


Cariboo Regional District

# ALEXIS CREEK WATER SYSTEM 2024 ANNUAL REPORT

**Operating Permit # 002916** **CRD Utilities Department**

*building communities together*

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File: 5600-20-06-01

January 14, 2025

Christine Sweezey
Environmental Health Officer
Interior Health
540 Borland Street, 3rd Floor
Williams Lake, BC V2G 2G8

Dear Christine Sweezey:

Re: Transmittal of the 2024 Annual Report for the Alexis Creek Water System

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We are pleased to submit the 2024 Annual Report for the Alexis Creek Water System. This report is prepared to provide a comprehensive summary of the key developments, activities, and achievements of 2024, as well as to outline plans for the water system.

The report has been developed with consideration for public engagement and transparency, ensuring it meets the information needs of Interior Health, the Cariboo Regional District Board of Directors, and particularly the Alexis Creek community, as represented by Electoral Area K Director Betty Anderson.

We trust this report will serve as a valuable resource in understanding the progress and direction of the Alexis Creek Water System.

Sincerely,

Kelly McDonald
Manager of Utilities

KM/cm

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# 1. Executive Summary

The Cariboo Regional District (CRD) continues to deliver high-quality services for the Alexis Creek Water System, which stands out as a reliable and well-maintained utility within the Central Cariboo region. Recent upgrades, including a new well, pumphouse, and SCADA communication system, have significantly improved operational efficiency and remote management capabilities.

Highlights include:

- Water Quality and Maintenance: Routine inspections, real-time monitoring, and 48 bacteriological tests annually ensure safe drinking water. Chlorine residuals are maintained within best practice standards to protect public health.
- Emergency Preparedness: Development of an Emergency Response and Contingency Plan (ERCP) is underway, enhancing readiness for potential equipment failures, natural disasters, and contamination events.
- Operator Expertise: Certified Operators oversee Alexis Creek, Russet Bluff, and Lexington water systems, as well as local sewer systems. Ongoing training under the Environmental Operator's Certification Program ensures service excellence.
- Future Plans: A system Master Plan and comprehensive asset inventory will be developed in 2025 to improve budgeting, preventive maintenance, and grant eligibility. Valve exercising, fire hydrant, and pressure reducing valve maintenance are also planned.
- Water Demand: Average daily usage per resident was 262 litres in 2024, well below national averages, with peak consumption in July.

These efforts underscore the CRD's ongoing commitment to maintaining a resilient, efficient, and sustainable water system for the Alexis Creek community.

## 1.1. Key Information:

System key facts:

- 4.7 km of main pipe
- Single reservoir
- Single well and pump station
- 135 service connections serving approximately 300 residents
- Chlorinated

## 2. Introduction

The CRD has been responsible for operating the Alexis Creek Water System in Area K since 1982 (Bylaw 1433, 1982). Alexis Creek Water is part of the Central Cariboo regional utilities systems covering a large geographical area. This system is made up entirely of PVC and has recently benefited from a new well and pumphouse with updated instrumentation and communications. Overall, the condition and reliability of the system is exceptional among CRD systems. This system is equipped to maintain a small disinfectant residual to safeguard from bacterial contamination and prevent buildup on the distribution system pipes.

## 3. Maintenance

CRD Operators follow a structured maintenance and monitoring schedule approved by Interior Health Authority to ensure water quality. Key activities include:

- Collecting 48 bacteriological water samples annually and sending them to an accredited laboratory to confirm potability and detect potential issues.
- Conducting full-spectrum water quality analysis as required.
- Performing weekly inspections and maintenance of system equipment to monitor performance and ensure operational reliability.

Planning is underway for full system main valve exercising, fire hydrant, and pressure reducing valve maintenance in 2025.

### 3.1. Water Disinfection and Compliance

The CRD maintains a chlorine residual as recommended by industry best practice to safeguard our residents on the Alexis Creek Water System. The residual is kept at no lower than 0.5 mg/L and no greater than 1.0 mg/L with instrumentation and specialized dosing pumps. The superior quality of the water eliminates the risk of chlorine by-products in this system. Regular residual sampling is undertaken by the Operators to confirm dosing accuracy.

## 4. Projects and Planned Activities

### 4.1. New Source Well

A new pumphouse and well were commissioned in early 2025 with construction taking place through 2024. The project, paid for by provincial grant funding (Community Works Fund), allowed the CRD to upgrade the communications and remote

monitoring and control system (SCADA). This is especially critical for Alexis Creek as the system is geographically remote. The upgraded SCADA system allows Operators to diagnose and adjust many problems over a fibre-optic network, ultimately saving the taxpayers money. A temporary pumphouse was utilized in the form of a shipping container, which has since been removed.

A generator was also installed to add reliability when there are problems with the power grid.

### 4.2. Asset Management

Throughout 2024, asset management inventory and implementation efforts have been ongoing across all Cariboo Regional District utilities, including the Alexis Creek Water System. This initiative is designed to support more efficient budgeting for system improvements and strengthen preventive maintenance practices. A system Master Plan is scheduled for development in 2025 to assist with long-term budgeting and improve eligibility for grant funding opportunities.

## 5. Environmental Operator's Certification Program (EOCP)

The CRD has been active in 2024, with staff completing numerous training courses and achieving certification levels in the Environmental Operator's Certification Program (EOCP). The Central region systems have two certified Operators *(table 1).*

The Operators are responsible for operating the Alexis Creek Water System along with Russet Bluff and Lexington water systems. These Operators are also responsible for the sewer systems in Alexis Creek, Pine Valley and Wildwood.

*Table 1: Environmental Operator Certification Levels*

| ***Operator*** | ***Region*** | ***Water Distribution*** | ***Water Treatment*** | ***Small Water Systems*** |
|---|---|---|---|---|
| ***Ken Heidema*** | *Central* | 2 | 1 | ☑ |
| ***Charles Howes*** | *Central* | 1 | 1 | |
| *Jourdy Ouellette (backup)* | *South* | 3 | 2 | |
| *Philip Wilkins (backup)* | *North* | 1 | 1 | ☑ |
| *Manager (backup)* | *Central* | 4 | 1 | |

Operators have worked diligently to maintain the level of service our residents expect while safeguarding public health. We anticipate improvements in 2025 through additional staff and continued training.

## 6. Source to Tap Risks and Cross-Connection Control

The Alexis Creek Water System relies on a single source well located in a developed area at the center of the community, which poses a higher risk of contamination due to nearby human activities. To mitigate these risks, establishing a Source Protection Area will be assessed. Additionally, a cross-connection control program is planned to prevent potential backflow of contaminants into the water system, enhancing overall protection and reliability and meeting permit requirements.

## 7. Water Sampling

The 2024 sampling schedule consisted of a full chemical analysis as well as twice monthly bacteriological sampling at two locations. In addition, chlorine residuals and turbidity are monitored by the Operators in real time.

* *Sample results attached.*

## 8. Water Quality

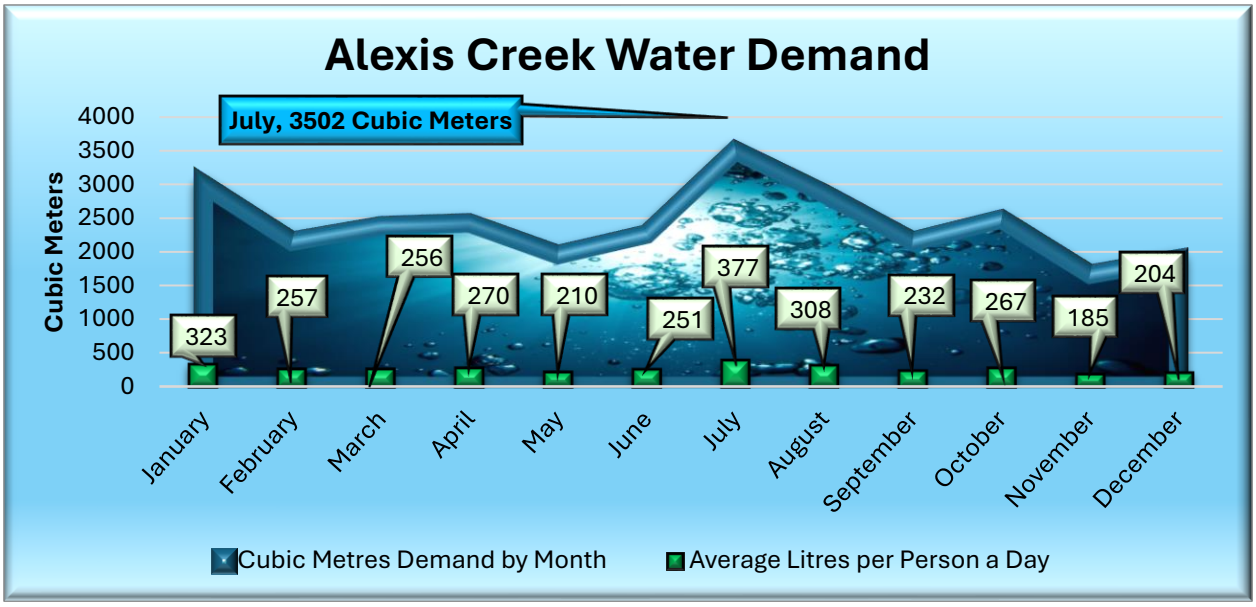
Although relatively hard water, Alexis Creek source water is considered excellent for our region. There are no parameters of concern from laboratory testing.

## 9. Events

### 9.1. Water Demand

Demand averaged 262 litres per resident per day in 2024, which is well below the national average residential use. This statistic is based off a regional average of 2.5 residents per connection. Total water demand was 28,745 cubic meters with a peak use in July (3,502 cubic metres, 377 litres per person per day) and lowest use in November (1,667 cubic metres, 185 litres per person per day). Demand illustrated below (*figure 1*):

*Figure 1: Alexis Creek Monthly Demand in Cubic Metres*




## 10. Emergency Planning

A new Emergency Response and Contingency Plan (ERCP) for the Alexis Creek Water System is currently being developed to enhance preparedness and ensure quick, coordinated responses to potential emergencies affecting the water supply.

The process began with a risk assessment to identify potential hazards, such as equipment failures, natural disasters, contamination events, and power outages. Stakeholder input, including feedback from Operators, community members, and regulatory bodies, helped shape the plan to address specific vulnerabilities and local conditions.

### 10.1. Key Elements of the ERCP

The key elements of the ERCP include:

- Clear Response Protocols: Step-by-step actions for various emergency scenarios.
- Roles and Responsibilities: Defined roles for Operators, management, and external agencies.
- Communication Strategies: Procedures for notifying residents, government agencies, and media.
- Resource Allocation: Identification of equipment, backup systems, and personnel required during emergencies.

- Training and Drills: Regular exercises to ensure staff are familiar with the plan and can respond efficiently.

The plan will be reviewed and approved by local health authorities to ensure compliance with provincial regulations. Updating the ERCP ensures that emergency procedures align with the current operational capacity.

In addition, a drought management plan is also currently being developed in line with best practice.

** Plans attached.*

## 11. Conclusion

The Cariboo Regional District's continued investment in the Alexis Creek Water System has strengthened its operational reliability, water quality, and emergency preparedness. Recent infrastructure upgrades and proactive maintenance practices ensure safe and efficient service delivery for residents. With upcoming initiatives such as the system Master Plan, asset inventory development, and emergency response improvements, the CRD is well-positioned to sustain and enhance water system performance, supporting long-term community needs and resilience.

## 12. References


- *Health Canada (2019, May 21). Guidance on Natural Organic Matter in Drinking Water. Retrieved from https://www.canada.ca/en/health-canada/programs/consultation-organic-matter-drinking-water/document.html#es*
- *Environmental Operators Certification Program (2024). Retrieved from https://eocp.ca/*
- *Sample results, Interior Health. Retrieved from https://services.interiorhealth.ca/publichealthprotection/watersamples.aspx*
- Statistics Canada (2021). *Survey of Drinking Water Plants – The Daily.* https://www150.statcan.gc.ca/n1/daily-quotidien/231114/dq231114d-eng.htm

*Thank you to:*

- *Cheryl McMullen*
- *Jourdy Ouellette*
- *Colin Brusic*
- *Ken Heidema*
- *Chuck Howes*
- *Phil Wilkins*
- *Tyler Olsen*

*for their contribution.*

## Appendix A: Links

Interior Health:

- *Interior Health Water Advisories*
- *Drinking Water | Environmental & Seasonal Health | IH*

Cariboo Regional District:

- *Water Notices and Advisories - Cariboo Regional District*
- *Sewer and Water Services - Cariboo Regional District*

Notification App (VoyentAlert!):

- *Emergency Notification System - Cariboo Regional District*

Environmental Operators Certification Program (EOCP):

- *EOCP Homepage | EOCP*
- *Backflow Prevention, Cross Connection Control, and the Environmental Operators Certification Program | EOCP*

## Appendix B:  Sample Results

| **Facility and Sample Site:**<br>**Alexis Creek Waterworks**<br>**7569 McAuley Road, Alexis Creek, BC** | **Test Type:**<br>**Drinking Water – Bacteriological**<br>**Unit of Measure: CFU per 100 ml** | **Value** | **Date Collected** | **Results** |
|---|---|---|---|---|
| Pumphouse | Sample Parameter: E. coli | <1 | 02 Jan 2024 | Acceptable |
| | Sample Parameter: Total Coliform | <1 | 02 Jan 2024 | Acceptable |
| Sample Station | Sample Parameter: E. coli | <1 | 02 Jan 2024 | Acceptable |
| | Sample Parameter: Total Coliform | <1 | 02 Jan 2024 | Acceptable |
| Pumphouse | Sample Parameter: E. coli | <1 | 06 Feb 2024 | Acceptable |
| | Sample Parameter: Total Coliform | <1 | 06 Feb 2024 | Acceptable |
| Sample Station | Sample Parameter: E. coli | <1 | 06 Feb 2024 | Acceptable |
| | Sample Parameter: Total Coliform | <1 | 06 Feb 2024 | Acceptable |
| Pumphouse | Sample Parameter: E. coli | <1 | 13 Feb 2024 | Acceptable |
| | Sample Parameter: Total Coliform | <1 | 13 Feb 2024 | Acceptable |
| Sample Station | Sample Parameter: E. coli | <1 | 13 Feb 2024 | Acceptable |
| | Sample Parameter: Total Coliform | <1 | 13 Feb 2024 | Acceptable |
| Pumphouse | Sample Parameter: E. coli | <1 | 06 Mar 2024 | Acceptable |
| | Sample Parameter: Total Coliform | <1 | 06 Mar 2024 | Acceptable |
| Sample Station | Sample Parameter: E. coli | <1 | 12 Mar 2024 | Acceptable |
| | Sample Parameter: Total Coliform | <1 | 12 Mar 2024 | Acceptable |
| Pumphouse | Sample Parameter: E. coli | <1 | 08 Apr 2024 | Acceptable |
| | Sample Parameter: Total Coliform | <1 | 08 Apr 2024 | Acceptable |
| Sample Station | Sample Parameter: E. coli | <1 | 08 Apr 2024 | Acceptable |
| | Sample Parameter: Total Coliform | <1 | 08 Apr 2024 | Acceptable |
| Pumphouse | Sample Parameter: E. coli | <1 | 17 Apr 2024 | Acceptable |
| | Sample Parameter: Total Coliform | <1 | 17 Apr 2024 | Acceptable |
| Sample Station | Sample Parameter: E. coli | <1 | 17 Apr 2024 | Acceptable |
| | Sample Parameter: Total Coliform | <1 | 17 Apr 2024 | Acceptable |
| Pumphouse | Sample Parameter: E. coli | <1 | 06 May 2024 | Acceptable |
| | Sample Parameter: Total Coliform | <1 | 06 May 2024 | Acceptable |
| Sample Station | Sample Parameter: E. coli | <1 | 06 May 2024 | Acceptable |
| | Sample Parameter: Total Coliform | <1 | 06 May 2024 | Acceptable |
| Pumphouse | Sample Parameter: E. coli | <1 | 05 Jun 2024 | Acceptable |
| | Sample Parameter: Total Coliform | <1 | 05 Jun 2024 | Acceptable |
| Sample Station | Sample Parameter: E. coli | <1 | 05 Jun 2024 | Acceptable |
| | Sample Parameter: Total Coliform | <1 | 05 Jun 2024 | Acceptable |
| Pumphouse | Sample Parameter: E. coli | <1 | 18 Jun 2024 | Acceptable |
| | Sample Parameter: Total Coliform | <1 | 18 Jun 2024 | Acceptable |
| Sample Station | Sample Parameter: E. coli | <1 | 18 Jun 2024 | Acceptable |
| | Sample Parameter: Total Coliform | <1 | 18 Jun 2024 | Acceptable |
| Pumphouse | Sample Parameter: E. coli | <1 | 19 Jun 2024 | Acceptable |
| | Sample Parameter: Total Coliform | <1 | 19 Jun 2024 | Acceptable |
| Sample Station | Sample Parameter: E. coli | <1 | 19 Jun 2024 | Acceptable |
| | Sample Parameter: Total Coliform | <1 | 19 Jun 2024 | Acceptable |
| Pumphouse | Sample Parameter: E. coli | <1 | 10 Jul 2024 | Acceptable |
| | Sample Parameter: Total Coliform | <1 | 10 Jul 2024 | Acceptable |
| Sample Station | Sample Parameter: E. coli | <1 | 10 Jul 2024 | Acceptable |
| | Sample Parameter: Total Coliform | <1 | 10 Jul 2024 | Acceptable |
| Pumphouse | Sample Parameter: E. coli | <1 | 17 Jul 2024 | Acceptable |
| | Sample Parameter: Total Coliform | <1 | 17 Jul 2024 | Acceptable |
| Sample Station | Sample Parameter: E. coli | <1 | 17 Jul 2024 | Acceptable |
| | Sample Parameter: Total Coliform | <1 | 17 Jul 2024 | Acceptable |
| Pumphouse | Sample Parameter: E. coli | <1 | 06 Aug 2024 | Acceptable |
| | Sample Parameter: Total Coliform | <1 | 06 Aug 2024 | Acceptable |
| Sample Station | Sample Parameter: E. coli | <1 | 06 Aug 2024 | Acceptable |
| | Sample Parameter: Total Coliform | <1 | 06 Aug 2024 | Acceptable |
| Pumphouse | Sample Parameter: E. coli | <1 | 14 Aug 2024 | Acceptable |
| | Sample Parameter: Total Coliform | <1 | 14 Aug 2024 | Acceptable |
| Sample Station | Sample Parameter: E. coli | <1 | 14 Aug 2024 | Acceptable |
| | Sample Parameter: Total Coliform | <1 | 14 Aug 2024 | Acceptable |
| Pumphouse | Sample Parameter: E. coli | <1 | 11 Sep 2024 | Acceptable |
| | Sample Parameter: Total Coliform | <1 | 11 Sep 2024 | Acceptable |
| Sample Station | Sample Parameter: E. coli | <1 | 11 Sep 2024 | Acceptable |
| | Sample Parameter: Total Coliform | <1 | 11 Sep 2024 | Acceptable |
| Pumphouse | Sample Parameter: E. coli | <1 | 18 Sep 2024 | Acceptable |
| | Sample Parameter: Total Coliform | <1 | 18 Sep 2024 | Acceptable |
| Sample Station | Sample Parameter: E. coli | <1 | 18 Sep 2024 | Acceptable |
| | Sample Parameter: Total Coliform | <1 | 18 Sep 2024 | Acceptable |

| **Facility and Sample Site:**<br>**Alexis Creek Water System**<br>**7569 McAuley Road, Alexis Creek, BC** | **Test Type:**<br>**Drinking Water – Bacteriological**<br>**Unit of Measure: CFU per 100 ml** | **Value** | **Date Collected** | **Results** |
|---|---|---|---|---|
| Pumphouse | Sample Parameter: E. coli | <1 | 02 Oct 2024 | Acceptable |
| | Sample Parameter: Total Coliform | <1 | 02 Oct 2024 | Acceptable |
| Sample Station | Sample Parameter: E. coli | <1 | 02 Oct 2024 | Acceptable |
| | Sample Parameter: Total Coliform | <1 | 02 Oct 2024 | Acceptable |
| Pumphouse | Sample Parameter: E. coli | <1 | 09 Oct 2024 | Acceptable |
| | Sample Parameter: Total Coliform | <1 | 09 Oct 2024 | Acceptable |
| Sample Station | Sample Parameter: E. coli | <1 | 09 Oct 2024 | Acceptable |
| | Sample Parameter: Total Coliform | <1 | 09 Oct 2024 | Acceptable |
| Pumphouse | Sample Parameter: E. coli | <1 | 06 Nov 2024 | Acceptable |
| | Sample Parameter: Total Coliform | <1 | 06 Nov 2024 | Acceptable |
| Sample Station | Sample Parameter: E. coli | <1 | 06 Nov 2024 | Acceptable |
| | Sample Parameter: Total Coliform | <1 | 06 Nov 2024 | Acceptable |
| Pumphouse | Sample Parameter: E. coli | <1 | 13 Nov 2024 | Acceptable |
| | Sample Parameter: Total Coliform | <1 | 13 Nov 2024 | Acceptable |
| Sample Station | Sample Parameter: E. coli | <1 | 13 Nov 2024 | Acceptable |
| | Sample Parameter: Total Coliform | <1 | 13 Nov 2024 | Acceptable |
| Pumphouse | Sample Parameter: E. coli | <1 | 02 Dec 2024 | Acceptable |
| | Sample Parameter: Total Coliform | <1 | 02 Dec 2024 | Acceptable |
| No sample site given | Sample Parameter: E. coli | <1 | 02 Dec 2024 | Acceptable |
| | Sample Parameter: Total Coliform | <1 | 02 Dec 2024 | Acceptable |
| Pumphouse | Sample Parameter: E. coli | <1 | 04 Dec 2024 | Acceptable |
| | Sample Parameter: Total Coliform | <1 | 04 Dec 2024 | Acceptable |
| Pumphouse Raw – Well 2 | Sample Parameter: E. coli | <1 | 04 Dec 2024 | Acceptable |
| | Sample Parameter: Total Coliform | <1 | 04 Dec 2024 | Acceptable |
| No sample site given | Sample Parameter: E. coli | <1 | 10 Dec 2024 | Acceptable |
| | Sample Parameter: Total Coliform | <1 | 10 Dec 2024 | Acceptable |

| | | |
|---|---|---|
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| Work Order | : | KS2400865 |
| Client | : | Cariboo Regional District |
| Project | : | Drinking Water |

## Analytical Results Evaluation

Matrix: **Water**

| Analyte | CAS Number | Method/Lab | Unit | Client sample ID: Alexis Creek | Lexington | Russet Bluff | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date/time: 12-Mar-2024 02:30 | 12-Mar-2024 02:30 | 12-Mar-2024 02:30 | ---- | ---- | ---- | ---- |
| | | | | Sub-Matrix: Water | Water | Water | ---- | ---- | ---- | ---- |
| | | | | KS2400865-001 | KS2400865-002 | KS2400865-003 | -------- | -------- | -------- | -------- |
| **Physical Tests** | | | | | | | | | | |
| **Alkalinity, total (as CaCO3)** | ---- | E290/VA | mg/L | 277 | 366 | 604 | ---- | ---- | ---- | ---- |
| **Colour, true** | ---- | E329/VA | CU | <5.0 | <5.0 | <5.0 | ---- | ---- | ---- | ---- |
| **Conductivity** | ---- | E100/VA | µS/cm | 581 | 1410 | 1200 | ---- | ---- | ---- | ---- |
| **pH** | ---- | E108/VA | pH units | 8.39 | 8.37 | 8.45 | ---- | ---- | ---- | ---- |
| **Solids, total dissolved [TDS]** | ---- | E162/VA | mg/L | 347 | 906 | 604 | ---- | ---- | ---- | ---- |
| **Turbidity** | ---- | E121/VA | NTU | <0.10 | 0.65 | <0.10 | ---- | ---- | ---- | ---- |
| **Hardness (as CaCO3), from total Ca/Mg** | ---- | EC100A/VA | mg/L | 191 | 528 | 708 | ---- | ---- | ---- | ---- |
| **Anions and Nutrients** | | | | | | | | | | |
| **Chloride** | 16887-00-6 | E235.Cl/VA | mg/L | 5.74 | 57.3 | 39.7 | ---- | ---- | ---- | ---- |
| **Fluoride** | 16984-48-8 | E235.F/VA | mg/L | 0.157 | 0.112 | <0.100 DLDS | ---- | ---- | ---- | ---- |
| **Nitrate (as N)** | 14797-55-8 | E235.NO3-L/VA | mg/L | 0.382 | <0.0250 DLDS | 0.990 | ---- | ---- | ---- | ---- |
| **Nitrite (as N)** | 14797-65-0 | E235.NO2-L/VA | mg/L | <0.0010 | <0.0050 DLDS | <0.0050 DLDS | ---- | ---- | ---- | ---- |
| **Sulfate (as SO4)** | 14808-79-8 | E235.SO4/VA | mg/L | 31.9 | 339 | 63.0 | ---- | ---- | ---- | ---- |
| **Total Metals** | | | | | | | | | | |
| **Aluminum, total** | 7429-90-5 | E420/VA | mg/L | ---- | <0.0030 | ---- | ---- | ---- | ---- | ---- |
| **Aluminum, total** | 7429-90-5 | E420/VA | mg/L | <0.0100 | ---- | <0.0100 | ---- | ---- | ---- | ---- |
| **Antimony, total** | 7440-36-0 | E420/VA | mg/L | ---- | <0.00010 | ---- | ---- | ---- | ---- | ---- |
| **Antimony, total** | 7440-36-0 | E420/VA | mg/L | <0.00050 | ---- | <0.00050 | ---- | ---- | ---- | ---- |
| **Arsenic, total** | 7440-38-2 | E420/VA | mg/L | 0.00310 | 0.00887 | 0.00253 | ---- | ---- | ---- | ---- |
| **Barium, total** | 7440-39-3 | E420/VA | mg/L | ---- | 0.00891 | ---- | ---- | ---- | ---- | ---- |
| **Barium, total** | 7440-39-3 | E420/VA | mg/L | <0.0200 | ---- | 0.0225 | ---- | ---- | ---- | ---- |
| **Boron, total** | 7440-42-8 | E420/VA | mg/L | ---- | 0.123 | ---- | ---- | ---- | ---- | ---- |
| **Boron, total** | 7440-42-8 | E420/VA | mg/L | <0.100 | ---- | 0.212 | ---- | ---- | ---- | ---- |
| **Cadmium, total** | 7440-43-9 | E420/VA | mg/L | ---- | <0.0000150 DLM | ---- | ---- | ---- | ---- | ---- |
| **Cadmium, total** | 7440-43-9 | E420/VA | mg/L | <0.000200 | ---- | <0.000200 | ---- | ---- | ---- | ---- |
| **Calcium, total** | 7440-70-2 | E420/VA | mg/L | ---- | 50.0 | ---- | ---- | ---- | ---- | ---- |
| **Calcium, total** | 7440-70-2 | E420/VA | mg/L | 20.6 | ---- | 10.0 | ---- | ---- | ---- | ---- |

| | | |
|---|---|---|
| Page | : | 5 of 7 |
| Work Order | : | KS2400865 |
| Client | : | Cariboo Regional District |
| Project | : | Drinking Water |

## Analytical Results Evaluation

Matrix: **Water**

| Analyte | CAS Number | Method/Lab | Unit | Client sample ID | Alexis Creek | Lexington | Russet Bluff | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date/time | 12-Mar-2024 02:30 | 12-Mar-2024 02:30 | 12-Mar-2024 02:30 | ---- | ---- | ---- | ---- |
| | | | | Sub-Matrix | Water | Water | Water | ---- | ---- | ---- | ---- |
| | | | | | KS2400865-001 | KS2400865-002 | KS2400865-003 | -------- | -------- | -------- | -------- |
| **Total Metals** | | | | | | | | | | | |
| **Chromium, total** | 7440-47-3 | E420/VA | mg/L | | ---- | <0.00050 | ---- | ---- | ---- | ---- | ---- |
| **Chromium, total** | 7440-47-3 | E420/VA | mg/L | | 0.00829 | ---- | 0.0116 | ---- | ---- | ---- | ---- |
| **Copper, total** | 7440-50-8 | E420/VA | mg/L | | ---- | 0.00051 | ---- | ---- | ---- | ---- | ---- |
| **Copper, total** | 7440-50-8 | E420/VA | mg/L | | 0.00148 | ---- | 0.00433 | ---- | ---- | ---- | ---- |
| **Iron, total** | 7439-89-6 | E420/VA | mg/L | | ---- | 0.167 | ---- | ---- | ---- | ---- | ---- |
| **Iron, total** | 7439-89-6 | E420/VA | mg/L | | <0.030 | ---- | <0.030 | ---- | ---- | ---- | ---- |
| **Lead, total** | 7439-92-1 | E420/VA | mg/L | | ---- | <0.000050 | ---- | ---- | ---- | ---- | ---- |
| **Lead, total** | 7439-92-1 | E420/VA | mg/L | | <0.000500 | ---- | <0.000500 | ---- | ---- | ---- | ---- |
| **Magnesium, total** | 7439-95-4 | E420/VA | mg/L | | ---- | 98.0 | ---- | ---- | ---- | ---- | ---- |
| **Magnesium, total** | 7439-95-4 | E420/VA | mg/L | | 33.9 | ---- | 166 | ---- | ---- | ---- | ---- |
| **Manganese, total** | 7439-96-5 | E420/VA | mg/L | | ---- | 0.102 | ---- | ---- | ---- | ---- | ---- |
| **Manganese, total** | 7439-96-5 | E420/VA | mg/L | | <0.00200 | ---- | <0.00200 | ---- | ---- | ---- | ---- |
| **Mercury, total** | 7439-97-6 | E508/VA | mg/L | | <0.0000050 | <0.0000050 | <0.0000050 | ---- | ---- | ---- | ---- |
| **Potassium, total** | 7440-09-7 | E420/VA | mg/L | | ---- | 6.06 | ---- | ---- | ---- | ---- | ---- |
| **Potassium, total** | 7440-09-7 | E420/VA | mg/L | | 6.03 | ---- | 7.38 | ---- | ---- | ---- | ---- |
| **Selenium, total** | 7782-49-2 | E420/VA | mg/L | | ---- | <0.000050 | ---- | ---- | ---- | ---- | ---- |
| **Selenium, total** | 7782-49-2 | E420/VA | mg/L | | 0.00537 | ---- | 0.00247 | ---- | ---- | ---- | ---- |
| **Sodium, total** | 7440-23-5 | E420/VA | mg/L | | ---- | 110 | ---- | ---- | ---- | ---- | ---- |
| **Sodium, total** | 7440-23-5 | E420/VA | mg/L | | 62.6 | ---- | 32.3 | ---- | ---- | ---- | ---- |
| **Uranium, total** | 7440-61-1 | E420/VA | mg/L | | ---- | 0.000987 | ---- | ---- | ---- | ---- | ---- |
| **Uranium, total** | 7440-61-1 | E420/VA | mg/L | | 0.00574 | ---- | <0.000100 | ---- | ---- | ---- | ---- |
| **Zinc, total** | 7440-66-6 | E420/VA | mg/L | | ---- | <0.0030 | ---- | ---- | ---- | ---- | ---- |
| **Zinc, total** | 7440-66-6 | E420/VA | mg/L | | <0.0500 | ---- | <0.0500 | ---- | ---- | ---- | ---- |

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.

| | | |
|---|---|---|
| Page | : | 6 of 7 |
| Work Order | : | KS2400865 |
| Client | : | Cariboo Regional District |
| Project | : | Drinking Water |

## Summary of Guideline Limits

| Analyte | CAS Number | Unit | BCDWQG AO | BCDWQG MAC | BCDWQG OG |
|---|---|---|---|---|---|
| **Physical Tests** | | | | | |
| Alkalinity, total (as CaCO3) | ---- | mg/L | -- | -- | -- |
| Colour, true | ---- | CU | 15 CU | -- | -- |
| Conductivity | ---- | µS/cm | -- | -- | -- |
| Hardness (as CaCO3), from total Ca/Mg | ---- | mg/L | -- | -- | -- |
| pH | ---- | pH units | -- | -- | 7 - 10.5 pH units |
| Solids, total dissolved [TDS] | ---- | mg/L | 500 mg/L | -- | -- |
| Turbidity | ---- | NTU | -- | 1 NTU | -- |
| **Anions and Nutrients** | | | | | |
| Chloride | 16887-00-6 | mg/L | 250 mg/L | -- | -- |
| Fluoride | 16984-48-8 | mg/L | -- | 1.5 mg/L | -- |
| Nitrate (as N) | 14797-55-8 | mg/L | -- | 10 mg/L | -- |
| Nitrite (as N) | 14797-65-0 | mg/L | -- | 1 mg/L | -- |
| Sulfate (as SO4) | 14808-79-8 | mg/L | 500 mg/L | -- | -- |
| **Total Metals** | | | | | |
| Aluminum, total | 7429-90-5 | mg/L | -- | 2.9 mg/L | -- |
| Antimony, total | 7440-36-0 | mg/L | -- | 0.006 mg/L | -- |
| Arsenic, total | 7440-38-2 | mg/L | -- | 0.01 mg/L | -- |
| Barium, total | 7440-39-3 | mg/L | -- | 2 mg/L | -- |
| Boron, total | 7440-42-8 | mg/L | -- | 5 mg/L | -- |
| Cadmium, total | 7440-43-9 | mg/L | -- | 0.007 mg/L | -- |
| Calcium, total | 7440-70-2 | mg/L | -- | -- | -- |
| Chromium, total | 7440-47-3 | mg/L | -- | 0.05 mg/L | -- |
| Copper, total | 7440-50-8 | mg/L | 1 mg/L | 2 mg/L | -- |
| Iron, total | 7439-89-6 | mg/L | 0.3 mg/L | -- | -- |
| Lead, total | 7439-92-1 | mg/L | -- | 0.005 mg/L | -- |
| Magnesium, total | 7439-95-4 | mg/L | -- | -- | -- |
| Manganese, total | 7439-96-5 | mg/L | 0.02 mg/L | 0.12 mg/L | -- |
| Mercury, total | 7439-97-6 | mg/L | -- | 0.001 mg/L | -- |
| Potassium, total | 7440-09-7 | mg/L | -- | -- | -- |
| Selenium, total | 7782-49-2 | mg/L | -- | 0.05 mg/L | -- |
| Sodium, total | 7440-23-5 | mg/L | 200 mg/L | -- | -- |
| Uranium, total | 7440-61-1 | mg/L | -- | 0.02 mg/L | -- |
| Zinc, total | 7440-66-6 | mg/L | 5 mg/L | -- | -- |

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

**Key:**

| | | |
|---|---|---|
| BCDWQG | | British Columbia Drinking Water Quality Guidelines (JAN, 2023) |
| | AO | Aesthetic Objective/Other Value |
| | MAC | Maximium Acceptable Concentrations |
| | OG | Operational Guidance |

| | | |
|---|---|---|
| Page | : | 3 of 5 |
| Work Order | : | KS2402921 |
| Client | : | Cariboo Regional District |
| Project | : | ---- |

## Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

| Analyte | CAS Number | Method/Lab | LOR | Unit | Client sample ID | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | **Alexis Creek Pump House** | ---- | ---- | ---- | ---- |
| | | | | *Client sampling date / time* | 24-Jul-2024 09:30 | ---- | ---- | ---- | ---- |
| | | | | | **KS2402921-001** | -------- | -------- | -------- | -------- |
| | | | | | Result | ---- | ---- | ---- | ---- |
| **Physical Tests** | | | | | | | | | |
| **Absorbance, UV (@ 254nm), unfiltered** | ---- | E405/VA | 0.0050 | AU/cm | 0.0060 | ---- | ---- | ---- | ---- |
| **Alkalinity, bicarbonate (as CaCO3)** | ---- | E290/VA | 1.0 | mg/L | 257 | ---- | ---- | ---- | ---- |
| **Alkalinity, carbonate (as CaCO3)** | ---- | E290/VA | 1.0 | mg/L | 22.4 | ---- | ---- | ---- | ---- |
| **Alkalinity, hydroxide (as CaCO3)** | ---- | E290/VA | 1.0 | mg/L | <1.0 | ---- | ---- | ---- | ---- |
| **Alkalinity, phenolphthalein (as CaCO3)** | ---- | E290/VA | 1.0 | mg/L | 11.2 | ---- | ---- | ---- | ---- |
| **Alkalinity, total (as CaCO3)** | ---- | E290/VA | 1.0 | mg/L | 280 | ---- | ---- | ---- | ---- |
| **Colour, true** | ---- | E329/VA | 5.0 | CU | <5.0 | ---- | ---- | ---- | ---- |
| **Conductivity** | ---- | E100/VA | 2.0 | µS/cm | 596 | ---- | ---- | ---- | ---- |
| **Hardness (as CaCO3), from total Ca/Mg** | ---- | EC100A/VA | 0.60 | mg/L | 188 | ---- | ---- | ---- | ---- |
| **Langelier index (@ 15°C)** | ---- | EC105A/VA | 0.010 | - | 0.810 | ---- | ---- | ---- | ---- |
| **Langelier index (@ 20°C)** | ---- | EC105A/VA | 0.010 | - | 0.882 | ---- | ---- | ---- | ---- |
| **Langelier index (@ 25°C)** | ---- | EC105A/VA | 0.010 | - | 0.952 | ---- | ---- | ---- | ---- |
| **Langelier index (@ 4°C)** | ---- | EC105A/VA | 0.010 | - | 0.639 | ---- | ---- | ---- | ---- |
| **Langelier index (@ 60°C)** | ---- | EC105A/VA | 0.010 | - | 1.39 | ---- | ---- | ---- | ---- |
| **Langelier index (@ 77°C)** | ---- | EC105A/VA | 0.010 | - | 1.58 | ---- | ---- | ---- | ---- |
| **pH** | ---- | E108/VA | 0.10 | pH units | 8.56 | ---- | ---- | ---- | ---- |
| **Solids, total dissolved [TDS]** | ---- | E162/VA | 10 | mg/L | 342 | ---- | ---- | ---- | ---- |
| **Turbidity** | ---- | E121/VA | 0.10 | NTU | <0.10 | ---- | ---- | ---- | ---- |
| **Transmittance, UV (@ 254nm), unfiltered** | ---- | E405/VA | 1.0 | % T/cm | 98.6 | ---- | ---- | ---- | ---- |
| **Anions and Nutrients** | | | | | | | | | |
| **Ammonia, total (as N)** | 7664-41-7 | E298/VA | 0.0050 | mg/L | <0.0050 | ---- | ---- | ---- | ---- |
| **Bromide** | 24959-67-9 | E235.Br-L/VA | 0.050 | mg/L | 0.053 | ---- | ---- | ---- | ---- |
| **Chloride** | 16887-00-6 | E235.Cl/VA | 0.50 | mg/L | 5.42 | ---- | ---- | ---- | ---- |
| **Fluoride** | 16984-48-8 | E235.F/VA | 0.020 | mg/L | 0.172 | ---- | ---- | ---- | ---- |
| **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 | 0.377 | ---- | ---- | ---- | ---- |
| **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 | ---- | ---- | ---- | ---- |

| | | |
|---|---|---|
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| Work Order | : | KS2402921 |
| Client | : | Cariboo Regional District |
| Project | : | ---- |

## Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

| Analyte | CAS Number | Method/Lab | LOR | Unit | Client sample ID | Alexis Creek Pump House | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Client sampling date / time | 24-Jul-2024 09:30 | ---- | ---- | ---- | ---- |
| | | | | | | KS2402921-001 | -------- | -------- | -------- | -------- |
| | | | | | | Result | ---- | ---- | ---- | ---- |
| **Anions and Nutrients** | | | | | | | | | | |
| Sulfate (as SO4) | 14808-79-8 | E235.SO4/VA | 0.30 | mg/L | | 33.6 | ---- | ---- | ---- | ---- |
| **Cyanides** | | | | | | | | | | |
| Cyanide, strong acid dissociable (Total) | ---- | E333/VA | 0.0050 | mg/L | | <0.0050 | ---- | ---- | ---- | ---- |
| **Organic / Inorganic Carbon** | | | | | | | | | | |
| Carbon, total organic [TOC] | ---- | E355-L/VA | 0.50 | mg/L | | 0.92 | ---- | ---- | ---- | ---- |
| **Ion Balance** | | | | | | | | | | |
| Anion sum | ---- | EC101A/VA | 0.10 | meq/L | | 6.48 | ---- | ---- | ---- | ---- |
| Cation sum (total) | ---- | EC101A/VA | 0.10 | meq/L | | 6.58 | ---- | ---- | ---- | ---- |
| Ion balance (APHA) | ---- | EC101A/VA | 0.010 | % | | 0.766 | ---- | ---- | ---- | ---- |
| **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 | | 0.00331 | ---- | ---- | ---- | ---- |
| Barium, total | 7440-39-3 | E420/VA | 0.00010 | mg/L | | 0.0135 | ---- | ---- | ---- | ---- |
| 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 | | 0.031 | ---- | ---- | ---- | ---- |
| Cadmium, total | 7440-43-9 | E420/VA | 0.0000050 | mg/L | | <0.0000050 | ---- | ---- | ---- | ---- |
| Calcium, total | 7440-70-2 | E420/VA | 0.050 | mg/L | | 21.1 | ---- | ---- | ---- | ---- |
| Cesium, total | 7440-46-2 | E420/VA | 0.000010 | mg/L | | <0.000010 | ---- | ---- | ---- | ---- |
| Chromium, total | 7440-47-3 | E420/VA | 0.00050 | mg/L | | 0.00862 | ---- | ---- | ---- | ---- |
| Cobalt, total | 7440-48-4 | E420/VA | 0.00010 | mg/L | | <0.00010 | ---- | ---- | ---- | ---- |
| Copper, total | 7440-50-8 | E420/VA | 0.00050 | mg/L | | 0.00901 | ---- | ---- | ---- | ---- |
| Iron, total | 7439-89-6 | E420/VA | 0.010 | mg/L | | <0.010 | ---- | ---- | ---- | ---- |
| Lead, total | 7439-92-1 | E420/VA | 0.000050 | mg/L | | 0.000302 | ---- | ---- | ---- | ---- |
| Lithium, total | 7439-93-2 | E420/VA | 0.0010 | mg/L | | 0.0036 | ---- | ---- | ---- | ---- |
| Magnesium, total | 7439-95-4 | E420/VA | 0.0050 | mg/L | | 32.9 | ---- | ---- | ---- | ---- |
| Manganese, total | 7439-96-5 | E420/VA | 0.00010 | mg/L | | <0.00010 | ---- | ---- | ---- | ---- |
| Mercury, total | 7439-97-6 | E508/VA | 0.0000050 | mg/L | | <0.0000050 | ---- | ---- | ---- | ---- |
| Molybdenum, total | 7439-98-7 | E420/VA | 0.000050 | mg/L | | 0.00456 | ---- | ---- | ---- | ---- |
| Nickel, total | 7440-02-0 | E420/VA | 0.00050 | mg/L | | <0.00050 | ---- | ---- | ---- | ---- |

| | | |
|---|---|---|
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| Work Order | : | KS2402921 |
| Client | : | Cariboo Regional District |
| Project | : | ---- |

## Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

| Analyte | CAS Number | Method/Lab | LOR | Unit | Client sample ID | Alexis Creek Pump House | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Client sampling date / time | 24-Jul-2024 09:30 | ---- | ---- | ---- | ---- |
| | | | | | | KS2402921-001 | -------- | -------- | -------- | -------- |
| | | | | | | Result | ---- | ---- | ---- | ---- |
| **Total Metals** | | | | | | | | | | |
| **Phosphorus, total** | 7723-14-0 | E420/VA | 0.050 | mg/L | | 0.090 | ---- | ---- | ---- | ---- |
| **Potassium, total** | 7440-09-7 | E420/VA | 0.050 | mg/L | | 6.64 | ---- | ---- | ---- | ---- |
| **Rubidium, total** | 7440-17-7 | E420/VA | 0.00020 | mg/L | | 0.00146 | ---- | ---- | ---- | ---- |
| **Selenium, total** | 7782-49-2 | E420/VA | 0.000050 | mg/L | | 0.00530 | ---- | ---- | ---- | ---- |
| **Silicon, total** | 7440-21-3 | E420/VA | 0.10 | mg/L | | 13.3 | ---- | ---- | ---- | ---- |
| **Silver, total** | 7440-22-4 | E420/VA | 0.000010 | mg/L | | <0.000010 | ---- | ---- | ---- | ---- |
| **Sodium, total** | 7440-23-5 | E420/VA | 0.050 | mg/L | | 61.0 | ---- | ---- | ---- | ---- |
| **Strontium, total** | 7440-24-6 | E420/VA | 0.00020 | mg/L | | 0.348 | ---- | ---- | ---- | ---- |
| **Sulfur, total** | 7704-34-9 | E420/VA | 0.50 | mg/L | | 12.5 | ---- | ---- | ---- | ---- |
| **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 | | 0.00520 | ---- | ---- | ---- | ---- |
| **Vanadium, total** | 7440-62-2 | E420/VA | 0.00050 | mg/L | | 0.0143 | ---- | ---- | ---- | ---- |
| **Zinc, total** | 7440-66-6 | E420/VA | 0.0030 | mg/L | | 0.0096 | ---- | ---- | ---- | ---- |
| **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.

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

## Appendix C:  Emergency Plans

*2025 Cariboo Regional District*

# Emergency Response & Contingency Plan

## Alexis Creek Water System

*Utilities, Communications, and Emergency Operations Departments*
*1-1-2025*

*By Kelly McDonald, Cheryl McMullen, Gerald Pinchbeck, Ken Heidema and Charles Howes*

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## SECTION 1: Emergency Plan Goals

The Objective of the Cariboo Regional District (CRD) Emergency Response and Contingency Plan (ERCP) is to provide staff and regulatory agencies with a guideline for potential water utility related emergencies.

This Emergency Response and Contingency Plan (ERCP) serves as a guideline to address various emergency situations, recognizing that no two emergencies are exactly alike. Each emergency is described with a general sequence of steps to follow, providing both a structured approach to response and a consistent method for documenting actions taken. Task lists within each emergency section also function as checklists to remind staff of critical items to consider and complete during an emergency. This ERCP includes specific protocols and considerations for the CRD water supply system.

This plan has been prepared to guide the Cariboo Regional District to respond to an emergency arising in the operation of the Alexis Creek Water System. The purpose of the ERCP is to:

- ✓ Ensure staff and the public's safety in carrying out emergency tasks.
- ✓ Provide the earliest and safest response to an emergency condition.
- ✓ Ensure that water quality and public health are not compromised.
- ✓ Ensure that water for firefighting is available.
- ✓ Restore normal water system operation.
- ✓ Protect the natural environment from impacts associated with the system operation in the event of an emergency.
- ✓ Contain property damage.

### 1.1. Resiliency in Operations

Operational resiliency refers to the capability of an operation to adjust, adapt, and maintain service delivery under emergency conditions. The objective for the CRD Water Utility is to achieve high operational resiliency. Indicators of operational resiliency include the following:

1.1.1. **Emergency Response Plan**: A comprehensive ERP is essential in building resilience within operations, providing structured guidance for handling emergencies effectively. This document is an integral part of that resiliency framework.

1.1.2. **Regional Agency Coordination**: The ERCP must be shared with regional emergency response agencies, ensuring cohesive support. The CRD Emergency Operations Department serves as the local staging agency for the Provincial Emergency Program.

1.1.3. **Mutual Aid Agreements**: In certain emergencies, the CRD may need support from neighboring water utilities. Williams Lake is a nearby utility from which the CRD may

seek assistance in the future. The CRD is working toward a formal mutual aid agreement based on community protection principles.

1.1.4. **Emergency Power**: The Alexis Creek Water System can operate on gravity-fed supply. A standard battery pack is on hand to maintain disinfection if the power grid fails.

1.1.5. **Ability to Meet Water Demands**: While the water system meets current demands, the reservoir is small, and there are no fire hydrants in the service area.

1.1.6. **Critical Parts Inventory:** Appendix B provides a list of critical parts and their availability. Appendix A includes contact names for Cariboo support agencies offering specialized parts or services.

1.1.7. **Critical Staff Resiliency:** Staff's ability to respond and remain calm during extreme events is only evident when tested. Training and reinforcement of sound decision-making at all levels will support preparedness for emergency situations.

## SECTION 2: How to Use This Plan

The Water System Emergency Response and Contingency Plan (ERCP) is a guide for handling water system emergencies. The “Actions” section outlines various potential emergencies and provides steps to help minimize further damage.

After an emergency, the CRD will complete a Post Incident Report (see Appendix D). Regular review exercises and updates will strengthen our emergency response capabilities. We ask all plan holders to participate and offer recommendations to continually improve the ERCP.

Remember, the ERCP is only effective if everyone reviews, understands, and contributes to its ongoing development.

## SECTION 3: Emergency Planning Definitions

This section provides emergency planning definitions used in this document, following *AWWA Manual 19: Emergency Planning for Water Utilities*.

*Emergency:* An unexpected event that may compromise water quality or reduce the availability of domestic, irrigation, or fire flow water for the community.

*Minor Emergency:* A localized, routine incident impacting a small number of customers, such as a small pipe break, vehicle collision with a hydrant, brief power outage, or minor service repair. Minor emergencies should be manageable without special resources and, if effectively handled, can be prevented from escalating into major emergencies.

*Major Emergency:* A significant event affecting a large portion of the water system, posing risks to water quality or quantity and potentially endangering community health and safety. Major emergencies are rare but impactful.

*Natural Disaster:* Events caused by natural forces beyond human control, including wildfires, earthquakes, floods, tornadoes, heat domes, freezing, and other severe weather-related incidents.

*Human-Caused Disaster:* Disasters resulting from human actions, whether accidental or intentional. These may include human error, accidents, labor disputes, negligence, vandalism, sabotage, terrorism, biological contamination, or chemical spills.

*Hazard:* A source of potential harm or danger linked to a disaster, such as unstable slopes from a creek wash-out or ground shaking from an earthquake.

*Lifeline Supply:* Essential community services that support health, safety, and sustenance. Lifeline utilities include water, wastewater, electricity, and natural gas, as well as critical transportation, communication, healthcare, and emergency operations centres.

## SECTION 4: Emergency Scenarios

### 4.1. Introduction

Sections 5 and 6 list potential water system emergencies related to the physical components of the water supply. Section 7 describes the steps for a cyber threat or vandalism.

### 4.2. Emergency Scenario Format

Each emergency scenario in this ERCP follows a consistent format:

4.2.1. **Description of Emergency**: Describes each potential emergency for easy reference. Sections 5 and 6 cover physical water service issues, while Section 7 addresses cyber incidents and vandalism.

4.2.2. **Indicators**: Outlines how each emergency can be recognized, either by CRD staff or external contacts.

4.2.3. **Actions**: Lists response steps for CRD staff, generally in recommended order. This list serves as a guideline, and the lead Water Operator can use the provided checklist to verify all necessary actions are taken.

4.2.4. **Contacts**: Lists relevant contact agencies; specific contacts are found in the ERCP's Communications Section.

4.2.5. **Event Record**: A checklist at the page bottom summarizes the event, records whether photos were taken, and tracks emergency reporting.

All events, including minor repairs and leaks, should be documented and sent to the CRD Office for electronic filing. Each event should be recorded by date. Large events should have dedicated folders containing photos and data, following a standardized naming protocol.

## SECTION 5: Water Supply Contamination

Description of Emergency: Contamination has been detected or possible contamination is present.

Indicators: Public notification (taste, odour or colour observations), poor water sample results, visible observations made by Water Operators, cross connection with potential contamination.

### 5.1. Potential Causes

5.1.1. Chemical Spill (e.g. transport truck, industry)
5.1.2. Flood Event
5.1.3. Confirmed Cross Connection
5.1.4. System Breach (e.g. water main break) *see 6.2.
5.1.5. Positive Sample Result (e.g. E. coli or other immediate threat to public health contaminant)
5.1.6. Vandalism

**Actions:**

1) Notify Water Operator.
2) Notify Drinking Water Officer (DWO).
3) Assess threat level (see Appendix B).
4) Notify Communications Department.
5) Water Operators to investigate site and inform Manager of Utilities of possible situation. Manager to contact Interior Health.
6) Confirm that the source of contaminant is mitigated.
7) If chemical contamination confirmed or highly suspected to be present:
    a) Attempt to isolate.
    b) Discuss with Engineer, Biologist/Chemist (Lab) and DWO to develop a reasonable and representative sampling program.
    c) Contact Lab and arrange bottles if required and collect samples for rush analysis.

8) Report any spills to the Provincial Agency responsible (see Appendix A).

9) In an extreme situation of contamination, consider shutting down all supply pumps.

    a) Pump station would shut off and "Do Not Use" notices would be provided to the public. CRD senior management would make this call.

10) Communication: Begin public notification if required and follow Water Quality Notification Procedures.

11) Continue discussion with appropriate experts for moving forward.

12) Discussions to consider alternate water source if needed. Involve Emergency Operations Department and Notify Fire Department.

13) Continue monitoring until water quality is back to normal and IH gives approval to lift advisory or notice.

14) Complete documentation:

    a) Record of events, include times and dates.
    b) Complete a comprehensive damage assessment.
    c) Investigate potential causes.
    d) After action report.

## SECTION 6: Supply Disruption

### 6.1. Equipment Failure

Description of Emergency: This type of emergency is typically caused by extreme weather events that place a very high demand on the Water Treatment Plant, or any other situation where water demands are high, and equipment or infrastructure reduces the ability to maintain maximum output.

Indicators: Visual observations by Water Operators. Failure of equipment as identified by SCADA and alarms.

**Actions:**

1) Document Situation: Note date, time, location and means of event recognition.

2) Notify Water Operator.

3) Notify Manager.

4) Notify Communications Department.

5) If cause is identified as a main break, see section 6.2.

6) Well Site Investigation: Generally, this problem is caused by high flows and overheating VFD's.

7) Check in the pumphouse for mechanical issues such as temperatures on variable frequency drive (VFD) displays.

8) Check all SCADA pages and trends to determine what is operational, what has failed, or what is at risk of failure.

9) Check on alarms.

10) Note status of chlorine disinfection, reservoir level, source pump status, chemical dosing status, and raw water flows.

11) Check all necessary equipment to confirm proper functionality.

12) Check inventory for parts that may be available to aid in necessary repairs. If necessary, contact Williams Lake Public Works for assistance.

13) If the issue stems from the VFD's, allow to cool and contract electrician if necessary.

14) If issue is due to drawdown in Supply Well, consult Drought Management Plan (Appendix C) and proceed to next step.

15) If problem persists:

- ✓ Communicate with Interior Health, issue an advisory as recommended (see Section 1).
- ✓ Implement emergency water restrictions (Communications Department).
- ✓ Contact Williams Lake Fire Department and CRD Protective Services Department to inform them of the situation.

16) Complete documentation:

a) Record of events, include times and dates.
b) Complete a comprehensive damage assessment.
c) Investigate potential causes.

### 6.2. Supply Main Break

Description of Emergency: Failure or damage to a water supply main causing loss of water and/or pressure.

Indicators: SCADA alarms indicating pressure loss, calls from residents or staff observations.

**Actions**: Steps to be taken by CRD staff:

1) Contact Manager of Utilities.
2) Contact Water Operator.
3) Determine location.
4) Stop the flow of water by closing valves and isolating the break, depending on the scale of the break (see chart in Appendix B); attempt to maintain positive pressure.
5) Contact Manager and describe the emergency.
6) Determine what section of the system has been affected by the depressurization.
7) If there is a potential that the system has been contaminated, the Manager of Utilities will contact Interior Health for recommendations on issuing a Water Advisory. See Appendix E (follow Communications procedures).
8) Make the site safe by implementing traffic control: block road, if necessary, contact traffic control contractor (see Appendix A).
9) If possible, mitigate danger to the public and further damage of infrastructure or property. If necessary and feasible, set up sediment control measures and de-chlorinated water released.
10) Assess immediate damage.
11) Coordinate repair plans with appropriate contractors (see contacts).
12) Contact the Provincial Agency responsible (see Appendix) for large discharges of chlorinated water including;
13) If there is significant sediment or chlorinated water in streams.
14) Call Fire Department to inform them when hydrants are in or out of service.
15) Complete documentation:
    a) Record of events, include times and dates.
    b) Complete a comprehensive damage assessment.
    c) Investigate potential causes.
    d) After action report.

### 6.3. Extended Loss of BC Hydro Power Supply

Description of Emergency: The loss of power will stop the pumping systems to supply water to the distribution system and from filling the reservoir. With no power, a full reservoir has approximately 48 hours of water available.

Indicators: SCADA alarms

**Actions:**

1) Source a generator.
2) Change system settings if necessary to keep reservoirs topped up.
3) If sudden phase loss or total power loss causes equipment failure see Section 6.
4) If issues with power supply persist:
   - ✓ Contact BC Hydro for information on the timelines for power restoration.
   - ✓ Communicate with Interior Health, issue an advisory as recommended (see Section 1).
   - ✓ Implement emergency water restrictions (Communications Department).
   - ✓ Potentially throttle down the pressure within the distribution to reduce water loss (always above 20 psi).
   - ✓ Contact Williams Lake Fire Department and CRD Protective Services Department to inform them of the situation.

### 6.4. Operator Transportation Routes Compromised

#### 6.4.1. Potential Causes

- Forest fire
- Accident
- Mechanical issues with vehicle
- Construction

Description of Emergency: The usual transportation route to the Alexis Creek area is blocked (e.g., by a forest fire or accident), and no operator can be onsite to perform duties.

**Actions:**

1) Contact Manager of Utilities.
2) Manager will inform Interior Health Officer of situation.
3) Continue to monitor system using SCADA.
4) If issue persists:
   - ✓ Contact Williams Lake or other Regional Operators for assistance.

- ✓ Reach out to local contact if physical checks are needed. Preferably local contractor with system experience (see Appendix A).
- ✓ Contact the Communications Department to issue applicable advisories (at the recommendation of Interior Health).

5) Complete documentation:

   a) Record of events, include times and dates.
   b) Complete a comprehensive damage assessment.
   c) Investigate potential causes.

## SECTION 7: Cyber Incident

(Omitted for security reasons.)

## SECTION 8: Drought

### 8.1 Introduction

Drought is often caused by a long duration of inadequate rainfall or snowmelt to replenish the level of the water source. It can also be the result of a breakdown in a crucial piece of a water system's infrastructure; or a prolonged issue with water quality that prevents the supply of potable water for an extended period. All of these circumstances can result in a significant depletion in the source capacity or even a complete loss of source. The Cariboo Regional District's Drought Management Plan for the Alexis Creek Water System serves as a guide to monitoring, managing and conserving water use in the event of an impending drought. The objectives of this Plan are to:

1) Identify the priority users of the water supply.
2) Provide direction on water conservation before and during the drought period.
3) Establish a guideline for communicating issues and instructions to users and other key contacts.
4) List supplemental or alternate sources of potable water in the event of a prolonged drought.

Appendix C outlines the Cariboo Regional District's Drought Management Plan.

# Appendix A: Contacts

(Omitted for security reasons.)

# Appendix B:  Charts

## Water Main Break

| *Water Main Break Severity Chart* | | | | |
|---|---|---|---|---|
| *Class 1* | *Class 2* | *Class 3* | *Class 4* | *Class 5* |
| *Routine* | *Minor* | *Substantial* | *Major* | *Catastrophic* |
| Small enough to leave until repairs are convenient | Water Pooling | Isolation Needed | Large area needs to be isolated | Complete Distribution System Shut down |
| Positive Pressure Maintained | Positive Pressure Maintained | Positive Pressure may not be possible | Loss of Pressure in large area of distribution system | Complete system pressure loss (e.g. drained reservoir) |
| Consult with DWO if any concerns. | Advisory may be required, consult with DWO. | Advisory Needed, contact Interior Health. Assess damage. | Advisory needed, contact interior health. Assess damage | Advisory needed, contact interior Health. initiate EOC. |
| Flush line (localized) | sample for bacteriological contamination after flushing lines as per C651-14 (localized) | Sample for bacteriological contamination after flushing lines as per AWWA C651-14 | Chemical and bacteriological sampling may be needed. Possible unidirectional flushing and super chlorination needed as per AWWA C651-14 | Chemical and bacteriological sampling needed at various points in the system. System wide flushing needed. Super chlorination required as per AWWA C651-14 |

## Critical Parts Inventory

| *Critical Parts Inventory* | | | | | | | |
|---|---|---|---|---|---|---|---|
| Part | Use | Location Stored | Vendor | Part | Use | Location Stored | Vendor |
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# Appendix C:  Drought Management Plan

## DROUGHT MANAGEMENT PLAN

### Priority Users

The area served by the Alexis Creek Water System is comprised of an estimated 300 residents. In a drought situation, the provision of water will be prioritized as follows:

| Priority Level | User | Comments |
|---|---|---|
| 1 | Residents | The CRD is obligated to provide water to the residents served by the Alexis Creek Water System for basic health and sanitation needs. |
| 2 | All Businesses and Organizations (these may need to be further prioritized following public meeting discussions) | Businesses that rely on the provision of water may be required to reduce hours of operation or close down temporarily during a drought in order to conserve water. However, a prolonged drought may result in a significant loss of revenue, which would need to be addressed. |

### Water Restrictions and Conservation Measures

The following restrictions will be imposed and conservation measures recommended to Alexis Creek Water System users at various stages prior to and during a drought:

| **STAGE 1: PREPAREDNESS** | |
|---|---|
| **Permitted Uses** | **Restrictions** |
| Drinking water<br>Bathing<br>Handwashing dishes or using dishwasher<br>Washing machine<br>Watering plants with a hose or watering can<br>Bathing pets.<br>Washing vehicles. | May 1 to Oct. 1: Lawn watering on reduced days for reduced hours, per bylaws. |
| | **Conservation Measures** |
| | Install water-saving devices. |
| **STAGE 2: IMPENDING DROUGHT – CONSERVATION** | |
| **Permitted Uses** | **Restrictions** |
| Drinking water<br>Bathing<br>Handwashing dishes or using dishwasher<br>Washing machine<br>Watering plants with a hose or watering can | Lawn watering days and hours restricted further.<br>Wash vehicles only if absolutely necessary. |
| | **Conservation Measures** |
| | Bathe pets only as needed.<br>Use washing machine for full loads only.<br>Use dishwasher for full loads only. |
| **STAGE 3: DROUGHT – RESTRICTIONS** | |
| **Permitted Uses** | **Restrictions** |
| Drinking water (all users)<br>Bathing<br>Handwashing dishes or using dishwasher<br>Washing machine | No watering of lawns or watering of plants, per bylaws.<br>No bathing of pets unless absolutely necessary.<br>No washing of vehicles.<br>No filling of swimming pools.<br>No power-washing. |
| | **Conservation Measures** |
| | Bathe only as needed and/or reduce time in shower.<br>Use washing machine for full loads only.<br>Use dishwasher for full loads only. |

## Communication Plan

Communication between the CRD and users of the Alexis Creek Water System, as well as with key operational contacts, is imperative during an emergency situation. Providing timely and clear information and instructions greatly reduces confusion, frustration and anxiety, and enables outside agencies to provide assistance more effectively if needed.

<table>
<tr><th colspan="3">STAGE 1: PREPAREDNESS</th></tr>
<tr><td colspan="3">Water use is routinely higher from mid-Spring to the end of Summer each year due to less rainfall, increased lawn and garden maintenance, swimming pools, more frequent car-washing and showers, etc.<br>Water levels are constantly monitored, and watering restrictions are put in place annually from May 1 to October 1 as a preventative measure to minimize depletion of the water supply during these months.</td></tr>
<tr><td colspan="2">Procedures (Concurrent)</td><td>Target</td></tr>
<tr><td colspan="2">Finance Dept. mails notice of water restrictions and water conservation recommendations with annual utility bills in April of each year.</td><td>Residents</td></tr>
<tr><td colspan="2">Communications Dept. posts notice of water restrictions and water conservation recommendations on website and social media.</td><td>All users of the Alexis Creek Water System</td></tr>
<tr><td colspan="2">Communications Dept. sends notice of water restrictions and water conservation recommendations by email.</td><td>Subscribed users.</td></tr>
<tr><td colspan="2">Water Operators post notice of water restrictions and water conservation recommendations on bulletin boards at 108 Mall, gas station, mailboxes</td><td>Users of the Alexis Creek Water System who don’t have access to a computer.</td></tr>
<tr><th colspan="3">STAGE 2: POTENTIAL THREAT – DIMINISHED WATER SUPPLY</th></tr>
<tr><td colspan="3">If there is little snowmelt in the Spring and rainfall in the Spring/Summer is not enough to bring the source of the water supply to an adequate level, further restrictions on water use may be required.<br>Prolonged water quality issues may result in having to obtain water from an alternate source until rectified.<br>Any significant or ongoing issues would indicate that action is required to prevent the possibility of a water supply crisis.</td></tr>
<tr><th colspan="2">Procedures</th><th>Target</th></tr>
<tr><td>1.</td><td>Inform key contacts of possible threat to water source:<br>Water Operators notify Manager of Utilities<br>Manager of Utilities informs other key contacts</td><td>Manager of Utilities<br>Drinking Water Officer<br>Electoral Area Director<br>Manager of Fire Administration</td></tr>
<tr><td rowspan="2">2.</td><td>At Interior Health’s direction, Manager of Utilities and Communications Dept. have public notice mailed to users, posted on website, social media, and on local bulletin boards.</td><td>All users of the Alexis Creek Water System</td></tr>
<tr><td>Communications Dept. sends public notice by email.</td><td>Subscribed users</td></tr>
<tr><td>3.</td><td>Manager of Utilities notifies CRD Managers involved in Emergency Planning as a precautionary measure.</td><td>Chief Administrative Officer<br>Manager of Communications<br>Manager of Emergency Programs</td></tr>
<tr><td>4.</td><td>Manager of Utilities, Water Operators and Electoral Area Director hold public meeting to discuss potential drought, further restrictions required and recommended conservation measures.</td><td>All users of the Alexis Creek Water System</td></tr>
<tr><td>5.</td><td>Manager of Utilities notifies other agencies as a precautionary measure that assistance may be required if situation can’t be rectified.</td><td>City of Williams Lake<br>Ministry of Water, Land and Resource Stewardship<br>Ministry of Emergency Management and Climate Readiness</td></tr>
</table>

| STAGE 3: EMERGENCY – SIGNIFICANT DEPLETION OR LACK OF SOURCE | | |
|---|---|---|
| The following situations are considered critical:<br>• An inability to keep the water supply at a level that will provide enough water to meet the basic health and sanitation needs of the users.<br>• A prolonged issue with the water system infrastructure that results in the inability to provide water to the users.<br>• A severe or prolonged water quality issue that cannot be easily rectified.<br>• The inability to provide an adequate water supply for fire protection.<br>• An ongoing water supply issue that results in significant losses for businesses in the service area. | | |
| **Procedures** | | **Target** |
| 1. | Inform key contacts of crisis situation.<br>Discuss further steps:<br>Water Operators inform Manager of Utilities.<br>Manager of Utilities notifies other key contacts. | Manager of Utilities<br>Drinking Water Officer<br>Electoral Area Director<br>Chief Administrative Officer<br>Manager of Fire Administration<br>Manager of Communications<br>Manager of Emergency Programs |
| 2. | At Interior Health's direction, Manager of Utilities and Communications Dept. have public notice mailed to users, and posted on website, social media, and local bulletin boards. | All users of the Alexis Creek Water System |
| | Communications Dept. sends notice of emergency situation by email and via Voyent Alert. | Subscribed users |
| 3. | Manager of Utilities and Communications Dept. post notice in local newspaper; make radio announcements. | All users of the Alexis Creek Water System |
| 4. | Manager of Utilities, Water Operators and Electoral Area Director hold public meeting to discuss further steps. | All users of the Alexis Creek Water System |
| 5. | Manager of Utilities notifies other agencies. Discuss what assistance may be available. | City of Williams Lake<br>Ministry of Water, Land and Resource Stewardship<br>Ministry of Emergency Management and Climate Readiness |

## Supplemental or Alternate Sources of Potable Water

| Supplemental or Alternate Source | Contact Information | Capacity Available | Estimated Time To Deliver | Estimated Cost |
|---|---|---|---|---|
| Backup Water Source | | | | |
| Reservoir Rental Company | | | | |
| Bulk Haul Water | Triple P Sanitation (upon verification of IH permit) | Not specified | | |
| Other Water Supplier | Triple P Sanitation (upon verification of IH permit) | Not specified | | |

| Supplemental or Alternate Source | Contact Information | Capacity Available | Estimated Time To Deliver | Estimated Cost |
|---|---|---|---|---|
| Bottled Water | Cariboo Water Purification Centre | Not specified | | |
| | Cool Clear Water | Not specified | Pick up only | $5.00 / 5 Gal<br>$3.00 / 3 Gal |
| | Williams Lake Water Factory | Not specified | | |

## Operational Procedures

| Action | | Person Responsible |
|---|---|---|
| 1 | Ensure pump is shut off (to protect pump). | Water Operator |
| 2 | Notify all users by social media, email distribution, radio and public bulletins. High risk users to be notified by telephone call. Situationally assessed for best means of communication process. | Manager of Utilities<br>Manager of Communications |
| 3 | Contact government agencies (see below) for advice and assistance. | Manager of Utilities |
| 4 | Arrange alternate source (e.g. bottled water, bulk hauler and storage tank). | Manager of Utilities |

**Government Agency Contacts:**

- Drinking Water Officer
- Local government's Emergency Program Coordinator
- Ministry of Forests, Lands and Natural Resource Operations
- Others as necessary, depending on severity (ie. Fire Department)

# Appendix D:  Templates

**Damage Assessment Summary (EOC 415)**

| DAMAGE ASSESSMENT SUMMARY | | | | |
|---|---|---|---|---|
| | **Event:** | **Time:** | | **Date:** |
| | **Operational Period:** | **PEP Task #:** | | **Position:** |
| | | **Number** | **Estimated Value** | **Comments** |
| **Public Property** | ▪ Municipal Facilities Damaged | | | |
| | ▪ Municipal Facilities Destroyed | | | |
| | ▪ Public Facilities Damaged | | | |
| | ▪ Public Facilities Destroyed | | | |
| | ▪ Provincial Facilities Damaged | | | |
| | ▪ Provincial Facilities Destroyed | | | |
| | ▪ Federal Facilities Damaged | | | |
| | ▪ Federal Facilities Destroyed | | | |
| | ▪ Roads Damaged | | | |
| | ▪ Roads Destroyed | | | |
| | ▪ Bridges Damaged | | | |
| | ▪ Bridges Destroyed | | | |
| | ▪ Railroads Damaged | | | |
| | ▪ Railroads Destroyed | | | |
| | ▪ Water Supply Damaged | | | |
| | ▪ Sewers Damaged | | | |
| | **Total Public Damage:** | | | |
| **Private Property** | ▪ Residential Buildings Damaged | | | |
| | ▪ Residential Buildings Destroyed | | | |
| | ▪ Businesses Damaged | | | |
| | ▪ Businesses Destroyed | | | |
| | ▪ Agriculture Damaged | | | |
| | ▪ Agriculture Destroyed | | | |
| | **Total Public Damage:** | | | |
| **Priority Repairs/Restoration:** | | | | |
| **Prepared By:** | | | **Date and Time:** | |

**Action Plan (EOC 502)**

| EOC Action Plan | | | |
|---|---|---|---|
| **Event:** | | **Date:** | **Time:** |
| **Operational Period:** | **PEP Task #:** | **Prepared By:** | |

| **Objectives:** (In priority order, for the designated operational period) |
|---|
| |

| **Tasks/Action Items:** | **Function Assigned** | **Estimated Completion Time** |
|---|---|---|
| | | |

**Attachments:** (Check if attached)

| | | | | | |
|---|---|---|---|---|---|
| ☐ | Organization Chart | ☐ | Public Information Plan | ☐ | Communication Plan |
| ☐ | EOC Floor Plan | ☐ | Transportation Plan | ☐ | |
| ☐ | Situation Map | ☐ | Evacuation Plan | ☐ | |

| **Recommended By** (Planning Section Chief): | **Approved By** (EOC Director): |
|---|---|
| | |

**Distribution:**

- ☐ EOC Director
- ☐ Risk Management Officer
- ☐ Liaison Officer
- ☐ Information Officer
- ☐ Posted for ALL EOC Personnel
- ☐ Operation Section Chief
- ☐ Planning Section Chief
- ☐ Logistics Section Chief
- ☐ Finance/Administration Section Chief
- ☐ Other _____

**Situation Report (EOC 501)**

## EOC Situation Report

**Community / Local Authority:** _____

**Date and Time:** _____

**PEP Task Number:** _____

**Prepared By:** ☐ Community / Local Authority
☐ PREOC Operational Area Coordinator

**Approved By:** _____
*(Name and Position)*

| **EOC Contact:** | **Report Type:** |
|---|---|
| Name: _____ | ☐ Initial |
| Position: _____ | ☐ Update #_____ |
| _____ | ☐ Final |
| Phone #: _____ | **Situation Forecast:** |
| Fax #: _____ | ☐ Improving |
| E-mail: _____ | ☐ Unchanged |
| | ☐ Deteriorating |

**Highlights** (*Situational Overview – Key Points*):

| |
|---|
| |
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| |

**Current Priority Needs:** (*Resources / Information / Support*):

**Resource Request Attached:** ☐ Yes ☐ No

| |
|---|
| |
| |
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| |

**People Impacted** (*Estimated / Confirmed*):

| # Evacuated | # Injured | # Homeless* | # Missing | # Dead | # Hospitalized |
|---|---|---|---|---|---|
| | | | | | |

* *As a result of the emergency event*

**Event Log (EOC 414)**

**POSITION LOG**

| Event: | Section: | Position: |
|---|---|---|
| Operational Period: | PEP Task #: | Date: |

**LOG**

| Time (24 Hr.) | To | From | Action | Follow-Up | Closed |
|---|---|---|---|---|---|
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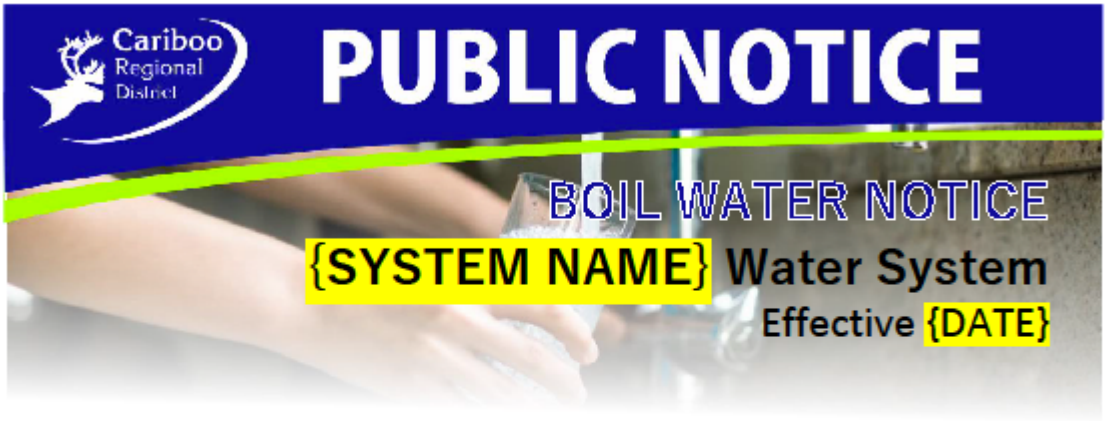
# Appendix E: Communications Templates




**The Cariboo Regional District has issued a Boil Water Notice to users of the {SYSTEM NAME} Water System, pursuant to a request of a Drinking Water Officer under Section 14 of the *Drinking Water Protection Act*. This Notice remains in effect until further notice.**

The Cariboo Regional District's water systems are tested regularly to ensure they meet public health regulations. This boil water notice is being issued because {REASON}. This notice is being issued {CHOOSE: as a precautionary measure to protect public health. OR in order to protect public health and safety from significant health risks presented by pathogens in the water supply.}

**All users of the {WATER SYSTEM NAME} Water System are asked to bring water to a rolling boil for a minimum of one minute before using water from the system for:**

**Drinking (or use an alternate, safe source of water)**
**Cooking (if not boiled)**
**Brushing teeth**
**Washing Dishes**
**Washing fruits or vegetables to be eaten raw**
**Watering animals**

**Also, please use hand sanitizer after washing hands.**

If you have further questions, please call Environmental Services at 1-800-665-1636 during regular office hours.

*For more information about boil water advisories and service interruptions in the CRD and what to expect, visit cariboord.ca/water-notices-and-advisories. To receive updates on CRD water systems and other relevant information within the CRD, residents are reminded to subscribe to the latest news on our website at cariboord.ca/subscribe. Residents can also sign up the Cariboo Chilcotin Emergency Notification System to be notified directly of emergency orders and alerts or utility service interruptions at cariboord.ca/EmergencyNotifications.*

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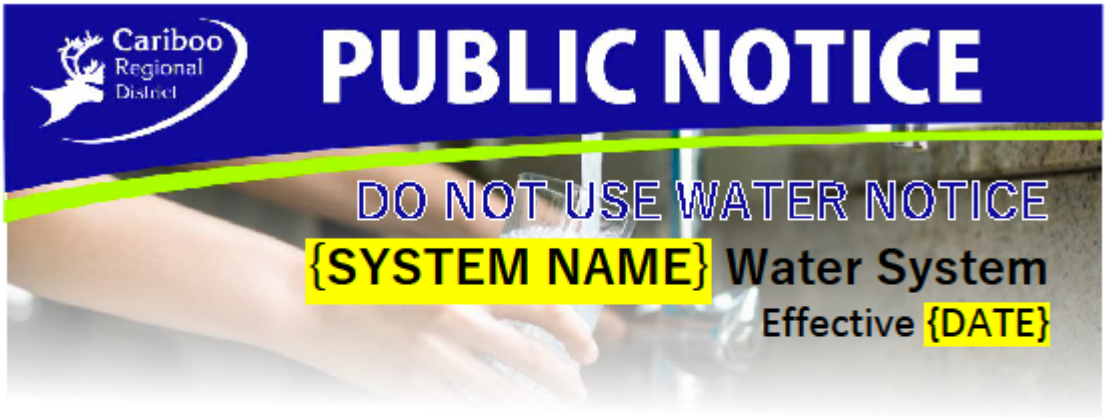


**The Cariboo Regional District has issued a Do Not Use Notice to users of the {SYSTEM NAME} Water System, pursuant to a request of a Drinking Water Officer under Section 14 of the *Drinking Water Protection Act*. This Notice remains in effect until further notice.**

The Cariboo Regional District's water systems are tested regularly to ensure they meet public health regulations. Due to the presence of {if known, be specific, or if unknown say "contaminants in the water supply posing an immediate threat to resident's safety}, the Cariboo Regional District is implementing this until further notice. Follow all instructions below:

**All users of the {WATER SYSTEM NAME} Water System are asked to immediately stop using water from the system for any purpose. This includes: drinking, making beverages or ice, brushing teeth, preparing or washing food, bathing, water for animals, washing anything (including vehicles), and watering plants.**

**Do not turn your taps on for any reason. Boiling water will NOT make it safe! Water from your hot water tank may also be unsafe, and you are advised to consult a qualified plumber before draining the tank.**

**The Cariboo Regional District has contacted Interior Health and the Ministry of Environment to request their cooperation in investigating this matter. In addition, the Cariboo Regional District is taking immediate acton to find another source of water supply for residents of {WATER SYSTEM NAME}.**

**During this time, an alternate water source will be available at {ADDRESS AND OPERATING HOURS}.**

If you have further questions, please call Environmental Services at 1-800-665-1636 during regular office hours.

*For more information about boil water advisories and service interruptions in the CRD and what to expect, visit cariboord.ca/water-notices-and-advisories. To receive updates on CRD water systems and other relevant information within the CRD, residents are reminded to subscribe to the latest news on our website at cariboord.ca/subscribe. Residents can also sign up the Cariboo Chilcotin Emergency Notification System to be notified directly of emergency orders and alerts or utility service interruptions at cariboord.ca/EmergencyNotifications.*

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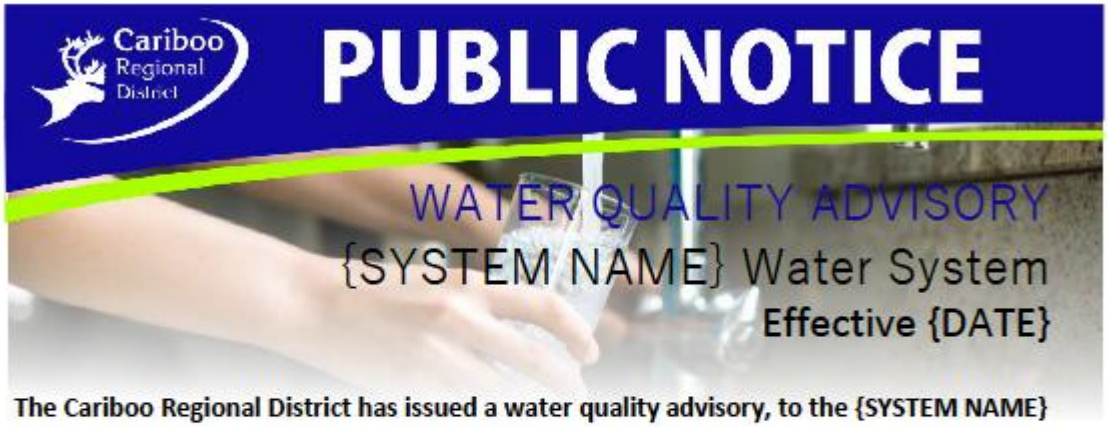


**The Cariboo Regional District has issued a water quality advisory, to the {SYSTEM NAME} Water System users because of {issue} levels exceeding the *Guidelines for Canadian Drinking Water Quality*. This Advisory remains in effect until further notice.**

The Cariboo Regional District's water systems are tested regularly to ensure they meet public health regulations. Health Canada's Guidelines for Drinking Water has established a maximum acceptable concentration (MAC) for {issue} in drinking water of {standard}. Recent water samples submitted show {issue} concentrations that exceed the MAC.

Add information provided by Health Canada or Interior Health about the nature of the water quality advisory. This section requires approval from a Drinking Water Officer.

{Other safety instructions or advisories. I.e. is the water safe for other non-consumption purposes, how does boiling water impact it, etc.}

If you have further questions, please call the Environmental Services department at 1-800-665-1636 during regular office hours.

*For more information about boil water advisories and service interruptions in the CRD and what to expect, visit **cariboord.ca/water-notices-and-advisories**. To receive updates on CRD water systems and other relevant*

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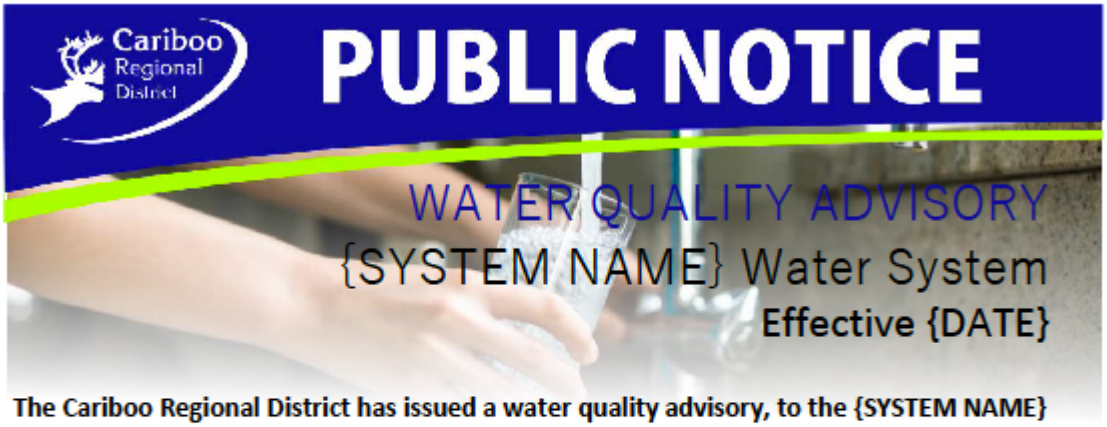


**The Cariboo Regional District has issued a water quality advisory, to the {SYSTEM NAME} Water System users because of manganese (Mn) levels exceeding the *Guidelines for Canadian Drinking Water Quality*. This Advisory remains in effect until further notice.**

The Cariboo Regional District's water systems are tested regularly to ensure they meet public health regulations. Health Canada has established a maximum acceptable concentration (MAC) for manganese in drinking water of 0.12 mg/L. Recent water samples submitted show manganese concentrations that exceed the MAC.

Manganese (Mn) is an element found in air, food, soil and drinking water. While a small amount of Mn is essential for human health, new Health Canada research has shown drinking water with too much Mn can be a risk to health for infants and young children.

**Infants and young children are the most sensitive and vulnerable population**, as their bodies absorb more manganese and cannot regulate or remove the chemical as readily as adults and older children. As a result, the **drinking water from this system must not be used to prepare formula for bottle-fed infants**. An alternate source of safe drinking water, such as bottled water, must be used when preparing formula for infants and young children. **Boiling the water will not lower the manganese level.**

Breastfed infants are generally considered at lower risk to manganese exposure as the transfer of manganese to breast milk is limited. Pregnant or breastfeeding women who have concerns may wish to use a safe, alternate source of drinking water or consult with a healthcare professional.

Water exceeding the MAC for manganese can be used for cooking and drinking by non-vulnerable groups and is still considered safe for hand washing, bathing and showering. If you have further questions, please call the Environmental Services department at 1-800-665-1636 during regular office hours.

*For more information about boil water advisories and service interruptions in the CRD and what to expect, visit **cariboord.ca/water-notices-and-advisories**. To receive updates on CRD water systems and other relevant information within the CRD, residents are reminded to subscribe to the latest news on our website at **cariboord.ca/subscribe**.*

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The Cariboo Regional District has issued a water quality advisory for users of the Forest Grove Water System because of a positive test result for low coliform found in the system.

**For this reason, as precautionary measure, any high-risk users, including those with weakened immune systems, young children and those on dialysis are advised to:**

- **use purchased bottled water or boiled water for drinking, brushing teeth, dishwashing, preparing food, and making ice, or**
- **bring water to a roiling boil for one minute, then cool to an appropriate temperature before using.**

The CRD regularly tests the water system as part of its Water Quality Monitoring Program. The advisory will remain in effect until further notice. We apologize in advance for any inconvenience this may cause.

When satisfactory results are reported from the required testing, customers will be notified that the advisory has been lifted. If you have questions, please call the Environmental Services department at 1-800-665-1636. If calling outside of regular business hours (8:30 a.m. to 4:30 p.m. Monday to Friday), please dial "5" when prompted to reach our emergency after hours contact.

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