Ymir Water System

2024 Quartz Creek Flow and Water Quality Monitoring Report

Year End Report

Date of Report:	April 25, 2025
Reporting Period:	2024 Year End Report Jan 2024 to Dec 2024
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Quartz Creek Flow Monitoring

Reporting Period

This is an annual report for the year 2024 and includes data from 01 Jan 2024 to 31 Dec 2024.

See prior years reporting for additional data and flow monitoring information.

Flow Monitoring Weir

In 2019 a flow monitoring weir was installed on Quartz Creek at the intake for the Ymir water system with funding provided by BC Timber Sales and the Ymir water service. Funding for current monitoring and reporting is provided by ATCO Wood Products Ltd. and the Regional District owned Ymir water service.

The Kindsvater-Carter Formula was adopted to calculate flow through the sharp crested aluminum weir installed in the concrete water system intake weir. Flow depth through the aluminum flow monitoring weir is measured by an ultrasonic level transmitter. The aluminum weir will measure flows up to about 560 mm or 742 L/s, above this level the concrete intake weir will overtop. Wing plates were added to the ends of the concrete weir to accommodate higher peak flows of up to 710 mm or 1,515 L/s. Flows above 710 mm are considered inaccurate as they are influenced by a catwalk and spill over onto the creek banks.

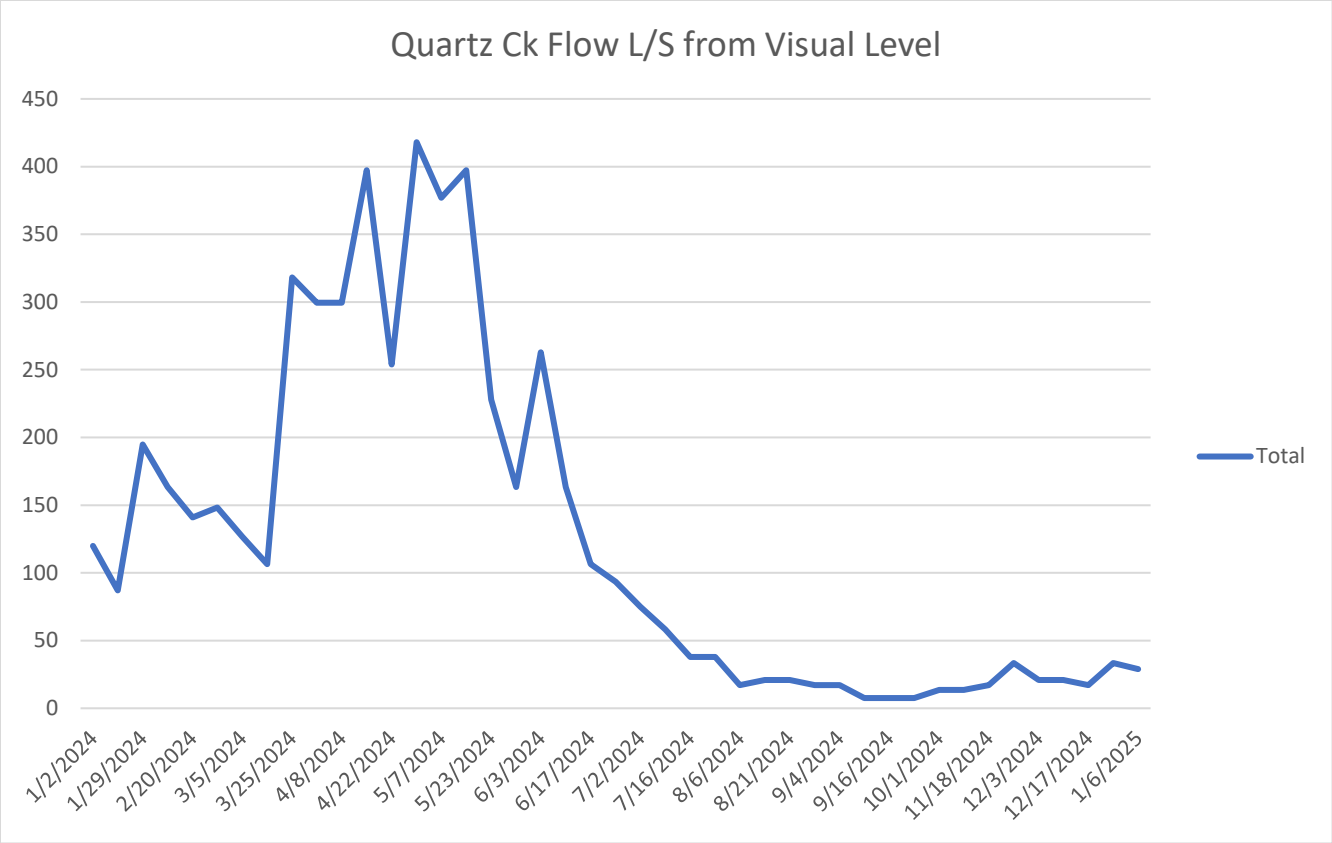
Reporting Period Data Quality

There were multiple level sensor failures during 2022-2023, hence level sensor data is unreliable prior to our controls upgrades completed in February of 2024. Once the Ymir water treatment plant is operational in central SCADA, continuous data logging began to occur.

Flow Graph

Since automated data recording was lost for 2023 due to the level sensor failures, manually recorded flow levels were reviewed. Water Technicians record digital instrument level and visual flow level readings when they are onsite about once per week.

The following graph provides Quartz Creek flows for the year 2024 collected visually.



The following table provides the minimum and maximum average daily weir flow level and creek flow for the reporting period.

	Quartz Creek Flow Level (mm)	**Quartz Creek Flow** (L/s)	**Date**
Min	34	8	16 Sep 2024
Max	445	395	30 April 2024

This data is derived from visual observations as level sensor data will be incomplete for 2024.

Quartz Creek Water Quality Monitoring

The Regional District is monitoring the following water quality parameters in association with the Quartz Creek Flow and Water Quality Monitoring initiative.

Water Quality Monitoring Parameter	Description	Desired Frequency
Raw Water Turbidity	Online turbidity meter	15 minutes
pH	Manual testing	When Technician on Site
Treated Water Bacteriological	Total Coliforms, E.coli & Fecal Coliform	Weekly
Raw Water Bacteriological	Total Coliforms, E.coli & Fecal Coliform	Bi-weekly
Raw Water Full Comprehensive	Chemical and physical parameters based on Guidelines for Canadian Drinking Water Quality	Quarterly
Treated Water THM & HAA	Trihalomethanes (THMs) and haloacetic acids (HAAs)	Quarterly

Raw Water Turbidity

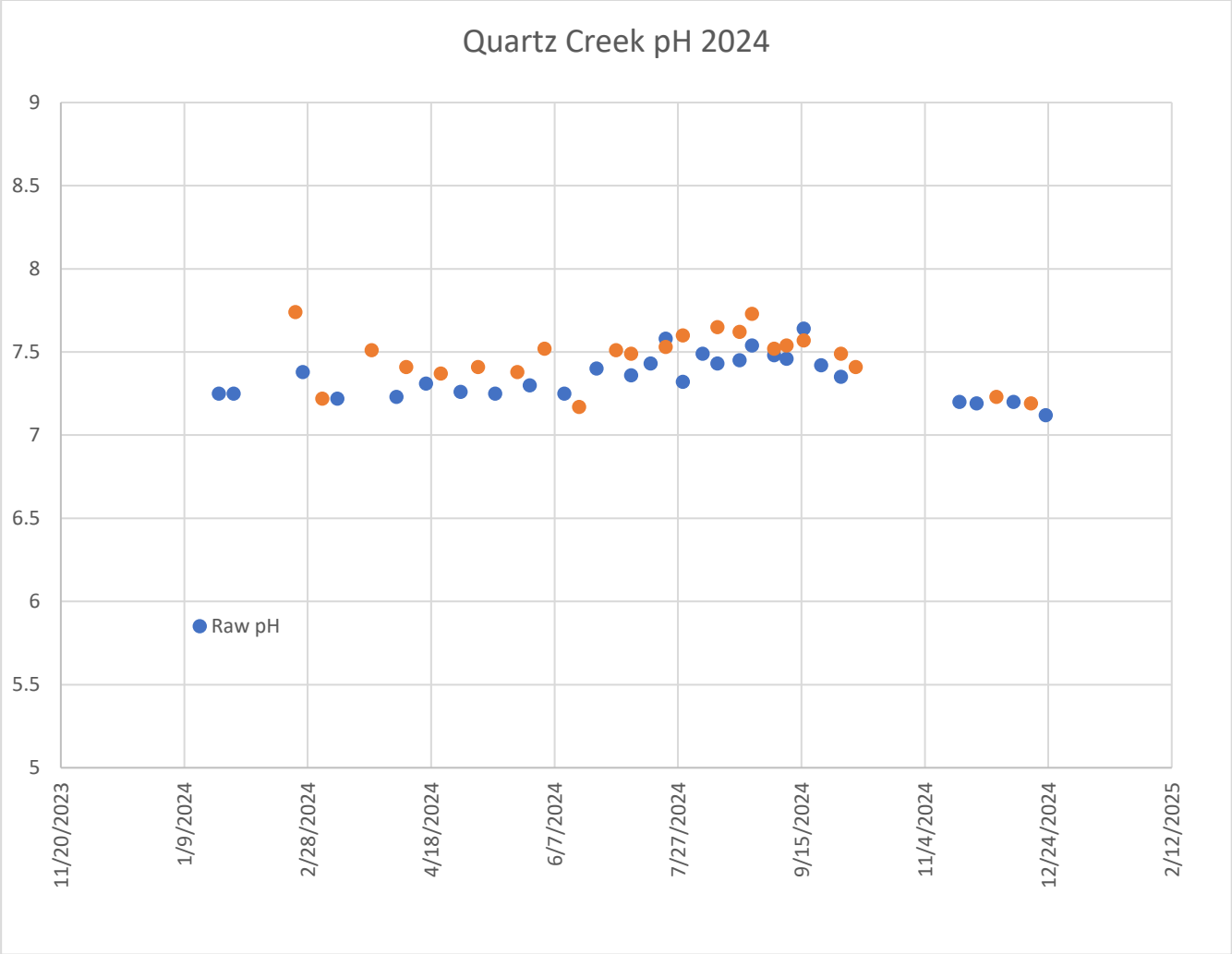
Raw water turbidity is monitored online in the treatment plant.

Raw water turbidity is presented on the flow charts in the previous section. The maximum daily average turbidity for the reporting period was 0.59 NTU recorded on 03 June 2024, during freshet.

pH

Health Canada Drinking Water Quality Guidelines identifies a pH range of 7.0 to 10.5 as acceptable for finished (treated) drinking water.

Raw water pH was hand measured when water technicians were onsite at the Ymir water treatment plant. pH varied from 7.12 to 7.64 during the 2024 monitoring period.



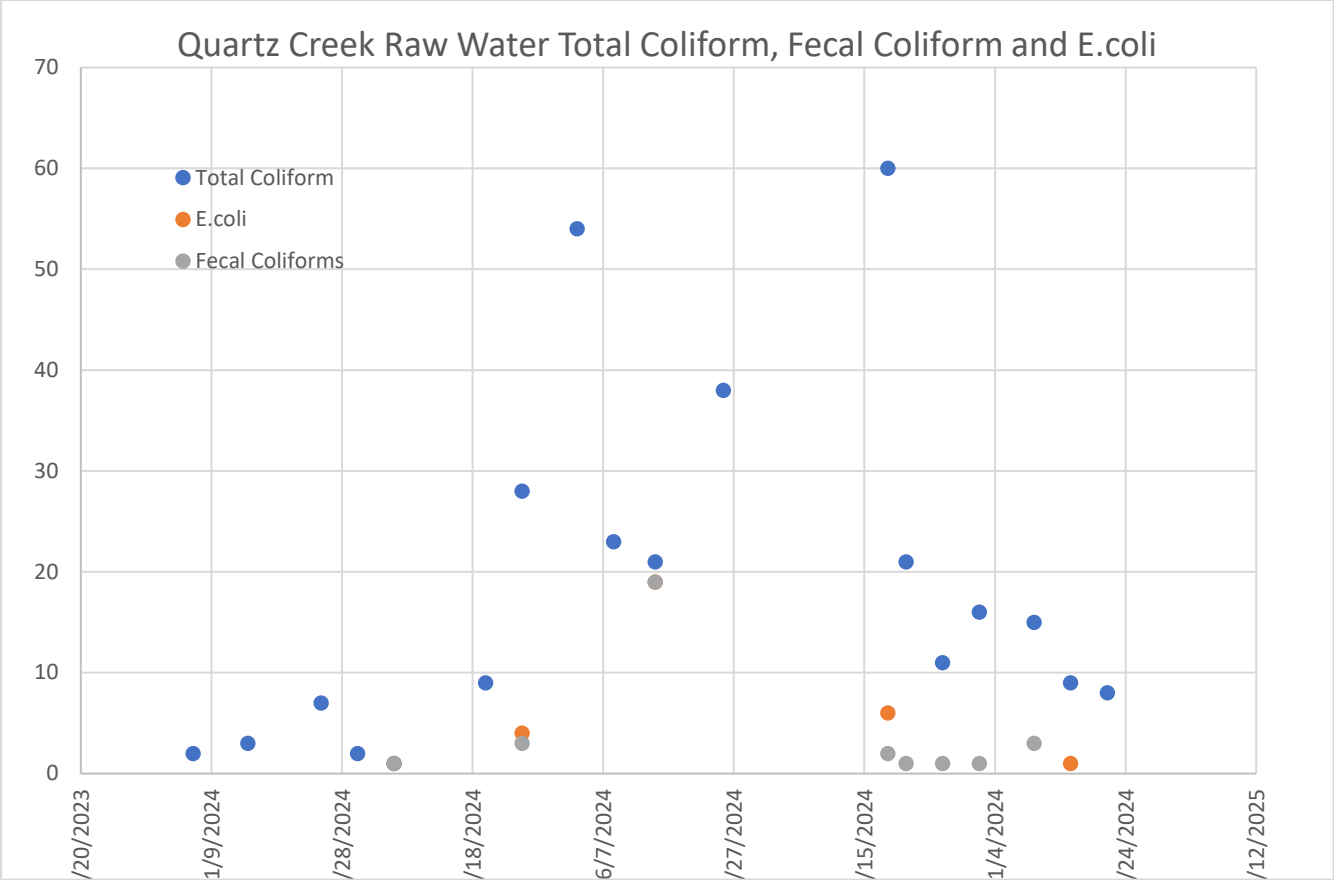
Treated Water Bacteriological

A treated water sample is taken weekly for Total Coliforms, and E.coli bacteria testing. Testing is provided by the BC Centre for Disease Control through Interior Health. Only adverse sample results are reported to the Regional District. There has been no adverse treated water sample results during the monitoring period.

Raw Water Bacteriological

A raw water sample is taken bi-weekly for Total Coliforms, E.coli and Fecal Coliform bacteria testing. Testing is conducted by Passmore Laboratory Ltd.

The following chart provides the Quartz Creek Total Coliform, Fecal Coliform and E.coli sample test results for 2024.



Raw Water Full Comprehensive

Raw Water Full Comprehensive test results are summarized in the following table.

Sample Date	Comments
2023-04-26	Test results within Canadian Drinking Water Guidelines
2023-06-12	Test results within Canadian Drinking Water Guidelines
2023-08-01	Test results within Canadian Drinking Water Guidelines
2023-12-28	Test results within Canadian Drinking Water Guidelines
2024-09-19	Test results within Canadian Drinking Water Guidelines

Treated Water THM & HAA

Some studies have identified a potential link between disinfection byproducts, primarily trihalomethanes (THMs) and haloacetic acids (HAAs) and certain forms of cancer. Disinfection byproducts can be formed when chlorine reacts with source water that has higher levels or organic material.

Guidelines for Canadian Drinking Water Quality: Guideline Technical Document – Trihalomethanes, April 2009 addendum, identifies the maximum acceptable concentration (MAC) for trihalomethanes (THMs) in drinking water as 0.100 mg/L (100 µg/L) based on a locational running annual average of a minimum of quarterly samples taken at the point in the distribution system with the highest potential THM levels. The maximum acceptable concentration (MAC) for bromodichloromethane (BDCM) in drinking water is 0.016 mg/L (16 µg/L) monitored at the point in the distribution system with the highest potential THM levels.

Guidelines for Canadian Drinking Water Quality: Guideline Technical Document – Haloacetic Acids, 2008 identifies the maximum acceptable concentration (MAC) for total haloacetic acids in drinking water at 0.08 mg/L (80 µg/L) based on a locational running annual average of a minimum of quarterly samples taken in the distribution system. Sample test results for the monitoring period are summarized in the following table.

Sample Date	Total Trihalomethanes (mg/L)	Bromodichloromethane (mg/L)	Total Haloacetic Acids (mg/L)
2023-01-20	0.0175	<0.0010	0.0123
2023-06-01	0.0249	<0.0010	0.0216
2023-09-19	0.0292	<0.0010	0.0281
2023-12-28	0.0431	<0.0010	0.0355
2024-06-25	0.0392	<0.0010	0.0284
2024-09-19	0.0212	<0.0010	0.0197

Sample results are below Guidelines for Canadian Drinking Water Quality guideline maximum acceptable concentrations.