonymous	Turbidity	----	E121	0.10	NTU	0.30	0.31	0.006	Diff <2x LOR	----
Physical Tests (QC Lot: 1780996)											
KS2404902-001	Spruce Crescent DW2 - Raw Water Analysis Pumphouse	Absorbance, UV (@ 254nm), unfiltered	----	E405	0.0050	AU/cm	0.0110	0.0110	0	Diff <2x LOR	----
Physical Tests (QC Lot: 1786605)											
KS2404897-001	Anonymous	Solids, total dissolved [TDS]	----	E162	20	mg/L	415	420	1.20%	20%	----
Anions and Nutrients (QC Lot: 1780432)											
FJ2403552-001	Anonymous	Fluoride	16984-48-8	E235.F	0.020	mg/L	0.192	0.189	0.002	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1780433)											
FJ2403552-001	Anonymous	Chloride	16887-00-6	E235.Cl	0.50	mg/L	45.8	45.8	0.00543%	20%	----
Anions and Nutrients (QC Lot: 1780434)											
FJ2403552-001	Anonymous	Bromide	24959-67-9	E235.Br-L	0.050	mg/L	0.766	0.771	0.697%	20%	----
Anions and Nutrients (QC Lot: 1780435)											
FJ2403552-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.225	0.224	0.390%	20%	----
Anions and Nutrients (QC Lot: 1780436)											
FJ2403552-001	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0126	0.0124	1.76%	20%	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Anions and Nutrients (QC Lot: 1780437)											
FJ2403552-001	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	69.0	69.1	0.121%	20%	----
Anions and Nutrients (QC Lot: 1785231)											
KS2404902-001	Spruce Crescent DW2 - Raw Water Analysis Pumphouse	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.066	0.051	0.015	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1785233)											
KS2404902-001	Spruce Crescent DW2 - Raw Water Analysis Pumphouse	Ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0134	0.0133	0.00010	Diff <2x LOR	----
Cyanides (QC Lot: 1785403)											
VA24D1834-003	Anonymous	Cyanide, strong acid dissociable (Total)	----	E333	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 1785232)											
KS2404902-001	Spruce Crescent DW2 - Raw Water Analysis Pumphouse	Carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.66	0.64	0.02	Diff <2x LOR	----
Microbiological Tests (QC Lot: 1779273)											
KS2404902-001	Spruce Crescent DW2 - Raw Water Analysis Pumphouse	Coliforms, Escherichia coli [E. coli]	----	E010	1	MPN/100mL	<1	<1	0	Diff <2x LOR	----
		Coliforms, total	----	E010	1	MPN/100mL	<1	<1	0	Diff <2x LOR	----
VA24D1700-076	Anonymous	Coliforms, Escherichia coli [E. coli]	----	E010	10	MPN/100mL	52	41	23.6%	65%	----
		Coliforms, total	----	E010	10	MPN/100mL	512	488	4.80%	65%	----
Total Metals (QC Lot: 1779678)											
VA24D1493-001	Anonymous	Aluminum, total	7429-90-5	E420	0.0060	mg/L	0.0113	0.0122	0.0008	Diff <2x LOR	----
		Antimony, total	7440-36-0	E420	0.00020	mg/L	0.00102	0.00100	0.00002	Diff <2x LOR	----
		Arsenic, total	7440-38-2	E420	0.00020	mg/L	0.00109	0.00105	0.00004	Diff <2x LOR	----
		Barium, total	7440-39-3	E420	0.00020	mg/L	0.0478	0.0470	1.70%	20%	----
		Beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		Bismuth, total	7440-69-9	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		Boron, total	7440-42-8	E420	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
		Cadmium, total	7440-43-9	E420	0.0000100	mg/L	0.0000413	0.0000457	0.0000043	Diff <2x LOR	----
		Calcium, total	7440-70-2	E420	0.100	mg/L	395	397	0.505%	20%	----
		Cesium, total	7440-46-2	E420	0.000020	mg/L	0.000097	0.000098	0.0000003	Diff <2x LOR	----
		Chromium, total	7440-47-3	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		Cobalt, total	7440-48-4	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Copper, total	7440-50-8	E420	0.00100	mg/L	0.0125	0.0125	0.00319%	20%	----
		Iron, total	7439-89-6	E420	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Total Metals (QC Lot: 1779678) - continued											
VA24D1493-001	Anonymous	Lead, total	7439-92-1	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		Lithium, total	7439-93-2	E420	0.0020	mg/L	0.0116	0.0112	0.0004	Diff <2x LOR	----
		Magnesium, total	7439-95-4	E420	0.100	mg/L	115	114	0.768%	20%	----
		Manganese, total	7439-96-5	E420	0.00020	mg/L	0.00159	0.00172	0.00013	Diff <2x LOR	----
		Molybdenum, total	7439-98-7	E420	0.000100	mg/L	0.0221	0.0222	0.400%	20%	----
		Nickel, total	7440-02-0	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		Phosphorus, total	7723-14-0	E420	0.300	mg/L	<0.300	<0.300	0	Diff <2x LOR	----
		Potassium, total	7440-09-7	E420	0.100	mg/L	6.00	6.02	0.485%	20%	----
		Rubidium, total	7440-17-7	E420	0.00040	mg/L	0.00355	0.00333	0.00022	Diff <2x LOR	----
		Selenium, total	7782-49-2	E420	0.000100	mg/L	0.0229	0.0231	0.697%	20%	----
		Silicon, total	7440-21-3	E420	0.20	mg/L	10.4	10.0	4.36%	20%	----
		Silver, total	7440-22-4	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		Sodium, total	7440-23-5	E420	0.100	mg/L	25.8	26.4	2.02%	20%	----
		Strontium, total	7440-24-6	E420	0.00040	mg/L	1.95	2.01	2.94%	20%	----
		Sulfur, total	7704-34-9	E420	1.00	mg/L	405	386	4.86%	20%	----
		Tellurium, total	13494-80-9	E420	0.00040	mg/L	<0.00040	<0.00040	0	Diff <2x LOR	----
		Thallium, total	7440-28-0	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		Thorium, total	7440-29-1	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Tin, total	7440-31-5	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Titanium, total	7440-32-6	E420	0.0100	mg/L	<0.0100	<0.0100	0	Diff <2x LOR	----
		Tungsten, total	7440-33-7	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Uranium, total	7440-61-1	E420	0.000020	mg/L	0.0150	0.0160	6.29%	20%	----
		Vanadium, total	7440-62-2	E420	0.00100	mg/L	0.00130	0.00128	0.00002	Diff <2x LOR	----
		Zinc, total	7440-66-6	E420	0.0060	mg/L	<0.0060	<0.0060	0	Diff <2x LOR	----
		Zirconium, total	7440-67-7	E420	0.00040	mg/L	<0.00040	<0.00040	0	Diff <2x LOR	----
Total Metals (QC Lot: 1783565)											
FJ2403552-001	Anonymous	Mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 1780430)						
Alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
Alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
Alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
Alkalinity, phenolphthalein (as CaCO3)	----	E290	1	mg/L	<1.0	----
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 1780431)						
Conductivity	----	E100	1	µS/cm	1.2	----
Physical Tests (QCLot: 1780438)						
Colour, true	----	E329	5	CU	<5.0	----
Physical Tests (QCLot: 1780808)						
Turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 1780996)						
Absorbance, UV (@ 254nm), unfiltered	----	E405	0.005	AU/cm	<0.0050	----
Physical Tests (QCLot: 1786605)						
Solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Anions and Nutrients (QCLot: 1780432)						
Fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 1780433)						
Chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 1780434)						
Bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 1780435)						
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 1780436)						
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 1780437)						
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 1785231)						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 1785233)						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Cyanides (QCLot: 1785403)						

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Cyanides (QCLot: 1785403) - continued						
Cyanide, strong acid dissociable (Total)	----	E333	0.002	mg/L	<0.0020	----
Organic / Inorganic Carbon (QCLot: 1785232)						
Carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Microbiological Tests (QCLot: 1779273)						
Coliforms, Escherichia coli [E. coli]	----	E010	1	MPN/100mL	<1	----
Coliforms, total	----	E010	1	MPN/100mL	<1	----
Total Metals (QCLot: 1779678)						
Aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
Barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
Boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
Calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
Cesium, total	7440-46-2	E420	0.00001	mg/L	<0.000010	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	<0.00050	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
Copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
Iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
Lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
Lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
Phosphorus, total	7723-14-0	E420	0.05	mg/L	<0.050	----
Potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
Rubidium, total	7440-17-7	E420	0.0002	mg/L	<0.00020	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
Silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
Silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
Sodium, total	7440-23-5	E420	0.05	mg/L	<0.050	----
Strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 1779678) - continued						
Sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
Tellurium, total	13494-80-9	E420	0.0002	mg/L	<0.00020	----
Thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
Thorium, total	7440-29-1	E420	0.0001	mg/L	<0.00010	----
Tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	<0.00010	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
Zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	<0.00020	----
Total Metals (QCLot: 1783565)						
Mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 1780429)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Physical Tests (QCLot: 1780430)									
Alkalinity, phenolphthalein (as CaCO3)	----	E290	1	mg/L	229 mg/L	102	75.0	125	----
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	103	85.0	115	----
Physical Tests (QCLot: 1780431)									
Conductivity	----	E100	1	µS/cm	147 µS/cm	93.6	90.0	110	----
Physical Tests (QCLot: 1780438)									
Colour, true	----	E329	5	CU	100 CU	104	85.0	115	----
Physical Tests (QCLot: 1780808)									
Turbidity	----	E121	0.1	NTU	200 NTU	100	85.0	115	----
Physical Tests (QCLot: 1780996)									
Absorbance, UV (@ 254nm), unfiltered	----	E405	0.005	AU/cm	0.693 AU/cm	93.9	85.0	115	----
Physical Tests (QCLot: 1786605)									
Solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	108	85.0	115	----
Anions and Nutrients (QCLot: 1780432)									
Fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	97.7	90.0	110	----
Anions and Nutrients (QCLot: 1780433)									
Chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	99.1	90.0	110	----
Anions and Nutrients (QCLot: 1780434)									
Bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	106	85.0	115	----
Anions and Nutrients (QCLot: 1780435)									
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	98.8	90.0	110	----
Anions and Nutrients (QCLot: 1780436)									
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	98.0	90.0	110	----
Anions and Nutrients (QCLot: 1780437)									
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	100	90.0	110	----
Anions and Nutrients (QCLot: 1785231)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	116	75.0	125	----
Anions and Nutrients (QCLot: 1785233)									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	98.5	85.0	115	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Cyanides (QCLot: 1785403)									
Cyanide, strong acid dissociable (Total)	----	E333	0.002	mg/L	0.25 mg/L	90.3	80.0	120	----
Organic / Inorganic Carbon (QCLot: 1785232)									
Carbon, total organic [TOC]	----	E355-L	0.5	mg/L	8.57 mg/L	104	80.0	120	----
Total Metals (QCLot: 1779678)									
Aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	97.5	80.0	120	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	104	80.0	120	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	107	80.0	120	----
Barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	103	80.0	120	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	104	80.0	120	----
Boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	102	80.0	120	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	107	80.0	120	----
Calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	102	80.0	120	----
Cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	106	80.0	120	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	104	80.0	120	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
Copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	102	80.0	120	----
Iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	97.2	80.0	120	----
Lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	106	80.0	120	----
Lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	98.9	80.0	120	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	103	80.0	120	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	102	80.0	120	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
Phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	94.9	80.0	120	----
Potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	101	80.0	120	----
Rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	99.4	80.0	120	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	100	80.0	120	----
Silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	106	80.0	120	----
Silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	96.9	80.0	120	----
Sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	100	80.0	120	----
Strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	109	80.0	120	----
Sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	103	80.0	120	----
Tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	106	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 1779678) - continued									
Thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	105	80.0	120	----
Thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	106	80.0	120	----
Tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	103	80.0	120	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	102	80.0	120	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	104	80.0	120	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	111	80.0	120	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	104	80.0	120	----
Zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	104	80.0	120	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	101	80.0	120	----
Total Metals (QCLot: 1783565)									
Mercury, total	7439-97-6	E508	0.000005	mg/L	0 mg/L	86.9	80.0	120	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 1780432)										
FJ2403552-002	Anonymous	Fluoride	16984-48-8	E235.F	1.01 mg/L	1 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 1780433)										
FJ2403552-002	Anonymous	Chloride	16887-00-6	E235.Cl	101 mg/L	100 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 1780434)										
FJ2403552-002	Anonymous	Bromide	24959-67-9	E235.Br-L	ND mg/L	----	ND	75.0	125	----
Anions and Nutrients (QCLot: 1780435)										
FJ2403552-002	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	2.54 mg/L	2.5 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 1780436)										
FJ2403552-002	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.499 mg/L	0.5 mg/L	99.8	75.0	125	----
Anions and Nutrients (QCLot: 1780437)										
FJ2403552-002	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	99.2 mg/L	100 mg/L	99.2	75.0	125	----
Anions and Nutrients (QCLot: 1785231)										
KS2404903-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.70 mg/L	2.5 mg/L	108	70.0	130	----
Anions and Nutrients (QCLot: 1785233)										
KS2404903-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.124 mg/L	0.1 mg/L	124	75.0	125	----
Cyanides (QCLot: 1785403)										
VA24D1834-003	Anonymous	Cyanide, strong acid dissociable (Total)	----	E333	0.230 mg/L	0.25 mg/L	92.1	75.0	125	----
Organic / Inorganic Carbon (QCLot: 1785232)										
KS2404903-001	Anonymous	Carbon, total organic [TOC]	----	E355-L	5.29 mg/L	5 mg/L	106	70.0	130	----
Total Metals (QCLot: 1779678)										
VA24D1542-001	Anonymous	Aluminum, total	7429-90-5	E420	ND mg/L	----	ND	70.0	130	----
		Antimony, total	7440-36-0	E420	ND mg/L	----	ND	70.0	130	----
		Arsenic, total	7440-38-2	E420	ND mg/L	----	ND	70.0	130	----
		Barium, total	7440-39-3	E420	ND mg/L	----	ND	70.0	130	----
		Beryllium, total	7440-41-7	E420	0.389 mg/L	0.4 mg/L	97.3	70.0	130	----
		Bismuth, total	7440-69-9	E420	0.0971 mg/L	0.1 mg/L	97.1	70.0	130	----
		Boron, total	7440-42-8	E420	ND mg/L	----	ND	70.0	130	----
		Cadmium, total	7440-43-9	E420	0.0403 mg/L	0.04 mg/L	101	70.0	130	----
		Calcium, total	7440-70-2	E420	ND mg/L	----	ND	70.0	130	----
		Cesium, total	7440-46-2	E420	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		Chromium, total	7440-47-3	E420	ND mg/L	----	ND	70.0	130	----
		Cobalt, total	7440-48-4	E420	ND mg/L	----	ND	70.0	130	----
		Copper, total	7440-50-8	E420	ND mg/L	----	ND	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Total Metals (QCLot: 1779678) - continued										
VA24D1542-001	Anonymous	Iron, total	7439-89-6	E420	ND mg/L	----	ND	70.0	130	----
		Lead, total	7439-92-1	E420	0.190 mg/L	0.2 mg/L	95.2	70.0	130	----
		Lithium, total	7439-93-2	E420	0.892 mg/L	1 mg/L	89.2	70.0	130	----
		Magnesium, total	7439-95-4	E420	ND mg/L	----	ND	70.0	130	----
		Manganese, total	7439-96-5	E420	ND mg/L	----	ND	70.0	130	----
		Molybdenum, total	7439-98-7	E420	ND mg/L	----	ND	70.0	130	----
		Nickel, total	7440-02-0	E420	ND mg/L	----	ND	70.0	130	----
		Phosphorus, total	7723-14-0	E420	90.9 mg/L	100 mg/L	90.9	70.0	130	----
		Potassium, total	7440-09-7	E420	ND mg/L	----	ND	70.0	130	----
		Rubidium, total	7440-17-7	E420	ND mg/L	----	ND	70.0	130	----
		Selenium, total	7782-49-2	E420	ND mg/L	----	ND	70.0	130	----
		Silicon, total	7440-21-3	E420	ND mg/L	----	ND	70.0	130	----
		Silver, total	7440-22-4	E420	0.0382 mg/L	0.04 mg/L	95.4	70.0	130	----
		Sodium, total	7440-23-5	E420	ND mg/L	----	ND	70.0	130	----
		Strontium, total	7440-24-6	E420	ND mg/L	----	ND	70.0	130	----
		Sulfur, total	7704-34-9	E420	ND mg/L	----	ND	70.0	130	----
		Tellurium, total	13494-80-9	E420	0.429 mg/L	0.4 mg/L	107	70.0	130	----
		Thallium, total	7440-28-0	E420	0.0369 mg/L	0.04 mg/L	92.3	70.0	130	----
		Thorium, total	7440-29-1	E420	0.188 mg/L	0.2 mg/L	94.3	70.0	130	----
		Tin, total	7440-31-5	E420	0.197 mg/L	0.2 mg/L	98.7	70.0	130	----
		Titanium, total	7440-32-6	E420	ND mg/L	----	ND	70.0	130	----
		Tungsten, total	7440-33-7	E420	0.196 mg/L	0.2 mg/L	98.0	70.0	130	----
		Uranium, total	7440-61-1	E420	ND mg/L	----	ND	70.0	130	----
		Vanadium, total	7440-62-2	E420	ND mg/L	----	ND	70.0	130	----
		Zinc, total	7440-66-6	E420	3.78 mg/L	4 mg/L	94.4	70.0	130	----
		Zirconium, total	7440-67-7	E420	0.408 mg/L	0.4 mg/L	102	70.0	130	----
Total Metals (QCLot: 1783565)										
FJ2403552-002	Anonymous	Mercury, total	7439-97-6	E508	0.0000956 mg/L	0 mg/L	95.6	70.0	130	----

Chain of Custody (COC) / Analytical Request Form

ALS Environmental

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here (lab use only)

COC Number: 15 -

Page of

Report To	Contact and company name below will appear on the final report
Company:	DISTRICT OF BARRIERE
Contact:	Chris Matthews
Phone:	250-320-1505 250-672-9751 Fax 250-672-9708
	Company address below will appear on the final report
Street:	P.O. Box 219
City/Province:	BARRIERE
Postal Code:	BC
Invoice To	Same as Report To ☑ YES ☐ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	
Contact:	

Report Format / Distribution

Select Report Format: ☑ PDF ☐ EXCEL ☐ EDD (DIGITAL)

Quality Control (QC) Report with Report ☐ YES ☐ NO

☐ Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax

Email 2 cmatthews@barriere.ca

Email 3 pamos@barriere.ca

Invoice Distribution

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax

Email 2

Project Information

ALS Account # / Quote #:

Job #:

PO / AFE:

LSD:

Oil and Gas Required Fields (client use)

AFE/Cost Center: PO#

Major/Minor Code: Routing Code:

Requisitioner:

Location:

ALS Lab Work Order # (lab use only) 4902

ALS Contact: **Sampler** GRAHAM

Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4] ☐ | 3 day [P3] ☐ | 2 day [P2] ☐

EMERGENCY: 1 Business day [E1] ☐ | Same Day, Weekend or Statutory holiday [E0] ☐

Date and Time Required for all E&P TATs:

For tests that can not be performed according to the service level selected, you will be contacted.

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Number of Containers
	Spruce Crescent DW2 - Raw Water Analysis	21 11 24	1015	Grab	6
	NTU: 0.13				
	CL2 Free: 0.00				
	CL2 Total: 0.00				
	PUMPHOUSE				
	Please reference WO# KS2304717 for required analysis				

Environmental Division
Kamloops
Work Order Reference
KS2404902

Telephone : +1 250 372 3588

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☐ NO

Are samples for human drinking water use? ☐ YES ☐ NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

Ice Packs ☑ Ice Cubes ☐ Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
1.0					

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date: NOV 21 2024	Time: 1323	Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

OCTOBER 2015 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

dropoff

ALS Canada Ltd.

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right partner.

CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: **KS2404903**	Page	: 1 of 6
Client	: **District of Barriere**	Laboratory	: ALS Environmental - Kamloops
Contact	: Chris Matthews	Account Manager	: Caitlin Fountain
Address	: PO Box 219 Barriere BC Canada V0E 1E0	Address	: 1445 McGill Road, Unit 2B Kamloops, British Columbia Canada V2C 6K7
Telephone	: ----	Telephone	: 250 372 3588
Project	: Louis Creek Water	Date Samples Received	: 21-Nov-2024 13:23
PO	: ----	Date Analysis Commenced	: 22-Nov-2024
C-O-C number	: ----	Issue Date	: 03-Dec-2024 09:18
Sampler	: Graham H		
Site	: ----		
Quote number	: 20DIOB100KS02 Water		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Guideline Comparison

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Ghazaleh Khanmirzaei	Analyst	Metals, Burnaby, British Columbia
Jon Fisher	Production Manager, Environmental	Inorganics, Waterloo, Ontario
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Monica Ko	Lab Assistant	Microbiology, Burnaby, British Columbia

No Breaches Found

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.
Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guidelines are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.

Key : LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	no units
%	percent
% T/cm	% transmittance per centimetre
µS/cm	microsiemens per centimetre
AU/cm	absorbance units per centimetre
CU	colour units (1 cu = 1 mg/l pt)
meq/L	milliequivalents per litre
mg/L	milligrams per litre
MPN/100mL	most probable number per hundred millilitres
NTU	nephelometric turbidity units
pH units	pH units

>: greater than.
<: less than.
Red shading is applied where the result or the LOR is greater than the Guideline Upper Limit (or lower than the Guideline Lower Limit, if applicable).
For drinking water samples, Red shading is applied where the result for E.coli, fecal or total coliforms is greater than or equal to the Guideline Upper Limit.

Analytical Results Evaluation

Matrix: **Water**

Analyte	CAS Number	Method/Lab	Unit	Client sample ID: Louis Creek - Raw Water Analysis Pumphouse	----	----	----	----	----	----
				Sampling date/time: 21-Nov-2024 08:50	----	----	----	----	----	----
				Sub-Matrix: Water	----	----	----	----	----	----
				KS2404903-001	--------	--------	--------	--------	--------	--------
Physical Tests										
Absorbance, UV (@ 254nm), unfiltered	----	E405/VA	AU/cm	0.0160	----	----	----	----	----	----
Alkalinity, bicarbonate (as CaCO3)	----	E290/VA	mg/L	204	----	----	----	----	----	----
Alkalinity, carbonate (as CaCO3)	----	E290/VA	mg/L	<1.0	----	----	----	----	----	----
Alkalinity, hydroxide (as CaCO3)	----	E290/VA	mg/L	<1.0	----	----	----	----	----	----
Alkalinity, phenolphthalein (as CaCO3)	----	E290/VA	mg/L	<1.0	----	----	----	----	----	----
Alkalinity, total (as CaCO3)	----	E290/VA	mg/L	204	----	----	----	----	----	----
Colour, true	----	E329/VA	CU	<5.0	----	----	----	----	----	----
Conductivity	----	E100/VA	µS/cm	435	----	----	----	----	----	----
Hardness (as CaCO3), from total Ca/Mg	----	EC100A/VA	mg/L	245	----	----	----	----	----	----
Langelier index (@ 15°C)	----	EC105A/VA	-	0.892	----	----	----	----	----	----
Langelier index (@ 20°C)	----	EC105A/VA	-	0.965	----	----	----	----	----	----
Langelier index (@ 25°C)	----	EC105A/VA	-	1.04	----	----	----	----	----	----
Langelier index (@ 4°C)	----	EC105A/VA	-	0.718	----	----	----	----	----	----
Langelier index (@ 60°C)	----	EC105A/VA	-	1.48	----	----	----	----	----	----
Langelier index (@ 77°C)	----	EC105A/VA	-	1.68	----	----	----	----	----	----
pH	----	E108/VA	pH units	8.24	----	----	----	----	----	----
Solids, total dissolved [TDS]	----	E162/VA	mg/L	310	----	----	----	----	----	----
Turbidity	----	E121/VA	NTU	0.32	----	----	----	----	----	----
Transmittance, UV (@ 254nm), unfiltered	----	E405/VA	% T/cm	96.4	----	----	----	----	----	----
Anions and Nutrients										
Ammonia, total (as N)	7664-41-7	E298/VA	mg/L	0.0290	----	----	----	----	----	----
Bromide	24959-67-9	E235.Br-L/VA	mg/L	<0.050	----	----	----	----	----	----
Chloride	16887-00-6	E235.Cl/VA	mg/L	2.48	----	----	----	----	----	----
Fluoride	16984-48-8	E235.F/VA	mg/L	0.096	----	----	----	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318/VA	mg/L	<0.050	----	----	----	----	----	----
Nitrate (as N)	14797-55-8	E235.NO3-L/VA	mg/L	<0.0050	----	----	----	----	----	----

Analytical Results Evaluation

Matrix: **Water**

Analyte	CAS Number	Method/Lab	Unit	Client sample ID: Louis Creek - Raw Water Analysis Pumphouse	----	----	----	----	----	----
				Sampling date/time: 21-Nov-2024 08:50	----	----	----	----	----	----
				Sub-Matrix: Water	----	----	----	----	----	----
				KS2404903-001	--------	--------	--------	--------	--------	--------
Anions and Nutrients										
Nitrite (as N)	14797-65-0	E235.NO2-L/VA	mg/L	<0.0010	----	----	----	----	----	----
Nitrogen, total organic	----	EC363/VA	mg/L	<0.050	----	----	----	----	----	----
Sulfate (as SO4)	14808-79-8	E235.SO4/VA	mg/L	38.3	----	----	----	----	----	----
Cyanides										
Cyanide, strong acid dissociable (Total)	----	E333/WT	mg/L	<0.0050	----	----	----	----	----	----
Organic / Inorganic Carbon										
Carbon, total organic [TOC]	----	E355-L/VA	mg/L	0.56	----	----	----	----	----	----
Microbiological Tests										
Coliforms, total	----	E010/VA	MPN/100 mL	<1	----	----	----	----	----	----
Coliforms, Escherichia coli [E. coli]	----	E010/VA	MPN/10 0mL	<1	----	----	----	----	----	----
Ion Balance										
Anion sum	----	EC101A/VA	meq/L	4.95	----	----	----	----	----	----
Cation sum (total)	----	EC101A/VA	meq/L	5.20	----	----	----	----	----	----
Ion balance (APHA)	----	EC101A/VA	%	2.46	----	----	----	----	----	----
Total Metals										
Aluminum, total	7429-90-5	E420/VA	mg/L	0.0037	----	----	----	----	----	----
Antimony, total	7440-36-0	E420/VA	mg/L	<0.00010	----	----	----	----	----	----
Arsenic, total	7440-38-2	E420/VA	mg/L	0.00128	----	----	----	----	----	----
Barium, total	7440-39-3	E420/VA	mg/L	0.00783	----	----	----	----	----	----
Beryllium, total	7440-41-7	E420/VA	mg/L	<0.000100	----	----	----	----	----	----
Bismuth, total	7440-69-9	E420/VA	mg/L	<0.000050	----	----	----	----	----	----
Boron, total	7440-42-8	E420/VA	mg/L	<0.010	----	----	----	----	----	----
Cadmium, total	7440-43-9	E420/VA	mg/L	0.0000073	----	----	----	----	----	----
Calcium, total	7440-70-2	E420/VA	mg/L	70.2	----	----	----	----	----	----

Analytical Results Evaluation

Matrix: **Water**

Analyte	CAS Number	Method/Lab	Unit	Client sample ID	Louis Creek - Raw Water Analysis Pumphouse	----	----	----	----	----	----
				Sampling date/time	21-Nov-2024 08:50	----	----	----	----	----	----
				Sub-Matrix	Water	----	----	----	----	----	----
					KS2404903-001	--------	--------	--------	--------	--------	--------
Total Metals											
Cesium, total	7440-46-2	E420/VA	mg/L		0.000019	----	----	----	----	----	----
Chromium, total	7440-47-3	E420/VA	mg/L		<0.00050	----	----	----	----	----	----
Cobalt, total	7440-48-4	E420/VA	mg/L		<0.00010	----	----	----	----	----	----
Copper, total	7440-50-8	E420/VA	mg/L		0.00068	----	----	----	----	----	----
Iron, total	7439-89-6	E420/VA	mg/L		0.093	----	----	----	----	----	----
Lead, total	7439-92-1	E420/VA	mg/L		<0.000050	----	----	----	----	----	----
Lithium, total	7439-93-2	E420/VA	mg/L		0.0021	----	----	----	----	----	----
Magnesium, total	7439-95-4	E420/VA	mg/L		16.9	----	----	----	----	----	----
Manganese, total	7439-96-5	E420/VA	mg/L		0.0702	----	----	----	----	----	----
Mercury, total	7439-97-6	E508/VA	mg/L		<0.0000050	----	----	----	----	----	----
Molybdenum, total	7439-98-7	E420/VA	mg/L		0.00254	----	----	----	----	----	----
Nickel, total	7440-02-0	E420/VA	mg/L		<0.00050	----	----	----	----	----	----
Phosphorus, total	7723-14-0	E420/VA	mg/L		0.075	----	----	----	----	----	----
Potassium, total	7440-09-7	E420/VA	mg/L		3.60	----	----	----	----	----	----
Rubidium, total	7440-17-7	E420/VA	mg/L		0.00231	----	----	----	----	----	----
Selenium, total	7782-49-2	E420/VA	mg/L		<0.000050	----	----	----	----	----	----
Silicon, total	7440-21-3	E420/VA	mg/L		11.6	----	----	----	----	----	----
Silver, total	7440-22-4	E420/VA	mg/L		<0.000010	----	----	----	----	----	----
Sodium, total	7440-23-5	E420/VA	mg/L		4.84	----	----	----	----	----	----
Strontium, total	7440-24-6	E420/VA	mg/L		0.358	----	----	----	----	----	----
Sulfur, total	7704-34-9	E420/VA	mg/L		13.7	----	----	----	----	----	----
Tellurium, total	13494-80-9	E420/VA	mg/L		<0.00020	----	----	----	----	----	----
Thallium, total	7440-28-0	E420/VA	mg/L		<0.000010	----	----	----	----	----	----
Thorium, total	7440-29-1	E420/VA	mg/L		<0.00010	----	----	----	----	----	----
Tin, total	7440-31-5	E420/VA	mg/L		<0.00010	----	----	----	----	----	----
Titanium, total	7440-32-6	E420/VA	mg/L		<0.00030	----	----	----	----	----	----
Tungsten, total	7440-33-7	E420/VA	mg/L		0.00010	----	----	----	----	----	----

Analytical Results Evaluation

Matrix: **Water**

Analyte	CAS Number	Method/Lab	Unit	Client sample ID	Louis Creek - Raw Water Analysis Pumphouse	----	----	----	----	----	----
				Sampling date/time	21-Nov-2024 08:50	----	----	----	----	----	----
				Sub-Matrix	Water	----	----	----	----	----	----
				KS2404903-001	--------	--------	--------	--------	--------	--------	--------
Total Metals											
Uranium, total	7440-61-1	E420/VA	mg/L		0.000016	----	----	----	----	----	----
Vanadium, total	7440-62-2	E420/VA	mg/L		<0.00050	----	----	----	----	----	----
Zinc, total	7440-66-6	E420/VA	mg/L		0.0031	----	----	----	----	----	----
Zirconium, total	7440-67-7	E420/VA	mg/L		<0.00020	----	----	----	----	----	----

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

Key:

CERTIFICATE OF ANALYSIS

Work Order	:	**KS2404903**			
Client	:	**District of Barriere**	Laboratory	:	ALS Environmental - Vancouver
Contact	:	Chris Matthews	Account Manager	:	Caitlin Fountain
Address	:	PO Box 219 Barriere British Columbia Canada V0E 1E0	Address	:	8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	:	----	Telephone	:	250 372 3588
Project	:	Louis Creek Water	Date Samples Received	:	21-Nov-2024 13:23
PO	:	----	Date Analysis Commenced	:	22-Nov-2024
C-O-C number	:	----	Issue Date	:	03-Dec-2024 09:18
Sampler	:	Graham H			
Site	:	----			
Quote number	:	20DIOB100KS02 Water			
No. of samples received	:	1			
No. of samples analysed	:	1			

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Ghazaleh Khanmirzaei	Analyst	Metals, Burnaby, British Columbia
Jon Fisher	Production Manager, Environmental	Inorganics, Waterloo, Ontario
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Monica Ko	Lab Assistant	Microbiology, Burnaby, British Columbia

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key: CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
LOR: Limit of Reporting (detection limit).

Unit	*Description*
mg/L	milligrams per litre
pH units	pH units
µS/cm	microsiemens per centimetre
NTU	nephelometric turbidity units
CU	colour units (1 cu = 1 mg/l pt)
% T/cm	% transmittance per centimetre
AU/cm	absorbance units per centimetre
-	no units
MPN/100mL	most probable number per hundred millilitres
%	percent
meq/L	milliequivalents per litre

<: less than.
>: greater than.
Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

					Client sample ID	Louis Creek - Raw Water Analysis Pumphouse	----	----	----	----
					Client sampling date / time	21-Nov-2024 08:50	----	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit		KS2404903-001	----	----	----	----
						Result	----	----	----	----
Physical Tests										
Absorbance, UV (@ 254nm), unfiltered	----	E405/VA	0.0050	AU/cm		0.0160	----	----	----	----
Alkalinity, bicarbonate (as CaCO3)	----	E290/VA	1.0	mg/L		204	----	----	----	----
Alkalinity, carbonate (as CaCO3)	----	E290/VA	1.0	mg/L		<1.0	----	----	----	----
Alkalinity, hydroxide (as CaCO3)	----	E290/VA	1.0	mg/L		<1.0	----	----	----	----
Alkalinity, phenolphthalein (as CaCO3)	----	E290/VA	1.0	mg/L		<1.0	----	----	----	----
Alkalinity, total (as CaCO3)	----	E290/VA	1.0	mg/L		204	----	----	----	----
Colour, true	----	E329/VA	5.0	CU		<5.0	----	----	----	----
Conductivity	----	E100/VA	2.0	µS/cm		435	----	----	----	----
Hardness (as CaCO3), from total Ca/Mg	----	EC100A/VA	0.60	mg/L		245	----	----	----	----
Langelier index (@ 15°C)	----	EC105A/VA	0.010	-		0.892	----	----	----	----
Langelier index (@ 20°C)	----	EC105A/VA	0.010	-		0.965	----	----	----	----
Langelier index (@ 25°C)	----	EC105A/VA	0.010	-		1.04	----	----	----	----
Langelier index (@ 4°C)	----	EC105A/VA	0.010	-		0.718	----	----	----	----
Langelier index (@ 60°C)	----	EC105A/VA	0.010	-		1.48	----	----	----	----
Langelier index (@ 77°C)	----	EC105A/VA	0.010	-		1.68	----	----	----	----
pH	----	E108/VA	0.10	pH units		8.24	----	----	----	----
Solids, total dissolved [TDS]	----	E162/VA	10	mg/L		310	----	----	----	----
Turbidity	----	E121/VA	0.10	NTU		0.32	----	----	----	----
Transmittance, UV (@ 254nm), unfiltered	----	E405/VA	1.0	% T/cm		96.4	----	----	----	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab	LOR	Unit	Louis Creek - Raw Water Analysis Pumphouse	----	----	----	----
Client sample ID									
Client sampling date / time					21-Nov-2024 08:50	----	----	----	----
					KS2404903-001	----	----	----	----
					Result	----	----	----	----
Anions and Nutrients									
Ammonia, total (as N)	7664-41-7	E298/VA	0.0050	mg/L	0.0290	----	----	----	----
Bromide	24959-67-9	E235.Br-L/VA	0.050	mg/L	<0.050	----	----	----	----
Chloride	16887-00-6	E235.Cl/VA	0.50	mg/L	2.48	----	----	----	----
Fluoride	16984-48-8	E235.F/VA	0.020	mg/L	0.096	----	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318/VA	0.050	mg/L	<0.050	----	----	----	----
Nitrate (as N)	14797-55-8	E235.NO3-L/VA	0.0050	mg/L	<0.0050	----	----	----	----
Nitrite (as N)	14797-65-0	E235.NO2-L/VA	0.0010	mg/L	<0.0010	----	----	----	----
Nitrogen, total organic	----	EC363/VA	0.050	mg/L	<0.050	----	----	----	----
Sulfate (as SO4)	14808-79-8	E235.SO4/VA	0.30	mg/L	38.3	----	----	----	----
Cyanides									
Cyanide, strong acid dissociable (Total)	----	E333/WT	0.0050	mg/L	<0.0050	----	----	----	----
Organic / Inorganic Carbon									
Carbon, total organic [TOC]	----	E355-L/VA	0.50	mg/L	0.56	----	----	----	----
Microbiological Tests									
Coliforms, total	----	E010/VA	1	MPN/100 mL	<1	----	----	----	----
Coliforms, Escherichia coli [E. coli]	----	E010/VA	1	MPN/100 mL	<1	----	----	----	----
Ion Balance									
Anion sum	----	EC101A/VA	0.10	meq/L	4.95	----	----	----	----
Cation sum (total)	----	EC101A/VA	0.10	meq/L	5.20	----	----	----	----
Ion balance (APHA)	----	EC101A/VA	0.010	%	2.46	----	----	----	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	Louis Creek - Raw Water Analysis Pumphouse	----	----	----	----
					Client sampling date / time	21-Nov-2024 08:50	----	----	----	----
						KS2404903-001	----	----	----	----
						Result	----	----	----	----
Total Metals										
Aluminum, total	7429-90-5	E420/VA	0.0030	mg/L		0.0037	----	----	----	----
Antimony, total	7440-36-0	E420/VA	0.00010	mg/L		<0.00010	----	----	----	----
Arsenic, total	7440-38-2	E420/VA	0.00010	mg/L		0.00128	----	----	----	----
Barium, total	7440-39-3	E420/VA	0.00010	mg/L		0.00783	----	----	----	----
Beryllium, total	7440-41-7	E420/VA	0.000100	mg/L		<0.000100	----	----	----	----
Bismuth, total	7440-69-9	E420/VA	0.000050	mg/L		<0.000050	----	----	----	----
Boron, total	7440-42-8	E420/VA	0.010	mg/L		<0.010	----	----	----	----
Cadmium, total	7440-43-9	E420/VA	0.0000050	mg/L		0.0000073	----	----	----	----
Calcium, total	7440-70-2	E420/VA	0.050	mg/L		70.2	----	----	----	----
Cesium, total	7440-46-2	E420/VA	0.000010	mg/L		0.000019	----	----	----	----
Chromium, total	7440-47-3	E420/VA	0.00050	mg/L		<0.00050	----	----	----	----
Cobalt, total	7440-48-4	E420/VA	0.00010	mg/L		<0.00010	----	----	----	----
Copper, total	7440-50-8	E420/VA	0.00050	mg/L		0.00068	----	----	----	----
Iron, total	7439-89-6	E420/VA	0.010	mg/L		0.093	----	----	----	----
Lead, total	7439-92-1	E420/VA	0.000050	mg/L		<0.000050	----	----	----	----
Lithium, total	7439-93-2	E420/VA	0.0010	mg/L		0.0021	----	----	----	----
Magnesium, total	7439-95-4	E420/VA	0.0050	mg/L		16.9	----	----	----	----
Manganese, total	7439-96-5	E420/VA	0.00010	mg/L		0.0702	----	----	----	----
Mercury, total	7439-97-6	E508/VA	0.0000050	mg/L		<0.0000050	----	----	----	----
Molybdenum, total	7439-98-7	E420/VA	0.000050	mg/L		0.00254	----	----	----	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab	LOR	Unit	Louis Creek - Raw Water Analysis Pumphouse	----	----	----	----
Client sample ID									
Client sampling date / time					21-Nov-2024 08:50	----	----	----	----
					KS2404903-001	----	----	----	----
					Result	----	----	----	----
Total Metals									
Nickel, total	7440-02-0	E420/VA	0.00050	mg/L	<0.00050	----	----	----	----
Phosphorus, total	7723-14-0	E420/VA	0.050	mg/L	0.075	----	----	----	----
Potassium, total	7440-09-7	E420/VA	0.050	mg/L	3.60	----	----	----	----
Rubidium, total	7440-17-7	E420/VA	0.00020	mg/L	0.00231	----	----	----	----
Selenium, total	7782-49-2	E420/VA	0.000050	mg/L	<0.000050	----	----	----	----
Silicon, total	7440-21-3	E420/VA	0.10	mg/L	11.6	----	----	----	----
Silver, total	7440-22-4	E420/VA	0.000010	mg/L	<0.000010	----	----	----	----
Sodium, total	7440-23-5	E420/VA	0.050	mg/L	4.84	----	----	----	----
Strontium, total	7440-24-6	E420/VA	0.00020	mg/L	0.358	----	----	----	----
Sulfur, total	7704-34-9	E420/VA	0.50	mg/L	13.7	----	----	----	----
Tellurium, total	13494-80-9	E420/VA	0.00020	mg/L	<0.00020	----	----	----	----
Thallium, total	7440-28-0	E420/VA	0.000010	mg/L	<0.000010	----	----	----	----
Thorium, total	7440-29-1	E420/VA	0.00010	mg/L	<0.00010	----	----	----	----
Tin, total	7440-31-5	E420/VA	0.00010	mg/L	<0.00010	----	----	----	----
Titanium, total	7440-32-6	E420/VA	0.00030	mg/L	<0.00030	----	----	----	----
Tungsten, total	7440-33-7	E420/VA	0.00010	mg/L	0.00010	----	----	----	----
Uranium, total	7440-61-1	E420/VA	0.000010	mg/L	0.000016	----	----	----	----
Vanadium, total	7440-62-2	E420/VA	0.00050	mg/L	<0.00050	----	----	----	----
Zinc, total	7440-66-6	E420/VA	0.0030	mg/L	0.0031	----	----	----	----
Zirconium, total	7440-67-7	E420/VA	0.00020	mg/L	<0.00020	----	----	----	----

Please refer to the General Comments section for an explanation of any result qualifiers detected.

ALS Canada Ltd.

right solutions.
right partner.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **KS2404903**	Page	: 1 of 10
Client	: **District of Barriere**	Laboratory	: ALS Environmental - Kamloops
Contact	: Chris Matthews	Account Manager	: Caitlin Fountain
Address	: PO Box 219 Barriere BC Canada V0E 1E0	Address	: 1445 McGill Road, Unit 2B Kamloops, British Columbia Canada V2C 6K7
Telephone	: ----	Telephone	: 250 372 3588
Project	: Louis Creek Water	Date Samples Received	: 21-Nov-2024 13:23
PO	: ----	Issue Date	: 03-Dec-2024 09:18
C-O-C number	: ----		
Sampler	: Graham H		
Site	: ----		
Quote number	: 20DIOB100KS02 Water		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
Louis Creek - Raw Water Analysis - Pumphouse	E298	21-Nov-2024	27-Nov-2024	28 days	6 days	✓	29-Nov-2024	28 days	8 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE										
Louis Creek - Raw Water Analysis - Pumphouse	E235.Br-L	21-Nov-2024	23-Nov-2024	28 days	2 days	✓	23-Nov-2024	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE										
Louis Creek - Raw Water Analysis - Pumphouse	E235.Cl	21-Nov-2024	23-Nov-2024	28 days	2 days	✓	23-Nov-2024	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
Louis Creek - Raw Water Analysis - Pumphouse	E235.F	21-Nov-2024	23-Nov-2024	28 days	2 days	✓	23-Nov-2024	28 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
Louis Creek - Raw Water Analysis - Pumphouse	E235.NO3-L	21-Nov-2024	23-Nov-2024	3 days	2 days	✓	23-Nov-2024	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
Louis Creek - Raw Water Analysis - Pumphouse	E235.NO2-L	21-Nov-2024	23-Nov-2024	3 days	2 days	✓	23-Nov-2024	3 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
Louis Creek - Raw Water Analysis - Pumphouse	E235.SO4	21-Nov-2024	23-Nov-2024	28 days	2 days	✓	23-Nov-2024	28 days	2 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	*Method*	*Sampling Date*	*Extraction / Preparation*				*Analysis*			
			Preparation Date	*Holding Times*		*Eval*	*Analysis Date*	*Holding Times*		*Eval*
				Rec	*Actual*			*Rec*	*Actual*	
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
Louis Creek - Raw Water Analysis - Pumphouse	E318	21-Nov-2024	27-Nov-2024	28 days	6 days	✓	29-Nov-2024	28 days	8 days	✓
Cyanides : Total Cyanide										
Opaque HDPE - total (sodium hydroxide)										
Louis Creek - Raw Water Analysis - Pumphouse	E333	21-Nov-2024	27-Nov-2024	14 days	6 days	✓	27-Nov-2024	14 days	6 days	✓
Microbiological Tests : Total Coliforms and E. coli (Enzyme Substrate)										
Sterile HDPE (Sodium thiosulphate)										
Louis Creek - Raw Water Analysis - Pumphouse	E010	21-Nov-2024	----	----	----		22-Nov-2024	30 hrs	25 hrs	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid)										
Louis Creek - Raw Water Analysis - Pumphouse	E355-L	21-Nov-2024	27-Nov-2024	28 days	6 days	✓	27-Nov-2024	28 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
Louis Creek - Raw Water Analysis - Pumphouse	E290	21-Nov-2024	23-Nov-2024	14 days	2 days	✓	23-Nov-2024	14 days	2 days	✓
Physical Tests : Apparent UV Absorbance and Transmittance by Spectrometry										
HDPE										
Louis Creek - Raw Water Analysis - Pumphouse	E405	21-Nov-2024	----	----	----		23-Nov-2024	3 days	2 days	✓
Physical Tests : Colour (True) by Spectrometer (5 CU)										
HDPE										
Louis Creek - Raw Water Analysis - Pumphouse	E329	21-Nov-2024	23-Nov-2024	3 days	2 days	✓	24-Nov-2024	3 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE										
Louis Creek - Raw Water Analysis - Pumphouse	E100	21-Nov-2024	23-Nov-2024	28 days	2 days	✓	23-Nov-2024	28 days	2 days	✓
Physical Tests : pH by Meter										
HDPE										
Louis Creek - Raw Water Analysis - Pumphouse	E108	21-Nov-2024	23-Nov-2024	0.25 hrs	45 hrs	× EHTR-FM	23-Nov-2024	0.25 hrs	48 hrs	× EHTR-FM

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	*Method*	*Sampling Date*	*Extraction / Preparation*				*Analysis*			
			Preparation Date	*Holding Times*		*Eval*	*Analysis Date*	*Holding Times*		*Eval*
				Rec	*Actual*			*Rec*	*Actual*	
Physical Tests : TDS by Gravimetry										
HDPE										
Louis Creek - Raw Water Analysis - Pumphouse	E162	21-Nov-2024	----	----	----		27-Nov-2024	7 days	6 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE										
Louis Creek - Raw Water Analysis - Pumphouse	E121	21-Nov-2024	----	----	----		23-Nov-2024	3 days	2 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved)										
Louis Creek - Raw Water Analysis - Pumphouse	E508	21-Nov-2024	26-Nov-2024	28 days	5 days	✓	26-Nov-2024	28 days	5 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved)										
Louis Creek - Raw Water Analysis - Pumphouse	E420	21-Nov-2024	26-Nov-2024	180 days	5 days	✓	28-Nov-2024	180 days	7 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Alkalinity Species by Titration	E290	1780430	1	17	5.8	5.0	✓
Ammonia by Fluorescence	E298	1785233	1	20	5.0	5.0	✓
Apparent UV Absorbance and Transmittance by Spectrometry	E405	1780996	1	4	25.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	1780434	1	17	5.8	5.0	✓
Chloride in Water by IC	E235.Cl	1780433	1	17	5.8	5.0	✓
Colour (True) by Spectrometer (5 CU)	E329	1780438	1	12	8.3	5.0	✓
Conductivity in Water	E100	1780431	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	1780432	1	17	5.8	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1780435	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1780436	1	17	5.8	5.0	✓
pH by Meter	E108	1780429	1	10	10.0	5.0	✓
Sulfate in Water by IC	E235.SO4	1780437	1	17	5.8	5.0	✓
TDS by Gravimetry	E162	1786605	1	20	5.0	5.0	✓
Total Coliforms and E. coli (Enzyme Substrate)	E010	1779273	2	18	11.1	10.0	✓
Total Cyanide	E333	1785403	1	16	6.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1785231	1	14	7.1	5.0	✓
Total Mercury in Water by CVAAS	E508	1783565	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1779678	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	1785232	1	9	11.1	5.0	✓
Turbidity by Nephelometry	E121	1780808	1	20	5.0	5.0	✓
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	1780430	1	17	5.8	5.0	✓
Ammonia by Fluorescence	E298	1785233	1	20	5.0	5.0	✓
Apparent UV Absorbance and Transmittance by Spectrometry	E405	1780996	1	4	25.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	1780434	1	17	5.8	5.0	✓
Chloride in Water by IC	E235.Cl	1780433	1	17	5.8	5.0	✓
Colour (True) by Spectrometer (5 CU)	E329	1780438	1	12	8.3	5.0	✓
Conductivity in Water	E100	1780431	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	1780432	1	17	5.8	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1780435	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1780436	1	17	5.8	5.0	✓
pH by Meter	E108	1780429	1	10	10.0	5.0	✓
Sulfate in Water by IC	E235.SO4	1780437	1	17	5.8	5.0	✓
TDS by Gravimetry	E162	1786605	1	20	5.0	5.0	✓
Total Cyanide	E333	1785403	1	16	6.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1785231	1	14	7.1	5.0	✓

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Control Samples (LCS) - Continued							
Total Mercury in Water by CVAAS	E508	1783565	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1779678	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	1785232	1	9	11.1	5.0	✓
Turbidity by Nephelometry	E121	1780808	1	20	5.0	5.0	✓
Method Blanks (MB)							
Alkalinity Species by Titration	E290	1780430	1	17	5.8	5.0	✓
Ammonia by Fluorescence	E298	1785233	1	20	5.0	5.0	✓
Apparent UV Absorbance and Transmittance by Spectrometry	E405	1780996	1	4	25.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	1780434	1	17	5.8	5.0	✓
Chloride in Water by IC	E235.Cl	1780433	1	17	5.8	5.0	✓
Colour (True) by Spectrometer (5 CU)	E329	1780438	1	12	8.3	5.0	✓
Conductivity in Water	E100	1780431	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	1780432	1	17	5.8	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1780435	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1780436	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	1780437	1	17	5.8	5.0	✓
TDS by Gravimetry	E162	1786605	1	20	5.0	5.0	✓
Total Coliforms and E. coli (Enzyme Substrate)	E010	1779273	1	18	5.5	5.0	✓
Total Cyanide	E333	1785403	1	16	6.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1785231	1	14	7.1	5.0	✓
Total Mercury in Water by CVAAS	E508	1783565	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1779678	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	1785232	1	9	11.1	5.0	✓
Turbidity by Nephelometry	E121	1780808	1	20	5.0	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	1785233	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	1780434	1	17	5.8	5.0	✓
Chloride in Water by IC	E235.Cl	1780433	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	1780432	1	17	5.8	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1780435	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1780436	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	1780437	1	17	5.8	5.0	✓
Total Cyanide	E333	1785403	1	16	6.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1785231	1	14	7.1	5.0	✓
Total Mercury in Water by CVAAS	E508	1783565	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1779678	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	1785232	1	9	11.1	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Coliforms and E. coli (Enzyme Substrate)	E010 ALS Environmental - Vancouver	Water	APHA 9223 (mod)	The enzyme substrate test simultaneously detects Total Coliforms and E. coli in a 100 mL sample after incubation at 35.0 ±0.5°C for either 18 or 24 hours (dependent on reagent used).
Conductivity in Water	E100 ALS Environmental - Vancouver	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 ALS Environmental - Vancouver	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 ALS Environmental - Vancouver	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
TDS by Gravimetry	E162 ALS Environmental - Vancouver	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC	E235.Cl ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Sulfate in Water by IC	E235.SO4 ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Alkalinity Species by Titration	E290 ALS Environmental - Vancouver	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 ALS Environmental - Vancouver	Water	Method Fialab 100, 2018	Ammonia in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021)
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 ALS Environmental - Vancouver	Water	Method Fialab 100, 2018	TKN in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021).
Colour (True) by Spectrometer (5 CU)	E329 ALS Environmental - Vancouver	Water	APHA 2120 C (mod)	Colour (True Colour) is determined by filtering a sample through a 0.45 micron membrane filter followed by analysis of the filtrate using the platinum-cobalt colourimetric method. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment.
Total Cyanide	E333 ALS Environmental - Waterloo	Water	ISO 14403 (mod)	Total or Strong Acid Dissociable (SAD) Cyanide is determined by Continuous Flow Analyzer (CFA) with in-line UV digestion followed by colourmetric analysis. Method Limitation: High levels of thiocyanate (SCN) may cause positive interference (up to 0.5% of SCN concentration).
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L ALS Environmental - Vancouver	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Apparent UV Absorbance and Transmittance by Spectrometry	E405 ALS Environmental - Vancouver	Water	APHA 5910 B (mod)	Apparent UV Absorbance is determined on an unfiltered sample by UV absorbance measurement in a quartz cell at 254 nm. The analysis is carried out without pH adjustment.
Total Metals in Water by CRC ICPMS	E420 ALS Environmental - Vancouver	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Mercury in Water by CVAAS	E508 ALS Environmental - Vancouver	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Hardness (Calculated) from Total Ca/Mg	EC100A ALS Environmental - Vancouver	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.
Ion Balance using Total Metals	EC101A ALS Environmental - Vancouver	Water	APHA 1030E	Cation Sum (using total metals), Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Saturation Index using Laboratory pH (Ca-T)	EC105A ALS Environmental - Vancouver	Water	APHA 2330B	Langelier Index provides an indication of scale formation potential at a given pH and temperature, and is calculated as per APHA 2330B Saturation Index. Positive values indicate oversaturation with respect to CaCO3. Negative values indicate undersaturation of CaCO3. This calculation uses laboratory pH measurements and provides estimates of Langelier Index at temperatures of 4, 15, 20, 25, 66, and 77°C. Ryznar Stability Index is an alternative index used for scale formation and corrosion potential.
Total Organic Nitrogen (Calculation)	EC363 ALS Environmental - Vancouver	Water	APHA 4500-NORG (TKN)/NH3-NITROGEN (NH3)	Total Organic Nitrogen is a calculated parameter. Total Organic Nitrogen = Total Kjeldahl Nitrogen - Ammonia.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 ALS Environmental - Vancouver	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 ALS Environmental - Vancouver	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Preparation for Total Organic Carbon by Combustion	EP355 ALS Environmental - Vancouver	Water		Preparation for Total Organic Carbon by Combustion

QUALITY CONTROL REPORT

Work Order	: **KS2404903**	Page	: 1 of 13
Client	: District of Barriere	Laboratory	: ALS Environmental - Kamloops
Contact	: Chris Matthews	Account Manager	: Caitlin Fountain
Address	: PO Box 219 Barriere BC Canada V0E 1E0	Address	: 1445 McGill Road, Unit 2B Kamloops, British Columbia Canada V2C 6K7
Telephone	: ----	Telephone	: 250 372 3588
Project	: Louis Creek Water	Date Samples Received	: 21-Nov-2024 13:23
PO	: ----	Date Analysis Commenced	: 22-Nov-2024
C-O-C number	: ----	Issue Date	: 03-Dec-2024 09:16
Sampler	: Graham H		
Site	: ----		
Quote number	: 20DIOB100KS02 Water		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Ghazaleh Khanmirzaei	Analyst	Vancouver Metals, Burnaby, British Columbia
Jon Fisher	Production Manager, Environmental	Waterloo Inorganics, Waterloo, Ontario
Kim Jensen	Department Manager - Metals	Vancouver Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Vancouver Inorganics, Burnaby, British Columbia
Monica Ko	Lab Assistant	Vancouver Microbiology, Burnaby, British Columbia

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 1780429)											
FJ2403552-003	Anonymous	pH	----	E108	0.10	pH units	8.17	8.18	0.122%	4%	----
Physical Tests (QC Lot: 1780430)											
FJ2403552-003	Anonymous	Alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	104	104	0.385%	200%	----
		Alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0.00%	200%	----
		Alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0.00%	200%	----
		Alkalinity, phenolphthalein (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		Alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	104	104	0.385%	20%	----
Physical Tests (QC Lot: 1780431)											
FJ2403552-003	Anonymous	Conductivity	----	E100	2.0	µS/cm	1420	1410	0.423%	10%	----
Physical Tests (QC Lot: 1780438)											
KS2404902-001	Anonymous	Colour, true	----	E329	5.0	CU	<5.0	<5.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 1780808)											
FJ2403543-001	Anonymous	Turbidity	----	E121	0.10	NTU	0.30	0.31	0.006	Diff <2x LOR	----
Physical Tests (QC Lot: 1780996)											
KS2404902-001	Anonymous	Absorbance, UV (@ 254nm), unfiltered	----	E405	0.0050	AU/cm	0.0110	0.0110	0	Diff <2x LOR	----
Physical Tests (QC Lot: 1786605)											
KS2404897-001	Anonymous	Solids, total dissolved [TDS]	----	E162	20	mg/L	415	420	1.20%	20%	----
Anions and Nutrients (QC Lot: 1780432)											
FJ2403552-001	Anonymous	Fluoride	16984-48-8	E235.F	0.020	mg/L	0.192	0.189	0.002	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1780433)											
FJ2403552-001	Anonymous	Chloride	16887-00-6	E235.Cl	0.50	mg/L	45.8	45.8	0.00543%	20%	----
Anions and Nutrients (QC Lot: 1780434)											
FJ2403552-001	Anonymous	Bromide	24959-67-9	E235.Br-L	0.050	mg/L	0.766	0.771	0.697%	20%	----
Anions and Nutrients (QC Lot: 1780435)											
FJ2403552-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.225	0.224	0.390%	20%	----
Anions and Nutrients (QC Lot: 1780436)											
FJ2403552-001	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0126	0.0124	1.76%	20%	----
Anions and Nutrients (QC Lot: 1780437)											
FJ2403552-001	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	69.0	69.1	0.121%	20%	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Anions and Nutrients (QC Lot: 1785231)											
KS2404902-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.066	0.051	0.015	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1785233)											
KS2404902-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0134	0.0133	0.00010	Diff <2x LOR	----
Cyanides (QC Lot: 1785403)											
VA24D1834-003	Anonymous	Cyanide, strong acid dissociable (Total)	----	E333	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 1785232)											
KS2404902-001	Anonymous	Carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.66	0.64	0.02	Diff <2x LOR	----
Microbiological Tests (QC Lot: 1779273)											
KS2404902-001	Anonymous	Coliforms, Escherichia coli [E. coli]	----	E010	1	MPN/100mL	<1	<1	0	Diff <2x LOR	----
		Coliforms, total	----	E010	1	MPN/100mL	<1	<1	0	Diff <2x LOR	----
VA24D1700-076	Anonymous	Coliforms, Escherichia coli [E. coli]	----	E010	10	MPN/100mL	52	41	23.6%	65%	----
		Coliforms, total	----	E010	10	MPN/100mL	512	488	4.80%	65%	----
Total Metals (QC Lot: 1779678)											
VA24D1493-001	Anonymous	Aluminum, total	7429-90-5	E420	0.0060	mg/L	0.0113	0.0122	0.0008	Diff <2x LOR	----
		Antimony, total	7440-36-0	E420	0.00020	mg/L	0.00102	0.00100	0.00002	Diff <2x LOR	----
		Arsenic, total	7440-38-2	E420	0.00020	mg/L	0.00109	0.00105	0.00004	Diff <2x LOR	----
		Barium, total	7440-39-3	E420	0.00020	mg/L	0.0478	0.0470	1.70%	20%	----
		Beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		Bismuth, total	7440-69-9	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		Boron, total	7440-42-8	E420	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
		Cadmium, total	7440-43-9	E420	0.0000100	mg/L	0.0000413	0.0000457	0.0000043	Diff <2x LOR	----
		Calcium, total	7440-70-2	E420	0.100	mg/L	395	397	0.505%	20%	----
		Cesium, total	7440-46-2	E420	0.000020	mg/L	0.000097	0.000098	0.0000003	Diff <2x LOR	----
		Chromium, total	7440-47-3	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		Cobalt, total	7440-48-4	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Copper, total	7440-50-8	E420	0.00100	mg/L	0.0125	0.0125	0.00319%	20%	----
		Iron, total	7439-89-6	E420	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
		Lead, total	7439-92-1	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		Lithium, total	7439-93-2	E420	0.0020	mg/L	0.0116	0.0112	0.0004	Diff <2x LOR	----
		Magnesium, total	7439-95-4	E420	0.100	mg/L	115	114	0.768%	20%	----
		Manganese, total	7439-96-5	E420	0.00020	mg/L	0.00159	0.00172	0.00013	Diff <2x LOR	----
		Molybdenum, total	7439-98-7	E420	0.000100	mg/L	0.0221	0.0222	0.400%	20%	----
		Nickel, total	7440-02-0	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Total Metals (QC Lot: 1779678) - continued											
VA24D1493-001	Anonymous	Phosphorus, total	7723-14-0	E420	0.300	mg/L	<0.300	<0.300	0	Diff <2x LOR	----
		Potassium, total	7440-09-7	E420	0.100	mg/L	6.00	6.02	0.485%	20%	----
		Rubidium, total	7440-17-7	E420	0.00040	mg/L	0.00355	0.00333	0.00022	Diff <2x LOR	----
		Selenium, total	7782-49-2	E420	0.000100	mg/L	0.0229	0.0231	0.697%	20%	----
		Silicon, total	7440-21-3	E420	0.20	mg/L	10.4	10.0	4.36%	20%	----
		Silver, total	7440-22-4	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		Sodium, total	7440-23-5	E420	0.100	mg/L	25.8	26.4	2.02%	20%	----
		Strontium, total	7440-24-6	E420	0.00040	mg/L	1.95	2.01	2.94%	20%	----
		Sulfur, total	7704-34-9	E420	1.00	mg/L	405	386	4.86%	20%	----
		Tellurium, total	13494-80-9	E420	0.00040	mg/L	<0.00040	<0.00040	0	Diff <2x LOR	----
		Thallium, total	7440-28-0	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		Thorium, total	7440-29-1	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Tin, total	7440-31-5	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Titanium, total	7440-32-6	E420	0.0100	mg/L	<0.0100	<0.0100	0	Diff <2x LOR	----
		Tungsten, total	7440-33-7	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Uranium, total	7440-61-1	E420	0.000020	mg/L	0.0150	0.0160	6.29%	20%	----
		Vanadium, total	7440-62-2	E420	0.00100	mg/L	0.00130	0.00128	0.00002	Diff <2x LOR	----
		Zinc, total	7440-66-6	E420	0.0060	mg/L	<0.0060	<0.0060	0	Diff <2x LOR	----
		Zirconium, total	7440-67-7	E420	0.00040	mg/L	<0.00040	<0.00040	0	Diff <2x LOR	----
Total Metals (QC Lot: 1783565)											
FJ2403552-001	Anonymous	Mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 1780430)						
Alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
Alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
Alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
Alkalinity, phenolphthalein (as CaCO3)	----	E290	1	mg/L	<1.0	----
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 1780431)						
Conductivity	----	E100	1	µS/cm	1.2	----
Physical Tests (QCLot: 1780438)						
Colour, true	----	E329	5	CU	<5.0	----
Physical Tests (QCLot: 1780808)						
Turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 1780996)						
Absorbance, UV (@ 254nm), unfiltered	----	E405	0.005	AU/cm	<0.0050	----
Physical Tests (QCLot: 1786605)						
Solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Anions and Nutrients (QCLot: 1780432)						
Fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 1780433)						
Chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 1780434)						
Bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 1780435)						
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 1780436)						
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 1780437)						
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 1785231)						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 1785233)						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Cyanides (QCLot: 1785403)						

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Cyanides (QCLot: 1785403) - continued						
Cyanide, strong acid dissociable (Total)	----	E333	0.002	mg/L	<0.0020	----
Organic / Inorganic Carbon (QCLot: 1785232)						
Carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Microbiological Tests (QCLot: 1779273)						
Coliforms, Escherichia coli [E. coli]	----	E010	1	MPN/100mL	<1	----
Coliforms, total	----	E010	1	MPN/100mL	<1	----
Total Metals (QCLot: 1779678)						
Aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
Barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
Boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
Calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
Cesium, total	7440-46-2	E420	0.00001	mg/L	<0.000010	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	<0.00050	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
Copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
Iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
Lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
Lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
Phosphorus, total	7723-14-0	E420	0.05	mg/L	<0.050	----
Potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
Rubidium, total	7440-17-7	E420	0.0002	mg/L	<0.00020	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
Silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
Silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
Sodium, total	7440-23-5	E420	0.05	mg/L	<0.050	----
Strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 1779678) - continued						
Sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
Tellurium, total	13494-80-9	E420	0.0002	mg/L	<0.00020	----
Thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
Thorium, total	7440-29-1	E420	0.0001	mg/L	<0.00010	----
Tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	<0.00010	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
Zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	<0.00020	----
Total Metals (QCLot: 1783565)						
Mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 1780429)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Physical Tests (QCLot: 1780430)									
Alkalinity, phenolphthalein (as CaCO3)	----	E290	1	mg/L	229 mg/L	102	75.0	125	----
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	103	85.0	115	----
Physical Tests (QCLot: 1780431)									
Conductivity	----	E100	1	µS/cm	147 µS/cm	93.6	90.0	110	----
Physical Tests (QCLot: 1780438)									
Colour, true	----	E329	5	CU	100 CU	104	85.0	115	----
Physical Tests (QCLot: 1780808)									
Turbidity	----	E121	0.1	NTU	200 NTU	100	85.0	115	----
Physical Tests (QCLot: 1780996)									
Absorbance, UV (@ 254nm), unfiltered	----	E405	0.005	AU/cm	0.693 AU/cm	93.9	85.0	115	----
Physical Tests (QCLot: 1786605)									
Solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	108	85.0	115	----
Anions and Nutrients (QCLot: 1780432)									
Fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	97.7	90.0	110	----
Anions and Nutrients (QCLot: 1780433)									
Chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	99.1	90.0	110	----
Anions and Nutrients (QCLot: 1780434)									
Bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	106	85.0	115	----
Anions and Nutrients (QCLot: 1780435)									
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	98.8	90.0	110	----
Anions and Nutrients (QCLot: 1780436)									
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	98.0	90.0	110	----
Anions and Nutrients (QCLot: 1780437)									
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	100	90.0	110	----
Anions and Nutrients (QCLot: 1785231)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	116	75.0	125	----
Anions and Nutrients (QCLot: 1785233)									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	98.5	85.0	115	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Target Concentration	LCS	Low	High	Qualifier
Cyanides (QCLot: 1785403)									
Cyanide, strong acid dissociable (Total)	----	E333	0.002	mg/L	0.25 mg/L	90.3	80.0	120	----
Organic / Inorganic Carbon (QCLot: 1785232)									
Carbon, total organic [TOC]	----	E355-L	0.5	mg/L	8.57 mg/L	104	80.0	120	----
Total Metals (QCLot: 1779678)									
Aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	97.5	80.0	120	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	104	80.0	120	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	107	80.0	120	----
Barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	103	80.0	120	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	104	80.0	120	----
Boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	102	80.0	120	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	107	80.0	120	----
Calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	102	80.0	120	----
Cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	106	80.0	120	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	104	80.0	120	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
Copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	102	80.0	120	----
Iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	97.2	80.0	120	----
Lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	106	80.0	120	----
Lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	98.9	80.0	120	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	103	80.0	120	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	102	80.0	120	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
Phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	94.9	80.0	120	----
Potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	101	80.0	120	----
Rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	99.4	80.0	120	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	100	80.0	120	----
Silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	106	80.0	120	----
Silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	96.9	80.0	120	----
Sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	100	80.0	120	----
Strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	109	80.0	120	----
Sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	103	80.0	120	----
Tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	106	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 1779678) - continued									
Thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	105	80.0	120	----
Thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	106	80.0	120	----
Tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	103	80.0	120	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	102	80.0	120	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	104	80.0	120	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	111	80.0	120	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	104	80.0	120	----
Zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	104	80.0	120	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	101	80.0	120	----
Total Metals (QCLot: 1783565)									
Mercury, total	7439-97-6	E508	0.000005	mg/L	0 mg/L	86.9	80.0	120	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 1780432)										
FJ2403552-002	Anonymous	Fluoride	16984-48-8	E235.F	1.01 mg/L	1 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 1780433)										
FJ2403552-002	Anonymous	Chloride	16887-00-6	E235.Cl	101 mg/L	100 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 1780434)										
FJ2403552-002	Anonymous	Bromide	24959-67-9	E235.Br-L	ND mg/L	----	ND	75.0	125	----
Anions and Nutrients (QCLot: 1780435)										
FJ2403552-002	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	2.54 mg/L	2.5 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 1780436)										
FJ2403552-002	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.499 mg/L	0.5 mg/L	99.8	75.0	125	----
Anions and Nutrients (QCLot: 1780437)										
FJ2403552-002	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	99.2 mg/L	100 mg/L	99.2	75.0	125	----
Anions and Nutrients (QCLot: 1785231)										
KS2404903-001	Louis Creek - Raw Water Analysis Pumphouse	Kjeldahl nitrogen, total [TKN]	----	E318	2.70 mg/L	2.5 mg/L	108	70.0	130	----
Anions and Nutrients (QCLot: 1785233)										
KS2404903-001	Louis Creek - Raw Water Analysis Pumphouse	Ammonia, total (as N)	7664-41-7	E298	0.124 mg/L	0.1 mg/L	124	75.0	125	----
Cyanides (QCLot: 1785403)										
VA24D1834-003	Anonymous	Cyanide, strong acid dissociable (Total)	----	E333	0.230 mg/L	0.25 mg/L	92.1	75.0	125	----
Organic / Inorganic Carbon (QCLot: 1785232)										
KS2404903-001	Louis Creek - Raw Water Analysis Pumphouse	Carbon, total organic [TOC]	----	E355-L	5.29 mg/L	5 mg/L	106	70.0	130	----
Total Metals (QCLot: 1779678)										
VA24D1542-001	Anonymous	Aluminum, total	7429-90-5	E420	ND mg/L	----	ND	70.0	130	----
		Antimony, total	7440-36-0	E420	ND mg/L	----	ND	70.0	130	----
		Arsenic, total	7440-38-2	E420	ND mg/L	----	ND	70.0	130	----
		Barium, total	7440-39-3	E420	ND mg/L	----	ND	70.0	130	----
		Beryllium, total	7440-41-7	E420	0.389 mg/L	0.4 mg/L	97.3	70.0	130	----
		Bismuth, total	7440-69-9	E420	0.0971 mg/L	0.1 mg/L	97.1	70.0	130	----
		Boron, total	7440-42-8	E420	ND mg/L	----	ND	70.0	130	----
		Cadmium, total	7440-43-9	E420	0.0403 mg/L	0.04 mg/L	101	70.0	130	----
		Calcium, total	7440-70-2	E420	ND mg/L	----	ND	70.0	130	----
		Cesium, total	7440-46-2	E420	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		Chromium, total	7440-47-3	E420	ND mg/L	----	ND	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Total Metals (QCLot: 1779678) - continued										
VA24D1542-001	Anonymous	Cobalt, total	7440-48-4	E420	ND mg/L	----	ND	70.0	130	----
		Copper, total	7440-50-8	E420	ND mg/L	----	ND	70.0	130	----
		Iron, total	7439-89-6	E420	ND mg/L	----	ND	70.0	130	----
		Lead, total	7439-92-1	E420	0.190 mg/L	0.2 mg/L	95.2	70.0	130	----
		Lithium, total	7439-93-2	E420	0.892 mg/L	1 mg/L	89.2	70.0	130	----
		Magnesium, total	7439-95-4	E420	ND mg/L	----	ND	70.0	130	----
		Manganese, total	7439-96-5	E420	ND mg/L	----	ND	70.0	130	----
		Molybdenum, total	7439-98-7	E420	ND mg/L	----	ND	70.0	130	----
		Nickel, total	7440-02-0	E420	ND mg/L	----	ND	70.0	130	----
		Phosphorus, total	7723-14-0	E420	90.9 mg/L	100 mg/L	90.9	70.0	130	----
		Potassium, total	7440-09-7	E420	ND mg/L	----	ND	70.0	130	----
		Rubidium, total	7440-17-7	E420	ND mg/L	----	ND	70.0	130	----
		Selenium, total	7782-49-2	E420	ND mg/L	----	ND	70.0	130	----
		Silicon, total	7440-21-3	E420	ND mg/L	----	ND	70.0	130	----
		Silver, total	7440-22-4	E420	0.0382 mg/L	0.04 mg/L	95.4	70.0	130	----
		Sodium, total	7440-23-5	E420	ND mg/L	----	ND	70.0	130	----
		Strontium, total	7440-24-6	E420	ND mg/L	----	ND	70.0	130	----
		Sulfur, total	7704-34-9	E420	ND mg/L	----	ND	70.0	130	----
		Tellurium, total	13494-80-9	E420	0.429 mg/L	0.4 mg/L	107	70.0	130	----
		Thallium, total	7440-28-0	E420	0.0369 mg/L	0.04 mg/L	92.3	70.0	130	----
		Thorium, total	7440-29-1	E420	0.188 mg/L	0.2 mg/L	94.3	70.0	130	----
		Tin, total	7440-31-5	E420	0.197 mg/L	0.2 mg/L	98.7	70.0	130	----
		Titanium, total	7440-32-6	E420	ND mg/L	----	ND	70.0	130	----
		Tungsten, total	7440-33-7	E420	0.196 mg/L	0.2 mg/L	98.0	70.0	130	----
		Uranium, total	7440-61-1	E420	ND mg/L	----	ND	70.0	130	----
		Vanadium, total	7440-62-2	E420	ND mg/L	----	ND	70.0	130	----
		Zinc, total	7440-66-6	E420	3.78 mg/L	4 mg/L	94.4	70.0	130	----
		Zirconium, total	7440-67-7	E420	0.408 mg/L	0.4 mg/L	102	70.0	130	----
Total Metals (QCLot: 1783565)										
FJ2403552-002	Anonymous	Mercury, total	7439-97-6	E508	0.0000956 mg/L	0 mg/L	95.6	70.0	130	----

Chain of Custody (COC) / Analytical Request Form

ALS Environmental

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

COC Number: 15 -

Affix ALS barcode label here (lab use only)

Page of

Report To	Contact and company name below will appear on the final report
Company:	DISTRICT OF BARRIERE
Contact:	Chris Matthews
Phone:	250-320-1505 250-672-9751 Fax 250-672-9708
	Company address below will appear on the final report
Street:	P.O. Box 219
City/Province:	BARRIERE
Postal Code:	BC
Invoice To	Same as Report To ☑ YES ☐ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	
Contact:	

Report Format / Distribution	
Select Report Format:	☑ PDF ☐ EXCEL ☐ EDD (DIGITAL)
Quality Control (QC) Report with Report	☐ YES ☐ NO
☐ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	
Email 2	cmatthews@barriere.ca
Email 3	pamos@barriere.ca

Invoice Distribution	
Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	
Email 2	

Project Information	
ALS Account # / Quote #:	
Job #:	
PO / AFE:	
LSD:	

Oil and Gas Required Fields (client use)	
AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

ALS Lab Work Order # (lab use only)	4903	ALS Contact:	Sampler: GRAHAM

Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days)		EMERGENCY	
4 day [P4]	☐	1 Business day [E1]	☐
3 day [P3]	☐	Same Day, Weekend or Statutory holiday [E0]	☐
2 day [P2]	☐		

Date and Time Required for all E&P TATs:

For tests that can not be performed according to the service level selected, you will be contacted.

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Number of Containers
	Louis Creek - Raw Water Analysis	21 11 29	850	Grab	6
	NTU: 0.07				
	CL2 Free: 0.00				
	CL2 Total: 0.00				
	Location: PUMP HOUSE				
	Please reference WO# KS2304717 for required analysis				

Environmental Division
Kamloops
Work Order Reference
KS2404903

Telephone : +1 250 372 3586

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)
Are samples taken from a Regulated DW System? ☐ YES ☐ NO	
Are samples for human drinking water use? ☐ YES ☐ NO	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen	☐	SIF Observations	Yes ☐	No ☐	
Ice Packs	☑	Ice Cubes ☐	Custody seal intact	Yes ☐	No ☐
Cooling Initiated	☐				

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
10					

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
				NOV 2 1 2024	1323			

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

OCTOBER 2015 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

drop off

ALS Canada Ltd.

right solutions.
right partner.

CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: **KS2404904**	Page	: 1 of 6
Client	: **District of Barriere**	Laboratory	: ALS Environmental - Kamloops
Contact	: Chris Matthews	Account Manager	: Caitlin Fountain
Address	: PO Box 219 Barriere BC Canada V0E 1E0	Address	: 1445 McGill Road, Unit 2B Kamloops, British Columbia Canada V2C 6K7
Telephone	: ----	Telephone	: 250 372 3588
Project	: District of Barriere Water	Date Samples Received	: 21-Nov-2024 13:23
PO	: ----	Date Analysis Commenced	: 22-Nov-2024
C-O-C number	: ----	Issue Date	: 03-Dec-2024 09:16
Sampler	: Graham H		
Site	: ----		
Quote number	: 20DIOB100KS02 Water		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Guideline Comparison

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Ghazaleh Khanmirzaei	Analyst	Metals, Burnaby, British Columbia
Jon Fisher	Production Manager, Environmental	Inorganics, Waterloo, Ontario
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Monica Ko	Lab Assistant	Microbiology, Burnaby, British Columbia

No Breaches Found

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.
Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guidelines are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.

Key : LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	no units
%	percent
% T/cm	% transmittance per centimetre
µS/cm	microsiemens per centimetre
AU/cm	absorbance units per centimetre
CU	colour units (1 cu = 1 mg/l pt)
meq/L	milliequivalents per litre
mg/L	milligrams per litre
MPN/100mL	most probable number per hundred millilitres
NTU	nephelometric turbidity units
pH units	pH units

>: greater than.
<: less than.
Red shading is applied where the result or the LOR is greater than the Guideline Upper Limit (or lower than the Guideline Lower Limit, if applicable).
For drinking water samples, Red shading is applied where the result for E.coli, fecal or total coliforms is greater than or equal to the Guideline Upper Limit.

Analytical Results Evaluation

Matrix: **Water**

Analyte	CAS Number	Method/Lab	Unit	Client sample ID: Spruce Crescent DW3 - Raw Water Analysis Pumphouse	----	----	----	----	----	----
				Sampling date/time: 21-Nov-2024 09:50	----	----	----	----	----	----
				Sub-Matrix: Water	----	----	----	----	----	----
				KS2404904-001	---------	---------	---------	---------	---------	---------
Physical Tests										
Absorbance, UV (@ 254nm), unfiltered	----	E405/VA	AU/cm	0.0150	----	----	----	----	----	----
Alkalinity, bicarbonate (as CaCO3)	----	E290/VA	mg/L	188	----	----	----	----	----	----
Alkalinity, carbonate (as CaCO3)	----	E290/VA	mg/L	<1.0	----	----	----	----	----	----
Alkalinity, hydroxide (as CaCO3)	----	E290/VA	mg/L	<1.0	----	----	----	----	----	----
Alkalinity, phenolphthalein (as CaCO3)	----	E290/VA	mg/L	<1.0	----	----	----	----	----	----
Alkalinity, total (as CaCO3)	----	E290/VA	mg/L	188	----	----	----	----	----	----
Colour, true	----	E329/VA	CU	<5.0	----	----	----	----	----	----
Conductivity	----	E100/VA	µS/cm	383	----	----	----	----	----	----
Hardness (as CaCO3), from total Ca/Mg	----	EC100A/VA	mg/L	208	----	----	----	----	----	----
Langelier index (@ 15°C)	----	EC105A/VA	-	0.502	----	----	----	----	----	----
Langelier index (@ 20°C)	----	EC105A/VA	-	0.575	----	----	----	----	----	----
Langelier index (@ 25°C)	----	EC105A/VA	-	0.646	----	----	----	----	----	----
Langelier index (@ 4°C)	----	EC105A/VA	-	0.327	----	----	----	----	----	----
Langelier index (@ 60°C)	----	EC105A/VA	-	1.09	----	----	----	----	----	----
Langelier index (@ 77°C)	----	EC105A/VA	-	1.29	----	----	----	----	----	----
pH	----	E108/VA	pH units	8.03	----	----	----	----	----	----
Solids, total dissolved [TDS]	----	E162/VA	mg/L	251	----	----	----	----	----	----
Turbidity	----	E121/VA	NTU	2.05	----	----	----	----	----	----
Transmittance, UV (@ 254nm), unfiltered	----	E405/VA	% T/cm	96.6	----	----	----	----	----	----
Anions and Nutrients										
Ammonia, total (as N)	7664-41-7	E298/VA	mg/L	0.0196	----	----	----	----	----	----
Bromide	24959-67-9	E235.Br-L/VA	mg/L	<0.050	----	----	----	----	----	----
Chloride	16887-00-6	E235.Cl/VA	mg/L	2.28	----	----	----	----	----	----
Fluoride	16984-48-8	E235.F/VA	mg/L	0.092	----	----	----	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318/VA	mg/L	<0.050	----	----	----	----	----	----

Analytical Results Evaluation

Matrix: **Water**

Analyte	CAS Number	Method/Lab	Unit	Client sample ID	Spruce Crescent DW3 - Raw Water Analysis Pumphouse	----	----	----	----	----	----
				Sampling date/time	21-Nov-2024 09:50	----	----	----	----	----	----
				Sub-Matrix	Water	----	----	----	----	----	----
				KS2404904-001	--------	--------	--------	--------	--------	--------	
Anions and Nutrients											
Nitrate (as N)	14797-55-8	E235.NO3-L/VA	mg/L	0.224	----	----	----	----	----	----	
Nitrite (as N)	14797-65-0	E235.NO2-L/VA	mg/L	<0.0010	----	----	----	----	----	----	
Nitrogen, total organic	----	EC363/VA	mg/L	<0.050	----	----	----	----	----	----	
Sulfate (as SO4)	14808-79-8	E235.SO4/VA	mg/L	24.4	----	----	----	----	----	----	
Cyanides											
Cyanide, strong acid dissociable (Total)	----	E333/WT	mg/L	<0.0050	----	----	----	----	----	----	
Organic / Inorganic Carbon											
Carbon, total organic [TOC]	----	E355-L/VA	mg/L	0.64	----	----	----	----	----	----	
Microbiological Tests											
Coliforms, total	----	E010/VA	MPN/100 mL	<1	----	----	----	----	----	----	
Coliforms, Escherichia coli [E. coli]	----	E010/VA	MPN/100mL	<1	----	----	----	----	----	----	
Ion Balance											
Anion sum	----	EC101A/VA	meq/L	4.35	----	----	----	----	----	----	
Cation sum (total)	----	EC101A/VA	meq/L	4.56	----	----	----	----	----	----	
Ion balance (APHA)	----	EC101A/VA	%	2.36	----	----	----	----	----	----	
Total Metals											
Aluminum, total	7429-90-5	E420/VA	mg/L	0.0164	----	----	----	----	----	----	
Antimony, total	7440-36-0	E420/VA	mg/L	<0.00010	----	----	----	----	----	----	
Arsenic, total	7440-38-2	E420/VA	mg/L	0.00157	----	----	----	----	----	----	
Barium, total	7440-39-3	E420/VA	mg/L	0.0227	----	----	----	----	----	----	
Beryllium, total	7440-41-7	E420/VA	mg/L	<0.000100	----	----	----	----	----	----	
Bismuth, total	7440-69-9	E420/VA	mg/L	<0.000050	----	----	----	----	----	----	
Boron, total	7440-42-8	E420/VA	mg/L	<0.010	----	----	----	----	----	----	
Cadmium, total	7440-43-9	E420/VA	mg/L	0.0000122	----	----	----	----	----	----	

Analytical Results Evaluation

Matrix: **Water**

Analyte	CAS Number	Method/Lab	Unit	Client sample ID	----	----	----	----	----	----
				Spruce Crescent DW3 - Raw Water Analysis Pumphouse						
				Sampling date/time: 21-Nov-2024 09:50	----	----	----	----	----	----
				Sub-Matrix: Water	----	----	----	----	----	----
				KS2404904-001	--------	--------	--------	--------	--------	--------
Total Metals										
Calcium, total	7440-70-2	E420/VA	mg/L	48.0	----	----	----	----	----	----
Cesium, total	7440-46-2	E420/VA	mg/L	<0.000010	----	----	----	----	----	----
Chromium, total	7440-47-3	E420/VA	mg/L	0.00051	----	----	----	----	----	----
Cobalt, total	7440-48-4	E420/VA	mg/L	<0.00010	----	----	----	----	----	----
Copper, total	7440-50-8	E420/VA	mg/L	0.00609	----	----	----	----	----	----
Iron, total	7439-89-6	E420/VA	mg/L	0.078	----	----	----	----	----	----
Lead, total	7439-92-1	E420/VA	mg/L	0.000266	----	----	----	----	----	----
Lithium, total	7439-93-2	E420/VA	mg/L	0.0021	----	----	----	----	----	----
Magnesium, total	7439-95-4	E420/VA	mg/L	21.4	----	----	----	----	----	----
Manganese, total	7439-96-5	E420/VA	mg/L	0.0256	----	----	----	----	----	----
Mercury, total	7439-97-6	E508/VA	mg/L	<0.0000050	----	----	----	----	----	----
Molybdenum, total	7439-98-7	E420/VA	mg/L	0.00168	----	----	----	----	----	----
Nickel, total	7440-02-0	E420/VA	mg/L	<0.00050	----	----	----	----	----	----
Phosphorus, total	7723-14-0	E420/VA	mg/L	<0.050	----	----	----	----	----	----
Potassium, total	7440-09-7	E420/VA	mg/L	1.96	----	----	----	----	----	----
Rubidium, total	7440-17-7	E420/VA	mg/L	0.00078	----	----	----	----	----	----
Selenium, total	7782-49-2	E420/VA	mg/L	0.000205	----	----	----	----	----	----
Silicon, total	7440-21-3	E420/VA	mg/L	8.43	----	----	----	----	----	----
Silver, total	7440-22-4	E420/VA	mg/L	<0.000010	----	----	----	----	----	----
Sodium, total	7440-23-5	E420/VA	mg/L	7.93	----	----	----	----	----	----
Strontium, total	7440-24-6	E420/VA	mg/L	0.308	----	----	----	----	----	----
Sulfur, total	7704-34-9	E420/VA	mg/L	8.25	----	----	----	----	----	----
Tellurium, total	13494-80-9	E420/VA	mg/L	<0.00020	----	----	----	----	----	----
Thallium, total	7440-28-0	E420/VA	mg/L	<0.000010	----	----	----	----	----	----
Thorium, total	7440-29-1	E420/VA	mg/L	<0.00010	----	----	----	----	----	----
Tin, total	7440-31-5	E420/VA	mg/L	<0.00010	----	----	----	----	----	----

Analytical Results Evaluation

Matrix: **Water**

Analyte	CAS Number	Method/Lab	Unit	Client sample ID	Spruce Crescent DW3 - Raw Water Analysis Pumphouse	----	----	----	----	----	----
				Sampling date/time	21-Nov-2024 09:50	----	----	----	----	----	----
				Sub-Matrix	Water	----	----	----	----	----	----
					KS2404904-001	--------	--------	--------	--------	--------	--------
Total Metals											
Titanium, total	7440-32-6	E420/VA	mg/L		0.00152	----	----	----	----	----	----
Tungsten, total	7440-33-7	E420/VA	mg/L		<0.00010	----	----	----	----	----	----
Uranium, total	7440-61-1	E420/VA	mg/L		0.00167	----	----	----	----	----	----
Vanadium, total	7440-62-2	E420/VA	mg/L		0.00085	----	----	----	----	----	----
Zinc, total	7440-66-6	E420/VA	mg/L		0.0127	----	----	----	----	----	----
Zirconium, total	7440-67-7	E420/VA	mg/L		<0.00020	----	----	----	----	----	----

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

Key:

CERTIFICATE OF ANALYSIS

Work Order	:	**KS2404904**			
Client	:	**District of Barriere**	Laboratory	:	ALS Environmental - Vancouver
Contact	:	Chris Matthews	Account Manager	:	Caitlin Fountain
Address	:	PO Box 219 Barriere British Columbia Canada V0E 1E0	Address	:	8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	:	----	Telephone	:	250 372 3588
Project	:	District of Barriere Water	Date Samples Received	:	21-Nov-2024 13:23
PO	:	----	Date Analysis Commenced	:	22-Nov-2024
C-O-C number	:	----	Issue Date	:	03-Dec-2024 09:18
Sampler	:	Graham H			
Site	:	----			
Quote number	:	20DIOB100KS02 Water			
No. of samples received	:	1			
No. of samples analysed	:	1			

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Ghazaleh Khanmirzaei	Analyst	Metals, Burnaby, British Columbia
Jon Fisher	Production Manager, Environmental	Inorganics, Waterloo, Ontario
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Monica Ko	Lab Assistant	Microbiology, Burnaby, British Columbia

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key: CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
LOR: Limit of Reporting (detection limit).

Unit	*Description*
mg/L	milligrams per litre
pH units	pH units
µS/cm	microsiemens per centimetre
NTU	nephelometric turbidity units
CU	colour units (1 cu = 1 mg/l pt)
% T/cm	% transmittance per centimetre
AU/cm	absorbance units per centimetre
-	no units
MPN/100mL	most probable number per hundred millilitres
%	percent
meq/L	milliequivalents per litre

<: less than.
>: greater than.
Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	Spruce Crescent DW3 - Raw Water Analysis Pumphouse	----	----	----	----
					Client sampling date / time	21-Nov-2024 09:50	----	----	----	----
						KS2404904-001	----	----	----	----
						Result	----	----	----	----
Physical Tests										
Absorbance, UV (@ 254nm), unfiltered	----	E405/VA	0.0050	AU/cm		0.0150	----	----	----	----
Alkalinity, bicarbonate (as CaCO3)	----	E290/VA	1.0	mg/L		188	----	----	----	----
Alkalinity, carbonate (as CaCO3)	----	E290/VA	1.0	mg/L		<1.0	----	----	----	----
Alkalinity, hydroxide (as CaCO3)	----	E290/VA	1.0	mg/L		<1.0	----	----	----	----
Alkalinity, phenolphthalein (as CaCO3)	----	E290/VA	1.0	mg/L		<1.0	----	----	----	----
Alkalinity, total (as CaCO3)	----	E290/VA	1.0	mg/L		188	----	----	----	----
Colour, true	----	E329/VA	5.0	CU		<5.0	----	----	----	----
Conductivity	----	E100/VA	2.0	µS/cm		383	----	----	----	----
Hardness (as CaCO3), from total Ca/Mg	----	EC100A/VA	0.60	mg/L		208	----	----	----	----
Langelier index (@ 15°C)	----	EC105A/VA	0.010	-		0.502	----	----	----	----
Langelier index (@ 20°C)	----	EC105A/VA	0.010	-		0.575	----	----	----	----
Langelier index (@ 25°C)	----	EC105A/VA	0.010	-		0.646	----	----	----	----
Langelier index (@ 4°C)	----	EC105A/VA	0.010	-		0.327	----	----	----	----
Langelier index (@ 60°C)	----	EC105A/VA	0.010	-		1.09	----	----	----	----
Langelier index (@ 77°C)	----	EC105A/VA	0.010	-		1.29	----	----	----	----
pH	----	E108/VA	0.10	pH units		8.03	----	----	----	----
Solids, total dissolved [TDS]	----	E162/VA	10	mg/L		251	----	----	----	----
Turbidity	----	E121/VA	0.10	NTU		2.05	----	----	----	----
Transmittance, UV (@ 254nm), unfiltered	----	E405/VA	1.0	% T/cm		96.6	----	----	----	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID				
					Spruce Crescent DW3 - Raw Water Analysis Pumphouse	----	----	----	----
					Client sampling date / time				
					21-Nov-2024 09:50	----	----	----	----
					KS2404904-001	----	----	----	----
					Result	----	----	----	----
Anions and Nutrients									
Ammonia, total (as N)	7664-41-7	E298/VA	0.0050	mg/L	0.0196	----	----	----	----
Bromide	24959-67-9	E235.Br-L/VA	0.050	mg/L	<0.050	----	----	----	----
Chloride	16887-00-6	E235.Cl/VA	0.50	mg/L	2.28	----	----	----	----
Fluoride	16984-48-8	E235.F/VA	0.020	mg/L	0.092	----	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318/VA	0.050	mg/L	<0.050	----	----	----	----
Nitrate (as N)	14797-55-8	E235.NO3-L/VA	0.0050	mg/L	0.224	----	----	----	----
Nitrite (as N)	14797-65-0	E235.NO2-L/VA	0.0010	mg/L	<0.0010	----	----	----	----
Nitrogen, total organic	----	EC363/VA	0.050	mg/L	<0.050	----	----	----	----
Sulfate (as SO4)	14808-79-8	E235.SO4/VA	0.30	mg/L	24.4	----	----	----	----
Cyanides									
Cyanide, strong acid dissociable (Total)	----	E333/WT	0.0050	mg/L	<0.0050	----	----	----	----
Organic / Inorganic Carbon									
Carbon, total organic [TOC]	----	E355-L/VA	0.50	mg/L	0.64	----	----	----	----
Microbiological Tests									
Coliforms, total	----	E010/VA	1	MPN/100 mL	<1	----	----	----	----
Coliforms, Escherichia coli [E. coli]	----	E010/VA	1	MPN/100 mL	<1	----	----	----	----
Ion Balance									
Anion sum	----	EC101A/VA	0.10	meq/L	4.35	----	----	----	----
Cation sum (total)	----	EC101A/VA	0.10	meq/L	4.56	----	----	----	----
Ion balance (APHA)	----	EC101A/VA	0.010	%	2.36	----	----	----	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	Spruce Crescent DW3 - Raw Water Analysis Pumphouse	----	----	----	----
					Client sampling date / time	21-Nov-2024 09:50	----	----	----	----
						KS2404904-001	----	----	----	----
						Result	----	----	----	----
Total Metals										
Aluminum, total	7429-90-5	E420/VA	0.0030	mg/L		0.0164	----	----	----	----
Antimony, total	7440-36-0	E420/VA	0.00010	mg/L		<0.00010	----	----	----	----
Arsenic, total	7440-38-2	E420/VA	0.00010	mg/L		0.00157	----	----	----	----
Barium, total	7440-39-3	E420/VA	0.00010	mg/L		0.0227	----	----	----	----
Beryllium, total	7440-41-7	E420/VA	0.000100	mg/L		<0.000100	----	----	----	----
Bismuth, total	7440-69-9	E420/VA	0.000050	mg/L		<0.000050	----	----	----	----
Boron, total	7440-42-8	E420/VA	0.010	mg/L		<0.010	----	----	----	----
Cadmium, total	7440-43-9	E420/VA	0.0000050	mg/L		0.0000122	----	----	----	----
Calcium, total	7440-70-2	E420/VA	0.050	mg/L		48.0	----	----	----	----
Cesium, total	7440-46-2	E420/VA	0.000010	mg/L		<0.000010	----	----	----	----
Chromium, total	7440-47-3	E420/VA	0.00050	mg/L		0.00051	----	----	----	----
Cobalt, total	7440-48-4	E420/VA	0.00010	mg/L		<0.00010	----	----	----	----
Copper, total	7440-50-8	E420/VA	0.00050	mg/L		0.00609	----	----	----	----
Iron, total	7439-89-6	E420/VA	0.010	mg/L		0.078	----	----	----	----
Lead, total	7439-92-1	E420/VA	0.000050	mg/L		0.000266	----	----	----	----
Lithium, total	7439-93-2	E420/VA	0.0010	mg/L		0.0021	----	----	----	----
Magnesium, total	7439-95-4	E420/VA	0.0050	mg/L		21.4	----	----	----	----
Manganese, total	7439-96-5	E420/VA	0.00010	mg/L		0.0256	----	----	----	----
Mercury, total	7439-97-6	E508/VA	0.0000050	mg/L		<0.0000050	----	----	----	----
Molybdenum, total	7439-98-7	E420/VA	0.000050	mg/L		0.00168	----	----	----	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID				
					Spruce Crescent DW3 - Raw Water Analysis Pumphouse	----	----	----	----
					Client sampling date / time				
					21-Nov-2024 09:50	----	----	----	----
					KS2404904-001	----	----	----	----
					Result	----	----	----	----
Total Metals									
Nickel, total	7440-02-0	E420/VA	0.00050	mg/L	<0.00050	----	----	----	----
Phosphorus, total	7723-14-0	E420/VA	0.050	mg/L	<0.050	----	----	----	----
Potassium, total	7440-09-7	E420/VA	0.050	mg/L	1.96	----	----	----	----
Rubidium, total	7440-17-7	E420/VA	0.00020	mg/L	0.00078	----	----	----	----
Selenium, total	7782-49-2	E420/VA	0.000050	mg/L	0.000205	----	----	----	----
Silicon, total	7440-21-3	E420/VA	0.10	mg/L	8.43	----	----	----	----
Silver, total	7440-22-4	E420/VA	0.000010	mg/L	<0.000010	----	----	----	----
Sodium, total	7440-23-5	E420/VA	0.050	mg/L	7.93	----	----	----	----
Strontium, total	7440-24-6	E420/VA	0.00020	mg/L	0.308	----	----	----	----
Sulfur, total	7704-34-9	E420/VA	0.50	mg/L	8.25	----	----	----	----
Tellurium, total	13494-80-9	E420/VA	0.00020	mg/L	<0.00020	----	----	----	----
Thallium, total	7440-28-0	E420/VA	0.000010	mg/L	<0.000010	----	----	----	----
Thorium, total	7440-29-1	E420/VA	0.00010	mg/L	<0.00010	----	----	----	----
Tin, total	7440-31-5	E420/VA	0.00010	mg/L	<0.00010	----	----	----	----
Titanium, total	7440-32-6	E420/VA	0.00030	mg/L	0.00152	----	----	----	----
Tungsten, total	7440-33-7	E420/VA	0.00010	mg/L	<0.00010	----	----	----	----
Uranium, total	7440-61-1	E420/VA	0.000010	mg/L	0.00167	----	----	----	----
Vanadium, total	7440-62-2	E420/VA	0.00050	mg/L	0.00085	----	----	----	----
Zinc, total	7440-66-6	E420/VA	0.0030	mg/L	0.0127	----	----	----	----
Zirconium, total	7440-67-7	E420/VA	0.00020	mg/L	<0.00020	----	----	----	----

Please refer to the General Comments section for an explanation of any result qualifiers detected.

ALS Canada Ltd.

right solutions.
right partner.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **KS2404904**	Page	: 1 of 10
Client	: **District of Barriere**	Laboratory	: ALS Environmental - Kamloops
Contact	: Chris Matthews	Account Manager	: Caitlin Fountain
Address	: PO Box 219 Barriere BC Canada V0E 1E0	Address	: 1445 McGill Road, Unit 2B Kamloops, British Columbia Canada V2C 6K7
Telephone	: ----	Telephone	: 250 372 3588
Project	: District of Barriere Water	Date Samples Received	: 21-Nov-2024 13:23
PO	: ----	Issue Date	: 03-Dec-2024 09:16
C-O-C number	: ----		
Sampler	: Graham H		
Site	: ----		
Quote number	: 20DIOB100KS02 Water		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
Spruce Crescent DW3 - Raw Water Analysis - Pumphouse	E298	21-Nov-2024	27-Nov-2024	28 days	6 days	✓	29-Nov-2024	28 days	8 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE										
Spruce Crescent DW3 - Raw Water Analysis - Pumphouse	E235.Br-L	21-Nov-2024	23-Nov-2024	28 days	2 days	✓	23-Nov-2024	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE										
Spruce Crescent DW3 - Raw Water Analysis - Pumphouse	E235.Cl	21-Nov-2024	23-Nov-2024	28 days	2 days	✓	23-Nov-2024	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
Spruce Crescent DW3 - Raw Water Analysis - Pumphouse	E235.F	21-Nov-2024	23-Nov-2024	28 days	2 days	✓	23-Nov-2024	28 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
Spruce Crescent DW3 - Raw Water Analysis - Pumphouse	E235.NO3-L	21-Nov-2024	23-Nov-2024	3 days	2 days	✓	23-Nov-2024	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
Spruce Crescent DW3 - Raw Water Analysis - Pumphouse	E235.NO2-L	21-Nov-2024	23-Nov-2024	3 days	2 days	✓	23-Nov-2024	3 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
Spruce Crescent DW3 - Raw Water Analysis - Pumphouse	E235.SO4	21-Nov-2024	23-Nov-2024	28 days	2 days	✓	23-Nov-2024	28 days	2 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	*Method*	*Sampling Date*	*Extraction / Preparation*				*Analysis*			
			Preparation Date	*Holding Times* Rec	*Holding Times* Actual	*Eval*	*Analysis Date*	*Holding Times* Rec	*Holding Times* Actual	*Eval*
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
Spruce Crescent DW3 - Raw Water Analysis - Pumphouse	E318	21-Nov-2024	27-Nov-2024	28 days	6 days	✓	29-Nov-2024	28 days	8 days	✓
Cyanides : Total Cyanide										
Opaque HDPE - total (sodium hydroxide)										
Spruce Crescent DW3 - Raw Water Analysis - Pumphouse	E333	21-Nov-2024	27-Nov-2024	14 days	6 days	✓	27-Nov-2024	14 days	6 days	✓
Microbiological Tests : Total Coliforms and E. coli (Enzyme Substrate)										
Sterile HDPE (Sodium thiosulphate)										
Spruce Crescent DW3 - Raw Water Analysis - Pumphouse	E010	21-Nov-2024	----	----	----		22-Nov-2024	30 hrs	24 hrs	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid)										
Spruce Crescent DW3 - Raw Water Analysis - Pumphouse	E355-L	21-Nov-2024	27-Nov-2024	28 days	6 days	✓	27-Nov-2024	28 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
Spruce Crescent DW3 - Raw Water Analysis - Pumphouse	E290	21-Nov-2024	23-Nov-2024	14 days	2 days	✓	23-Nov-2024	14 days	2 days	✓
Physical Tests : Apparent UV Absorbance and Transmittance by Spectrometry										
HDPE										
Spruce Crescent DW3 - Raw Water Analysis - Pumphouse	E405	21-Nov-2024	----	----	----		23-Nov-2024	3 days	2 days	✓
Physical Tests : Colour (True) by Spectrometer (5 CU)										
HDPE										
Spruce Crescent DW3 - Raw Water Analysis - Pumphouse	E329	21-Nov-2024	23-Nov-2024	3 days	2 days	✓	24-Nov-2024	3 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE										
Spruce Crescent DW3 - Raw Water Analysis - Pumphouse	E100	21-Nov-2024	23-Nov-2024	28 days	2 days	✓	23-Nov-2024	28 days	2 days	✓
Physical Tests : pH by Meter										
HDPE										
Spruce Crescent DW3 - Raw Water Analysis - Pumphouse	E108	21-Nov-2024	23-Nov-2024	0.25 hrs	44 hrs	× EHTR-FM	23-Nov-2024	0.25 hrs	47 hrs	× EHTR-FM

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	*Method*	*Sampling Date*	*Extraction / Preparation*				*Analysis*			
			Preparation Date	*Holding Times*		*Eval*	*Analysis Date*	*Holding Times*		*Eval*
				Rec	*Actual*			*Rec*	*Actual*	
Physical Tests : TDS by Gravimetry										
HDPE										
Spruce Crescent DW3 - Raw Water Analysis - Pumphouse	E162	21-Nov-2024	----	----	----		27-Nov-2024	7 days	6 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE										
Spruce Crescent DW3 - Raw Water Analysis - Pumphouse	E121	21-Nov-2024	----	----	----		23-Nov-2024	3 days	2 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved)										
Spruce Crescent DW3 - Raw Water Analysis - Pumphouse	E508	21-Nov-2024	26-Nov-2024	28 days	5 days	✓	26-Nov-2024	28 days	5 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved)										
Spruce Crescent DW3 - Raw Water Analysis - Pumphouse	E420	21-Nov-2024	26-Nov-2024	180 days	5 days	✓	28-Nov-2024	180 days	7 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Alkalinity Species by Titration	E290	1780430	1	17	5.8	5.0	✓
Ammonia by Fluorescence	E298	1785233	1	20	5.0	5.0	✓
Apparent UV Absorbance and Transmittance by Spectrometry	E405	1780996	1	4	25.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	1780434	1	17	5.8	5.0	✓
Chloride in Water by IC	E235.Cl	1780433	1	17	5.8	5.0	✓
Colour (True) by Spectrometer (5 CU)	E329	1780438	1	12	8.3	5.0	✓
Conductivity in Water	E100	1780431	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	1780432	1	17	5.8	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1780435	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1780436	1	17	5.8	5.0	✓
pH by Meter	E108	1780429	1	10	10.0	5.0	✓
Sulfate in Water by IC	E235.SO4	1780437	1	17	5.8	5.0	✓
TDS by Gravimetry	E162	1786605	1	20	5.0	5.0	✓
Total Coliforms and E. coli (Enzyme Substrate)	E010	1779273	2	18	11.1	10.0	✓
Total Cyanide	E333	1785403	1	16	6.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1785231	1	14	7.1	5.0	✓
Total Mercury in Water by CVAAS	E508	1783565	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1779678	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	1785232	1	9	11.1	5.0	✓
Turbidity by Nephelometry	E121	1780808	1	20	5.0	5.0	✓
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	1780430	1	17	5.8	5.0	✓
Ammonia by Fluorescence	E298	1785233	1	20	5.0	5.0	✓
Apparent UV Absorbance and Transmittance by Spectrometry	E405	1780996	1	4	25.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	1780434	1	17	5.8	5.0	✓
Chloride in Water by IC	E235.Cl	1780433	1	17	5.8	5.0	✓
Colour (True) by Spectrometer (5 CU)	E329	1780438	1	12	8.3	5.0	✓
Conductivity in Water	E100	1780431	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	1780432	1	17	5.8	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1780435	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1780436	1	17	5.8	5.0	✓
pH by Meter	E108	1780429	1	10	10.0	5.0	✓
Sulfate in Water by IC	E235.SO4	1780437	1	17	5.8	5.0	✓
TDS by Gravimetry	E162	1786605	1	20	5.0	5.0	✓
Total Cyanide	E333	1785403	1	16	6.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1785231	1	14	7.1	5.0	✓

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Control Samples (LCS) - Continued							
Total Mercury in Water by CVAAS	E508	1783565	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1779678	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	1785232	1	9	11.1	5.0	✓
Turbidity by Nephelometry	E121	1780808	1	20	5.0	5.0	✓
Method Blanks (MB)							
Alkalinity Species by Titration	E290	1780430	1	17	5.8	5.0	✓
Ammonia by Fluorescence	E298	1785233	1	20	5.0	5.0	✓
Apparent UV Absorbance and Transmittance by Spectrometry	E405	1780996	1	4	25.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	1780434	1	17	5.8	5.0	✓
Chloride in Water by IC	E235.Cl	1780433	1	17	5.8	5.0	✓
Colour (True) by Spectrometer (5 CU)	E329	1780438	1	12	8.3	5.0	✓
Conductivity in Water	E100	1780431	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	1780432	1	17	5.8	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1780435	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1780436	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	1780437	1	17	5.8	5.0	✓
TDS by Gravimetry	E162	1786605	1	20	5.0	5.0	✓
Total Coliforms and E. coli (Enzyme Substrate)	E010	1779273	1	18	5.5	5.0	✓
Total Cyanide	E333	1785403	1	16	6.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1785231	1	14	7.1	5.0	✓
Total Mercury in Water by CVAAS	E508	1783565	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1779678	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	1785232	1	9	11.1	5.0	✓
Turbidity by Nephelometry	E121	1780808	1	20	5.0	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	1785233	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	1780434	1	17	5.8	5.0	✓
Chloride in Water by IC	E235.Cl	1780433	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	1780432	1	17	5.8	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1780435	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1780436	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	1780437	1	17	5.8	5.0	✓
Total Cyanide	E333	1785403	1	16	6.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1785231	1	14	7.1	5.0	✓
Total Mercury in Water by CVAAS	E508	1783565	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1779678	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	1785232	1	9	11.1	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Coliforms and E. coli (Enzyme Substrate)	E010 ALS Environmental - Vancouver	Water	APHA 9223 (mod)	The enzyme substrate test simultaneously detects Total Coliforms and E. coli in a 100 mL sample after incubation at 35.0 ±0.5°C for either 18 or 24 hours (dependent on reagent used).
Conductivity in Water	E100 ALS Environmental - Vancouver	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 ALS Environmental - Vancouver	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 ALS Environmental - Vancouver	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
TDS by Gravimetry	E162 ALS Environmental - Vancouver	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC	E235.Cl ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Sulfate in Water by IC	E235.SO4 ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Alkalinity Species by Titration	E290 ALS Environmental - Vancouver	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 ALS Environmental - Vancouver	Water	Method Fialab 100, 2018	Ammonia in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021)
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 ALS Environmental - Vancouver	Water	Method Fialab 100, 2018	TKN in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021).
Colour (True) by Spectrometer (5 CU)	E329 ALS Environmental - Vancouver	Water	APHA 2120 C (mod)	Colour (True Colour) is determined by filtering a sample through a 0.45 micron membrane filter followed by analysis of the filtrate using the platinum-cobalt colourimetric method. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment.
Total Cyanide	E333 ALS Environmental - Waterloo	Water	ISO 14403 (mod)	Total or Strong Acid Dissociable (SAD) Cyanide is determined by Continuous Flow Analyzer (CFA) with in-line UV digestion followed by colourmetric analysis. Method Limitation: High levels of thiocyanate (SCN) may cause positive interference (up to 0.5% of SCN concentration).
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L ALS Environmental - Vancouver	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Apparent UV Absorbance and Transmittance by Spectrometry	E405 ALS Environmental - Vancouver	Water	APHA 5910 B (mod)	Apparent UV Absorbance is determined on an unfiltered sample by UV absorbance measurement in a quartz cell at 254 nm. The analysis is carried out without pH adjustment.
Total Metals in Water by CRC ICPMS	E420 ALS Environmental - Vancouver	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Mercury in Water by CVAAS	E508 ALS Environmental - Vancouver	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Hardness (Calculated) from Total Ca/Mg	EC100A ALS Environmental - Vancouver	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.
Ion Balance using Total Metals	EC101A ALS Environmental - Vancouver	Water	APHA 1030E	Cation Sum (using total metals), Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Saturation Index using Laboratory pH (Ca-T)	EC105A ALS Environmental - Vancouver	Water	APHA 2330B	Langelier Index provides an indication of scale formation potential at a given pH and temperature, and is calculated as per APHA 2330B Saturation Index. Positive values indicate oversaturation with respect to CaCO3. Negative values indicate undersaturation of CaCO3. This calculation uses laboratory pH measurements and provides estimates of Langelier Index at temperatures of 4, 15, 20, 25, 66, and 77°C. Ryznar Stability Index is an alternative index used for scale formation and corrosion potential.
Total Organic Nitrogen (Calculation)	EC363 ALS Environmental - Vancouver	Water	APHA 4500-NORG (TKN)/NH3-NITROGEN (NH3)	Total Organic Nitrogen is a calculated parameter. Total Organic Nitrogen = Total Kjeldahl Nitrogen - Ammonia.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 ALS Environmental - Vancouver	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 ALS Environmental - Vancouver	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Preparation for Total Organic Carbon by Combustion	EP355 ALS Environmental - Vancouver	Water		Preparation for Total Organic Carbon by Combustion

QUALITY CONTROL REPORT

Work Order	: **KS2404904**	Page	: 1 of 13
Client	: District of Barriere	Laboratory	: ALS Environmental - Kamloops
Contact	: Chris Matthews	Account Manager	: Caitlin Fountain
Address	: PO Box 219 Barriere BC Canada V0E 1E0	Address	: 1445 McGill Road, Unit 2B Kamloops, British Columbia Canada V2C 6K7
Telephone	: ----	Telephone	: 250 372 3588
Project	: District of Barriere Water	Date Samples Received	: 21-Nov-2024 13:23
PO	: ----	Date Analysis Commenced	: 22-Nov-2024
C-O-C number	: ----	Issue Date	: 03-Dec-2024 09:18
Sampler	: Graham H		
Site	: ----		
Quote number	: 20DIOB100KS02 Water		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Ghazaleh Khanmirzaei	Analyst	Vancouver Metals, Burnaby, British Columbia
Jon Fisher	Production Manager, Environmental	Waterloo Inorganics, Waterloo, Ontario
Kim Jensen	Department Manager - Metals	Vancouver Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Vancouver Inorganics, Burnaby, British Columbia
Monica Ko	Lab Assistant	Vancouver Microbiology, Burnaby, British Columbia

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 1780429)											
FJ2403552-003	Anonymous	pH	----	E108	0.10	pH units	8.17	8.18	0.122%	4%	----
Physical Tests (QC Lot: 1780430)											
FJ2403552-003	Anonymous	Alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	104	104	0.385%	200%	----
		Alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0.00%	200%	----
		Alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0.00%	200%	----
		Alkalinity, phenolphthalein (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		Alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	104	104	0.385%	20%	----
Physical Tests (QC Lot: 1780431)											
FJ2403552-003	Anonymous	Conductivity	----	E100	2.0	µS/cm	1420	1410	0.423%	10%	----
Physical Tests (QC Lot: 1780438)											
KS2404902-001	Anonymous	Colour, true	----	E329	5.0	CU	<5.0	<5.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 1780808)											
FJ2403543-001	Anonymous	Turbidity	----	E121	0.10	NTU	0.30	0.31	0.006	Diff <2x LOR	----
Physical Tests (QC Lot: 1780996)											
KS2404902-001	Anonymous	Absorbance, UV (@ 254nm), unfiltered	----	E405	0.0050	AU/cm	0.0110	0.0110	0	Diff <2x LOR	----
Physical Tests (QC Lot: 1786605)											
KS2404897-001	Anonymous	Solids, total dissolved [TDS]	----	E162	20	mg/L	415	420	1.20%	20%	----
Anions and Nutrients (QC Lot: 1780432)											
FJ2403552-001	Anonymous	Fluoride	16984-48-8	E235.F	0.020	mg/L	0.192	0.189	0.002	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1780433)											
FJ2403552-001	Anonymous	Chloride	16887-00-6	E235.Cl	0.50	mg/L	45.8	45.8	0.00543%	20%	----
Anions and Nutrients (QC Lot: 1780434)											
FJ2403552-001	Anonymous	Bromide	24959-67-9	E235.Br-L	0.050	mg/L	0.766	0.771	0.697%	20%	----
Anions and Nutrients (QC Lot: 1780435)											
FJ2403552-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.225	0.224	0.390%	20%	----
Anions and Nutrients (QC Lot: 1780436)											
FJ2403552-001	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0126	0.0124	1.76%	20%	----
Anions and Nutrients (QC Lot: 1780437)											
FJ2403552-001	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	69.0	69.1	0.121%	20%	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Anions and Nutrients (QC Lot: 1785231)											
KS2404902-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.066	0.051	0.015	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1785233)											
KS2404902-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0134	0.0133	0.00010	Diff <2x LOR	----
Cyanides (QC Lot: 1785403)											
VA24D1834-003	Anonymous	Cyanide, strong acid dissociable (Total)	----	E333	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 1785232)											
KS2404902-001	Anonymous	Carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.66	0.64	0.02	Diff <2x LOR	----
Microbiological Tests (QC Lot: 1779273)											
KS2404902-001	Anonymous	Coliforms, Escherichia coli [E. coli]	----	E010	1	MPN/100mL	<1	<1	0	Diff <2x LOR	----
		Coliforms, total	----	E010	1	MPN/100mL	<1	<1	0	Diff <2x LOR	----
VA24D1700-076	Anonymous	Coliforms, Escherichia coli [E. coli]	----	E010	10	MPN/100mL	52	41	23.6%	65%	----
		Coliforms, total	----	E010	10	MPN/100mL	512	488	4.80%	65%	----
Total Metals (QC Lot: 1779678)											
VA24D1493-001	Anonymous	Aluminum, total	7429-90-5	E420	0.0060	mg/L	0.0113	0.0122	0.0008	Diff <2x LOR	----
		Antimony, total	7440-36-0	E420	0.00020	mg/L	0.00102	0.00100	0.00002	Diff <2x LOR	----
		Arsenic, total	7440-38-2	E420	0.00020	mg/L	0.00109	0.00105	0.00004	Diff <2x LOR	----
		Barium, total	7440-39-3	E420	0.00020	mg/L	0.0478	0.0470	1.70%	20%	----
		Beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		Bismuth, total	7440-69-9	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		Boron, total	7440-42-8	E420	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
		Cadmium, total	7440-43-9	E420	0.0000100	mg/L	0.0000413	0.0000457	0.0000043	Diff <2x LOR	----
		Calcium, total	7440-70-2	E420	0.100	mg/L	395	397	0.505%	20%	----
		Cesium, total	7440-46-2	E420	0.000020	mg/L	0.000097	0.000098	0.0000003	Diff <2x LOR	----
		Chromium, total	7440-47-3	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		Cobalt, total	7440-48-4	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Copper, total	7440-50-8	E420	0.00100	mg/L	0.0125	0.0125	0.00319%	20%	----
		Iron, total	7439-89-6	E420	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
		Lead, total	7439-92-1	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		Lithium, total	7439-93-2	E420	0.0020	mg/L	0.0116	0.0112	0.0004	Diff <2x LOR	----
		Magnesium, total	7439-95-4	E420	0.100	mg/L	115	114	0.768%	20%	----
		Manganese, total	7439-96-5	E420	0.00020	mg/L	0.00159	0.00172	0.00013	Diff <2x LOR	----
		Molybdenum, total	7439-98-7	E420	0.000100	mg/L	0.0221	0.0222	0.400%	20%	----
		Nickel, total	7440-02-0	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Total Metals (QC Lot: 1779678) - continued											
VA24D1493-001	Anonymous	Phosphorus, total	7723-14-0	E420	0.300	mg/L	<0.300	<0.300	0	Diff <2x LOR	----
		Potassium, total	7440-09-7	E420	0.100	mg/L	6.00	6.02	0.485%	20%	----
		Rubidium, total	7440-17-7	E420	0.00040	mg/L	0.00355	0.00333	0.00022	Diff <2x LOR	----
		Selenium, total	7782-49-2	E420	0.000100	mg/L	0.0229	0.0231	0.697%	20%	----
		Silicon, total	7440-21-3	E420	0.20	mg/L	10.4	10.0	4.36%	20%	----
		Silver, total	7440-22-4	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		Sodium, total	7440-23-5	E420	0.100	mg/L	25.8	26.4	2.02%	20%	----
		Strontium, total	7440-24-6	E420	0.00040	mg/L	1.95	2.01	2.94%	20%	----
		Sulfur, total	7704-34-9	E420	1.00	mg/L	405	386	4.86%	20%	----
		Tellurium, total	13494-80-9	E420	0.00040	mg/L	<0.00040	<0.00040	0	Diff <2x LOR	----
		Thallium, total	7440-28-0	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		Thorium, total	7440-29-1	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Tin, total	7440-31-5	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Titanium, total	7440-32-6	E420	0.0100	mg/L	<0.0100	<0.0100	0	Diff <2x LOR	----
		Tungsten, total	7440-33-7	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Uranium, total	7440-61-1	E420	0.000020	mg/L	0.0150	0.0160	6.29%	20%	----
		Vanadium, total	7440-62-2	E420	0.00100	mg/L	0.00130	0.00128	0.00002	Diff <2x LOR	----
		Zinc, total	7440-66-6	E420	0.0060	mg/L	<0.0060	<0.0060	0	Diff <2x LOR	----
		Zirconium, total	7440-67-7	E420	0.00040	mg/L	<0.00040	<0.00040	0	Diff <2x LOR	----
Total Metals (QC Lot: 1783565)											
FJ2403552-001	Anonymous	Mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 1780430)						
Alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
Alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
Alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
Alkalinity, phenolphthalein (as CaCO3)	----	E290	1	mg/L	<1.0	----
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 1780431)						
Conductivity	----	E100	1	µS/cm	1.2	----
Physical Tests (QCLot: 1780438)						
Colour, true	----	E329	5	CU	<5.0	----
Physical Tests (QCLot: 1780808)						
Turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 1780996)						
Absorbance, UV (@ 254nm), unfiltered	----	E405	0.005	AU/cm	<0.0050	----
Physical Tests (QCLot: 1786605)						
Solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Anions and Nutrients (QCLot: 1780432)						
Fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 1780433)						
Chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 1780434)						
Bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 1780435)						
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 1780436)						
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 1780437)						
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 1785231)						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 1785233)						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Cyanides (QCLot: 1785403)						

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Cyanides (QCLot: 1785403) - continued						
Cyanide, strong acid dissociable (Total)	----	E333	0.002	mg/L	<0.0020	----
Organic / Inorganic Carbon (QCLot: 1785232)						
Carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Microbiological Tests (QCLot: 1779273)						
Coliforms, Escherichia coli [E. coli]	----	E010	1	MPN/100mL	<1	----
Coliforms, total	----	E010	1	MPN/100mL	<1	----
Total Metals (QCLot: 1779678)						
Aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
Barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
Boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
Calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
Cesium, total	7440-46-2	E420	0.00001	mg/L	<0.000010	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	<0.00050	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
Copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
Iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
Lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
Lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
Phosphorus, total	7723-14-0	E420	0.05	mg/L	<0.050	----
Potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
Rubidium, total	7440-17-7	E420	0.0002	mg/L	<0.00020	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
Silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
Silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
Sodium, total	7440-23-5	E420	0.05	mg/L	<0.050	----
Strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 1779678) - continued						
Sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
Tellurium, total	13494-80-9	E420	0.0002	mg/L	<0.00020	----
Thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
Thorium, total	7440-29-1	E420	0.0001	mg/L	<0.00010	----
Tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	<0.00010	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
Zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	<0.00020	----
Total Metals (QCLot: 1783565)						
Mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 1780429)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Physical Tests (QCLot: 1780430)									
Alkalinity, phenolphthalein (as CaCO3)	----	E290	1	mg/L	229 mg/L	102	75.0	125	----
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	103	85.0	115	----
Physical Tests (QCLot: 1780431)									
Conductivity	----	E100	1	µS/cm	147 µS/cm	93.6	90.0	110	----
Physical Tests (QCLot: 1780438)									
Colour, true	----	E329	5	CU	100 CU	104	85.0	115	----
Physical Tests (QCLot: 1780808)									
Turbidity	----	E121	0.1	NTU	200 NTU	100	85.0	115	----
Physical Tests (QCLot: 1780996)									
Absorbance, UV (@ 254nm), unfiltered	----	E405	0.005	AU/cm	0.693 AU/cm	93.9	85.0	115	----
Physical Tests (QCLot: 1786605)									
Solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	108	85.0	115	----
Anions and Nutrients (QCLot: 1780432)									
Fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	97.7	90.0	110	----
Anions and Nutrients (QCLot: 1780433)									
Chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	99.1	90.0	110	----
Anions and Nutrients (QCLot: 1780434)									
Bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	106	85.0	115	----
Anions and Nutrients (QCLot: 1780435)									
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	98.8	90.0	110	----
Anions and Nutrients (QCLot: 1780436)									
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	98.0	90.0	110	----
Anions and Nutrients (QCLot: 1780437)									
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	100	90.0	110	----
Anions and Nutrients (QCLot: 1785231)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	116	75.0	125	----
Anions and Nutrients (QCLot: 1785233)									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	98.5	85.0	115	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike: Target Concentration	Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High	Qualifier
Cyanides (QCLot: 1785403)									
Cyanide, strong acid dissociable (Total)	----	E333	0.002	mg/L	0.25 mg/L	90.3	80.0	120	----
Organic / Inorganic Carbon (QCLot: 1785232)									
Carbon, total organic [TOC]	----	E355-L	0.5	mg/L	8.57 mg/L	104	80.0	120	----
Total Metals (QCLot: 1779678)									
Aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	97.5	80.0	120	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	104	80.0	120	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	107	80.0	120	----
Barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	103	80.0	120	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	104	80.0	120	----
Boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	102	80.0	120	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	107	80.0	120	----
Calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	102	80.0	120	----
Cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	106	80.0	120	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	104	80.0	120	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
Copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	102	80.0	120	----
Iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	97.2	80.0	120	----
Lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	106	80.0	120	----
Lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	98.9	80.0	120	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	103	80.0	120	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	102	80.0	120	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
Phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	94.9	80.0	120	----
Potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	101	80.0	120	----
Rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	99.4	80.0	120	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	100	80.0	120	----
Silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	106	80.0	120	----
Silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	96.9	80.0	120	----
Sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	100	80.0	120	----
Strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	109	80.0	120	----
Sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	103	80.0	120	----
Tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	106	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 1779678) - continued									
Thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	105	80.0	120	----
Thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	106	80.0	120	----
Tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	103	80.0	120	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	102	80.0	120	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	104	80.0	120	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	111	80.0	120	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	104	80.0	120	----
Zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	104	80.0	120	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	101	80.0	120	----
Total Metals (QCLot: 1783565)									
Mercury, total	7439-97-6	E508	0.000005	mg/L	0 mg/L	86.9	80.0	120	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 1780432)										
FJ2403552-002	Anonymous	Fluoride	16984-48-8	E235.F	1.01 mg/L	1 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 1780433)										
FJ2403552-002	Anonymous	Chloride	16887-00-6	E235.Cl	101 mg/L	100 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 1780434)										
FJ2403552-002	Anonymous	Bromide	24959-67-9	E235.Br-L	ND mg/L	----	ND	75.0	125	----
Anions and Nutrients (QCLot: 1780435)										
FJ2403552-002	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	2.54 mg/L	2.5 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 1780436)										
FJ2403552-002	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.499 mg/L	0.5 mg/L	99.8	75.0	125	----
Anions and Nutrients (QCLot: 1780437)										
FJ2403552-002	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	99.2 mg/L	100 mg/L	99.2	75.0	125	----
Anions and Nutrients (QCLot: 1785231)										
KS2404903-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.70 mg/L	2.5 mg/L	108	70.0	130	----
Anions and Nutrients (QCLot: 1785233)										
KS2404903-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.124 mg/L	0.1 mg/L	124	75.0	125	----
Cyanides (QCLot: 1785403)										
VA24D1834-003	Anonymous	Cyanide, strong acid dissociable (Total)	----	E333	0.230 mg/L	0.25 mg/L	92.1	75.0	125	----
Organic / Inorganic Carbon (QCLot: 1785232)										
KS2404903-001	Anonymous	Carbon, total organic [TOC]	----	E355-L	5.29 mg/L	5 mg/L	106	70.0	130	----
Total Metals (QCLot: 1779678)										
VA24D1542-001	Anonymous	Aluminum, total	7429-90-5	E420	ND mg/L	----	ND	70.0	130	----
		Antimony, total	7440-36-0	E420	ND mg/L	----	ND	70.0	130	----
		Arsenic, total	7440-38-2	E420	ND mg/L	----	ND	70.0	130	----
		Barium, total	7440-39-3	E420	ND mg/L	----	ND	70.0	130	----
		Beryllium, total	7440-41-7	E420	0.389 mg/L	0.4 mg/L	97.3	70.0	130	----
		Bismuth, total	7440-69-9	E420	0.0971 mg/L	0.1 mg/L	97.1	70.0	130	----
		Boron, total	7440-42-8	E420	ND mg/L	----	ND	70.0	130	----
		Cadmium, total	7440-43-9	E420	0.0403 mg/L	0.04 mg/L	101	70.0	130	----
		Calcium, total	7440-70-2	E420	ND mg/L	----	ND	70.0	130	----
		Cesium, total	7440-46-2	E420	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		Chromium, total	7440-47-3	E420	ND mg/L	----	ND	70.0	130	----
		Cobalt, total	7440-48-4	E420	ND mg/L	----	ND	70.0	130	----
		Copper, total	7440-50-8	E420	ND mg/L	----	ND	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Total Metals (QCLot: 1779678) - continued										
VA24D1542-001	Anonymous	Iron, total	7439-89-6	E420	ND mg/L	----	ND	70.0	130	----
		Lead, total	7439-92-1	E420	0.190 mg/L	0.2 mg/L	95.2	70.0	130	----
		Lithium, total	7439-93-2	E420	0.892 mg/L	1 mg/L	89.2	70.0	130	----
		Magnesium, total	7439-95-4	E420	ND mg/L	----	ND	70.0	130	----
		Manganese, total	7439-96-5	E420	ND mg/L	----	ND	70.0	130	----
		Molybdenum, total	7439-98-7	E420	ND mg/L	----	ND	70.0	130	----
		Nickel, total	7440-02-0	E420	ND mg/L	----	ND	70.0	130	----
		Phosphorus, total	7723-14-0	E420	90.9 mg/L	100 mg/L	90.9	70.0	130	----
		Potassium, total	7440-09-7	E420	ND mg/L	----	ND	70.0	130	----
		Rubidium, total	7440-17-7	E420	ND mg/L	----	ND	70.0	130	----
		Selenium, total	7782-49-2	E420	ND mg/L	----	ND	70.0	130	----
		Silicon, total	7440-21-3	E420	ND mg/L	----	ND	70.0	130	----
		Silver, total	7440-22-4	E420	0.0382 mg/L	0.04 mg/L	95.4	70.0	130	----
		Sodium, total	7440-23-5	E420	ND mg/L	----	ND	70.0	130	----
		Strontium, total	7440-24-6	E420	ND mg/L	----	ND	70.0	130	----
		Sulfur, total	7704-34-9	E420	ND mg/L	----	ND	70.0	130	----
		Tellurium, total	13494-80-9	E420	0.429 mg/L	0.4 mg/L	107	70.0	130	----
		Thallium, total	7440-28-0	E420	0.0369 mg/L	0.04 mg/L	92.3	70.0	130	----
		Thorium, total	7440-29-1	E420	0.188 mg/L	0.2 mg/L	94.3	70.0	130	----
		Tin, total	7440-31-5	E420	0.197 mg/L	0.2 mg/L	98.7	70.0	130	----
		Titanium, total	7440-32-6	E420	ND mg/L	----	ND	70.0	130	----
		Tungsten, total	7440-33-7	E420	0.196 mg/L	0.2 mg/L	98.0	70.0	130	----
		Uranium, total	7440-61-1	E420	ND mg/L	----	ND	70.0	130	----
		Vanadium, total	7440-62-2	E420	ND mg/L	----	ND	70.0	130	----
		Zinc, total	7440-66-6	E420	3.78 mg/L	4 mg/L	94.4	70.0	130	----
		Zirconium, total	7440-67-7	E420	0.408 mg/L	0.4 mg/L	102	70.0	130	----
Total Metals (QCLot: 1783565)										
FJ2403552-002	Anonymous	Mercury, total	7439-97-6	E508	0.0000956 mg/L	0 mg/L	95.6	70.0	130	----

Chain of Custody (COC) / Analytical Request Form

ALS Environmental

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here (lab use only)

COC Number: 15 -

Page of

Report To	Contact and company name below will appear on the final report
Company:	DISTRICT OF BARRIERE
Contact:	Chris Matthews
Phone:	250-320-1505 250-672-9751 Fax 250-672-9708
	Company address below will appear on the final report
Street:	P.O. Box 219
City/Province:	BARRIERE
Postal Code:	BC
Invoice To	Same as Report To ☑ YES ☐ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	
Contact:	

Report Format / Distribution

Select Report Format: ☑ PDF ☐ EXCEL ☐ EDD (DIGITAL)

Quality Control (QC) Report with Report ☐ YES ☐ NO

☐ Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax

Email 2 cmatthews@barriere.ca

Email 3 pamos@barriere.ca

Invoice Distribution

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax

Email 2

Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4] ☐ | 3 day [P3] ☐ | 2 day [P2] ☐

EMERGENCY: 1 Business day [E1] ☐ | Same Day, Weekend or Statutory holiday [E0] ☐

Date and Time Required for all E&P TATs:

For tests that can not be performed according to the service level selected, you will be contacted.

Project Information

ALS Account # / Quote #:

Job #:

PO / AFE:

LSD:

Oil and Gas Required Fields (client use)

AFE/Cost Center: PO#

Major/Minor Code: Routing Code:

Requisitioner:

Location:

ALS Lab Work Order # (lab use only) 4904

ALS Contact: **Sampler:** GRAHAM

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Number of Containers
	Spruce Crescent DW3 - Raw Water Analysis	21 11 24	950	Grab	6
	NTU: 0.35				
	CL2 Free: 0.00				
	CL2 Total: 0.00				
	PUMP HOUSE				
	Please reference WO# KS2304717 for required analysis				

Environmental Division
Kamloops
Work Order Reference
KS2404904

Telephone : +1 250 372 3588

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System?

☐ YES ☐ NO

Are samples for human drinking water use?

☐ YES ☐ NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

Ice Packs ☑ Ice Cubes ☐ Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
10					

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
				NOV 21 2024	1323			

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

OCTOBER 2015 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

drop off

ALS Canada Ltd.

right solutions.
right partner.

CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: **KS2404905**	Page	: 1 of 6
Client	: **District of Barriere**	Laboratory	: ALS Environmental - Kamloops
Contact	: Chris Matthews	Account Manager	: Caitlin Fountain
Address	: PO Box 219 Barriere BC Canada V0E 1E0	Address	: 1445 McGill Road, Unit 2B Kamloops, British Columbia Canada V2C 6K7
Telephone	: ----	Telephone	: 250 372 3588
Project	: District of Barriere Water	Date Samples Received	: 21-Nov-2024 13:23
PO	: ----	Date Analysis Commenced	: 22-Nov-2024
C-O-C number	: ----	Issue Date	: 03-Dec-2024 09:18
Sampler	: Graham H		
Site	: ----		
Quote number	: 20DIOB100KS02 Water		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Guideline Comparison

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Ghazaleh Khanmirzaei	Analyst	Metals, Burnaby, British Columbia
Jon Fisher	Production Manager, Environmental	Inorganics, Waterloo, Ontario
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Monica Ko	Lab Assistant	Microbiology, Burnaby, British Columbia

No Breaches Found

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.
Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guidelines are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.

Key : LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	no units
%	percent
% T/cm	% transmittance per centimetre
µS/cm	microsiemens per centimetre
AU/cm	absorbance units per centimetre
CU	colour units (1 cu = 1 mg/l pt)
meq/L	milliequivalents per litre
mg/L	milligrams per litre
MPN/100mL	most probable number per hundred millilitres
NTU	nephelometric turbidity units
pH units	pH units

>: greater than.
<: less than.
Red shading is applied where the result or the LOR is greater than the Guideline Upper Limit (or lower than the Guideline Lower Limit, if applicable).
For drinking water samples, Red shading is applied where the result for E.coli, fecal or total coliforms is greater than or equal to the Guideline Upper Limit.

Analytical Results Evaluation

Matrix: **Water**

Analyte	CAS Number	Method/Lab	Unit	Client sample ID	----	----	----	----	----	----
				Bradford Park PW1 - Raw Water Analysis Pumphouse						
				Sampling date/time: 21-Nov-2024 09:35	----	----	----	----	----	----
				Sub-Matrix: Water	----	----	----	----	----	----
				KS2404905-001	--------	--------	--------	--------	--------	--------
Physical Tests										
Absorbance, UV (@ 254nm), unfiltered	----	E405/VA	AU/cm	0.0070	----	----	----	----	----	----
Alkalinity, bicarbonate (as CaCO3)	----	E290/VA	mg/L	226	----	----	----	----	----	----
Alkalinity, carbonate (as CaCO3)	----	E290/VA	mg/L	<1.0	----	----	----	----	----	----
Alkalinity, hydroxide (as CaCO3)	----	E290/VA	mg/L	<1.0	----	----	----	----	----	----
Alkalinity, phenolphthalein (as CaCO3)	----	E290/VA	mg/L	<1.0	----	----	----	----	----	----
Alkalinity, total (as CaCO3)	----	E290/VA	mg/L	226	----	----	----	----	----	----
Colour, true	----	E329/VA	CU	<5.0	----	----	----	----	----	----
Conductivity	----	E100/VA	µS/cm	440	----	----	----	----	----	----
Hardness (as CaCO3), from total Ca/Mg	----	EC100A/VA	mg/L	225	----	----	----	----	----	----
Langelier index (@ 15°C)	----	EC105A/VA	-	0.775	----	----	----	----	----	----
Langelier index (@ 20°C)	----	EC105A/VA	-	0.848	----	----	----	----	----	----
Langelier index (@ 25°C)	----	EC105A/VA	-	0.919	----	----	----	----	----	----
Langelier index (@ 4°C)	----	EC105A/VA	-	0.602	----	----	----	----	----	----
Langelier index (@ 60°C)	----	EC105A/VA	-	1.36	----	----	----	----	----	----
Langelier index (@ 77°C)	----	EC105A/VA	-	1.56	----	----	----	----	----	----
pH	----	E108/VA	pH units	8.23	----	----	----	----	----	----
Solids, total dissolved [TDS]	----	E162/VA	mg/L	306	----	----	----	----	----	----
Turbidity	----	E121/VA	NTU	0.32	----	----	----	----	----	----
Transmittance, UV (@ 254nm), unfiltered	----	E405/VA	% T/cm	98.4	----	----	----	----	----	----
Anions and Nutrients										
Ammonia, total (as N)	7664-41-7	E298/VA	mg/L	0.0314	----	----	----	----	----	----
Bromide	24959-67-9	E235.Br-L/VA	mg/L	<0.050	----	----	----	----	----	----
Chloride	16887-00-6	E235.Cl/VA	mg/L	0.65	----	----	----	----	----	----
Fluoride	16984-48-8	E235.F/VA	mg/L	0.177	----	----	----	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318/VA	mg/L	<0.050	----	----	----	----	----	----
Nitrate (as N)	14797-55-8	E235.NO3-L/VA	mg/L	<0.0050	----	----	----	----	----	----

Analytical Results Evaluation

Matrix: **Water**

Analyte	CAS Number	Method/Lab	Unit	Client sample ID	----	----	----	----	----	----
				Bradford Park PW1 - Raw Water Analysis Pumphouse	----	----	----	----	----	----
				Sampling date/time: 21-Nov-2024 09:35	----	----	----	----	----	----
				Sub-Matrix: Water	----	----	----	----	----	----
				KS2404905-001	--------	--------	--------	--------	--------	--------
Anions and Nutrients										
Nitrite (as N)	14797-65-0	E235.NO2-L/VA	mg/L	<0.0010	----	----	----	----	----	----
Nitrogen, total organic	----	EC363/VA	mg/L	<0.050	----	----	----	----	----	----
Sulfate (as SO4)	14808-79-8	E235.SO4/VA	mg/L	28.2	----	----	----	----	----	----
Cyanides										
Cyanide, strong acid dissociable (Total)	----	E333/WT	mg/L	<0.0050	----	----	----	----	----	----
Organic / Inorganic Carbon										
Carbon, total organic [TOC]	----	E355-L/VA	mg/L	<0.50	----	----	----	----	----	----
Microbiological Tests										
Coliforms, total	----	E010/VA	MPN/100 mL	<1	----	----	----	----	----	----
Coliforms, Escherichia coli [E. coli]	----	E010/VA	MPN/10 0mL	<1	----	----	----	----	----	----
Ion Balance										
Anion sum	----	EC101A/VA	meq/L	5.13	----	----	----	----	----	----
Cation sum (total)	----	EC101A/VA	meq/L	5.12	----	----	----	----	----	----
Ion balance (APHA)	----	EC101A/VA	%	-0.098	----	----	----	----	----	----
Total Metals										
Aluminum, total	7429-90-5	E420/VA	mg/L	<0.0030	----	----	----	----	----	----
Antimony, total	7440-36-0	E420/VA	mg/L	<0.00010	----	----	----	----	----	----
Arsenic, total	7440-38-2	E420/VA	mg/L	0.00629	----	----	----	----	----	----
Barium, total	7440-39-3	E420/VA	mg/L	0.0376	----	----	----	----	----	----
Beryllium, total	7440-41-7	E420/VA	mg/L	<0.000100	----	----	----	----	----	----
Bismuth, total	7440-69-9	E420/VA	mg/L	<0.000050	----	----	----	----	----	----
Boron, total	7440-42-8	E420/VA	mg/L	0.013	----	----	----	----	----	----
Cadmium, total	7440-43-9	E420/VA	mg/L	0.0000173	----	----	----	----	----	----
Calcium, total	7440-70-2	E420/VA	mg/L	49.5	----	----	----	----	----	----

Analytical Results Evaluation

Matrix: **Water**

Analyte	CAS Number	Method/Lab	Unit	Client sample ID	Bradford Park PW1 - Raw Water Analysis Pumphouse	----	----	----	----	----	----
				Sampling date/time	21-Nov-2024 09:35	----	----	----	----	----	----
				Sub-Matrix	Water	----	----	----	----	----	----
				KS2404905-001	--------	--------	--------	--------	--------	--------	--------
Total Metals											
Cesium, total	7440-46-2	E420/VA	mg/L		0.000014	----	----	----	----	----	----
Chromium, total	7440-47-3	E420/VA	mg/L		<0.00050	----	----	----	----	----	----
Cobalt, total	7440-48-4	E420/VA	mg/L		<0.00010	----	----	----	----	----	----
Copper, total	7440-50-8	E420/VA	mg/L		0.00174	----	----	----	----	----	----
Iron, total	7439-89-6	E420/VA	mg/L		0.069	----	----	----	----	----	----
Lead, total	7439-92-1	E420/VA	mg/L		<0.000050	----	----	----	----	----	----
Lithium, total	7439-93-2	E420/VA	mg/L		0.0040	----	----	----	----	----	----
Magnesium, total	7439-95-4	E420/VA	mg/L		24.6	----	----	----	----	----	----
Manganese, total	7439-96-5	E420/VA	mg/L		0.109	----	----	----	----	----	----
Mercury, total	7439-97-6	E508/VA	mg/L		<0.0000050	----	----	----	----	----	----
Molybdenum, total	7439-98-7	E420/VA	mg/L		0.00331	----	----	----	----	----	----
Nickel, total	7440-02-0	E420/VA	mg/L		<0.00050	----	----	----	----	----	----
Phosphorus, total	7723-14-0	E420/VA	mg/L		0.051	----	----	----	----	----	----
Potassium, total	7440-09-7	E420/VA	mg/L		3.25	----	----	----	----	----	----
Rubidium, total	7440-17-7	E420/VA	mg/L		0.00384	----	----	----	----	----	----
Selenium, total	7782-49-2	E420/VA	mg/L		<0.000050	----	----	----	----	----	----
Silicon, total	7440-21-3	E420/VA	mg/L		15.7	----	----	----	----	----	----
Silver, total	7440-22-4	E420/VA	mg/L		<0.000010	----	----	----	----	----	----
Sodium, total	7440-23-5	E420/VA	mg/L		12.4	----	----	----	----	----	----
Strontium, total	7440-24-6	E420/VA	mg/L		0.455	----	----	----	----	----	----
Sulfur, total	7704-34-9	E420/VA	mg/L		10.4	----	----	----	----	----	----
Tellurium, total	13494-80-9	E420/VA	mg/L		<0.00020	----	----	----	----	----	----
Thallium, total	7440-28-0	E420/VA	mg/L		<0.000010	----	----	----	----	----	----
Thorium, total	7440-29-1	E420/VA	mg/L		<0.00010	----	----	----	----	----	----
Tin, total	7440-31-5	E420/VA	mg/L		<0.00010	----	----	----	----	----	----
Titanium, total	7440-32-6	E420/VA	mg/L		<0.00030	----	----	----	----	----	----
Tungsten, total	7440-33-7	E420/VA	mg/L		0.00064	----	----	----	----	----	----

Analytical Results Evaluation

Matrix: **Water**

Analyte	CAS Number	Method/Lab	Unit	Client sample ID	Bradford Park PW1 - Raw Water Analysis Pumphouse	----	----	----	----	----
				Sampling date/time	21-Nov-2024 09:35	----	----	----	----	----	----
				Sub-Matrix	Water	----	----	----	----	----	----
					KS2404905-001	--------	--------	--------	--------	--------	--------
Total Metals											
Uranium, total	7440-61-1	E420/VA	mg/L		0.000178	----	----	----	----	----	----
Vanadium, total	7440-62-2	E420/VA	mg/L		0.00114	----	----	----	----	----	----
Zinc, total	7440-66-6	E420/VA	mg/L		0.0048	----	----	----	----	----	----
Zirconium, total	7440-67-7	E420/VA	mg/L		<0.00020	----	----	----	----	----	----

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

Key:

ALS Canada Ltd.

right solutions.
right partner.

CERTIFICATE OF ANALYSIS

Work Order	:	**KS2404905**		
Client	:	**District of Barriere**	Laboratory	: ALS Environmental - Vancouver
Contact	:	Chris Matthews	Account Manager	: Caitlin Fountain
Address	:	PO Box 219 Barriere British Columbia Canada V0E 1E0	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	:	----	Telephone	: 250 372 3588
Project	:	District of Barriere Water	Date Samples Received	: 21-Nov-2024 13:23
PO	:	----	Date Analysis Commenced	: 22-Nov-2024
C-O-C number	:	----	Issue Date	: 03-Dec-2024 09:18
Sampler	:	Graham H		
Site	:	----		
Quote number	:	20DIOB100KS02 Water		
No. of samples received	:	1		
No. of samples analysed	:	1		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Ghazaleh Khanmirzaei	Analyst	Metals, Burnaby, British Columbia
Jon Fisher	Production Manager, Environmental	Inorganics, Waterloo, Ontario
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Monica Ko	Lab Assistant	Microbiology, Burnaby, British Columbia

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key: CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
LOR: Limit of Reporting (detection limit).

Unit	*Description*
mg/L	milligrams per litre
pH units	pH units
µS/cm	microsiemens per centimetre
NTU	nephelometric turbidity units
CU	colour units (1 cu = 1 mg/l pt)
AU/cm	absorbance units per centimetre
% T/cm	% transmittance per centimetre
-	no units
MPN/100mL	most probable number per hundred millilitres
%	percent
meq/L	milliequivalents per litre

<: less than.
>: greater than.
Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID: Bradford Park PW1 - Raw Water Analysis Pumphouse	----	----	----	----
					Client sampling date / time: 21-Nov-2024 09:35	----	----	----	----
					KS2404905-001	----	----	----	----
					Result	----	----	----	----
Physical Tests									
Absorbance, UV (@ 254nm), unfiltered	----	E405/VA	0.0050	AU/cm	0.0070	----	----	----	----
Alkalinity, bicarbonate (as CaCO3)	----	E290/VA	1.0	mg/L	226	----	----	----	----
Alkalinity, carbonate (as CaCO3)	----	E290/VA	1.0	mg/L	<1.0	----	----	----	----
Alkalinity, hydroxide (as CaCO3)	----	E290/VA	1.0	mg/L	<1.0	----	----	----	----
Alkalinity, phenolphthalein (as CaCO3)	----	E290/VA	1.0	mg/L	<1.0	----	----	----	----
Alkalinity, total (as CaCO3)	----	E290/VA	1.0	mg/L	226	----	----	----	----
Colour, true	----	E329/VA	5.0	CU	<5.0	----	----	----	----
Conductivity	----	E100/VA	2.0	µS/cm	440	----	----	----	----
Hardness (as CaCO3), from total Ca/Mg	----	EC100A/VA	0.60	mg/L	225	----	----	----	----
Langelier index (@ 15°C)	----	EC105A/VA	0.010	-	0.775	----	----	----	----
Langelier index (@ 20°C)	----	EC105A/VA	0.010	-	0.848	----	----	----	----
Langelier index (@ 25°C)	----	EC105A/VA	0.010	-	0.919	----	----	----	----
Langelier index (@ 4°C)	----	EC105A/VA	0.010	-	0.602	----	----	----	----
Langelier index (@ 60°C)	----	EC105A/VA	0.010	-	1.36	----	----	----	----
Langelier index (@ 77°C)	----	EC105A/VA	0.010	-	1.56	----	----	----	----
pH	----	E108/VA	0.10	pH units	8.23	----	----	----	----
Solids, total dissolved [TDS]	----	E162/VA	10	mg/L	306	----	----	----	----
Turbidity	----	E121/VA	0.10	NTU	0.32	----	----	----	----
Transmittance, UV (@ 254nm), unfiltered	----	E405/VA	1.0	% T/cm	98.4	----	----	----	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

					Client sample ID	Bradford Park PW1 - Raw Water Analysis Pumphouse	----	----	----	----
					Client sampling date / time	21-Nov-2024 09:35	----	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit		KS2404905-001	----	----	----	----
						Result	----	----	----	----
Anions and Nutrients										
Ammonia, total (as N)	7664-41-7	E298/VA	0.0050	mg/L		0.0314	----	----	----	----
Bromide	24959-67-9	E235.Br-L/VA	0.050	mg/L		<0.050	----	----	----	----
Chloride	16887-00-6	E235.Cl/VA	0.50	mg/L		0.65	----	----	----	----
Fluoride	16984-48-8	E235.F/VA	0.020	mg/L		0.177	----	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318/VA	0.050	mg/L		<0.050	----	----	----	----
Nitrate (as N)	14797-55-8	E235.NO3-L/VA	0.0050	mg/L		<0.0050	----	----	----	----
Nitrite (as N)	14797-65-0	E235.NO2-L/VA	0.0010	mg/L		<0.0010	----	----	----	----
Nitrogen, total organic	----	EC363/VA	0.050	mg/L		<0.050	----	----	----	----
Sulfate (as SO4)	14808-79-8	E235.SO4/VA	0.30	mg/L		28.2	----	----	----	----
Cyanides										
Cyanide, strong acid dissociable (Total)	----	E333/WT	0.0050	mg/L		<0.0050	----	----	----	----
Organic / Inorganic Carbon										
Carbon, total organic [TOC]	----	E355-L/VA	0.50	mg/L		<0.50	----	----	----	----
Microbiological Tests										
Coliforms, total	----	E010/VA	1	MPN/100 mL		<1	----	----	----	----
Coliforms, Escherichia coli [E. coli]	----	E010/VA	1	MPN/100 mL		<1	----	----	----	----
Ion Balance										
Anion sum	----	EC101A/VA	0.10	meq/L		5.13	----	----	----	----
Cation sum (total)	----	EC101A/VA	0.10	meq/L		5.12	----	----	----	----
Ion balance (APHA)	----	EC101A/VA	0.010	%		-0.098	----	----	----	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID				
					Bradford Park PW1 - Raw Water Analysis Pumphouse	----	----	----	----
					Client sampling date / time				
					21-Nov-2024 09:35	----	----	----	----
					KS2404905-001	----	----	----	----
					Result	----	----	----	----
Total Metals									
Aluminum, total	7429-90-5	E420/VA	0.0030	mg/L	<0.0030	----	----	----	----
Antimony, total	7440-36-0	E420/VA	0.00010	mg/L	<0.00010	----	----	----	----
Arsenic, total	7440-38-2	E420/VA	0.00010	mg/L	0.00629	----	----	----	----
Barium, total	7440-39-3	E420/VA	0.00010	mg/L	0.0376	----	----	----	----
Beryllium, total	7440-41-7	E420/VA	0.000100	mg/L	<0.000100	----	----	----	----
Bismuth, total	7440-69-9	E420/VA	0.000050	mg/L	<0.000050	----	----	----	----
Boron, total	7440-42-8	E420/VA	0.010	mg/L	0.013	----	----	----	----
Cadmium, total	7440-43-9	E420/VA	0.0000050	mg/L	0.0000173	----	----	----	----
Calcium, total	7440-70-2	E420/VA	0.050	mg/L	49.5	----	----	----	----
Cesium, total	7440-46-2	E420/VA	0.000010	mg/L	0.000014	----	----	----	----
Chromium, total	7440-47-3	E420/VA	0.00050	mg/L	<0.00050	----	----	----	----
Cobalt, total	7440-48-4	E420/VA	0.00010	mg/L	<0.00010	----	----	----	----
Copper, total	7440-50-8	E420/VA	0.00050	mg/L	0.00174	----	----	----	----
Iron, total	7439-89-6	E420/VA	0.010	mg/L	0.069	----	----	----	----
Lead, total	7439-92-1	E420/VA	0.000050	mg/L	<0.000050	----	----	----	----
Lithium, total	7439-93-2	E420/VA	0.0010	mg/L	0.0040	----	----	----	----
Magnesium, total	7439-95-4	E420/VA	0.0050	mg/L	24.6	----	----	----	----
Manganese, total	7439-96-5	E420/VA	0.00010	mg/L	0.109	----	----	----	----
Mercury, total	7439-97-6	E508/VA	0.0000050	mg/L	<0.0000050	----	----	----	----
Molybdenum, total	7439-98-7	E420/VA	0.000050	mg/L	0.00331	----	----	----	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID				
					Bradford Park PW1 - Raw Water Analysis Pumphouse	----	----	----	----
					Client sampling date / time				
					21-Nov-2024 09:35	----	----	----	----
					KS2404905-001	----	----	----	----
					Result	----	----	----	----
Total Metals									
Nickel, total	7440-02-0	E420/VA	0.00050	mg/L	<0.00050	----	----	----	----
Phosphorus, total	7723-14-0	E420/VA	0.050	mg/L	0.051	----	----	----	----
Potassium, total	7440-09-7	E420/VA	0.050	mg/L	3.25	----	----	----	----
Rubidium, total	7440-17-7	E420/VA	0.00020	mg/L	0.00384	----	----	----	----
Selenium, total	7782-49-2	E420/VA	0.000050	mg/L	<0.000050	----	----	----	----
Silicon, total	7440-21-3	E420/VA	0.10	mg/L	15.7	----	----	----	----
Silver, total	7440-22-4	E420/VA	0.000010	mg/L	<0.000010	----	----	----	----
Sodium, total	7440-23-5	E420/VA	0.050	mg/L	12.4	----	----	----	----
Strontium, total	7440-24-6	E420/VA	0.00020	mg/L	0.455	----	----	----	----
Sulfur, total	7704-34-9	E420/VA	0.50	mg/L	10.4	----	----	----	----
Tellurium, total	13494-80-9	E420/VA	0.00020	mg/L	<0.00020	----	----	----	----
Thallium, total	7440-28-0	E420/VA	0.000010	mg/L	<0.000010	----	----	----	----
Thorium, total	7440-29-1	E420/VA	0.00010	mg/L	<0.00010	----	----	----	----
Tin, total	7440-31-5	E420/VA	0.00010	mg/L	<0.00010	----	----	----	----
Titanium, total	7440-32-6	E420/VA	0.00030	mg/L	<0.00030	----	----	----	----
Tungsten, total	7440-33-7	E420/VA	0.00010	mg/L	0.00064	----	----	----	----
Uranium, total	7440-61-1	E420/VA	0.000010	mg/L	0.000178	----	----	----	----
Vanadium, total	7440-62-2	E420/VA	0.00050	mg/L	0.00114	----	----	----	----
Zinc, total	7440-66-6	E420/VA	0.0030	mg/L	0.0048	----	----	----	----
Zirconium, total	7440-67-7	E420/VA	0.00020	mg/L	<0.00020	----	----	----	----

Please refer to the General Comments section for an explanation of any result qualifiers detected.

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QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **KS2404905**	Page	: 1 of 10
Client	: **District of Barriere**	Laboratory	: ALS Environmental - Kamloops
Contact	: Chris Matthews	Account Manager	: Caitlin Fountain
Address	: PO Box 219 Barriere BC Canada V0E 1E0	Address	: 1445 McGill Road, Unit 2B Kamloops, British Columbia Canada V2C 6K7
Telephone	: ----	Telephone	: 250 372 3588
Project	: District of Barriere Water	Date Samples Received	: 21-Nov-2024 13:23
PO	: ----	Issue Date	: 03-Dec-2024 09:18
C-O-C number	: ----		
Sampler	: Graham H		
Site	: ----		
Quote number	: 20DIOB100KS02 Water		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
Bradford Park PW1 - Raw Water Analysis - Pumphouse	E298	21-Nov-2024	27-Nov-2024	28 days	6 days	✓	29-Nov-2024	28 days	8 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE										
Bradford Park PW1 - Raw Water Analysis - Pumphouse	E235.Br-L	21-Nov-2024	23-Nov-2024	28 days	2 days	✓	23-Nov-2024	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE										
Bradford Park PW1 - Raw Water Analysis - Pumphouse	E235.Cl	21-Nov-2024	23-Nov-2024	28 days	2 days	✓	23-Nov-2024	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
Bradford Park PW1 - Raw Water Analysis - Pumphouse	E235.F	21-Nov-2024	23-Nov-2024	28 days	2 days	✓	23-Nov-2024	28 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
Bradford Park PW1 - Raw Water Analysis - Pumphouse	E235.NO3-L	21-Nov-2024	23-Nov-2024	3 days	2 days	✓	23-Nov-2024	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
Bradford Park PW1 - Raw Water Analysis - Pumphouse	E235.NO2-L	21-Nov-2024	23-Nov-2024	3 days	2 days	✓	23-Nov-2024	3 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
Bradford Park PW1 - Raw Water Analysis - Pumphouse	E235.SO4	21-Nov-2024	23-Nov-2024	28 days	2 days	✓	23-Nov-2024	28 days	2 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	*Method*	*Sampling Date*	*Extraction / Preparation*				*Analysis*			
			Preparation Date	*Holding Times* Rec	*Holding Times* Actual	*Eval*	*Analysis Date*	*Holding Times* Rec	*Holding Times* Actual	*Eval*
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
Bradford Park PW1 - Raw Water Analysis - Pumphouse	E318	21-Nov-2024	27-Nov-2024	28 days	6 days	✓	29-Nov-2024	28 days	8 days	✓
Cyanides : Total Cyanide										
Opaque HDPE - total (sodium hydroxide)										
Bradford Park PW1 - Raw Water Analysis - Pumphouse	E333	21-Nov-2024	27-Nov-2024	14 days	6 days	✓	27-Nov-2024	14 days	6 days	✓
Microbiological Tests : Total Coliforms and E. coli (Enzyme Substrate)										
Sterile HDPE (Sodium thiosulphate)										
Bradford Park PW1 - Raw Water Analysis - Pumphouse	E010	21-Nov-2024	----	----	----		22-Nov-2024	30 hrs	25 hrs	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid)										
Bradford Park PW1 - Raw Water Analysis - Pumphouse	E355-L	21-Nov-2024	27-Nov-2024	28 days	6 days	✓	27-Nov-2024	28 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
Bradford Park PW1 - Raw Water Analysis - Pumphouse	E290	21-Nov-2024	23-Nov-2024	14 days	2 days	✓	23-Nov-2024	14 days	2 days	✓
Physical Tests : Apparent UV Absorbance and Transmittance by Spectrometry										
HDPE										
Bradford Park PW1 - Raw Water Analysis - Pumphouse	E405	21-Nov-2024	----	----	----		23-Nov-2024	3 days	2 days	✓
Physical Tests : Colour (True) by Spectrometer (5 CU)										
HDPE										
Bradford Park PW1 - Raw Water Analysis - Pumphouse	E329	21-Nov-2024	23-Nov-2024	3 days	2 days	✓	24-Nov-2024	3 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE										
Bradford Park PW1 - Raw Water Analysis - Pumphouse	E100	21-Nov-2024	23-Nov-2024	28 days	2 days	✓	23-Nov-2024	28 days	2 days	✓
Physical Tests : pH by Meter										
HDPE										
Bradford Park PW1 - Raw Water Analysis - Pumphouse	E108	21-Nov-2024	23-Nov-2024	0.25 hrs	44 hrs	× EHTR-FM	23-Nov-2024	0.25 hrs	47 hrs	× EHTR-FM

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	*Method*	*Sampling Date*	*Extraction / Preparation*				*Analysis*			
			Preparation Date	*Holding Times*		*Eval*	*Analysis Date*	*Holding Times*		*Eval*
				Rec	*Actual*			*Rec*	*Actual*	
Physical Tests : TDS by Gravimetry										
HDPE										
Bradford Park PW1 - Raw Water Analysis - Pumphouse	E162	21-Nov-2024	----	----	----		27-Nov-2024	7 days	6 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE										
Bradford Park PW1 - Raw Water Analysis - Pumphouse	E121	21-Nov-2024	----	----	----		23-Nov-2024	3 days	2 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved)										
Bradford Park PW1 - Raw Water Analysis - Pumphouse	E508	21-Nov-2024	26-Nov-2024	28 days	5 days	✓	26-Nov-2024	28 days	5 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved)										
Bradford Park PW1 - Raw Water Analysis - Pumphouse	E420	21-Nov-2024	26-Nov-2024	180 days	5 days	✓	28-Nov-2024	180 days	7 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Alkalinity Species by Titration	E290	1780430	1	17	5.8	5.0	✓
Ammonia by Fluorescence	E298	1785233	1	20	5.0	5.0	✓
Apparent UV Absorbance and Transmittance by Spectrometry	E405	1780996	1	4	25.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	1780434	1	17	5.8	5.0	✓
Chloride in Water by IC	E235.Cl	1780433	1	17	5.8	5.0	✓
Colour (True) by Spectrometer (5 CU)	E329	1780438	1	12	8.3	5.0	✓
Conductivity in Water	E100	1780431	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	1780432	1	17	5.8	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1780435	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1780436	1	17	5.8	5.0	✓
pH by Meter	E108	1780429	1	10	10.0	5.0	✓
Sulfate in Water by IC	E235.SO4	1780437	1	17	5.8	5.0	✓
TDS by Gravimetry	E162	1786605	1	20	5.0	5.0	✓
Total Coliforms and E. coli (Enzyme Substrate)	E010	1779273	2	18	11.1	10.0	✓
Total Cyanide	E333	1785403	1	16	6.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1785231	1	14	7.1	5.0	✓
Total Mercury in Water by CVAAS	E508	1783565	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1779678	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	1785232	1	9	11.1	5.0	✓
Turbidity by Nephelometry	E121	1780808	1	20	5.0	5.0	✓
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	1780430	1	17	5.8	5.0	✓
Ammonia by Fluorescence	E298	1785233	1	20	5.0	5.0	✓
Apparent UV Absorbance and Transmittance by Spectrometry	E405	1780996	1	4	25.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	1780434	1	17	5.8	5.0	✓
Chloride in Water by IC	E235.Cl	1780433	1	17	5.8	5.0	✓
Colour (True) by Spectrometer (5 CU)	E329	1780438	1	12	8.3	5.0	✓
Conductivity in Water	E100	1780431	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	1780432	1	17	5.8	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1780435	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1780436	1	17	5.8	5.0	✓
pH by Meter	E108	1780429	1	10	10.0	5.0	✓
Sulfate in Water by IC	E235.SO4	1780437	1	17	5.8	5.0	✓
TDS by Gravimetry	E162	1786605	1	20	5.0	5.0	✓
Total Cyanide	E333	1785403	1	16	6.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1785231	1	14	7.1	5.0	✓

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Control Samples (LCS) - Continued							
Total Mercury in Water by CVAAS	E508	1783565	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1779678	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	1785232	1	9	11.1	5.0	✓
Turbidity by Nephelometry	E121	1780808	1	20	5.0	5.0	✓
Method Blanks (MB)							
Alkalinity Species by Titration	E290	1780430	1	17	5.8	5.0	✓
Ammonia by Fluorescence	E298	1785233	1	20	5.0	5.0	✓
Apparent UV Absorbance and Transmittance by Spectrometry	E405	1780996	1	4	25.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	1780434	1	17	5.8	5.0	✓
Chloride in Water by IC	E235.Cl	1780433	1	17	5.8	5.0	✓
Colour (True) by Spectrometer (5 CU)	E329	1780438	1	12	8.3	5.0	✓
Conductivity in Water	E100	1780431	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	1780432	1	17	5.8	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1780435	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1780436	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	1780437	1	17	5.8	5.0	✓
TDS by Gravimetry	E162	1786605	1	20	5.0	5.0	✓
Total Coliforms and E. coli (Enzyme Substrate)	E010	1779273	1	18	5.5	5.0	✓
Total Cyanide	E333	1785403	1	16	6.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1785231	1	14	7.1	5.0	✓
Total Mercury in Water by CVAAS	E508	1783565	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1779678	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	1785232	1	9	11.1	5.0	✓
Turbidity by Nephelometry	E121	1780808	1	20	5.0	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	1785233	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	1780434	1	17	5.8	5.0	✓
Chloride in Water by IC	E235.Cl	1780433	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	1780432	1	17	5.8	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1780435	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1780436	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	1780437	1	17	5.8	5.0	✓
Total Cyanide	E333	1785403	1	16	6.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1785231	1	14	7.1	5.0	✓
Total Mercury in Water by CVAAS	E508	1783565	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1779678	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	1785232	1	9	11.1	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Coliforms and E. coli (Enzyme Substrate)	E010 ALS Environmental - Vancouver	Water	APHA 9223 (mod)	The enzyme substrate test simultaneously detects Total Coliforms and E. coli in a 100 mL sample after incubation at 35.0 ±0.5°C for either 18 or 24 hours (dependent on reagent used).
Conductivity in Water	E100 ALS Environmental - Vancouver	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 ALS Environmental - Vancouver	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 ALS Environmental - Vancouver	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
TDS by Gravimetry	E162 ALS Environmental - Vancouver	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC	E235.Cl ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Sulfate in Water by IC	E235.SO4 ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Alkalinity Species by Titration	E290 ALS Environmental - Vancouver	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 ALS Environmental - Vancouver	Water	Method Fialab 100, 2018	Ammonia in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021)
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 ALS Environmental - Vancouver	Water	Method Fialab 100, 2018	TKN in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021).
Colour (True) by Spectrometer (5 CU)	E329 ALS Environmental - Vancouver	Water	APHA 2120 C (mod)	Colour (True Colour) is determined by filtering a sample through a 0.45 micron membrane filter followed by analysis of the filtrate using the platinum-cobalt colourimetric method. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment.
Total Cyanide	E333 ALS Environmental - Waterloo	Water	ISO 14403 (mod)	Total or Strong Acid Dissociable (SAD) Cyanide is determined by Continuous Flow Analyzer (CFA) with in-line UV digestion followed by colourmetric analysis. Method Limitation: High levels of thiocyanate (SCN) may cause positive interference (up to 0.5% of SCN concentration).
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L ALS Environmental - Vancouver	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Apparent UV Absorbance and Transmittance by Spectrometry	E405 ALS Environmental - Vancouver	Water	APHA 5910 B (mod)	Apparent UV Absorbance is determined on an unfiltered sample by UV absorbance measurement in a quartz cell at 254 nm. The analysis is carried out without pH adjustment.
Total Metals in Water by CRC ICPMS	E420 ALS Environmental - Vancouver	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Mercury in Water by CVAAS	E508 ALS Environmental - Vancouver	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Hardness (Calculated) from Total Ca/Mg	EC100A ALS Environmental - Vancouver	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.
Ion Balance using Total Metals	EC101A ALS Environmental - Vancouver	Water	APHA 1030E	Cation Sum (using total metals), Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Saturation Index using Laboratory pH (Ca-T)	EC105A ALS Environmental - Vancouver	Water	APHA 2330B	Langelier Index provides an indication of scale formation potential at a given pH and temperature, and is calculated as per APHA 2330B Saturation Index. Positive values indicate oversaturation with respect to CaCO3. Negative values indicate undersaturation of CaCO3. This calculation uses laboratory pH measurements and provides estimates of Langelier Index at temperatures of 4, 15, 20, 25, 66, and 77°C. Ryznar Stability Index is an alternative index used for scale formation and corrosion potential.
Total Organic Nitrogen (Calculation)	EC363 ALS Environmental - Vancouver	Water	APHA 4500-NORG (TKN)/NH3-NITROGEN (NH3)	Total Organic Nitrogen is a calculated parameter. Total Organic Nitrogen = Total Kjeldahl Nitrogen - Ammonia.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 ALS Environmental - Vancouver	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 ALS Environmental - Vancouver	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Preparation for Total Organic Carbon by Combustion	EP355 ALS Environmental - Vancouver	Water		Preparation for Total Organic Carbon by Combustion

QUALITY CONTROL REPORT

Work Order	: **KS2404905**	Page	: 1 of 13
Client	: District of Barriere	Laboratory	: ALS Environmental - Kamloops
Contact	: Chris Matthews	Account Manager	: Caitlin Fountain
Address	: PO Box 219 Barriere BC Canada V0E 1E0	Address	: 1445 McGill Road, Unit 2B Kamloops, British Columbia Canada V2C 6K7
Telephone	: ----	Telephone	: 250 372 3588
Project	: District of Barriere Water	Date Samples Received	: 21-Nov-2024 13:23
PO	: ----	Date Analysis Commenced	: 22-Nov-2024
C-O-C number	: ----	Issue Date	: 03-Dec-2024 09:16
Sampler	: Graham H		
Site	: ----		
Quote number	: 20DIOB100KS02 Water		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Ghazaleh Khanmirzaei	Analyst	Vancouver Metals, Burnaby, British Columbia
Jon Fisher	Production Manager, Environmental	Waterloo Inorganics, Waterloo, Ontario
Kim Jensen	Department Manager - Metals	Vancouver Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Vancouver Inorganics, Burnaby, British Columbia
Monica Ko	Lab Assistant	Vancouver Microbiology, Burnaby, British Columbia

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 1780429)											
FJ2403552-003	Anonymous	pH	----	E108	0.10	pH units	8.17	8.18	0.122%	4%	----
Physical Tests (QC Lot: 1780430)											
FJ2403552-003	Anonymous	Alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	104	104	0.385%	200%	----
		Alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0.00%	200%	----
		Alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0.00%	200%	----
		Alkalinity, phenolphthalein (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		Alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	104	104	0.385%	20%	----
Physical Tests (QC Lot: 1780431)											
FJ2403552-003	Anonymous	Conductivity	----	E100	2.0	µS/cm	1420	1410	0.423%	10%	----
Physical Tests (QC Lot: 1780438)											
KS2404902-001	Anonymous	Colour, true	----	E329	5.0	CU	<5.0	<5.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 1780808)											
FJ2403543-001	Anonymous	Turbidity	----	E121	0.10	NTU	0.30	0.31	0.006	Diff <2x LOR	----
Physical Tests (QC Lot: 1780996)											
KS2404902-001	Anonymous	Absorbance, UV (@ 254nm), unfiltered	----	E405	0.0050	AU/cm	0.0110	0.0110	0	Diff <2x LOR	----
Physical Tests (QC Lot: 1786605)											
KS2404897-001	Anonymous	Solids, total dissolved [TDS]	----	E162	20	mg/L	415	420	1.20%	20%	----
Anions and Nutrients (QC Lot: 1780432)											
FJ2403552-001	Anonymous	Fluoride	16984-48-8	E235.F	0.020	mg/L	0.192	0.189	0.002	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1780433)											
FJ2403552-001	Anonymous	Chloride	16887-00-6	E235.Cl	0.50	mg/L	45.8	45.8	0.00543%	20%	----
Anions and Nutrients (QC Lot: 1780434)											
FJ2403552-001	Anonymous	Bromide	24959-67-9	E235.Br-L	0.050	mg/L	0.766	0.771	0.697%	20%	----
Anions and Nutrients (QC Lot: 1780435)											
FJ2403552-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.225	0.224	0.390%	20%	----
Anions and Nutrients (QC Lot: 1780436)											
FJ2403552-001	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0126	0.0124	1.76%	20%	----
Anions and Nutrients (QC Lot: 1780437)											
FJ2403552-001	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	69.0	69.1	0.121%	20%	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Anions and Nutrients (QC Lot: 1785231)											
KS2404902-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.066	0.051	0.015	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1785233)											
KS2404902-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0134	0.0133	0.00010	Diff <2x LOR	----
Cyanides (QC Lot: 1785403)											
VA24D1834-003	Anonymous	Cyanide, strong acid dissociable (Total)	----	E333	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 1785232)											
KS2404902-001	Anonymous	Carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.66	0.64	0.02	Diff <2x LOR	----
Microbiological Tests (QC Lot: 1779273)											
KS2404902-001	Anonymous	Coliforms, Escherichia coli [E. coli]	----	E010	1	MPN/100mL	<1	<1	0	Diff <2x LOR	----
		Coliforms, total	----	E010	1	MPN/100mL	<1	<1	0	Diff <2x LOR	----
VA24D1700-076	Anonymous	Coliforms, Escherichia coli [E. coli]	----	E010	10	MPN/100mL	52	41	23.6%	65%	----
		Coliforms, total	----	E010	10	MPN/100mL	512	488	4.80%	65%	----
Total Metals (QC Lot: 1779678)											
VA24D1493-001	Anonymous	Aluminum, total	7429-90-5	E420	0.0060	mg/L	0.0113	0.0122	0.0008	Diff <2x LOR	----
		Antimony, total	7440-36-0	E420	0.00020	mg/L	0.00102	0.00100	0.00002	Diff <2x LOR	----
		Arsenic, total	7440-38-2	E420	0.00020	mg/L	0.00109	0.00105	0.00004	Diff <2x LOR	----
		Barium, total	7440-39-3	E420	0.00020	mg/L	0.0478	0.0470	1.70%	20%	----
		Beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		Bismuth, total	7440-69-9	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		Boron, total	7440-42-8	E420	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
		Cadmium, total	7440-43-9	E420	0.0000100	mg/L	0.0000413	0.0000457	0.0000043	Diff <2x LOR	----
		Calcium, total	7440-70-2	E420	0.100	mg/L	395	397	0.505%	20%	----
		Cesium, total	7440-46-2	E420	0.000020	mg/L	0.000097	0.000098	0.0000003	Diff <2x LOR	----
		Chromium, total	7440-47-3	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		Cobalt, total	7440-48-4	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Copper, total	7440-50-8	E420	0.00100	mg/L	0.0125	0.0125	0.00319%	20%	----
		Iron, total	7439-89-6	E420	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
		Lead, total	7439-92-1	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		Lithium, total	7439-93-2	E420	0.0020	mg/L	0.0116	0.0112	0.0004	Diff <2x LOR	----
		Magnesium, total	7439-95-4	E420	0.100	mg/L	115	114	0.768%	20%	----
		Manganese, total	7439-96-5	E420	0.00020	mg/L	0.00159	0.00172	0.00013	Diff <2x LOR	----
		Molybdenum, total	7439-98-7	E420	0.000100	mg/L	0.0221	0.0222	0.400%	20%	----
		Nickel, total	7440-02-0	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Total Metals (QC Lot: 1779678) - continued											
VA24D1493-001	Anonymous	Phosphorus, total	7723-14-0	E420	0.300	mg/L	<0.300	<0.300	0	Diff <2x LOR	----
		Potassium, total	7440-09-7	E420	0.100	mg/L	6.00	6.02	0.485%	20%	----
		Rubidium, total	7440-17-7	E420	0.00040	mg/L	0.00355	0.00333	0.00022	Diff <2x LOR	----
		Selenium, total	7782-49-2	E420	0.000100	mg/L	0.0229	0.0231	0.697%	20%	----
		Silicon, total	7440-21-3	E420	0.20	mg/L	10.4	10.0	4.36%	20%	----
		Silver, total	7440-22-4	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		Sodium, total	7440-23-5	E420	0.100	mg/L	25.8	26.4	2.02%	20%	----
		Strontium, total	7440-24-6	E420	0.00040	mg/L	1.95	2.01	2.94%	20%	----
		Sulfur, total	7704-34-9	E420	1.00	mg/L	405	386	4.86%	20%	----
		Tellurium, total	13494-80-9	E420	0.00040	mg/L	<0.00040	<0.00040	0	Diff <2x LOR	----
		Thallium, total	7440-28-0	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		Thorium, total	7440-29-1	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Tin, total	7440-31-5	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Titanium, total	7440-32-6	E420	0.0100	mg/L	<0.0100	<0.0100	0	Diff <2x LOR	----
		Tungsten, total	7440-33-7	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Uranium, total	7440-61-1	E420	0.000020	mg/L	0.0150	0.0160	6.29%	20%	----
		Vanadium, total	7440-62-2	E420	0.00100	mg/L	0.00130	0.00128	0.00002	Diff <2x LOR	----
		Zinc, total	7440-66-6	E420	0.0060	mg/L	<0.0060	<0.0060	0	Diff <2x LOR	----
		Zirconium, total	7440-67-7	E420	0.00040	mg/L	<0.00040	<0.00040	0	Diff <2x LOR	----
Total Metals (QC Lot: 1783565)											
FJ2403552-001	Anonymous	Mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 1780430)						
Alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
Alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
Alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
Alkalinity, phenolphthalein (as CaCO3)	----	E290	1	mg/L	<1.0	----
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 1780431)						
Conductivity	----	E100	1	µS/cm	1.2	----
Physical Tests (QCLot: 1780438)						
Colour, true	----	E329	5	CU	<5.0	----
Physical Tests (QCLot: 1780808)						
Turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 1780996)						
Absorbance, UV (@ 254nm), unfiltered	----	E405	0.005	AU/cm	<0.0050	----
Physical Tests (QCLot: 1786605)						
Solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Anions and Nutrients (QCLot: 1780432)						
Fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 1780433)						
Chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 1780434)						
Bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 1780435)						
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 1780436)						
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 1780437)						
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 1785231)						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 1785233)						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Cyanides (QCLot: 1785403)						

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Cyanides (QCLot: 1785403) - continued						
Cyanide, strong acid dissociable (Total)	----	E333	0.002	mg/L	<0.0020	----
Organic / Inorganic Carbon (QCLot: 1785232)						
Carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Microbiological Tests (QCLot: 1779273)						
Coliforms, Escherichia coli [E. coli]	----	E010	1	MPN/100mL	<1	----
Coliforms, total	----	E010	1	MPN/100mL	<1	----
Total Metals (QCLot: 1779678)						
Aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
Barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
Boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
Calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
Cesium, total	7440-46-2	E420	0.00001	mg/L	<0.000010	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	<0.00050	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
Copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
Iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
Lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
Lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
Phosphorus, total	7723-14-0	E420	0.05	mg/L	<0.050	----
Potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
Rubidium, total	7440-17-7	E420	0.0002	mg/L	<0.00020	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
Silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
Silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
Sodium, total	7440-23-5	E420	0.05	mg/L	<0.050	----
Strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 1779678) - continued						
Sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
Tellurium, total	13494-80-9	E420	0.0002	mg/L	<0.00020	----
Thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
Thorium, total	7440-29-1	E420	0.0001	mg/L	<0.00010	----
Tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	<0.00010	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
Zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	<0.00020	----
Total Metals (QCLot: 1783565)						
Mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 1780429)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Physical Tests (QCLot: 1780430)									
Alkalinity, phenolphthalein (as CaCO3)	----	E290	1	mg/L	229 mg/L	102	75.0	125	----
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	103	85.0	115	----
Physical Tests (QCLot: 1780431)									
Conductivity	----	E100	1	µS/cm	147 µS/cm	93.6	90.0	110	----
Physical Tests (QCLot: 1780438)									
Colour, true	----	E329	5	CU	100 CU	104	85.0	115	----
Physical Tests (QCLot: 1780808)									
Turbidity	----	E121	0.1	NTU	200 NTU	100	85.0	115	----
Physical Tests (QCLot: 1780996)									
Absorbance, UV (@ 254nm), unfiltered	----	E405	0.005	AU/cm	0.693 AU/cm	93.9	85.0	115	----
Physical Tests (QCLot: 1786605)									
Solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	108	85.0	115	----
Anions and Nutrients (QCLot: 1780432)									
Fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	97.7	90.0	110	----
Anions and Nutrients (QCLot: 1780433)									
Chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	99.1	90.0	110	----
Anions and Nutrients (QCLot: 1780434)									
Bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	106	85.0	115	----
Anions and Nutrients (QCLot: 1780435)									
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	98.8	90.0	110	----
Anions and Nutrients (QCLot: 1780436)									
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	98.0	90.0	110	----
Anions and Nutrients (QCLot: 1780437)									
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	100	90.0	110	----
Anions and Nutrients (QCLot: 1785231)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	116	75.0	125	----
Anions and Nutrients (QCLot: 1785233)									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	98.5	85.0	115	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike: Target Concentration	Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High	Qualifier
Cyanides (QCLot: 1785403)									
Cyanide, strong acid dissociable (Total)	----	E333	0.002	mg/L	0.25 mg/L	90.3	80.0	120	----
Organic / Inorganic Carbon (QCLot: 1785232)									
Carbon, total organic [TOC]	----	E355-L	0.5	mg/L	8.57 mg/L	104	80.0	120	----
Total Metals (QCLot: 1779678)									
Aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	97.5	80.0	120	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	104	80.0	120	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	107	80.0	120	----
Barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	103	80.0	120	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	104	80.0	120	----
Boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	102	80.0	120	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	107	80.0	120	----
Calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	102	80.0	120	----
Cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	106	80.0	120	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	104	80.0	120	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
Copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	102	80.0	120	----
Iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	97.2	80.0	120	----
Lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	106	80.0	120	----
Lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	98.9	80.0	120	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	103	80.0	120	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	102	80.0	120	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
Phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	94.9	80.0	120	----
Potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	101	80.0	120	----
Rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	99.4	80.0	120	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	100	80.0	120	----
Silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	106	80.0	120	----
Silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	96.9	80.0	120	----
Sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	100	80.0	120	----
Strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	109	80.0	120	----
Sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	103	80.0	120	----
Tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	106	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 1779678) - continued									
Thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	105	80.0	120	----
Thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	106	80.0	120	----
Tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	103	80.0	120	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	102	80.0	120	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	104	80.0	120	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	111	80.0	120	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	104	80.0	120	----
Zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	104	80.0	120	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	101	80.0	120	----
Total Metals (QCLot: 1783565)									
Mercury, total	7439-97-6	E508	0.000005	mg/L	0 mg/L	86.9	80.0	120	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 1780432)										
FJ2403552-002	Anonymous	Fluoride	16984-48-8	E235.F	1.01 mg/L	1 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 1780433)										
FJ2403552-002	Anonymous	Chloride	16887-00-6	E235.Cl	101 mg/L	100 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 1780434)										
FJ2403552-002	Anonymous	Bromide	24959-67-9	E235.Br-L	ND mg/L	----	ND	75.0	125	----
Anions and Nutrients (QCLot: 1780435)										
FJ2403552-002	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	2.54 mg/L	2.5 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 1780436)										
FJ2403552-002	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.499 mg/L	0.5 mg/L	99.8	75.0	125	----
Anions and Nutrients (QCLot: 1780437)										
FJ2403552-002	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	99.2 mg/L	100 mg/L	99.2	75.0	125	----
Anions and Nutrients (QCLot: 1785231)										
KS2404903-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.70 mg/L	2.5 mg/L	108	70.0	130	----
Anions and Nutrients (QCLot: 1785233)										
KS2404903-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.124 mg/L	0.1 mg/L	124	75.0	125	----
Cyanides (QCLot: 1785403)										
VA24D1834-003	Anonymous	Cyanide, strong acid dissociable (Total)	----	E333	0.230 mg/L	0.25 mg/L	92.1	75.0	125	----
Organic / Inorganic Carbon (QCLot: 1785232)										
KS2404903-001	Anonymous	Carbon, total organic [TOC]	----	E355-L	5.29 mg/L	5 mg/L	106	70.0	130	----
Total Metals (QCLot: 1779678)										
VA24D1542-001	Anonymous	Aluminum, total	7429-90-5	E420	ND mg/L	----	ND	70.0	130	----
		Antimony, total	7440-36-0	E420	ND mg/L	----	ND	70.0	130	----
		Arsenic, total	7440-38-2	E420	ND mg/L	----	ND	70.0	130	----
		Barium, total	7440-39-3	E420	ND mg/L	----	ND	70.0	130	----
		Beryllium, total	7440-41-7	E420	0.389 mg/L	0.4 mg/L	97.3	70.0	130	----
		Bismuth, total	7440-69-9	E420	0.0971 mg/L	0.1 mg/L	97.1	70.0	130	----
		Boron, total	7440-42-8	E420	ND mg/L	----	ND	70.0	130	----
		Cadmium, total	7440-43-9	E420	0.0403 mg/L	0.04 mg/L	101	70.0	130	----
		Calcium, total	7440-70-2	E420	ND mg/L	----	ND	70.0	130	----
		Cesium, total	7440-46-2	E420	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		Chromium, total	7440-47-3	E420	ND mg/L	----	ND	70.0	130	----
		Cobalt, total	7440-48-4	E420	ND mg/L	----	ND	70.0	130	----
		Copper, total	7440-50-8	E420	ND mg/L	----	ND	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Total Metals (QCLot: 1779678) - continued										
VA24D1542-001	Anonymous	Iron, total	7439-89-6	E420	ND mg/L	----	ND	70.0	130	----
		Lead, total	7439-92-1	E420	0.190 mg/L	0.2 mg/L	95.2	70.0	130	----
		Lithium, total	7439-93-2	E420	0.892 mg/L	1 mg/L	89.2	70.0	130	----
		Magnesium, total	7439-95-4	E420	ND mg/L	----	ND	70.0	130	----
		Manganese, total	7439-96-5	E420	ND mg/L	----	ND	70.0	130	----
		Molybdenum, total	7439-98-7	E420	ND mg/L	----	ND	70.0	130	----
		Nickel, total	7440-02-0	E420	ND mg/L	----	ND	70.0	130	----
		Phosphorus, total	7723-14-0	E420	90.9 mg/L	100 mg/L	90.9	70.0	130	----
		Potassium, total	7440-09-7	E420	ND mg/L	----	ND	70.0	130	----
		Rubidium, total	7440-17-7	E420	ND mg/L	----	ND	70.0	130	----
		Selenium, total	7782-49-2	E420	ND mg/L	----	ND	70.0	130	----
		Silicon, total	7440-21-3	E420	ND mg/L	----	ND	70.0	130	----
		Silver, total	7440-22-4	E420	0.0382 mg/L	0.04 mg/L	95.4	70.0	130	----
		Sodium, total	7440-23-5	E420	ND mg/L	----	ND	70.0	130	----
		Strontium, total	7440-24-6	E420	ND mg/L	----	ND	70.0	130	----
		Sulfur, total	7704-34-9	E420	ND mg/L	----	ND	70.0	130	----
		Tellurium, total	13494-80-9	E420	0.429 mg/L	0.4 mg/L	107	70.0	130	----
		Thallium, total	7440-28-0	E420	0.0369 mg/L	0.04 mg/L	92.3	70.0	130	----
		Thorium, total	7440-29-1	E420	0.188 mg/L	0.2 mg/L	94.3	70.0	130	----
		Tin, total	7440-31-5	E420	0.197 mg/L	0.2 mg/L	98.7	70.0	130	----
		Titanium, total	7440-32-6	E420	ND mg/L	----	ND	70.0	130	----
		Tungsten, total	7440-33-7	E420	0.196 mg/L	0.2 mg/L	98.0	70.0	130	----
		Uranium, total	7440-61-1	E420	ND mg/L	----	ND	70.0	130	----
		Vanadium, total	7440-62-2	E420	ND mg/L	----	ND	70.0	130	----
		Zinc, total	7440-66-6	E420	3.78 mg/L	4 mg/L	94.4	70.0	130	----
		Zirconium, total	7440-67-7	E420	0.408 mg/L	0.4 mg/L	102	70.0	130	----
Total Metals (QCLot: 1783565)										
FJ2403552-002	Anonymous	Mercury, total	7439-97-6	E508	0.0000956 mg/L	0 mg/L	95.6	70.0	130	----

Chain of Custody (COC) / Analytical Request Form

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Affix ALS barcode label here (lab use only)

COC Number: 15 -

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Company:	DISTRICT OF BARRIERE	Select Report Format: ☑ PDF ☐ EXCEL ☐ EDD (DIGITAL)	Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply
Contact:	Chris Matthews	Quality Control (QC) Report with Report ☐ YES ☐ NO	PRIORITY (Business Days): 4 day [P4] ☐ / 3 day [P3] ☐ / 2 day [P2] ☐ — EMERGENCY: 1 Business day [E1] ☐ / Same Day, Weekend or Statutory holiday [E0] ☐
Phone:	250-3201505 250-672-9751 Fax 250-672-9708	☐ Compare Results to Criteria on Report - provide details below if box checked	
	Company address below will appear on the final report	Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	
Street:	P.O. Box 219	Email 1 or Fax	Date and Time Required for all E&P TATs:
City/Province:	BARRIERE	Email 2 cmatthews@barriere.ca	For tests that can not be performed according to the service level selected, you will be contacted.
Postal Code:	BC	Email 3 pamos@barriere.ca	Analysis Request
Invoice To	Same as Report To ☑ YES ☐ NO	Invoice Distribution	Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below
	Copy of Invoice with Report ☑ YES ☐ NO	Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	
Company:		Email 1 or Fax	
Contact:		Email 2	

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:		AFE/Cost Center:	PO#
Job #:		Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:		Location:	
ALS Lab Work Order # (lab use only)	4905	ALS Contact:	Sampler: GRAHAM

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Number of Containers
	Bradford Park PW1 - Raw Water Analysis	21 11 24	935	Grab	6
	NTU: 0.11				
	CL2 Free: 0.00				
	CL2 Total: 0.00				
	PUMPHOUSE				
	Please reference WO# KS2304717 for required analysis				

Environmental Division
Kamloops
Work Order Reference
KS2404905

Telephone : +1 250 372 3586

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)
Are samples taken from a Regulated DW System? ☐ YES ☐ NO	
Are samples for human drinking water use? ☐ YES ☐ NO	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐
Ice Packs ☑ Ice Cubes ☐ Custody seal intact Yes ☐ No ☐
Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
1.0					

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date: NOV 21 2024	Time: 1323	Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

OCTOBER 2015 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

drop dt

Yellowhead Pioneer Residence Society

Box 400, Barriere BC V0E 1E0

Ph: 250-672-0019 yprsad@telus.net

May 27, 2025

District of Barriere

Box 219

Barriere BC V0E 1E0

Re: Grant Application

To Whom it May Concern;

Please find enclosed a grant application for Yellowhead Pioneer Residence for financial assistance with a garden project for the senior tenants. To date we have managed to build and fill the planters. The final stage will be the deer fencing. We have received some community donations to date, and a $3000. donation from BC Housing. We are hoping you will be able to assist with the final piece, the fencing costs.

Thank you for your consideration,

Pam Simpson

Administrator

DISTRICT OF BARRIERE
Grant Application – Organizations

Organization Official Name: Yellowhead Pioneer Residence Society

Mailing Address: Box 400
Barriere

Phone: 250 672-0019 Fax: _____ Email: yprsad@telus.net

Contact Person: Pam Simpson Title: Administrator

Briefly describe your organizations purpose: Yellowhead Pioneer provides both affordable Seniors Housing and Assisted Living for a total of 32 tenants.

Briefly describe how the requested grant money will be used: The Society is building Senior accesible garden boxes. A grant for $3000. to build the boxes was received from BC Housing. The funds did not cover deer fencing and water infrastructure (total

What amount of Grant-in-Aid is being requested? $ 500.00

Total organization operating budget for current year $ 910,000.

Total budget for project the grant is being applied for $ 4620.00

Did you receive a Grant-in-Aid last year Yes _____ No X

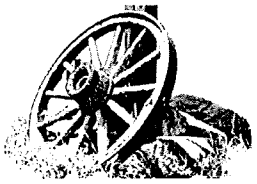
If **yes**, what was the amount of the grant? $ 0

Attachments: Please provide the following to your application (if available):

Financial Statement, Current Year Budget, Project Budget

Please forward completed application by mail to: District of Barriere, Box 219, Barriere, B.C. V0E 1E0 or in person at "The Ridge Building" at 4936 Barriere Town Road, or by fax to 250-672-9708. Applications must be received by the first Monday of the month to be considered in that month.

INTERNAL OFFICE USE: Approved Amount Approved: _____ Denied



Yellowhead Pioneer Residence

Box 400, Barriere BC V0E 1E0

Ph: 250-6720019 yprsad@telus.net

Raised Garden Bed Project

Project: To build 5 raised garden beds to accommodate the abilities of the Assisted Living tenant of Yellowhead Pioneer Residence.

Budget

Lumber	1200.00
Fabric	250.00
Screws	215.00
Soil	900.00
Mulch	350.00
Fabric Staples	35.00
T Posts	130.00
Galvanized Fencing	441.00
Galvanized Pipe	183.00
Galvanized Gate	416.00
Water infrastructure	500.00
Total Expense	**$4620.00**

All labour for building the boxes and fencing, as well as equipment (skid steer) to move soil will be donated.

YELLOWHEAD PIONEER RESIDENCE SOCIETY
Statement of Financial Position
March 31, 2024

	2024	2023
Assets		
Current		
Cash	$ 320,708	$ 381,837
Short term investments	256,102	329,899
Accounts receivable	22,931	4,673
Inventory	7,180	6,081
Goods and services tax recoverable	8,594	5,517
Restricted cash - BC Housing *(note 3)*	28,000	48,690
Restricted cash - Interior Health Authority *(note 3)*	152,282	152,282
	795,797	928,979
Property and equipment *(note 4)*	2,812,289	2,965,343
Long term investments	118,321	33,197
	$ 3,726,407	$ 3,927,519
Liabilities and Net Assets		
Current		
Accounts payable	$ 50,715	$ 51,357
Deposits received	4,310	4,493
Current portion of long term debt *(note 5)*	146,455	146,396
	201,480	202,246
Long term debt *(note 5)*	2,517,058	2,663,528
Deferred government assistance *(note 6)*	238,502	242,094
	2,957,040	3,107,868
Net Assets		
General fund	741,367	770,961
Restricted fund	28,000	48,690
	769,367	819,651
	$ 3,726,407	$ 3,927,519

On behalf of the Board

Director

Director

YELLOWHEAD PIONEER RESIDENCE SOCIETY
Statement of Revenues and Expenditures
Year Ended March 31, 2024

	2024	2023
Revenue		
Government grants	$ 440,585	$ 368,086
Rental	257,927	259,092
Interest and principal funded by BC Housing	148,296	148,296
BC Housing rent subsidy	56,769	5,705
Other revenue	2,752	3,901
Deferred contribution recognition	3,592	3,742
	909,921	788,822
Expenses		
Amortization	162,153	161,884
Food	37,412	25,188
Information technology	6,161	6,450
Insurance	14,987	13,986
Interest and bank charges	1,102	512
Interest on long term debt	1,886	1,934
Office	6,376	7,068
Professional fees	8,197	10,033
Recreation	2,137	2,677
Repairs and maintenance	45,775	24,187
Salaries and wages	637,573	490,348
Sub-contracts	7,925	9,091
Telephone	3,620	2,903
Supplies	6,994	7,903
Travel	939	-
Utilities	49,601	54,899
	992,838	819,063
Deficiency of revenue over expenses from operations	(82,917)	(30,241)
Other income		
Interest income	21,633	9,482
Other grants	11,000	46,578
	32,633	56,060
Excess (deficiency) of revenue over expenses	$ (50,284)	$ 25,819

YELLOWHEAD PIONEER RESIDENCE SOCIETY

Statement of Changes in Net Assets

Year Ended March 31, 2024

	General Fund	Restricted Fund	**2024**	2023
Net assets - beginning of year	$ 770,961	$ 48,690	**$ 819,651**	$ 793,834
Reserve account expenses	32,744	(32,744)	**-**	-
Deficiency of revenue over expenses	(62,338)	12,054	**(50,284)**	25,819
Net assets - end of year	$ 741,367	$ 28,000	**$ 769,367**	$ 819,653

City of Campbell River
From the Office of the Mayor

June 5, 2025,

To All Resource-Dependent Communities in British Columbia

Dear Mayors and Chairs Across British Columbia,

On behalf of the City of Campbell River Council, I am reaching out to invite your community to join a collective advocacy movement aimed at amplifying the voices of resource communities across British Columbia.

Resource communities like ours play a vital role in the economic fabric of the province of British Columbia. However, we often face unique challenges that are overlooked in broader policy discussions. By coming together, we can ensure that our collective concerns are heard and addressed at the provincial and federal levels.

Objectives:

- **Raise Awareness:** Highlight the significant contributions of resource communities to the provincial economy.
- **Advocate for Supportive Policies:** Influence policy decisions that directly impact resource-based communities.
- **Foster Collaboration:** Further strengthen partnerships between resource-based communities, so that we can work together, share best practices and strategies, and amplify results.

Key Initiatives:

1. **Targeted Communications:** We will launch a campaign to educate urban centres, policy makers, and the general public about the economic value of resource communities.
2. **Outreach:** We will continue to build a coalition of resource communities to strengthen our advocacy efforts.
3. **UBCM:** The City has submitted a UBCM resolution (attached) and is applying to host a session at the 2025 Convention.

301 St. Ann's Road, Campbell River, BC V9W 4C7 Phone 250-286-5700 Fax 250-286-5760

As leaders who have witnessed firsthand the incredible contributions and resilience of Campbell River, and resource communities across BC, we are deeply passionate about this initiative. We recognize that your community faces similar challenges and shares the same dedication and commitment to ensuring a prosperous future for all. Together, we can amplify our shared concerns, influence policy decisions, and drive change that will support the long-term growth and resilience of resource communities.

Please join us in this important initiative. Your insights and participation will be instrumental to our collective success.

Looking forward to working together for the betterment of all resource communities in British Columbia.

Sincerely,

Kermit Dahl
Mayor

City of Campbell River

Inclusion of Rural and Resource Communities in Provincial Economic Decision-Making

---

WHEREAS rural and resource-based communities continue to be a significant economic driver in both rural and urban areas across British Columbia;

AND WHEREAS communities throughout British Columbia are experiencing job losses and heightened economic challenges arising from trade uncertainties, and provincial legislation and policies that disproportionately affect resource industries such as forestry, mining, energy, and aquaculture;

AND WHEREAS these communities are integral to the provincial economy, contributing substantially to British Columbia's GDP, employment, and export revenues, while sustaining the economic vitality of urban centres through interconnected supply chains, workforce migration, and complementary industries;

AND WHEREAS current provincial decision-making processes frequently lack adequate representation and consultation with rural and resource-based communities, leading to policies that may inadvertently jeopardize the sustainability, cohesiveness and resilience of these regions;

THEREFORE BE IT RESOLVED that UBCM urge the Province of British Columbia to formally recognize the critical economic contributions of rural and resource-based communities and to ensure their meaningful inclusion in the development of legislation, regulations, and economic strategies that impact resource industries by:

- Prioritizing economically viable access to resources;

- Supporting innovation within each sector to foster sustainable growth and enhance competitiveness;

- Actively engaging with each resource sector and its stakeholders to comprehensively understand their unique challenges and opportunities; and

- Take decisive action to amend policies and legislation based on the unique challenges and opportunities identified

- Removing restrictive legislation on resource sector industries.

Village of Chase

PO Box 440, 826 Okanagan Ave,
Chase, British Columbia V0E 1M0
Office: 250. 679-3238
Fax: 250. 679-3070
www.chasebc.ca

June 5, 2025

The Honourable Lisa Beare, M.L.A.
Minister of Education and Child Care
PO Box 9045 Stn Prov Govt
Victoria, BC V8W 9E2
Email: ECC.Minister@gov.bc.ca

Dear Minister Beare:

RE: Funding for Public Education

At its May 27, 2025 Regular Meeting, the Council of the Village of Chase passed the following resolution:

> "*THAT Council write a letter to the Minister of Education and Child Care that public education is important to the Village of Chase and needs to be properly funded and copy MLA Ward Stamer and all local governments in B.C.*"

We write on behalf of our community to advocate for students in Chase and throughout British Columbia.

We understand that provincial governments have competing priorities to consider when allocating public funds across program areas. However, current funding levels are not sufficient to support student learning and well-being in our province.

We know that a properly funded public education system significantly improves the opportunities and outcomes for young people in our community. We call on the provincial government to address urgently needed funding for public education.

We thank you for giving thoughtful consideration to this most important issue.

Sincerely,
VILLAGE OF CHASE
David Lepsoe
David Lepsoe, Mayor, on behalf of Council

Village of Chase

PO Box 440, 826 Okanagan Ave,
Chase, British Columbia V0E 1M0
Office: 250. **679-3238**
Fax: 250. 679-3070
www.chasebc.ca

Cc: The Honourable David Eby, M.L.A., Premier of British Columbia

The Honourable Ward Stamer, M.L.A. for Kamloops-North Thompson

All local governments in British Columbia

City of Campbell River
From the Office of the Mayor

June 5, 2025,

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Kermit Dahl
Mayor

City of Campbell River

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---

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- Take decisive action to amend policies and legislation based on the unique challenges and opportunities identified

- Removing restrictive legislation on resource sector industries.

June 11, 2025

1309414

Via email: mayor@barriere.ca; George.Lampreau@simpcw.com;
director.jhayward@tnrd.ca

Their Worship Rob Kerslake
Mayor of the District of Barriere,
George Lampreau
Chief, Simpcw First Nation, and,
Jill Hayward
Director, Thompson Nicola Regional District

Dear Mayor Rob Kerslake, Chief George Lampreau and Jill Hayward:

Thank you for your letter of March 4, 2025, regarding emergency health services in Barriere. I apologize for the delay in response.

BC Emergency Health Services (BCEHS) is committed to providing timely, high quality and safe out-of-hospital care for patients throughout BC. I recognize how important the Juliet resource has been to Barriere and understand the concern you have for adequate coverage in the North Thompson region.

BCEHS supports Barriere and the communities of the North Thompson region with four ambulances on a permanent basis. Barriere operates as an "Alpha" shift model, meaning the community has full-time paramedics staffed 24/7 responding from the station. They also have a full-time Unit Chief position and a full-time standalone Community Paramedic (CP) position. The CP in Barriere helps bridge the gap in rural and remote health service delivery by providing non-emergency and scheduled care to patients as part of an integrated healthcare team. In the event a CP is the closest most appropriate unit, they may also be dispatched to a high-acuity 9-1-1 call.

The Juliet Car is a part of the temporary resources put in place in response to the challenge of unplanned emergency department closures in the region. The Ministry of Health (Ministry) has communicated to BCEHS that they are supported to maintain this ambulance in Barriere up until at least September 30, 2025. It is important to note that BCEHS is a provincial service not limited by municipal boundaries—they use a dynamic deployment model to make the most of available resources to respond to patients.

...2

The Ministry is working closely with the regional health authorities on a comprehensive approach to addressing the challenges of unplanned emergency department closures across rural BC. This work will help determine whether current temporary ambulance resources need to be sustained, moved to different communities or discontinued. Sustaining reliable services for British Columbians living in rural communities will be the principle that guides this work.

We are confident that recent investments, made in partnership with the Ministry, will ensure communities throughout the region continue to receive prompt and reliable service in the years to come. I appreciate the opportunity to respond.

Sincerely,

Josie Osborne
Minister

pc: Doug Garland, Director, Clinical Operations – Interior West, BC Emergency Health Services
Tasha Buchanan, Corporate Officer, District of Barrier

DISTRICT OF COLDSTREAM

9901 KALAMALKA ROAD, COLDSTREAM, BC V1B 1L6
Phone 250-545-5304 Fax 250-545-4733
Email: info@coldstream.ca Website: www.coldstream.ca
"Rural Living At Its Best"

June 17, 2025
0230-30-12 (Resolutions)

UBCM Member Municipalities
Via Email

Dear Mayors and Councillors,

Re: Modernization of Wastewater Regulations – UBCM Resolution

At their meeting held May 26, 2026, the District of Coldstream Council passed the following resolution:

> *"THAT Council direct Administration to forward the following resolution to the Union of British Columbia Municipalities Annual Convention for consideration:*
>
> > ***Whereas** the oversight of wastewater management in British Columbia is divided between two provincial ministries, resulting in split jurisdiction over two key regulations — the Municipal Wastewater Regulation (MWR) (2001) and the Sewerage System Regulation (SSR) (2005);*
> >
> > ***And whereas** these regulations have not undergone significant updates since their enactment, despite evolving environmental standards, increasing concerns regarding the professional oversight of these systems, emerging technologies, and increasing community and ecological demands;*
> >
> > ***And whereas** the Province has established priorities to support housing development, infrastructure expansion, improved cumulative effects assessment in natural resource decision-making, and stronger integration of source water and drinking water protection;*
> >
> > ***Therefore, be it resolved** that UBCM requests the Province of British Columbia to undertake a comprehensive review and modernization of the Municipal Wastewater Regulation and Sewerage System Regulation to ensure alignment with current environmental pressures, technological advancements, and land use planning needs.*
>
> *AND THAT Administration be directed to copy the correspondence to Lake Country, Columbia-Shuswap Regional District and the City of Vernon;*
>
> *AND FURTHER THAT Administration be directed to copy the correspondence to all UBCM member municipalities for information and request for support."*

This resolution was co-sponsored by the City of Vernon, District of Lake Country and the Columbia Shuswap Regional District and submitted to UBCM for consideration at the 2025 Convention. We encourage you to consider supporting this resolution at the 2025 UBCM Convention.

Yours truly,

Keri-Ann Austin, MMC
Chief Administrative Officer

cc Coldstream Council