



Grindrod Water Utility 2025 Annual Report



Regional District of North Okanagan
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ACRONYMS

AO	Aesthetic Objective	HDPE	High Density Polyethylene
BCAWQ	British Columbia Approved Water Quality Guidelines	IH/IHA	Interior Health
BPD	Backflow Prevention Device	MAC	Maximum Acceptable Concentration
BWN	Boil Water Notice	MOE	Ministry of Environment
Caro	Caro Analytical Services	MPN	Most Probable Number
CCCP	Cross Connection Control Program	NTU	Nephelometric Turbidity Units
CFU	Colony Forming Units	OC	Operational Certificate
COP	Conditions on Permit	OP	Operating Permit
CT	Contact Time	RDNO	Regional District of North Okanagan
DBP	Disinfection By-Product	SCADA	Supervisory Control and Data Acquisition
DWO	Drinking Water Officer	SDWQG	Surface Drinking Water Quality Guidelines
DWPA	Drinking Water Protection Act	SRWSP	Shuswap River Watershed Sustainability Plan
DWPR	Drinking Water Protection Regulation	SS	Sample Site
DWTO	Drinking Water Treatment Objectives (Microbiological) for Surface Water Supplies	SWS	Small Water System
E.coli	Escherichia coli	THM	Trihalomethanes
EOCP	Environmental Operator Certification Program	TOC	Total Organic Carbon
ERP	Emergency Response Plan	TTHM	Total Trihalomethanes
FUS	Fire Underwriters Survey	WQA	Water Quality Advisory
GCDWQ	Guidelines for Canadian Drinking Water Quality	WTP	Water Treatment Plant
GRW	Grindrod Water Utility	UV	Ultraviolet
		UVT	Ultraviolet Transmissivity

INTRODUCTION

As required by the *Drinking Water Protection Act* (DWPA) of BC, the Regional District of North Okanagan (RDNO) provides the following annual report in accordance with the Conditions on Permit (COP) for the Grindrod Water Utility (GRW), available at www.rdno.ca/grw.

This report provides an overview of the following:

- the water system of GRW
- the operations of the water utility, including the management, Environmental Operator Certification Program (EOCP) classification, and operations programs
- source assessment and watershed protection
- the annual water quality monitoring program, the 2025 monthly reports, and a summary of the 2025 water quality analysis
- water consumption
- emergency response
- reporting requirements
- annual completed works
- long-term plans

The annual reports are available to the public on the RDNO website www.rdno.ca/grw.

WATER SYSTEM OVERVIEW

1.1 SYSTEM OVERVIEW

GRW is owned and managed by the RDNO and was constructed in 1997. Appendix A provides the water service boundary and properties serviced by GRW.

GRW currently provides potable water to 50 residential connections, five (5) commercial, three (3) institutional, one (1) industrial, and one (1) park. Based on an estimate of two and a half (2.5) persons per single-family connection, the population is an estimated 125 persons.

The GRW system is comprised of the following:

- A screened intake is located in the Shuswap River. The high-density polyethylene (HDPE) supply line directs raw source water to the wet well where it is pumped to the package water treatment plant (WTP) for treatment.
- Before the source water enters the WTP, heavier sand and sediments are removed by hydro cyclones. The water is pretreated with chlorine, causing soluble manganese to precipitate out of solution for removal during the treatment process.

- The WTP consists of coagulation, flocculation, clarification and filtration with activated carbon at a maximum capacity of 66 U.S. gallons (254 liters) per minute.
- After the water is processed, it is disinfected with sodium hypochlorite before it flows by gravity to the reservoir onsite. The reservoir stores up to 63,300 U.S. gallons (240 cubic meters) of treated water.
- The treated water is pumped by constant feed pumps into the distribution system. A pressure relief valve maintains distribution system water pressure at approximately 55 psi (380 kPa).
- System operation is controlled by a Programmable Logic Controller (PLC) and monitored both locally and remotely with a Supervisory Control and Data Acquisition (SCADA) system with alarms set for pertinent parameters.
- The utility does not provide fire protection that meets the Fire Underwriters Survey (FUS) as there is insufficient reservoir storage, no fire hydrants and insufficient fire flows.

1.2 WATER SOURCE

The water source for the GRW system is the Shuswap River, which is located in the South Thompson Basin. The river is approximately 150 kilometres in length and traverses forested terrain, mountainous terrain, two (2) lakes (Sugar Lake and Mabel Lake), and a fertile agricultural valley before discharging into Mara Lake, a tributary lake of Shuswap Lake (RDNO, 2014). Appendix B provides a map of the Shuswap River Watershed.

1.3 TREATMENT REQUIREMENTS

The treated water quality objectives for all BC water systems using a surface source need to meet the Drinking Water Treatment Objectives (Microbiological) for Surface Water Supplies (DWTO) in BC, which include the following:

- 4 log removal or inactivation of viruses
- 3 log removal or inactivation of protozoa (*Giardia* and *Cryptosporidium*)
- 2 treatment processes for surface water
- 1 Nephelometric turbidity units (NTU) maximum turbidity
- 0 *Escherichia coli* (E.coli).

Interior Health (IH) requires elevated treatment objectives for GRW due to “high agricultural activity” along the banks of the river upstream of Enderby / Grindrod. As noted in Observations and Recommendations of the IH Routine Inspection Water Supply System Report, dated January 20, 2014, the elevated treatment objectives are as follows:

- 5 log removal or inactivation of viruses.
- 4 log removal or inactivation of protozoa (*Cryptosporidium* and *Giardia*).

- 2 treatment processes for surface water.
- 1 Nephelometric turbidity units (NTU) maximum turbidity.
- 0 Escherichia coli (E.coli).

The treatment levels at GRW are not compliant with these elevated standards as GRW does not provide sufficient treatment for 4 log removal for protozoa.

The treatment process of flocculation / clarification / filtration employed at the GRW packaged WTP provides “conventional treatment”, which would normally provide a 2-log credit for viruses and a 3-log credit for protozoa. However, the WTP was not designed, constructed and approved under the IH “Policy Statement on Pre-Engineered Water Treatment Plants” adopted April 1997. IH has specified that the GRW packaged WTP provides “direct filtration”, which qualifies for a 1 log removal credit for viruses and a 2-log removal credit for giardia and cryptosporidium.

Chlorination of the treated water provides sufficient Chlorine Contact Time (CT) for a 4-log inactivation of viruses. This with the 1 log credit for direct filtration, provides the required 5 log removal or inactivation of viruses. Chlorination provides a 1 log removal credit for giardia, but does not affect cryptosporidium, so only the 2-log removal credit for direct filtration applies for protozoa. Filtration and chlorination provide two (2) treatment barriers, and filtration reduces the turbidity to well below 1 NTU, with no occurrences of E.coli in the treated water. See Appendix C for the GRW CT calculation.

In order to meet the requirements of the IH Policy Statement on Pre-Engineered Water Treatment Plants the packaged WTP may require construction of double walls between treatment basins to introduce air gap separations. This work would have to be completed with approvals from IH.

As per the letter the RDNO sent to IH in June 2021, treatment improvements will be postponed until the current WTP requires a substantial upgrade, a full replacement, or legislative changes that require treatment improvements sooner. It was identified that there is a low risk of potential cross connection at the separation wall between the clarification and filtration process. The RDNO is managing this risk by scheduling annual inspections to look for cracks, holes or corrosion of the wall that may cause a cross connection between basins. An inspection was completed April 7, 2025, with no loss of wall integrity noted that could cause a cross connection.

OPERATIONS

1.4 MANAGEMENT

GRW is owned and managed by the RDNO. The Manager, Small Utilities is responsible for the operation and management with oversight provided by the General Manager, Utilities and the RDNO Board of Directors. The water quality monitoring program is coordinated and monitored by the water quality staff of the RDNO. The RDNO employs an EOCP certified contract operator to complete day-to-day operation and maintenance tasks. The operator is also required to respond

to emergencies, 24 hours a day, seven (7) days a week, and have a backup operator available to respond if necessary.

Interior Health (IH) is the regulator of water utilities and is responsible for ensuring compliance with legislation and Provincial standards. IH also issues the Operating Permit (OP) (Appendix D) and conditions on permit (COP) (Appendix E). The IH representative is often an Environmental Health Officer or a Drinking Water Officer (DWO) who works closely with the water utility to ensure COP are met.

1.5 EOCp CLASSIFICATION

GRW is classified by the EOCp as a Small Water System (SWS) (EOCP # 483).

The GRW operations are contracted to Aberdeen Electric Ltd., see Table 1 for the list of operators certified through the EOCp. The contracted operators are responsible for operating and maintaining the source, treatment, and distribution system as well as sampling as required by the water quality monitoring program.

The operator duties include on-site checks of the facilities at minimum three times per week with continual monitoring by the SCADA system with set alarms. All alarms are responded to by an operator. If immediate attention is required, the operator will proceed to the site to respond. The system operator will contact management for guidance or assistance as necessary.

1.6 OPERATIONS PROGRAMS

1.6.1 FLUSHING AND STANDPIPE MAINTENANCE

GRW is not in a fire protection area and there are no fire hydrants in the community. Standpipe maintenance is not regularly schedule. Records of any standpipe maintenance are kept on file.

1.6.2 CROSS CONNECTION CONTROL PROGRAM

The RDNO has a Cross Connection Control Program (CCCP) for all water utilities owned by the RDNO, including GRW. The CCCP is focused on identifying high and medium backflow risks and ensures annual compliance of Backflow Prevention Device (BPD) testing for these facilities.

Currently, most connections in the Grindrod community are residential and pose a minor hazard to GRW. There are currently two (2) properties in GRW that are in the CCC database and are required to complete annual testing of their backflow device. There are a few other lots that have been identified as commercial, institutional, industrial, and park properties that will require an assessment to identify their hazard levels and appropriate backflow prevention requirements.

Beginning in 2024, with the initiation of metering at property line, non-testable dual check valves are being installed in conjunction with the meter to provide premise isolation at low-risk properties. Three properties had premise isolation installed in 2025 for a total of five properties.

SOURCE ASSESSMENT AND WATERSHED PROTECTION PLANNING

Due to the large contribution size of the watershed upstream of the community of Grindrod and the small size of the water utility, aspects of source protection for this utility have been incorporated into the Shuswap River Water Sustainability Plan (SRWSP). The SRWSP was completed by the RDNO planning department and endorsed by the RDNO Board in 2014. It can be found on the following website:

[Shuswap River Watershed Sustainability Plan](#)

The purpose of the SRWSP is to create a common, long-term vision for the management of the Shuswap River watershed, and a comprehensive plan for decision making with regard to land and water planning within the watershed. Another purpose is to develop a sense of responsibility for the watershed within the community. The SRWSP develops objectives for Land Use Planning/ Urban/Residential Development, Agricultural Management Practices, Forestry Management Practices, Industrial and Commercial Operations, Water Quantity, and outlines strategies pertaining to each.

The goal for water quality and quantity is “to preserve and protect the Shuswap River Watershed to ensure water quality and quantity that supports the ecosystems and communities that rely on it.”

To further understand the source water for GRW the Shuswap Watershed Council has released a summary report covering results of recent water quality monitoring in the Shuswap watershed. The most recent report from 2023 / 2024 can be found at:

[https://www.fraserbasin.bc.ca/Library/TR_SWC_2/SWC_WaterQualityReport_2023-24 WEB.pdf](https://www.fraserbasin.bc.ca/Library/TR_SWC_2/SWC_WaterQualityReport_2023-24_WEB.pdf)

WATER QUALITY MONITORING

The goal of the water quality program at GRW is to monitor the quality of the source water and treated water within the distribution system to detect the presence of microorganisms or other concerns that can degrade water quality. If issues are found, operations and staff can respond to correct any concerns and appropriately notify customers as required.

1.7 PROGRAM AND SCHEDULE

Water quality monitoring for GRW is based on the requirements of the *Drinking Water Protection Regulation* (DWPR) Schedules A and B (Government of BC, 2003), the *Guidelines for Canadian Drinking Water Quality* (GCDWQ) (Health Canada, 2017), and the *Source Drinking Water Quality Guidelines* (SDWQG) (MoE, 2017).

The Water Quality Monitoring Program for GRW is reviewed and updated annually in January. The updated sampling program and schedules for 2025 are provided in Appendix F. The RDNO provides an updated Water Quality Monitoring Plan (WQ Plan) to IH at the beginning of each year after the program is developed. Included in the WQ Plan submitted is the monitoring schedule, parameters, and frequency of samples taken at different times of the year.

To meet Schedule B in the DWPR for populations less than 5,000, a minimum of four (4) microbiological samples are required per month. In 2025, GRW met this requirement. This was accomplished by taking two (2) samples on the first and third Tuesday of each month.

The system operators collect bacterial samples and drop them off at the local IH facility for shipment to Caro Analytical Services (CARO). Caro sends results to IH and uploads results to ENKI, a third-party online database the RDNO utilizes to store lab data.

1.8 SOURCE WATER

This section outlines the bacterial, turbidity, pH, temperature, and annual chemical results for 2025 source water at GRW. For additional information, see the monthly reports in Appendix H.

5.2.1 BACTERIA

At least one monthly raw water sample is collected from the intake and is analysed for E.coli and Total Coliforms and is measured in MPN/100 mL. E.coli is monitored as an indicator bacteria to assess contaminant levels in the source water and assess changes in this water. Total Coliform is monitored as an indicator bacteria to assess changes in source water. SDWQG has a limit of 10 E.coli/100mL for source water and has no applicable limit for Total Coliforms. The Total Coliform and E.coli sample was not reported in the month of October due to laboratory error. The September and November samples were run at the laboratory using the CFU method instead of the MPN method. Due to interferences associated with these methods, the Total Coliforms were reported as >200.0 for both Total Coliforms and E.coli for September and 850 Total Coliforms and >8 E.coli for November. It is suspected that the plates were overgrown in September and the E.coli value is due to interference, since it is orders of magnitude higher than previous results throughout the year. Since the lab was able to provide a result using the MPN for November, that result was included in the graphing. Neither of the September results nor the E.coli November result were included in any graphing as true numbers were not provided.

The highest recorded E.coli count in 2025 was 19 CFU/100mL (Figure 1) and the highest recorded Total Coliform count was 850 CFU/100mL (Figure 2). The E.coli exceeded the SDWQG of 10 E.coli/100mL two (2) times in 2025 at the Grindrod intake.

The standards in the SDWQG are used to assess the level of treatment required for a given water source. The exceedances of E.coli in the source water demonstrate that the high level of treatment at GRW (clarification, filtration and chlorination) is required to provide safe, clean drinking water to the community. These samples were taken before treatment, and the post-treatment sample

results of <1 E.coli indicated successful and efficient water treatment during periods of high source water E.coli.

5.2.2 TURBIDITY

Turbidity measurements relate to the optical properties of water. Turbidity is caused by suspended matter such as clay, silt, finely divided organic and inorganic matter, soluble coloured organic compounds, plankton, and other microscopic organisms. GRW has continuous online SCADA monitoring. Historically, source water from the Shuswap River is between 1 NTU and 5 NTU, with the exception of freshet. The GRW treatment plant works effectively to provide treated water with a turbidity of less than 1 NTU.

The highest recorded turbidity SCADA reading was 10.13 on April 9, 2025. See Figure 3 for the GRW raw water daily average SCADA turbidity results in 2025. SCADA source water turbidity data was lost from February 10 to February 12, 2025, due to planned upgrades to the GRW treatment plant, which included new meters being installed. The GRW treatment process was working normally during these times.

5.2.3 ANNUAL COMPREHENSIVE

Comprehensive sampling is completed annually. The annual sampling is rotated between spring and fall to ensure the raw water meets water quality guidelines during different times of the year. The 2025 comprehensive samples were taken in October. All parameters were within the limits with the exception of pH (Appendix G). The pH limit is a GCDWG limit that applies to the treated water to maximize treatment effectiveness, control corrosion and reduce leaching of plumbing components. Since the distribution system is checked on a regular basis, it is known that the current treatment process is effective and the lower pH values are not a health concern.

1.9 WATER TREATMENT PLANT

GRW is sourced from surface water and there is some variability within water quality parameters throughout the year. Treatment sampling follows the specifications outlined in the COP and as directed by IH, see Section 2.3. Additional parameters and monitoring can occur for individual projects. See Appendix F for the detailed schedule. Sampling for the water treatment plant occurs at the water treatment plant outlet.

1.9.1 BACTERIA

Monthly bacterial sampling is required as per Drinking Water Protection Regulations Schedule B. There were 24 samples analyzed at CARO analytical and four (4) samples analyzed at the RDNO laboratory in 2025.

Schedule A of the DWPR requires the following criteria be met for potable water:

No detectable Escherichia coli (E.coli) per 100 mL.

In 2025, there was no detectable E.coli in the GRW treated water.

At least 90% of samples have no detectable Total Coliform bacteria per 100 mL.

In 2025, 100% of samples in the GRW treated water had no detectable Total Coliform per 100 ml.

No sample has more than 10 Total Coliform per 100 mL.

In 2025, no samples in the GRW treated water had Total Coliform.

The results for 2025 met the GCDWQ and the DWPR.

1.9.2 TURBIDITY

Monitoring turbidity is essential in assessing water quality as it serves as an indicator for the effectiveness of the water treatment process and an indicator of potential changes in water quality. The utility monitors the turbidity with continuous online turbidity sensors at the source water, the treated water immediately after the WTP, and the water entering the distribution system post chlorination. Alarms are in place to notify the operator if there is an exceedance over set turbidity parameters at the monitoring points. Treated turbidity did not exceed the 1 NTU operational guideline in 2025. See Figure 4 for the 2025 treated turbidity readings.

1.9.3 CHLORINE

Under normal operations, the target residual after chlorine injection is between 1.50 mg/L to 2.00 mg/L to achieve the minimum target chlorine residual of 0.20 mg/L at the end of the distribution system. The continuous online chlorine analyzer monitors the free chlorine leaving the reservoir. In the event of low chlorine, the system is programmed through SCADA to notify the operator via an alarm.

1.10 WATER IN THE DISTRIBUTION SYSTEM

Distribution sampling follows the specifications outlined in the COP and as directed by IH, see Sections 3.1 and 3.3. Additional parameters and monitoring can occur for individual projects. See Appendix F for the detailed schedule. See Section 5.3.1 for treated water bacteria results, which are included in the required monthly bacterial sampling results. Operators collect samples from the GRW outlet, as well as from James Street SS and Fourth Avenue SS, as these two (2) sites are at the ends of the system and would act as a “worst case” scenario for water quality.

1.10.1 BACTERIA

Table 9 summarizes GRW distribution bacterial results. In 2025, there were 25 distribution samples analyzed by CARO and an additional nine (9) samples analyzed by the RDNO laboratory. Note that the water treatment plant outlet samples are included as distribution samples in order to achieve the required number of monthly samples as outlined by IH.

Schedule A of the BC DWPR requires the following criteria be met for potable water:

No detectable Escherichia coli (E.coli) per 100 mL.

In 2025, there was no detectable E.coli in the GRW distribution system

At least 90% of samples have no detectable Total Coliform bacteria per 100 mL.

In 2025, there were no detectable Total Coliform in the GRW distribution system.

No sample has more than 10 Total Coliform per 100 mL

In 2025, no samples had more than 10 Total Coliform

The results met the GCDWQ and the DWPR. GRW met all bacteria-related guidelines.

1.10.2 TURBIDITY

Turbidity is monitored with a handheld turbidity meter at three (3) distribution sites. The field parameters are recorded on an electronic log sheet and backed up monthly. Field parameters are also recorded on the submitted requisition sheets to Caro with bacterial samples and entered into ENKI.

All 308 of the turbidity tests of the distribution sites in 2025 were within compliance at <1 NTU as seen in Table 2.

1.10.3 CHLORINE

Total and free chlorine is monitored with a handheld chlorine meter concurrently with the turbidity readings.

The free chlorine of the distribution sites in 2025 ranged from 0.47 to 2.09 mg/L in the 308 samples taken. All samples contained at least 0.2 mg/L free chlorine, which is the recommended minimum as outlined by the World Health Organization, see Table 2.

1.10.4 PHYSICAL PARAMETERS

Table 2 summarizes the pH and temperature for the distribution system in 2025. Five (5) of the 34 pH samples were between 6.8 - 6.9, which is below the recommended guideline of 7.0. The pH limit is a GCDWG limit to maximize treatment effectiveness, control corrosion and reduce leaching of plumbing components. Since the distribution system is checked on a regular basis, it is known that the current treatment process is effective and the lower pH values are not a health concern.

GRW distribution temperatures increased to >15 C between May and November, which is due to seasonal temperature changes.

1.10.5 DISINFECTION BY-PRODUCTS

Trihalomethanes (THMs) are disinfection by-products that are formed when organic compounds, naturally present in the source water, react to the disinfection process. The level of THMs in

treated water depends on numerous factors including TOC, temperature, pH, water age, and chlorine dose. 10 distinct THM compounds are possible but only four (4) occur to any significant degree in treated drinking water:

- Chloroform
- Bromodichloromethane
- Dibromochloromethane
- Bromoform

Collectively, the above THM compounds are referred to as total trihalomethanes (TTHMs). Further in this text, TTHMs will refer to sample site averages of all four (4) compounds, not the individual parameters. Figures 5 and 6 are reported as an average of all four (4) compounds, therefore, TTHMs.

The GCDWQ MAC for TTHMs is 0.1 mg/L and is 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, which is Fourth Avenue SS. Figure 5 provides the TTHM results for 2025, which was well below the MAC with a TTHM average of 0.042.

GRW distribution has been monitoring THM's since 2010, with consistently low TTHM results. This is likely due to filtration at the water treatment plant. The TTHM annual average for the longest retention at the end of the system site is available for 2010 to 2025. All years show that TTHMs did not exceed guidelines as seen in Figure 6. Because THM results are consistently low and the source water is filtered, HAA disinfection byproducts are not monitored in this system.

The average from 2010 to 2019 was from the start and end of the system sites. THM sampling from 2010 to 2019 occurred at two (2) sites: Grindrod Water Treatment Plant Reservoir (start of the distribution) and Sure Crop Feed (longest retention time). This sampling usually occurred three (3) times a year. From 2021 onwards, THMs were only sampled quarterly at the Fourth Avenue SS to comply with GCDWQ as it requires a minimum of quarterly samples at the point where the distribution system has the highest potential THM levels, (Health Canada, 2017).

WATER CONSUMPTION

Table 3 and Figure 7 provide the monthly consumption for GRW in 2025 while Figure 8 provides a graph of the daily consumption from August 2019 - 2025. Water consumption begins to significantly increase in May, with peak flows usually observed in June to August, while September shows a significant decrease in monthly flows. 2025 data deviated from historical normals by staying well below the summer and winter averages starting in April, as seen in Figure 7. This could be attributed to new meters being installed at the GRW treatment plant, which more accurately reflect the quantity of water leaving the water treatment plant. The water utility continues to record water use through SCADA to create better trending in future years.

In 2025, there was a total volume of 30,696 m³ drawn from the Shuswap River of which 26,679 m³ was delivered to the distribution system for the purpose of water works, Conditional Water Licence number C110885 issued for the Grindrod Water Utility allows 286,731 m³ (63,072,000 U.S. gallons) per year.

Based on the consumption provided in Table 3, the 2025 daily average water use can be calculated based on 50 residential houses with an average of three (3) persons per house. Monthly industrial flows have been estimated and removed from the consumption data below. The following results are in litres per day per person (L/d/p).

- Winter water use was approximately 374 L/d/p in 2025. This is considered to represent indoor domestic water use only.
- Peak water use in July and August was 857 L/d/p. This is very high water use. For reference, Greater Vernon Water average summer residential water use was 375 L/d/p in 2024.
- The average annual water use in 2025 was 534 L/d/p, which is considered high compared to the Canadian average water use of 223 L/d/p and the British Columbia average water use of 286 L/p/d (Government of Canada, 2021).

The water use for Grindrod is considered high compared to metered water utilities. Outdoor water restrictions went into effect May 2025. This utility is working towards universal metering. Some properties have meters that are being read periodically, all new developments must install a meter and the RDNO is applying for grants to install meters at all other properties.

EMERGENCY RESPONSE PLANNING

1.11 EMERGENCY RESPONSE PLAN

A comprehensive update of the GRW Emergency Response Plan (ERP) was completed in 2024, and a review is completed annually. Sampling methodology and RDNO small utility ERP training for the operators also occurs annually.

RDNO Utilities staff, as well as the operators are all instructed on how to use the following supporting documents in times of water quality changes or emergencies:

1. GRW Emergency Response Plan
2. GRW Water Quality Deviation Response Plan

The above documents contain the contacts, criteria, and procedures necessary to assist operators and staff to make timely, informed decisions.

GRW must inform customers when their drinking water does not meet standards with the appropriate notifications based on risk. A WQA is released when the water poses a modest health

risk. A BWN is released when there is a known or higher risk of a possible health impact to the customer.

An advisory or notice is delivered as quickly and efficiently as possible. Notification may include WQA or BWN road signs, radio, email, and/or media releases. Under specific circumstances, notification is hand-delivered. Customers are advised to subscribe to the Grindrod Water Mailing List by going to www.rdno.ca/subscribe and subscribing to Grindrod Water email updates:

Please select the type of information you would like to receive *

- ☐ All RDNO News
- ☐ Public Notices
- ☐ Area B News
- ☐ Area C News
- ☐ Area D News
- ☐ Area E News
- ☐ Area F News
- ☐ The Board Bulletin - News and Updates from the RDNO
- ☐ Delcliffe Water
- ☐ Emergency Management
- ☐ Events
- ☐ Greater Vernon Water Notices
- ☐ Greater Vernon Water Agricultural Customers
- ☐ Greater Vernon Water Source Changes
- ☒ Grindrod Water
- ☐ GVW Non-Potable Water Updates
- ☐ Mabel Lake Water and Sewer
- ☐ Outback Water
- ☐ Parks and Trails
- ☐ Recreation and Culture
- ☐ Silver Star Water
- ☐ Swan Lake Residential Infill Project
- ☐ Wastewater Recovery Project
- ☐ Whitevale Water
- ☐ Waste Management

1.12 INCIDENT TRACKING AND NOTIFICATION

Two (2) incidents were recorded for 2025 and required public notification. Summaries of these are provided in Table 4.

RDNO Emergency Response Procedures require that incidents are reported. Incidents are defined when there is a deviation from normal operating procedure or there is a water quality issue. Incident reporting allows staff to track and review issues to assess if improvements could reduce the risks from each issue.

Public notifications are usually related to water infrastructure upgrades and are in localized areas where the work is occurring. These notifications are usually to make customers aware of planned work and advise them to store water for household use during the work. The notifications are usually hand-delivered to the affected customers.

REPORTING REQUIREMENTS

Monthly and annual reports are submitted to IH as per the COP and are available to the public at the RDNO website (www.rdno.ca/grw). Monthly reports for the last 12 months are available on the website. If historical reports are required, please contact the RDNO at 250-550-3700.

WORKS COMPLETED IN 2025

- Grindrod Water Treatment Plant Infrastructure Upgrade – Valves, piping, and header pipe replacement inside the Water Treatment Plant, including the addition of a distribution meter. Valves and piping inside the water treatment plant were starting to fail. The civil engineering design was completed in 2023. A contractor was hired in 2024 with construction completed in spring 2025.
- Level Transmitter in Wet Well – A level transmitter for tracking the wet well level during pump runs was installed. This improvement should give an indication of if the intake is becoming blocked.
- Environmental Management Plan – Delays in the emergency jetting of sand around the intake in October 2024 were due to waiting for permits. Adding an environmental management plan to the existing water licence will help mitigate this issue in the future when work is required around the intake. This plan has been prepared and submitted to the Province for approval.
- Universal Metering – Grant funding is actively being sought to begin universal metering at the property line at GRW for current customers. This project will begin when grant funding is received. All new development without a meter must install their meter at the time of connection, development or issuance of a building permit. Currently, five (5) properties have meters installed near the property line through new development.

PLANNED WORKS

1.13 2026 WORK PLANS

Works planned for 2026 include:

- Environmental Management Plan – This plan was submitted to the Province for approval in spring 2026. When it is approved, the plan will be added to the GRW water licence.
- Cross Connection Control Inspections – Cross Connection inspections are to take place on all high-risk properties located in GRW.
- Replace small cyclone – Routine replacement of this equipment as it has a limited life cycle.
- Capacity Study – GRW needs a Long-Term Infrastructure Plan (LTIP). The LTIP will look at the capacity of the water utility and will provide what capacity is remaining, triggers for upgrades, future treatment, and associated costs for the upgrades and treatment.

- Universal Metering – Grant funding is actively being sought to begin universal metering at the property line at GRW for current customers. This project will begin when grant funding is received. All new development without a meter must install their meter at the time of connection, development or issuance of a building permit.

1.14 LONG-TERM PLANS

There has been some development in Grindrod in recent years, with several additional customers connecting since 2022. A capacity study is being planned for this utility to better understand current and future water needs. This utility is working towards universal metering. Some properties have meters that are being read periodically, all new developments must install a meter and the RDNO is applying for grants to install meters at all other properties

CLOSING

The RDNO has made significant strides in fulfilling the RDNO program objectives, meeting the COP and requirements outlined by IH, and in implementing BC's DWPA and DWPR at GRW. The RDNO will strive for implementation of system improvements within the constraints of the GRW budget and through applications for grant funding.

TABLES

Table 1: Certified Operators

Contracted Operators			
Last Name	First Name	Certification #	Certification Held
McKim	Warren	1336	WDIII, WTII, WWCI, WWTII
McKim	Nicholas	9341	WDI, WTII

Table 2: GRW Summary of Field Results in the Distribution System and WTP Outlet

2025 Distribution Field Sampling Chemistry Summary						
	Min	Max	Average	# Samples	Chlorine <0.2 mg/L Turbidity >1 NTU but <5 NTU	Turbidity >5 NTU
Free Chlorine (mg/L) ¹	0.47	2.00	1.25	308	0	---
Total Chlorine (mg/L)	0.50	2.09	1.33	308	0	---
Turbidity (NTU) ¹	0.06	0.47	0.18	308	0	0
pH	6.8	7.7	7.2	34	---	---
Temperature	4.8	22.0	13.7	34	---	---

¹WQ Deviation Response Plan triggered when Free Chlorine <0.20 mg/L; Turbidity > 1.0 NTU

Table 3: GRW Monthly Consumption Summary

2025 Grindrod Consumption		
Month	Total Monthly Consumption (m3)	Average Daily Consumption (m3)
January	1,774	57
February	1,682*	67
March	1,892	61
April	1,728	58
May	2,561	83
June	2,951	98
July	4,016	130
August	3,467	112
September	2,310	77
October	1,542	50
November	1,389	46
December	1,365	44
Monthly Average	2,223	74
Total	26,679	

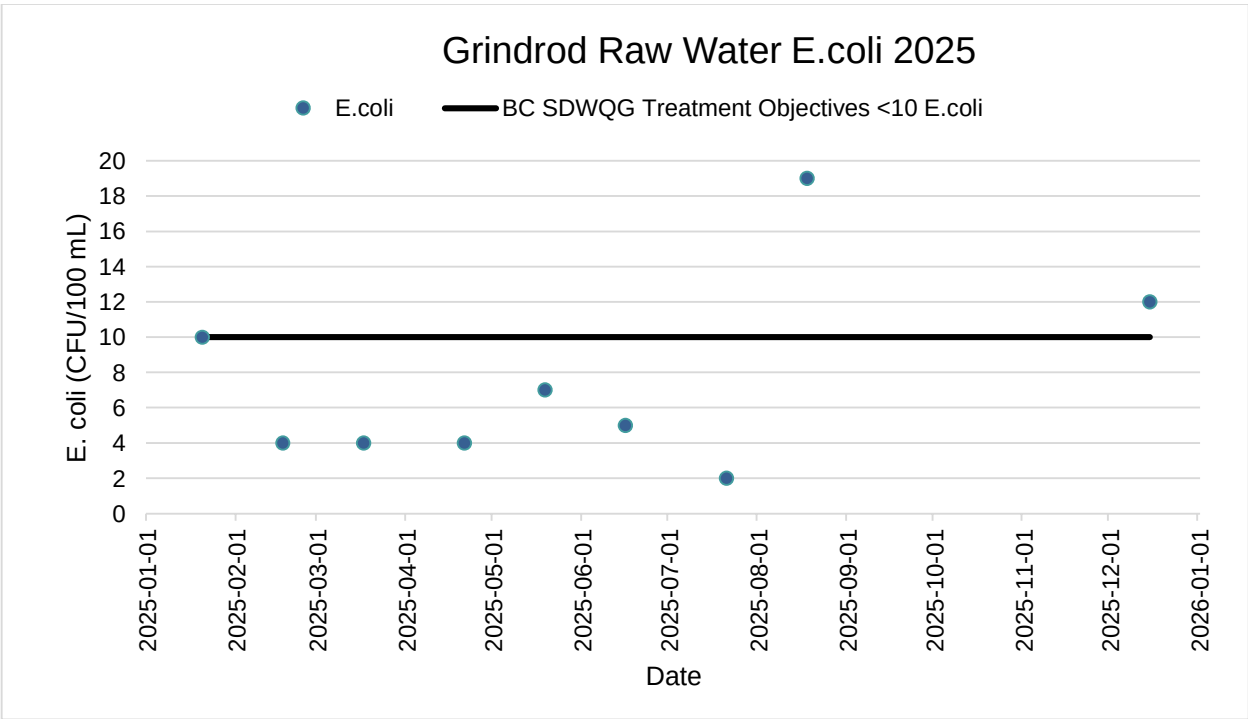
*Consumption data missing from February 10-12 inclusively due to planned construction at the WTP.

Table 4: GRW Incident Summary

2025 Grindrod System Incidents			
Cause	Date Reported	Trigger Event	Actions Completed
Planned Infrastructure Upgrades	07-Apr-25	Pipe upgrades within the GRW treatment plant	BWN issued April 7, 2025. Water outage required to accommodate the installation of new meters, piping, and valves within the GRW treatment plant. Bacterial samples taken several hours after system had returned to normal and the following day. All field parameters were normal, and bacterial samples were all non-detect. The BWN was rescinded on April 12, 2025
Potential Water Service Interruption	22-May-25	Planned construction work	WQA issued May 22, 2025. Bacterial samples taken several hours after system had returned to normal. All field parameters were normal, and bacterial samples were all non-detect. WQA was rescinded on May 23, 2025.

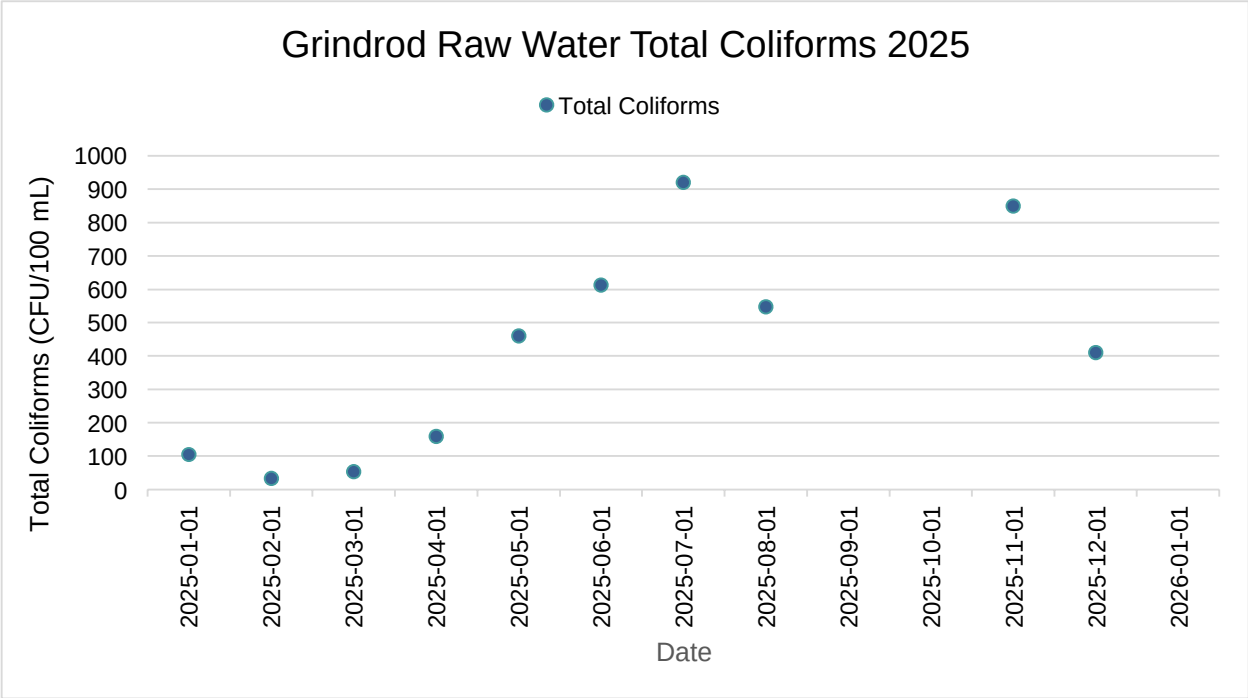
FIGURES

Figure 1: Grindrod Source Water - 2025 E.coli Results



September, October, and November data not reported due to laboratory error.

Figure 2: Grindrod Source Water - 2025 Total Coliform Results



September and October data not reported due to laboratory error. November data is reported in MPN/100 mL due to laboratory error.

Figure 3: Grindrod Source Water - 2025 Turbidity SCADA

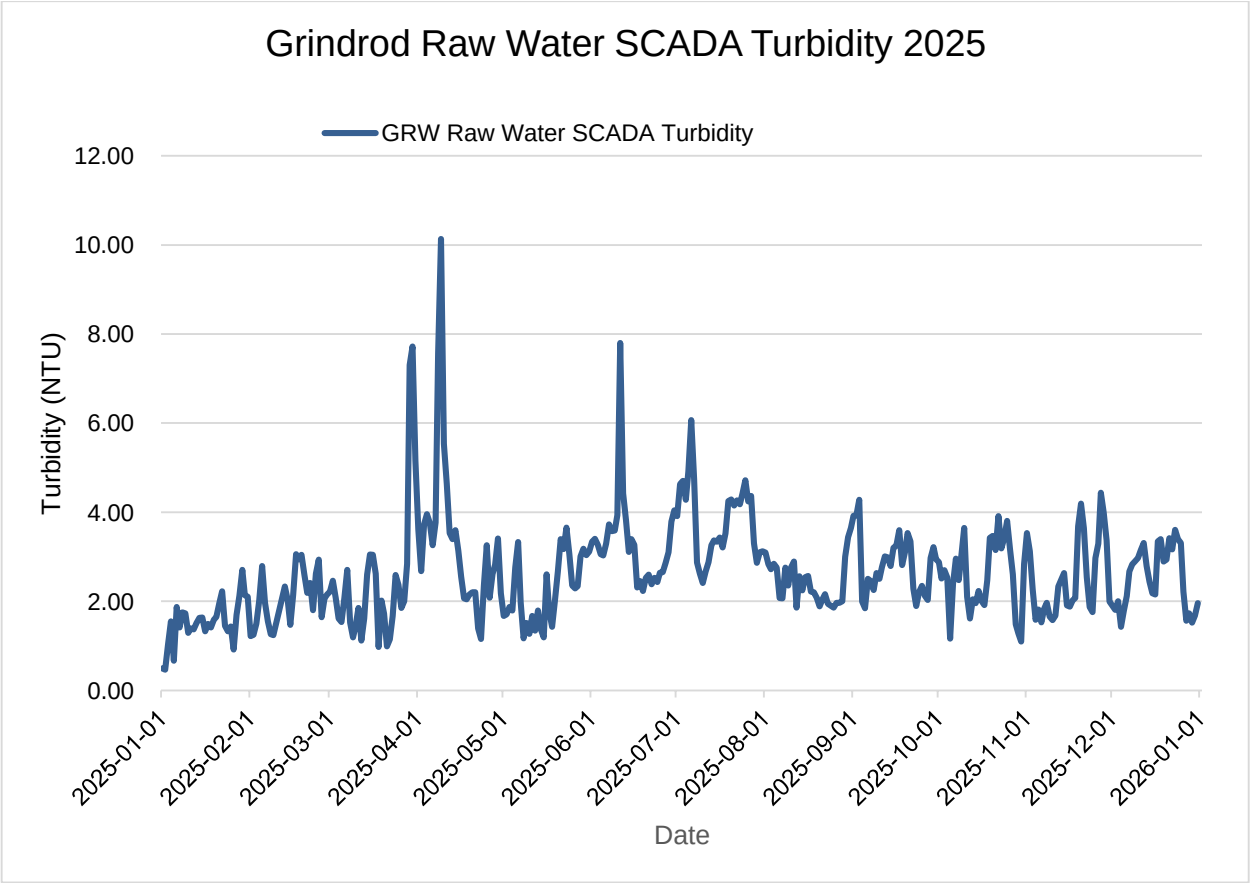


Figure 4: Grindrod Treated Water – 2025 Turbidity SCADA

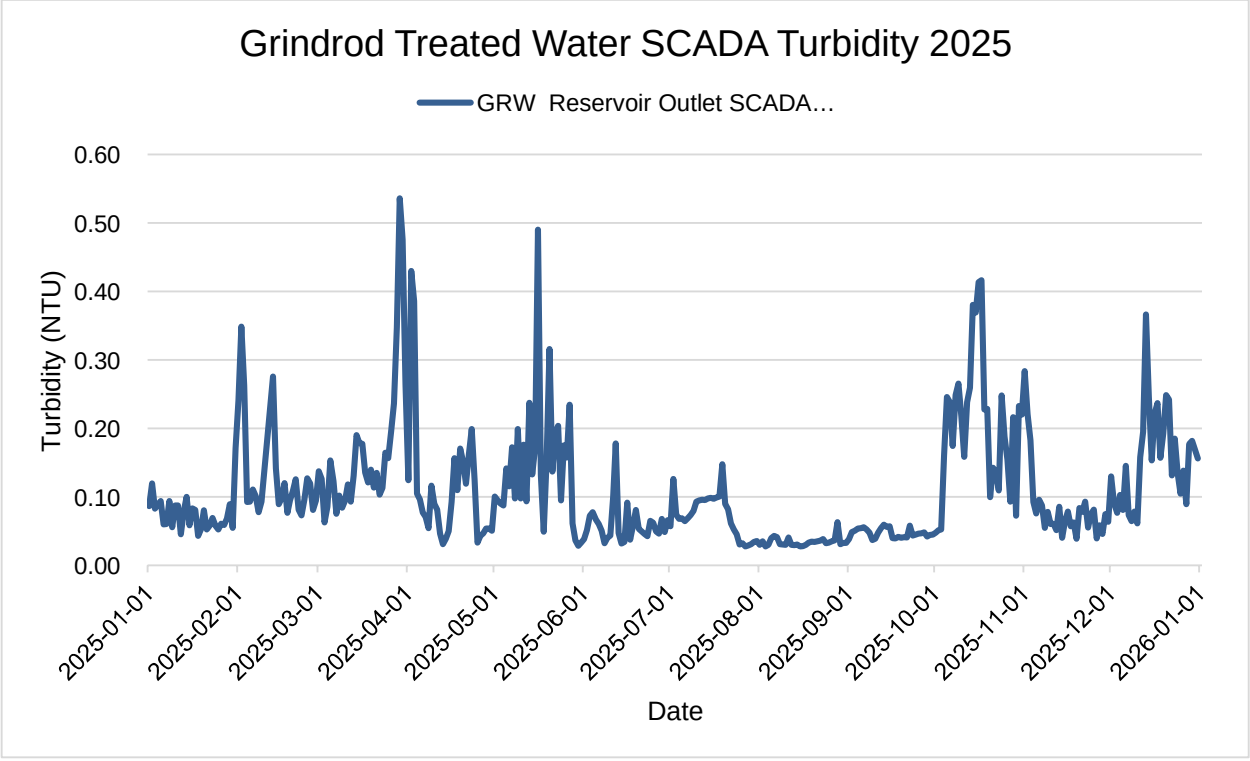


Figure 5: Grindrod Distribution System – 2025 Quarterly TTHM's

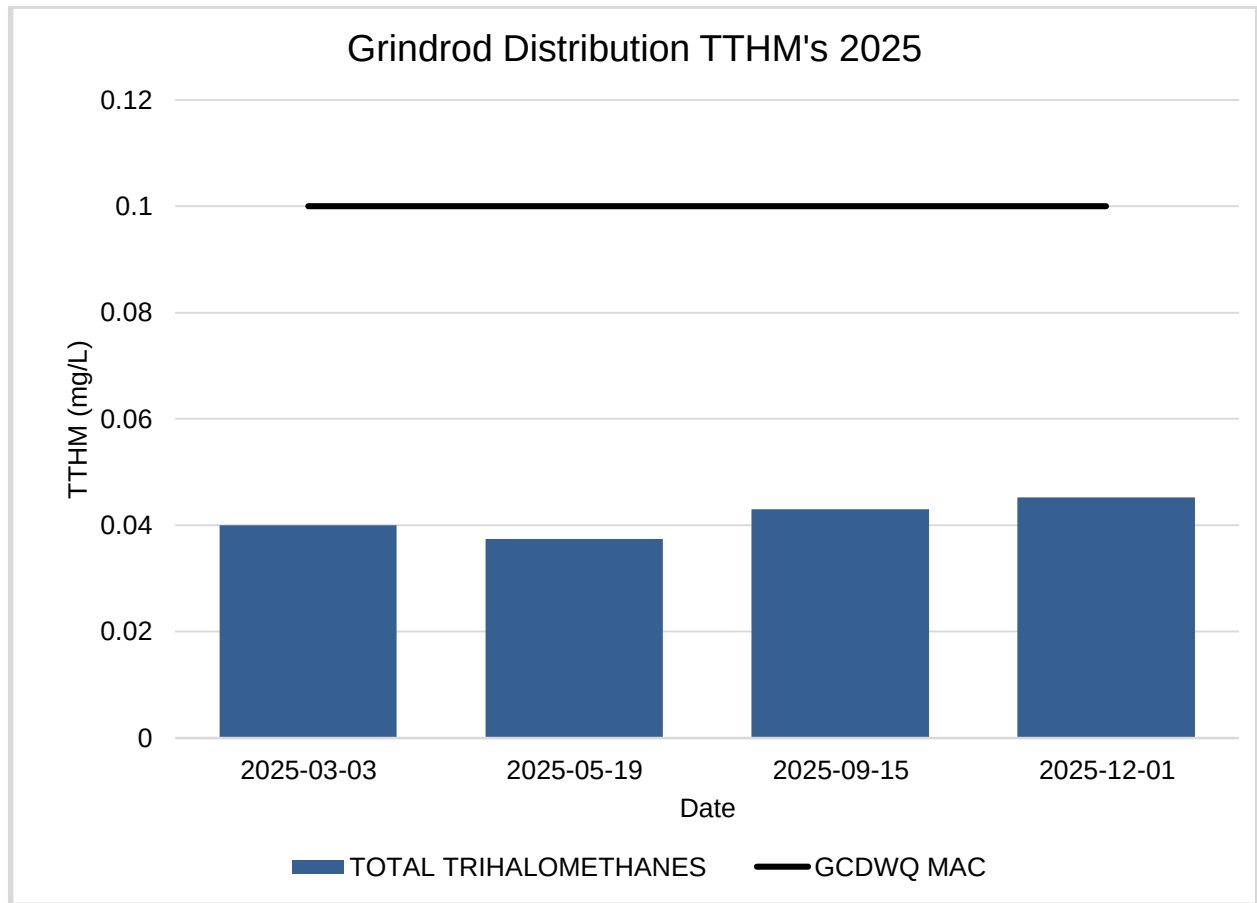


Figure 6: Grindrod Distribution System – 2010 to 2025 Historical annual average TTHM's

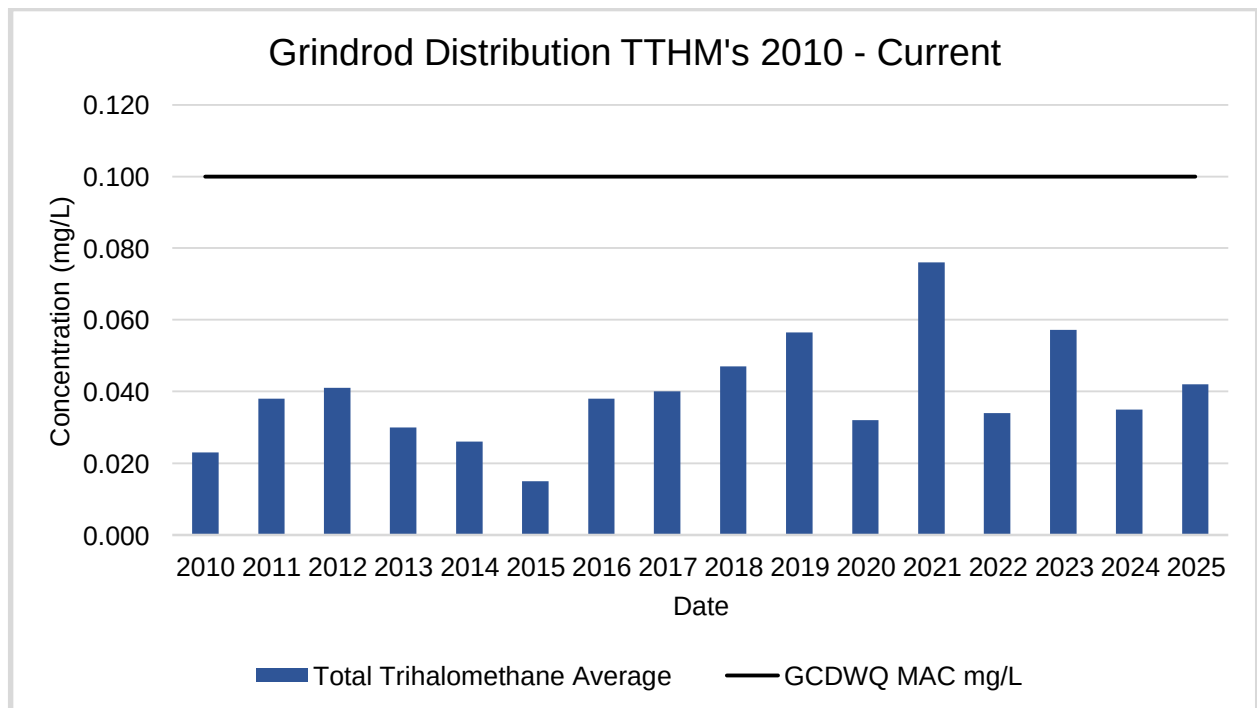


Figure 7: Grindrod Water Consumption 2025

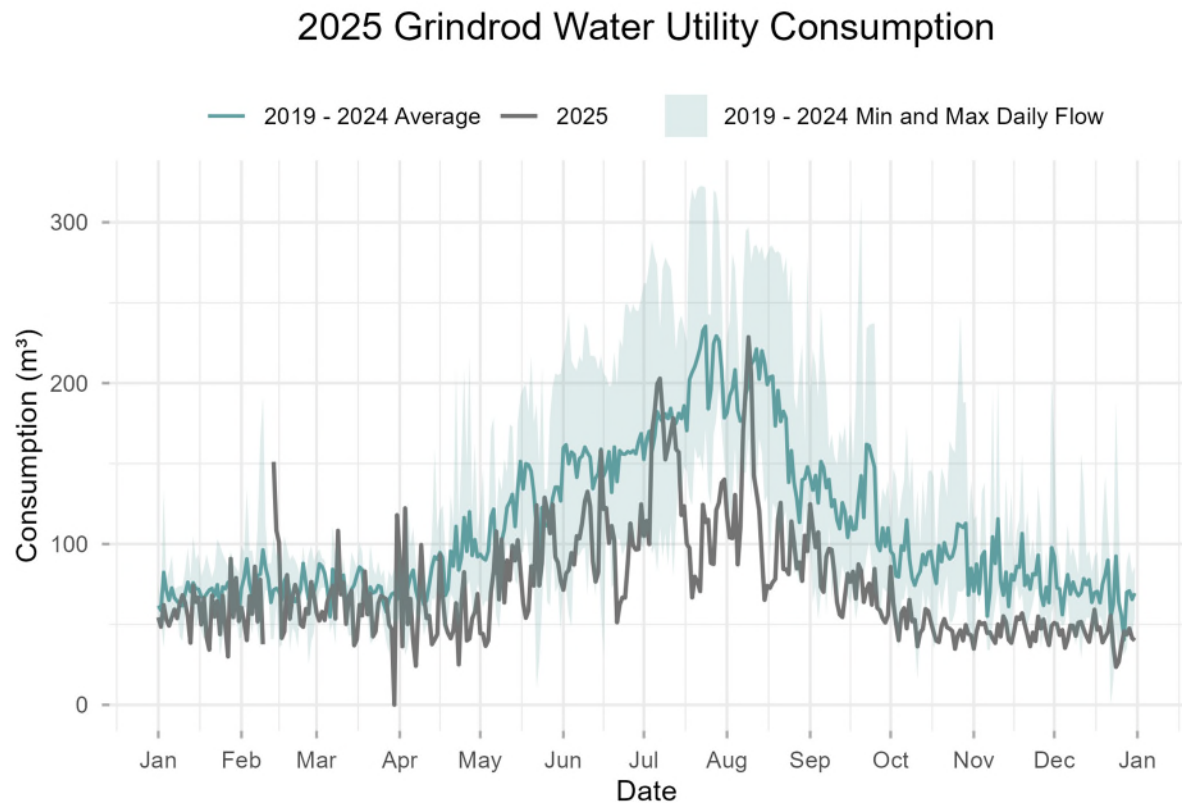
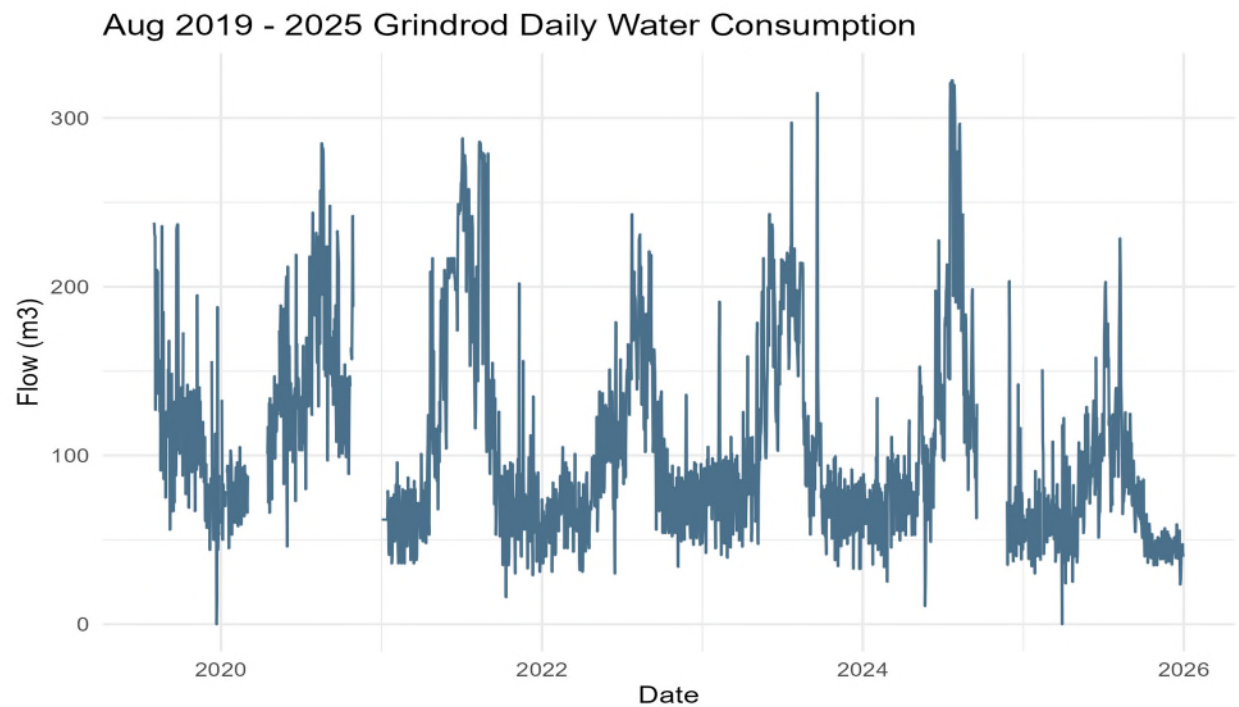


Figure 8: Grindrod Daily Water Consumption 2019 - 2025



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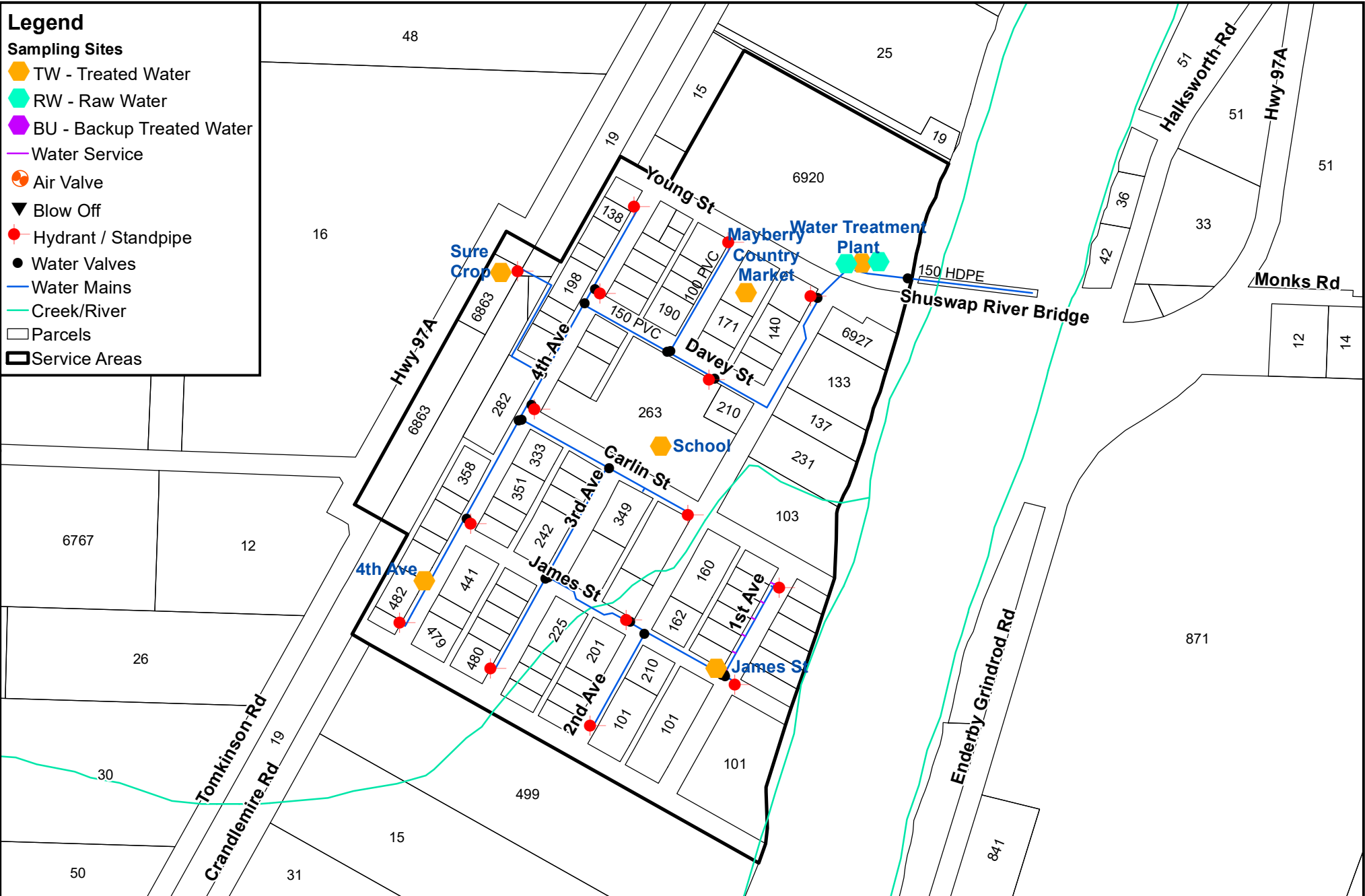
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<https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/water-quality/guidelines-canadian-drinking-water-quality-summary-table.html>

APPENDIX A

GRW Water System Map and Local Service Area



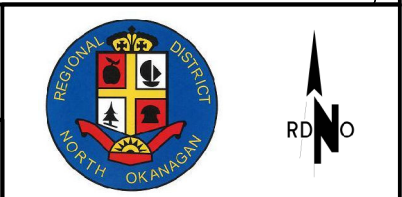
This map was compiled by RDNO, using data believed to be accurate; however, a margin of error is inherent in all maps. This product is distributed without warranties of any kind, either express or implied, including but not limited to warranties of sustainability or particular purpose or use.

Grindrod Water Utility

Plot Date: Jan 12, 2022

Scale: 1:5,000
 Plot Size: 11" x 8.5"

0 125 250 500 Meters



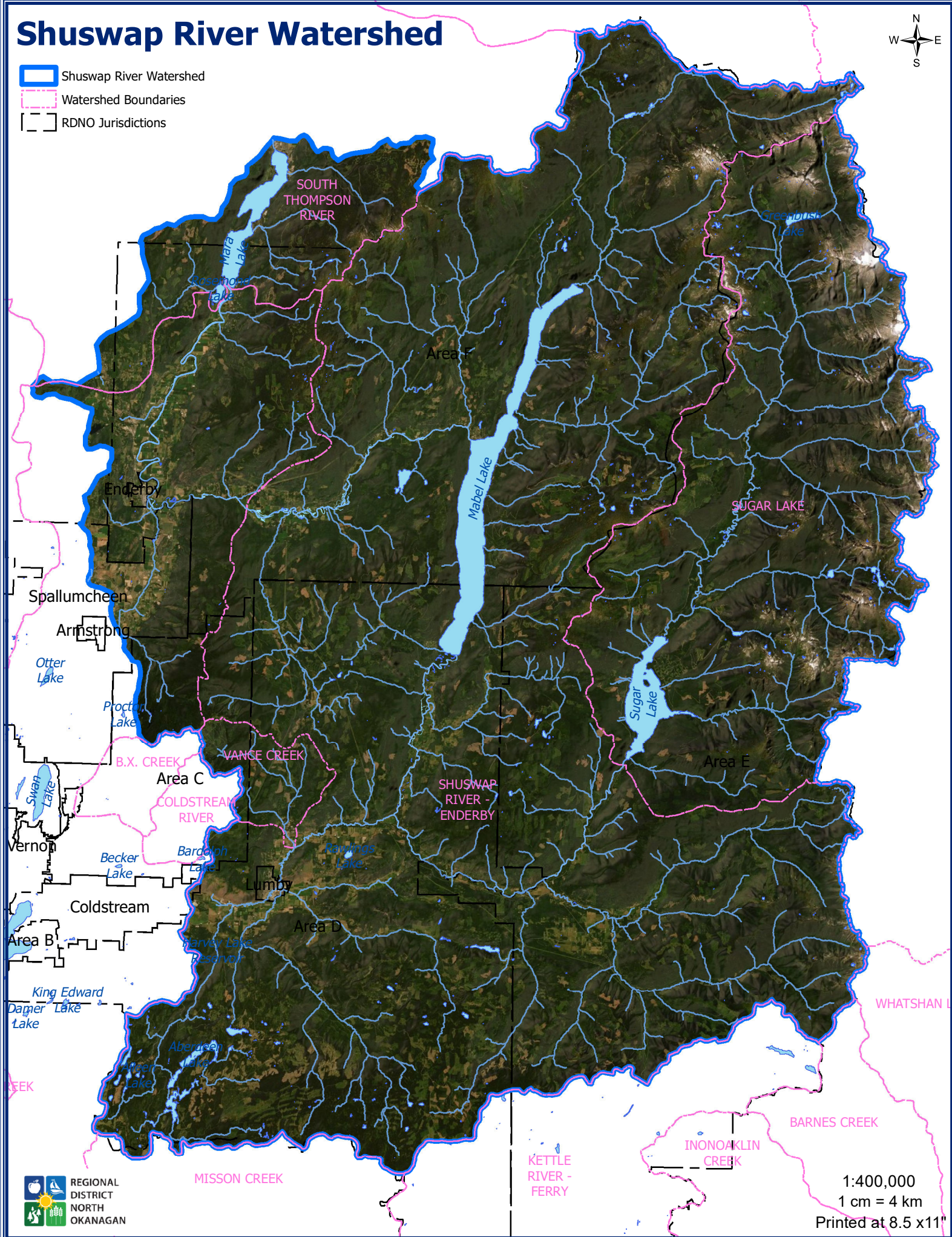
APPENDIX B

Shuswap River Watershed Map

Shuswap River Watershed



- Shuswap River Watershed
- Watershed Boundaries
- RDNO Jurisdictions



REGIONAL
DISTRICT
NORTH
OKANAGAN

1:400,000
1 cm = 4 km
Printed at 8.5 x 11"

APPENDIX C

Chlorine Contact Time

Grindrod Water Utility - Chlorine Contact Time Calculations

40.0	m	Reservoir Length (5 cells x 8m each)
2.44	m	Reservoir interior height floor to ceiling
2.29	m	Reservoir maximum water depth (100%)
1.95	m	Reservoir operating depth at high water level = 85%
1.72	m	Reservoir operating depth at low water level = 75%
1.15	m	Reservoir operating depth at 50%
2.84	m	Reservoir Width of cell
195	m ³	Reservoir Volume (V) at low water level 75%
130	m ³	Reservoir Volume (V) at 50%
62.7	U.S.gpm	Flow (peak hourly - assumed 3x average day demand)*
4.0	L/s	Flow (Q) peak hourly
1.3	L/s	Flow (Q) Average Day Demand (ADD)
822	minutes	Theoretical Detention Time (TDT) = V/Q (peak hourly) at 75%
2466	minutes	Theoretical Detention Time (TDT) = V/Q (ADD) at 75%
1644	minutes	Theoretical Detention Time (TDT) = V/Q (ADD) at 50% Volume
0.5		Baffling Factor (4 baffle walls, 1 weir, Average Baffling Condition)
411	minutes	Contact Time (CT) in Reservoir at peak hourly flow (TDT * Baffling Factor) at 75%
1233	minutes	Contact Time (CT) in Reservoir at ADD flow (TDT * Baffling Factor) at 75%
822	minutes	Contact Time (CT) in Reservoir at ADD flow (TDT * Baffling Factor) at 50%

*flow as calculated in document "grindrod water treatment - CT calculations summer 2008" October 30, 2012
As GRW is filter treated, the water parameters are generally consistent with little to no change in chlorine demand.

CT calculation for 1st customer - sampling point in pump house after reservoir

	Cl ₂ Residual mg/L (free)	Cl ₂ Injection mg/L	pH raw water	Raw Water temp °C	CT _a (achieved) = (Cl ₂ * CT in reservoir) min-mg/L	Virus CT _r (required) (5-Log) min-mg/L	CT _a /CT _r (Virus)	CT (Virus) % Achieved	CT _r (Giardia) (4-Log) Required	CT _a /CT _r (Giardia)	CT (Giardia) % Achieved
Reservoir at 75%	Minimum	Minimum	Average	Average	min-mg/L	min-mg/L			Required		
Peak Hourly Flow, Avg. Temp	1.26	2.00	7.50	9.0	517.9	8.0	64.74	100.000	175	2.96	100.00
Peak Hourly Flow, Winter Temp	1.26	2.00	7.50	3.0	517.9	12.0	43.16	100.000	246	2.11	100.00
Peak Hourly Flow, Summer Temp	1.26	2.00	7.50	20.0	517.9	3.0	172.63	100.000	131	3.95	100.00
Reservoir at 75%											
Normal Flow (ADD), Avg. Temp	1.26	2.00	7.50	9.0	1553.7	8.0	194.21	100.000	175	8.88	100.00
Normal Flow (ADD), Winter Temp	1.26	2.00	7.50	3.0	1553.7	12.0	129.47	100.000	246	6.32	100.00
Normal Flow (ADD), Summer Temp	1.26	2.00	7.50	20.0	1553.7	3.0	517.89	100.000	131	11.86	100.00
Reservoir at 50%											
Normal Flow (ADD), Avg. Temp	1.26	2.00	7.50	9.0	1035.8	8.0	129.47	100.000	175	5.92	100.00
Normal Flow (ADD), Winter Temp	1.26	2.00	7.50	3.0	1035.8	12.0	86.31	100.000	246	4.21	100.00
Normal Flow (ADD), Summer Temp	1.26	2.00	7.50	20.0	1035.8	3.0	345.26	100.000	131	7.91	100.00

Notes:

1. Normal CL2 residual range at reservoir is 1.0 to 1.5 mg/L

2. Temperature average is about 9°C with a low of near 0°C

3. Minimum Free Chlorine from SCADA

4. IHA correspondence of January 20, 2014 indicates the Grindrod Package WTP receives 1 Log removal credit for viruses, and 2 Log removal credit for protozoa (giardia and cryptosporidium) and further, recommends that the water treatment requirements for the Grindrod Water system are:
- Requirement

Achieved

5 log inactivation of viruses

1 Log removal credit, and 4 Log chlorine CT

4 log removal or inactivation of protozoa

2 Log removal credit (giardia&crypto), 2 Log chlorine CT (giardia), and 0 Log chlorine CT (crypto)*

2 refers to two treatment processes for all surface drinking water systems

filtration and chlorination

1 for less than 1 NTU of turbidity with a target of 0.1 NTU

0 total and fecal coliforms and E. coli
- *chlorine does not affect cryptosporidium so for this requirement the Total Achieved is 2 Log which is insufficient for IHA water treatment requirements

APPENDIX D

Operating Permit



Interior Health

ACCOUNTS RECEIVABLE

12-945 Columbia St W, Kamloops, BC V2C 1L5

Toll Free: 1-844-868-5200 ext. 10365 – Local Calls: 778-362-6810 ext. 10365

Email: hp.billing@interiorhealth.ca

PERMIT VALIDATION

TO VALIDATE your operating permit, immediately affix this decal in the designated location on the permit. The Health Act Fees Regulation states that an operation permit is valid only if it bears an unexpired decal.

Regional District of North Okanagan
Grindrod Water System
9848 Aberdeen Rd
Vernon BC V1B 2K9
Canada

Permit Number: **004846**

Issue Date: 06-Mar-2025

Expiry Date: 31-Mar-2026

Facility Number: 0450115

Facility Name: Grindrod Water System

Drinking Water System 15 - 300 Connections



APPENDIX E

Conditions on Permit



Interior Health

200 – 1835 Gordon Drive
Kelowna, BC
V1Y 3H5

February 26th, 2008

Bob Campbell
Regional District of North Okanagan
9848 Aberdeen Road
Coldstream, BC V1B 2K9

RECEIVED

FEB 28 2008

REGIONAL DISTRICT OF
NORTH OKANAGAN

Dear Mr. Campbell:

Re: **Grindrod Water System**

Drinking Water Quality Improvement Program – 2008 Conditions on Permit

Welcome to the Drinking Water Quality Improvement Program. I enjoyed meeting with you on February 18th, 2008 to discuss the draft Conditions on Permit letter dated December 20th, 2007. This letter specifies conditions that will come into effect for your water system on March 31st, 2008.

Interior Health is pleased to acknowledge our mutual accountability to drinking water consumers and our shared commitment with the **Grindrod Water System**. The intent of the Drinking Water Quality Improvement Program is to provide consistent and clear expectations for all stakeholders and to ensure consistent program delivery throughout the Interior Health region. The foundation of the Drinking Water Quality Improvement Program is a set of typical terms and conditions that may be attached to the Operating Permit. The Drinking Water Quality Improvement Program provides a documented and verifiable management system for promoting and protecting public health.

Water Suppliers and Interior Health recognize the need for working relationships to consistently achieve good quality drinking water. We expect to have on-going long term planning discussions with you with the outcome of setting target dates for staged improvements.

Currently water systems that serve more than 1000 people already have typical conditions placed on their Operating Permit. Interior Health expects planning to begin for 43210 treatment objectives for all additional water systems newly participating in the Drinking Water Quality Improvement Program commencing March 31st, 2008. It is recognized that Water Systems are at different stages of implementation and will not reach target dates at the same time. We also recognize that the full implementation of the 43210 treatment objectives will progress over the coming years.

All participating water systems should develop realistic and attainable target dates to implement 43210 as described below. Please note that deep wells that are not under the influence of surface water may not require additional treatment at this time.

- 4 log (99.99%) inactivation of Viruses
- 3 log (99.9%) inactivation or removal of *Giardia* and *Cryptosporidium*
- 2 treatment processes for surface water
- 1 for <1 NTU of turbidity with a target of 0.1 NTU
- 0 Total coliform, 0 fecal coliform and 0 *E. coli*

The following are the terms and conditions placed on your Permit to Operate effective March 31st, 2008:

1. Provide Source Protection Plan for Each Water Source

Watershed Assessment/Protection Plan

Status:

- Implementation 2008

Objective:

- Complete Source to Tap Screening Tool
- Provide budget to Complete Modules 1,2 7 and 8 of the MoH/MoE Source to Tap Assessment
 - Refer to: (or equivalent)
 - i. <http://www.bcwwa.org/source-to-tap/index.php>

Target Date:

- 2008

2. Provide a Certified Operator to Operate the System

Status:

- This system is EOCP classified as Small Water System
- Jessie Meier is certified SWS

Objective:

- Provide Environmental Operators Certification Program system classification and operator certification
- Continuously provide operator certified to the system classification

Target Date:

- Annual update

3. Provide a Drinking Water Quality Monitoring Program

Status:

- On a monthly basis, 1 raw water and 2 treated water bacterial samples are analyzed

Objective:

- Provide an annual update of Drinking Water Quality Monitoring Program with established schedules for systematic, routine sampling
- Provide a treatment and distribution system map to identify:
 - Bacteriological sampling points
 - Raw water and distribution system
 - Chemical sampling point(s) and schedules for basic potability monitoring (annual surface water)
- Monitor Total Organic Carbon to establish baseline

Target date:

- Annual update

4. Provide Continuous On-line Monitoring of the Water Disinfection Process

Status:

- Continuous On-line monitoring currently provided

Objective:

- Provide monitoring details in monthly report

Target Date:

- On-going from April 1st, 2008

5. Provide Continuous On-line Turbidity Sampling and Recording of Raw Water for Each Surface Source

Status:

- Continuous On-line monitoring currently provided

Objective:

- Provide monitoring details in monthly report

Target Date:

- On-going from April 1st, 2008

6. Provide Long-term Plans for Source, Treatment and Distribution System Improvements Taking into Account the Goal of 43210 Treatment Objectives

Status:

- Water treatment has received credit for 43210 treatment objectives

Objective:

- Provide relevant planning reports and system assessments
- Provide Maintenance Plan

Target Date:

- Fall 2008

7. Review and Update the Emergency Response Plan Annually

Status:

- Interior Health does not have 2007 Emergency Response Plan on file

Objective:

- Provide Emergency Response Plans that include adequate provisions for public notification and appropriate corrective measures to respond to emergency situations (Electronic versions are preferred)
- Test and update emergency phone numbers annually

Target Date:

- Update Emergency Response Plan annually

8. Provide Monthly Reports and an Annual Summary

Status:

- Implementation 2008

Objective:

Monthly reporting should include:

- Daily water consumption or pump hours
- Microbiological test results
- Continuous chlorine residual data (min, max and average values)
- Continuous turbidity data (min, max and average values)
- Comments on source, treatment, distribution system events

Annual reports should include (as applicable):

- Updates to Water System Assessment
- Updates to Maintenance Plan
- Updates to Water Monitoring Plan
- Provide Environmental Operators Certification Program certification documents for each operator
- Updates to EOCP System Classification

Target Date:

- Provide monthly reports prior to the 15th day of the following month
 - Send to: dale.thomas@interiorhealth.ca
- Provide annual reports prior to July 1st annually

Thank you. I look forward to working with you over the coming year.

Regards,



Dale Thomas, Public Health Inspector
Interior Health Authority
200 – 1835 Gordon Drive
Kelowna, BC V1Y 3H5

Phone: (250) 980-5050

Fax: (250) 980-5060

Cc: Mike Adams, Senior Drinking Water Officer
Wayne Radomske, Public Health Engineer
Christina Yamada, Public Health Engineer
Pat Holmes, Senior Public Health Inspector

APPENDIX F

Water Quality Monitoring Program

2025 Grindrod Water Utility Water Quality Monitoring Program

Operator Tasks		
Sampling	Bi-Weekly	Mondays
Chlorine	Weekly	At all distribution sites use handheld meter and log data
Turbidity	Weekly	At all distribution sites use handheld meter and log data
pH	Weekly	At all distribution sites use handheld meter and log data
Conductivity	Weekly	At all distribution sites use handheld meter and log data
Bottle drop off	Bring bottles to Interior Health's Vernon Health Protection Office to send to Caro for analysis	
Instrument cleaning and calibration	Bring instruments to RDNO according to instrument schedule	
Turbidity (online) meter cleaning	Flush, clean, and calibrate online turbidity meter quarterly (March, June, September and December) and write when flushed, cleaned, calibrated and any other comments in online operator's log.	

Sample Sites	
Site Type	Sample Site Name
Source	Shuswap River Intake
Treatment Plant	GRWTP Outlet
Distribution	Fourth Avenue SS
Distribution	James Street SS

Handheld Instrument Calibration by RDNO		
Parameter	Instrument Name	Frequency
Chlorine	Hach Pocket colorimeter	Annually
Turbidity	HACH 2100Q	Quarterly
pH	Oakton pH Testr	Monthly
Conductivity	Oakton ECO Testr	Monthly

2025 Grindrod Water Utility Water Quality Monitoring Program

Sampling Schedule

Source Analysis		
Sample Sites	Frequency	Caro Lab Parameters
Shuswap River Intake	Monthly	Bacterial

Treatment Analysis		
Sample Sites	Frequency	Caro Lab Parameters
GRWTP Outlet	Bi-weekly (1st and 3rd week of the month)	Bacterial

Distribution Analysis		
Sample Sites	Frequency	Caro Lab Parameters
Fourth Avenue SS	Monthly	Bacterial
	Quarterly (February, May, August, November)	THM's
James Street SS	Monthly	Bacterial

4 Distribution Bacterial Samples Per Month

2025 Grindrod Water Utility Water Quality Monitoring Program

Bottles and Parameters

Source Sampling		
Sites	Bottles	Parameters
Shuswap River Intake	1 - Caro Bacterial	Total Coliform, E.Coli

Treatment Sampling		
Sites	Bottles	Parameters
GRWTP Outlet	1 - Caro Bacterial	Total Coliform, E.Coli

Distribution Sampling		
Sites	Bottles	Parameters
Fourth Avenue SS	1 - Caro Bacterial	Total Coliform, E. Coli
	2 - THM bottles	THM's
James Street SS	1 - Caro Bacterial	Total Coliform, E. Coli

2025 Grindrod Water Utility Water Quality Monitoring Program

Grindrod Annual Comprehensive Source Sampling

Source Comprehensive Analysis Schedule		
Sample Site	Frequency	When
Shuswap River Intake	Annually	October
Annual sampling is done in October of each year		
Bottles for Annual Surface Water Source Sampling		
1 - Caro Bacterial		
1 - 125 mL Metals		
1 - 100 ml Glass metals (Mercury)		
1 - Cyanide		
1 - 1 L Caro		
1 - TOC		
1 - 4L Chlorophyll A		

APPENDIX G

Source Comprehensive Analysis

Shuswap River Intake Water Quality 2025

Water System:	Grindrod Water System
Source:	Shuswap River
Sampling Point:	Shuswap River Intake
Date of Sample:	2025-10-28



REGIONAL DISTRICT
NORTH OKANAGAN

		Canadian Drinking Water Guidelines	
Anions	Results (mg/L)	Maximum Acceptable Concentration (MAC)	Aesthetic Objective (AO)
Chloride	0.79		AO ≤250
Fluoride	<0.10	1.5	
Nitrate (As N)	0.013	10	
Nitrite (as N)	<0.010	1	
Sulphate	7.00		AO ≤500
General Parameters	Results (mg/L)	Maximum Acceptable Concentration (MAC)	Aesthetic Objective (AO)
UV Transmittance @ 254nm (%)	91.4	N/A	
Alkalinity, Bicarbonate (as CaCO3)	57.1	N/A	
Alkalinity, Carbonate (as CaCO3)	<1.0	N/A	
Alkalinity, Hydroxide (as CaCO3)	<1.0	N/A	
Alkalinity, Phenolphthalein (as CaCO3)	<1.0	N/A	
Alkalinity, Total (as CaCO3)	57.1	N/A	
Carbon, Dissolved Organic	1.46	N/A	
Carbon, Total Organic	1.74	N/A	
Chlorophyll a	1.00	N/A	
Colour, True (CU)	<5.0		AO ≤15
Conductivity (umho/cm)	107	N/A	
Cyanide, Total	0.0035	0.2	
Nitrogen, Total Kjeldahl	0.12	N/A	
pH	6.64	7.0 - 10.5	
Phosphorus, Total (as P)	0.0091	N/A	
Phosphorus, Total Dissolved	0.006	N/A	
Turbidity (NTU)	0.82		OG <1
Calculated Parameters	Results (mg/L)	Maximum Acceptable Concentration (MAC)	Aesthetic Objective (AO)
Hardness, Total	49.1	N/A	
Total Dissolved Solids	63.4		AO <500
Total Metals	Results (mg/L unless noted)	Maximum Acceptable Concentration (MAC)	Aesthetic Objective (AO)
Aluminum, total	0.0154		OG <0.1
Antimony, total	<0.00020	0.006	
Arsenic, total	<0.00050	0.01	
Barium, total	0.0101	2	
Boron, total	<0.0500	5	
Cadmium, total	<0.000010	0.007	
Calcium, total	16.2	N/A	
Chromium, total	<0.00050	0.05	
Cobalt, total	<0.00010	N/A	
Copper, total	0.00179	2	
Iron, total	0.031		AO ≤0.1
Lead, total	<0.00020	0.005	
Magnesium, total	2.09	N/A	
Manganese, total	0.00437	0.12	
Mercury, total	<0.000010	0.001	
Molybdenum, total	0.0007	N/A	
Nickel, total	<0.00040	N/A	
Potassium, total	0.91	N/A	
Selenium, total	<0.00050	0.05	
Sodium, total	1.55		AO ≤200
Strontium, total	0.08	7	
Uranium, total	0.000351	0.02	
Zinc, total	<0.0040		AO ≤5

Notes: No current Guideline ; Reference Health Canada

Hardness - no guideline - "Hardness Levels between 80 and 100 mg/L as CaCo3 are considered acceptable; levels greater than 200 are considered poor but can be tolerated; those in excess of 500 are normally considered unacceptable.

Turbidity - 1 NTU when disinfection required; <5 NTU aesthetic clarity

"<" = less than detection limit shown

">" = greater than upper range limit shown

"<<" = less than number shown (Detected)

">>" = greater than number shown (Detected)

* Criteria Exceeded

APPENDIX H

Monthly Report

Grindrod Water (GRW) Water Quality Report for January 2025

1. Source

The GRW system draws raw water from the Shuswap River through a screened intake line to a wet well. The raw water is pumped from the wet well through a small treatment plant referred to as a package treatment plant and into a below ground storage reservoir. There is no elevated storage in the whole system and as a result pumps run continuously to maintain pressure. This also means there is no way of supplying water during a power outage. Table 1 summarizes the bacterial and turbidity results for the untreated water at the treatment plant.

Table 1 Grindrod Water Treatment Plant – Untreated

Parameter	Laboratory	Units	# of Samples	# of Deviations	Result	Min	Max	Average
E.coli	CARO	MPN/100 mL	1	-----	10	-----	-----	-----
Total Coliform	CARO	MPN/100 mL	1	-----	105	-----	-----	-----
Turbidity	Operator Grab Sample	NTU	11	-----	-----	0.64	1.37	0.92
Turbidity	SCADA ¹ Daily Average	NTU	31 Days	-----	-----	0.46	2.70	1.53

¹SCADA: Supervisory Control and Data Acquisition.

2. Treatment Plant

The Grindrod package water treatment plant was designed for a filter flow rate of 66 U.S. gpm (4.2 liters per second) but is operated at about 53 U.S. gpm (3.3 Lps). The flow rate is determined by the operating speed of the pump in the wet well and meeting the turbidity guidelines. The treatment plant consists of a hydraulic flocculation chamber, a tube settler/clarifier and a mixed media filter. The plant discharge turbidity is typically below 0.2 NTU. Table 2 summarizes the results for chlorine and turbidity for the treated water at the treatment plant.

Table 2 Grindrod Water Treatment Plant - Treated

Parameter	Laboratory	Units	# of Samples	# of Deviations	Result	Min	Max	Average
Free Chlorine ²	SCADA ¹ Daily Average	mg/L	31 Days	-----	-----	0.91	1.24	1.09
Free Chlorine ²	Operator Grab Sample	mg/L	12	-----	-----	0.89	1.39	1.18
Total Chlorine	Operator Grab Sample	mg/L	12	-----	-----	0.96	1.45	1.25
E.coli	CARO	CFU/100 mL	2	-----	-----	<1	<1	<1
Total Coliform	CARO	CFU/100 mL	2	-----	-----	<1	<1	<1
Turbidity ²	SCADA ¹ Daily Average	NTU	31 Days	-----	-----	0.04	0.17	0.08
Turbidity ²	Operator Grab Sample	NTU	12	-----	-----	0.09	0.16	0.13

¹SCADA: Supervisory Control and Data Acquisition.

²Operation Guideline: As outlined in Deviation Response Plan - free chlorine >0.20 mg/L; turbidity <1.0 NTU.

3. Distribution

GRW provides potable water to 4 commercial, 3 institutional, 1 industrial, 1 recreational park, and 50 residential connections. The population served is approximately one hundred fifty (150). Table 3 summarizes the results for chlorine and turbidity for the distribution system from the following sample station locations: Fourth Ave, 135 3rd Ave, and James St. The amount of water volume used at Grindrod for January was 1774 m³.

Table 3 Grindrod Distribution Parameters

Parameter	Laboratory	Units	# of Samples	# of Deviations	Result	Min	Max	Average
Free Chlorine ¹	Operator Grab Sample	mg/L	12	-----	-----	0.76	1.38	1.10
Total Chlorine	Operator Grab Sample	mg/L	12	-----	-----	0.84	1.43	1.18
E.coli	CARO ²	CFU/100 mL	2	-----	-----	<1	<1	<1
Total Coliform	CARO ²	CFU/100 mL	2	-----	-----	<1	<1	<1
Turbidity ¹	Operator Grab Sample	NTU	12	-----	-----	0.12	0.37	0.18

¹Operation Guideline: As outlined in Deviation Response Plan - free chlorine >0.20 mg/L turbidity <1.0 NTU.

²Treatment Plant bacterial samples are included in the required monthly bacterial sampling amounts as per Drinking Water Protection Regulations Schedule B.

4. Water Quality Customer Calls and Notifications

Customer calls within the Grindrod Water Utility service area are tracked and recorded. There was one customer call this month.

Table 4 Water Quality Customer Calls for the month

# of Calls	Type of Call	Issue/Inquiry	Investigation	Comments
1	Complaint	Water leaking from standpipe	Yes	Operator attended and turned off standpipe. Standpipe was frozen so unable to determine if valve fully closed. Possible debris in valve preventing it from fully closing. Operator will return once standpipe has thawed to flush water out and reset valve.

5. Operational or Maintenance Activity

Operational activities within the Grindrod Water service area are tracked and recorded. There was one distribution operational activities this month.

Table 5 outlines the distribution operational and maintenance activities during the month.

Table 5 Monthly Operational Work and Maintenance

NUMBER OF LOCATIONS	TYPE OF WORK
0	Standpipe Maintenance
0	Water Service Locate
0	Water Main Break Repair
0	Water Service Install
0	Water Turn On/Off
0	Water Curb Stop Repair
1	Water Meter Inspection
0	Water Meter Maintenance
0	Water Meter Replacement
0	Water Meter Manual Read
0	Water Investigation

Grindrod Water (GRW) Water Quality Report for February 2025

1. Source

The GRW system draws raw water from the Shuswap River through a screened intake line to a wet well. The raw water is pumped from the wet well through a small treatment plant referred to as a package treatment plant and into a below ground storage reservoir. There is no elevated storage in the whole system and as a result pumps run continuously to maintain pressure. This also means there is no way of supplying water during a power outage. Table 1 summarizes the bacterial and turbidity results for the untreated water at the treatment plant.

Table 1 Grindrod Water Treatment Plant – Untreated

Parameter	Laboratory	Units	# of Samples	# of Deviations	Result	Min	Max	Average
E.coli	CARO	MPN/100 mL	1	-----	4	-----	-----	-----
Total Coliform	CARO	MPN/100 mL	1	-----	33	-----	-----	-----
Turbidity	Operator Grab Sample	NTU	11	-----	-----	0.60	1.69	1.14
Turbidity	SCADA ¹ Daily Average	NTU	25 ² Days	-----	-----	0.07	0.35	0.13

¹SCADA: Supervisory Control and Data Acquisition.

²The GRW water treatment plant was shutdown from February 10 to February 12 due to some planned upgrades to the plant. Instrument data was not collected while it was shutdown and is not included for those three days. There was no interruption in water service and all water supplied to customers met standards.

2. Treatment Plant

The Grindrod package water treatment plant was designed for a filter flow rate of 66 U.S. gpm (4.2 liters per second) but is operated at about 53 U.S. gpm (3.3 Lps). The flow rate is determined by the operating speed of the pump in the wet well and meeting the turbidity guidelines. The treatment plant consists of a hydraulic flocculation chamber, a tube settler/clarifier and a mixed media filter. The plant discharge turbidity is typically below 0.2 NTU. Table 2 summarizes the results for chlorine and turbidity for the treated water at the treatment plant.

Table 2 Grindrod Water Treatment Plant - Treated

Parameter	Laboratory	Units	# of Samples	# of Deviations	Result	Min	Max	Average
Free Chlorine ²	SCADA ¹ Daily Average	mg/L	25 ³ Days	-----	-----	0.72	1.22	0.95
Free Chlorine ²	Operator Grab Sample	mg/L	11	-----	-----	0.98	1.52	1.25
Total Chlorine	Operator Grab Sample	mg/L	11	-----	-----	1.02	1.56	1.32
E.coli	CARO	CFU/100 mL	2	-----	-----	<1	<1	<1
Total Coliform	CARO	CFU/100 mL	2	-----	-----	<1	<1	<1
Turbidity ²	SCADA ¹ Daily Average	NTU	25 ³ Days	-----	-----	0.07	0.35	0.13
Turbidity ²	Operator Grab Sample	NTU	11	-----	-----	0.14	0.37	0.21

¹SCADA: Supervisory Control and Data Acquisition.

²Operation Guideline: As outlined in Deviation Response Plan - free chlorine >0.20 mg/L; turbidity <1.0 NTU.

³The GRW water treatment plant was shutdown from February 10 to February 12 due to some planned upgrades to the plant. Instrument data was not collected while it was shutdown and is not included for those three days. There was no interruption in water service and all water supplied to customers met standards.

3. Distribution

GRW provides potable water to 4 commercial, 3 institutional, 1 industrial, 1 recreational park, and 50 residential connections. The population served is approximately one hundred fifty (150). Table 3 summarizes the results for chlorine and turbidity for the distribution system from the following sample station locations: Fourth Ave, 135 3rd Ave, and James St. The amount of water volume used at Grindrod for December was 1682 m³. Note that February 10-12 was removed from the calculation due to a new flow meter being installed at the GRW plant.

Table 3 Grindrod Distribution Parameters

Parameter	Laboratory	Units	# of Samples	# of Deviations	Result	Min	Max	Average
Free Chlorine ¹	Operator Grab Sample	mg/L	11	-----	-----	0.76	1.30	1.11
Total Chlorine	Operator Grab Sample	mg/L	11	-----	-----	0.83	1.45	1.18
E.coli	CARO ²	CFU/100 mL	2	-----	-----	<1	<1	<1
Total Coliform	CARO ²	CFU/100 mL	2	-----	-----	<1	<1	<1
Turbidity ¹	Operator Grab Sample	NTU	11	-----	-----	0.07	0.27	0.16

¹Operation Guideline: As outlined in Deviation Response Plan - free chlorine >0.20 mg/L turbidity <1.0 NTU.

²Treatment Plant bacterial samples are included in the required monthly bacterial sampling amounts as per Drinking Water Protection Regulations Schedule B.

4. Water Quality Customer Calls and Notifications

Customer calls within the Grindrod Water Utility service area are tracked and recorded. There were 0 customer calls this month.

Table 4 Water Quality Customer Calls for the month

# of Calls	Type of Call	Issue/Inquiry	Investigation	Comments
----	----	----	----	----

5. Operational or Maintenance Activity

Operational activities within the Grindrod Water service area are tracked and recorded. There was 1 distribution operational activity this month.

The water treatment plant had a multi-day planned shutdown in February to replace all the old and failing valves as part of the Grindrod Infrastructure Upgrade Project. There was no interruption in water service and all water supplied to customers met standards during this work.

Table 5 outlines the distribution operational and maintenance activities during the month.

Table 5 Monthly Operational Work and Maintenance

NUMBER OF LOCATIONS	TYPE OF WORK
0	Standpipe Maintenance
0	Water Service Locate
0	Water Main Break Repair
0	Water Service Install
0	Water Turn On/Off
0	Water Curb Stop Repair
0	Water Meter Inspection
0	Water Meter Maintenance
0	Water Meter Replacement
0	Water Meter Manual Read
0	Water Investigation
1	Valve Replacement

Grindrod Water (GRW) Water Quality Report for March 2025

1. Source

The GRW system draws raw water from the Shuswap River through a screened intake line to a wet well. The raw water is pumped from the wet well through a small treatment plant referred to as a package treatment plant and into a below ground storage reservoir. There is no elevated storage in the whole system and as a result pumps run continuously to maintain pressure. This also means there is no way of supplying water during a power outage. Table 1 summarizes the bacterial and turbidity results for the untreated water at the treatment plant.

Table 1 Grindrod Water Treatment Plant – Untreated

Parameter	Laboratory	Units	# of Samples	# of Deviations	Result	Min	Max	Average
E.coli	CARO	MPN/100 mL	1	-----	4	-----	-----	-----
Total Coliform	CARO	MPN/100 mL	1	-----	53	-----	-----	-----
Turbidity	Operator Grab Sample	NTU	14	-----	-----	1.05	9.36	2.92
Turbidity	SCADA ¹ Daily Average	NTU	31 Days	-----	-----	0.98	7.73	2.42

¹SCADA: Supervisory Control and Data Acquisition.

2. Treatment Plant

The Grindrod package water treatment plant was designed for a filter flow rate of 66 U.S. gpm (4.2 liters per second) but is operated at about 53 U.S. gpm (3.3 Lps). The flow rate is determined by the operating speed of the pump in the wet well and meeting the turbidity guidelines. The treatment plant consists of a hydraulic flocculation chamber, a tube settler/clarifier and a mixed media filter. The plant discharge turbidity is typically below 0.2 NTU. Table 2 summarizes the results for chlorine and turbidity for the treated water at the treatment plant.

Table 2 Grindrod Water Treatment Plant - Treated

Parameter	Laboratory	Units	# of Samples	# of Deviations	Result	Min	Max	Average
Free Chlorine ²	SCADA ¹ Daily Average	mg/L	31 Days	-----	-----	0.61	1.24	0.91
Free Chlorine ²	Operator Grab Sample	mg/L	14	-----	-----	0.58	1.12	0.84
Total Chlorine	Operator Grab Sample	mg/L	14	-----	-----	0.64	1.18	0.92
E.coli	CARO	CFU/100 mL	2	-----	-----	<1	<1	<1
Total Coliform	CARO	CFU/100 mL	2	-----	-----	<1	<1	<1
Turbidity ²	SCADA ¹ Daily Average	NTU	31 Days	-----	-----	0.06	0.54	0.17
Turbidity ²	Operator Grab Sample	NTU	14	-----	-----	0.15	0.35	0.22

¹SCADA: Supervisory Control and Data Acquisition.

²Operation Guideline: As outlined in Deviation Response Plan - free chlorine >0.20 mg/L; turbidity <1.0 NTU.

3. Distribution

GRW provides potable water to 4 commercial, 3 institutional, 1 industrial, 1 recreational park, and 50 residential connections. The population served is approximately one hundred fifty (150). Table 3 summarizes the results for chlorine and turbidity for the distribution system from the following sample station locations: Fourth Ave, 135 3rd Ave, and James St. The amount of water volume used at Grindrod for March was 1892m³.

Table 3 Grindrod Distribution Parameters

Parameter	Laboratory	Units	# of Samples	# of Deviations	Result	Min	Max	Average
Free Chlorine ¹	Operator Grab Sample	mg/L	15	-----	-----	0.47	0.90	0.71
Total Chlorine	Operator Grab Sample	mg/L	15	-----	-----	0.50	0.92	0.77
E.coli	CARO ²	CFU/100 mL	2	-----	-----	<1	<1	<1
Total Coliform	CARO ²	CFU/100 mL	2	-----	-----	<1	<1	<1
Turbidity ¹	Operator Grab Sample	NTU	15	-----	-----	0.11	0.27	0.18

¹Operation Guideline: As outlined in Deviation Response Plan - free chlorine >0.20 mg/L turbidity <1.0 NTU.

²Treatment Plant bacterial samples are included in the required monthly bacterial sampling amounts as per Drinking Water Protection Regulations Schedule B.

4. Water Quality Customer Calls and Notifications

Customer calls within the Grindrod Water Utility service area are tracked and recorded. There were 0 customer calls this month.

Table 4 Water Quality Customer Calls for the month

# of Calls	Type of Call	Issue/Inquiry	Investigation	Comments
----	----	----	----	----

5. Operational or Maintenance Activity

Operational activities within the Grindrod Water service area are tracked and recorded. There were 0 distribution operational activity this month.

Table 5 outlines the distribution operational and maintenance activities during the month.

Table 5 Monthly Operational Work and Maintenance

NUMBER OF LOCATIONS	TYPE OF WORK
0	Standpipe Maintenance
0	Water Service Locate
0	Water Main Break Repair
0	Water Service Install
0	Water Turn On/Off
0	Water Curb Stop Repair
0	Water Meter Inspection
0	Water Meter Maintenance
0	Water Meter Replacement
0	Water Meter Manual Read
0	Water Investigation

Grindrod Water (GRW) Water Quality Report for April 2025

The following is the water quality summary for the Grindrod Water (GRW) Utility.

On April 4, 2025, an Advance Notice of Water Service Interruption and Precautionary Boil Water Notice was issued for April 7 due to planned work. Work was completed and water was restored on April 8. The BWN was rescinded on April 10.

1. Source

The GRW system draws raw water from the Shuswap River through a screened intake line to a wet well. The raw water is pumped from the wet well through a small treatment plant referred to as a package treatment plant and into a below ground storage reservoir. There is no elevated storage in the whole system and as a result pumps run continuously to maintain pressure. This also means there is no way of supplying water during a power outage. Table 1 summarizes the bacterial and turbidity results for the untreated water at the treatment plant.

Table 1 Grindrod Water Treatment Plant – Untreated

Parameter	Laboratory	Units	# of Samples	# of Deviations	Result	Min	Max	Average
E.coli	CARO	MPN/100 mL	1	-----	4	-----	-----	-----
Total Coliform	CARO	MPN/100 mL	1	-----	160	-----	-----	-----
Turbidity	Operator Grab Sample	NTU	11	-----	-----	2.18	6.84	3.69
Turbidity	SCADA ¹ Daily Average	NTU	30 Days	-----	-----	1.16	10.13	3.36

¹SCADA: Supervisory Control and Data Acquisition.

2. Treatment Plant

The Grindrod package water treatment plant was designed for a filter flow rate of 66 U.S. gpm (4.2 liters per second) but is operated at about 53 U.S. gpm (3.3 Lps). The flow rate is determined by the operating speed of the pump in the wet well and meeting the turbidity guidelines. The treatment plant consists of a hydraulic flocculation chamber, a tube settler/clarifier and a mixed media filter. The plant discharge turbidity is typically below 0.2 NTU. Table 2 summarizes the results for chlorine and turbidity for the treated water at the treatment plant. Note that on April 7-8, there was a planned water outage for the Grindrod community. Because of this, no regular sampling occurred that week and samples were instead collected and analyzed at the RDNO accredited laboratory in compliance with the associated Boil Water Notice.

Table 2 Grindrod Water Treatment Plant - Treated

Parameter	Laboratory	Units	# of Samples	# of Deviations	Result	Min	Max	Average
Free Chlorine ²	SCADA ¹ Daily Average	mg/L	30 Days	-----	-----	0.37	2.34	1.23
Free Chlorine ²	Operator Grab Sample	mg/L	11	-----	-----	0.69	1.95	1.21
Total Chlorine	Operator Grab Sample	mg/L	11	-----	-----	0.76	2.04	1.30
E.coli	CARO	CFU/100 mL	1 ³	-----	<1	-----	-----	-----
E.coli	RDNO Laboratory	MPN/100 mL	4 ³	-----	-----	<1	<1	<1
Total Coliform	CARO	CFU/100 mL	1 ³	-----	<1	-----	-----	-----
Total Coliform	RDNO Laboratory	MPN/100 mL	4 ³	-----	-----	<1	<1	<1
Turbidity ²	SCADA ¹ Daily Average	NTU	30 Days	-----	-----	0.03	0.43	0.11
Turbidity ²	Operator Grab Sample	NTU	11	-----	-----	0.19	0.31	0.25

¹SCADA: Supervisory Control and Data Acquisition.

²Operation Guideline: As outlined in Deviation Response Plan - free chlorine >0.20 mg/L; turbidity <1.0 NTU.

³Treatment Plant bacterial samples are included in the required monthly bacterial sampling amounts as per Drinking Water Protection Regulations Schedule B.

3. Distribution

GRW provides potable water to 4 commercial, 3 institutional, 1 industrial, 1 recreational park, and 50 residential connections. The population served is approximately one hundred fifty (150). Table 3 summarizes the results for chlorine and turbidity for the distribution system from the following sample station locations: Fourth Ave, 135 3rd Ave, and James St. On April 7-8, there was a planned water outage for the Grindrod community. Because of this, no regular sampling occurred that week and samples were instead collected and analyzed at the RDNO accredited laboratory in compliance with the associated Boil Water Notice. The amount of water volume used at Grindrod for March was 1728m³.

Table 3 Grindrod Distribution Parameters

Parameter	Laboratory	Units	# of Samples	# of Deviations	Result	Min	Max	Average
Free Chlorine ¹	Operator Grab Sample	mg/L	11	-----	-----	0.61	1.87	1.09
Total Chlorine	Operator Grab Sample	mg/L	11	-----	-----	0.71	1.94	1.18
E.coli	CARO ²	CFU/100 mL	1	-----	<1	-----	-----	-----
E.coli	RDNO Laboratory	MPN/100 mL	8	-----	-----	<1	<1	<1
Total Coliform	CARO ²	CFU/100 mL	1	-----	<1	-----	-----	-----
Total Coliform	RDNO Laboratory	MPN/100 mL	8	-----	-----	<1	<1	<1
Turbidity ¹	Operator Grab Sample	NTU	11	-----	-----	0.12	0.40	0.26

¹Operation Guideline: As outlined in Deviation Response Plan - free chlorine >0.20 mg/L turbidity <1.0 NTU.

²Treatment Plant bacterial samples are included in the required monthly bacterial sampling amounts as per Drinking Water Protection Regulations Schedule B.

4. Water Quality Customer Calls and Notifications

Customer calls within the Grindrod Water Utility service area are tracked and recorded. There were 0 customer calls this month.

Table 4 Water Quality Customer Calls for the month

# of Calls	Type of Call	Issue/Inquiry	Investigation	Comments
-----	-----	-----	-----	-----

5. Operational or Maintenance Activity

Operational activities within the Grindrod Water service area are tracked and recorded. There was 1 routine distribution operational activity this month. There was one non-routine operational activity that involved a pre-planned shutdown of the Grindrod WTP in order to complete the header pipe replacement.

Table 5 outlines the routine distribution operational and maintenance activities during the month.

Table 5 Monthly Operational Work and Maintenance

NUMBER OF LOCATIONS	TYPE OF WORK
0	Standpipe Maintenance
0	Water Service Locate
0	Water Main Break Repair
0	Water Service Install
0	Water Turn On/Off
0	Water Curb Stop Repair
0	Water Meter Inspection
0	Water Meter Maintenance
0	Water Meter Replacement
0	Water Meter Manual Read
0	Water Investigation
1	Treatment Plant Wall Inspection

Grindrod Water (GRW) Water Quality Report for May 2025

The following is the water quality summary for the Grindrod Water (GRW) Utility.

On May 16, 2025, an Advance Notice of Water Service Interruption and Precautionary Water Quality Advisory (WQA) was hand delivered to ten properties for planned work on May 22. The WQA was rescinded on May 23.

On May 16, 2025, an Outdoor Water Conservation notice was issued to the GRW system. This notice outlined daily outdoor watering restrictions due to the annual decrease in water treatment efficiency caused by increased particulates in the source water.

1. Source

The GRW system draws raw water from the Shuswap River through a screened intake line to a wet well. The raw water is pumped from the wet well through a small treatment plant referred to as a package treatment plant and into a below ground storage reservoir. There is no elevated storage in the whole system and as a result pumps run continuously to maintain pressure. A generator was installed in 2024 to provide water during a power outage. Table 1 summarizes the bacterial and turbidity results for the untreated water at the treatment plant.

Table 1 Grindrod Water Treatment Plant – Untreated

Parameter	Laboratory	Units	# of Samples	# of Deviations	Result	Min	Max	Average
E.coli	CARO	MPN/100 mL	1	-----	7	-----	-----	-----
Total Coliform	CARO	MPN/100 mL	1	-----	461	-----	-----	-----
Turbidity	Operator Grab Sample	NTU	12	-----	-----	1.01	3.51	2.51
Turbidity	SCADA ¹ Daily Average	NTU	31 Days	-----	-----	1.17	3.65	2.24

¹SCADA: Supervisory Control and Data Acquisition.

2. Treatment Plant

The Grindrod package water treatment plant was designed for a filter flow rate of 66 U.S. gpm (4.2 liters per second) but is operated at about 53 U.S. gpm (3.3 Lps). The flow rate is determined by the operating speed of the pump in the wet well and meeting the turbidity guidelines. The treatment plant consists of a hydraulic flocculation chamber, a tube settler/clarifier and a mixed media filter. The plant discharge turbidity is typically below 0.2 NTU. Table 2 summarizes the results for chlorine and turbidity for the treated water at the treatment plant.

Table 2 Grindrod Water Treatment Plant - Treated

Parameter	Laboratory	Units	# of Samples	# of Deviations	Result	Min	Max	Average
Free Chlorine ²	SCADA ¹ Daily Average	mg/L	31 Days	-----	-----	0.73	1.66	1.11
Free Chlorine ²	Operator Grab Sample	mg/L	13	-----	-----	0.77	1.57	1.08
Total Chlorine	Operator Grab Sample	mg/L	13	-----	-----	0.08 3	1.63	1.16
E.coli	CARO	CFU/100 mL	3 ⁴	-----	-----	<1	<1	<1
Total Coliform	CARO	CFU/100 mL	3 ⁴	-----	-----	<1	<1	<1
Turbidity ²	SCADA ¹ Daily Average	NTU	31 Days	-----	-----	0.03	0.49	0.15
Turbidity ²	Operator Grab Sample	NTU	13	-----	-----	0.18	0.32	0.25

¹SCADA: Supervisory Control and Data Acquisition.

²Operation Guideline: As outlined in Deviation Response Plan - free chlorine >0.20 mg/L; turbidity <1.0 NTU.

³Treatment Plant and Distribution bacterial samples are included in the required monthly bacterial sampling amounts as per Drinking Water Protection Regulations Schedule B.

⁴Additional samples taken during planned construction in the area.

3. Distribution

GRW provides potable water to 4 commercial, 3 institutional, 1 industrial, 1 recreational park, and 50 residential connections. The population served is approximately one hundred fifty (150). Table 3 summarizes the results for chlorine and turbidity for the distribution system from the following sample station locations: Fourth Ave, 135 3rd Ave, and James St. The amount of water volume used at Grindrod for May was 2561m³.

Table 3 Grindrod Distribution Parameters

Parameter	Laboratory	Units	# of Samples	# of Deviations	Result	Min	Max	Average
Free Chlorine ¹	Operator Grab Sample	mg/L	14	-----	-----	0.60	1.52	0.96
Total Chlorine	Operator Grab Sample	mg/L	14	-----	-----	0.72	1.58	1.04
E.coli	CARO ²	CFU/100 mL	4 ⁴	-----	-----	<1	<1	<1
E.coli	RDNO Laboratory	MPN/100 mL	2 ³	-----	-----	<1	<1	<1
Total Coliform	CARO ²	CFU/100 mL	4 ⁴	-----	-----	<1	<1	<1
Total Coliform	RDNO Laboratory	MPN/100 mL	2 ³	-----	-----	<1	<1	<1
Turbidity ¹	Operator Grab Sample	NTU	14	-----	-----	0.17	0.36	0.25

¹Operation Guideline: As outlined in Deviation Response Plan - free chlorine >0.20 mg/L turbidity <1.0 NTU.

²Treatment Plant and Distribution bacterial samples are included in the required monthly bacterial sampling amounts as per Drinking Water Protection Regulations Schedule B.

³Two samples taken and ran at the RDNO Laboratory during the WQA.

⁴Additional samples taken during planned construction

4. Water Quality Customer Calls and Notifications

Customer calls within the Grindrod Water Utility service area are tracked and recorded. There were 0 customer calls this month.

Table 4 Water Quality Customer Calls for the month

# of Calls	Type of Call	Issue/Inquiry	Investigation	Comments
-----	-----	-----	-----	-----

5. Operational or Maintenance Activity

Operational activities within the Grindrod Water service area are tracked and recorded. There were 0 distribution operational activity this month.

Table 5 outlines the routine distribution operational and maintenance activities during the month.

Table 5 Monthly Operational Work and Maintenance

NUMBER OF LOCATIONS	TYPE OF WORK
0	Standpipe Maintenance
0	Water Service Locate
0	Water Main Break Repair
2	Water Service Install
0	Water Turn On/Off
0	Water Curb Stop Repair
0	Water Meter Inspection
0	Water Meter Maintenance
0	Water Meter Replacement
0	Water Meter Manual Read
0	Water Investigation
0	Treatment Plant Wall Inspection

Grindrod Water (GRW) Water Quality Report for June 2025

The following is the water quality summary for the Grindrod Water (GRW) Utility.

1. Source

The GRW system draws raw water from the Shuswap River through a screened intake line to a wet well. The raw water is pumped from the wet well through a small treatment plant referred to as a package treatment plant and into a below ground storage reservoir. There is no elevated storage in the whole system and as a result pumps run continuously to maintain pressure. A generator was installed in 2024 to provide water during a power outage. Table 1 summarizes the bacterial and turbidity results for the untreated water at the treatment plant.

Table 1 Grindrod Water Treatment Plant – Untreated

Parameter	Laboratory	Units	# of Samples	# of Deviations	Result	Min	Max	Average
E.coli	CARO	MPN/100 mL	1	-----	5	-----	-----	-----
Total Coliform	CARO	MPN/100 mL	1	-----	613	-----	-----	-----
Turbidity	Operator Grab Sample	NTU	13	-----	-----	1.77	7.30	3.06
Turbidity	SCADA ¹ Daily Average	NTU	30 Days	-----	-----	2.23	7.80	3.29

¹SCADA: Supervisory Control and Data Acquisition.

2. Treatment Plant

The Grindrod package water treatment plant was designed for a filter flow rate of 66 U.S. gpm (4.2 liters per second) but is operated at about 53 U.S. gpm (3.3 Lps). The flow rate is determined by the operating speed of the pump in the wet well and meeting the turbidity guidelines. The treatment plant consists of a hydraulic flocculation chamber, a tube settler/clarifier and a mixed media filter. The plant discharge turbidity is typically below 0.2 NTU. Table 2 summarizes the results for chlorine and turbidity for the treated water at the treatment plant.

Table 2 Grindrod Water Treatment Plant - Treated

Parameter	Laboratory	Units	# of Samples	# of Deviations	Result	Min	Max	Average
Free Chlorine ²	SCADA ¹ Daily Average	mg/L	30 Days	-----	-----	1.30	2.53	1.86
Free Chlorine ²	Operator Grab Sample	mg/L	13	-----	-----	1.21	1.86	1.57
Total Chlorine	Operator Grab Sample	mg/L	13	-----	-----	1.28	1.94	1.65
E.coli	CARO ³	CFU/100 mL	2	-----	-----	<1	<1	<1
Total Coliform	CARO ³	CFU/100 mL	2	-----	-----	<1	<1	<1
Turbidity ²	SCADA ¹ Daily Average	NTU	30 Days	-----	-----	0.03	0.18	0.06
Turbidity ²	Operator Grab Sample	NTU	13	-----	-----	0.15	0.27	0.19

¹SCADA: Supervisory Control and Data Acquisition.

²Operation Guideline: As outlined in Deviation Response Plan - free chlorine >0.20 mg/L; turbidity <1.0 NTU.

³Treatment Plant and Distribution bacterial samples are included in the required monthly bacterial sampling amounts as per Drinking Water Protection Regulations Schedule B.

3. Distribution

GRW provides potable water to 4 commercial, 3 institutional, 1 industrial, 1 recreational park, and 50 residential connections. The population served is approximately one hundred fifty (150). Table 3 summarizes the results for chlorine and turbidity for the distribution system from the following sample station locations: Fourth Ave, 135 3rd Ave, and James St. The amount of water volume used at Grindrod for June was 2951 m³.

Table 3 Grindrod Distribution Parameters

Parameter	Laboratory	Units	# of Samples	# of Deviations	Result	Min	Max	Average
Free Chlorine ¹	Operator Grab Sample	mg/L	13	-----	-----	1.18	2.00	1.56
Total Chlorine	Operator Grab Sample	mg/L	13	-----	-----	1.24	2.09	1.63
E.coli	CARO ²	CFU/100 mL	2	-----	-----	<1	<1	<1
Total Coliform	CARO ²	CFU/100 mL	2	-----	-----	<1	<1	<1
Turbidity ¹	Operator Grab Sample	NTU	13	-----	-----	0.15	0.47	0.24

¹Operation Guideline: As outlined in Deviation Response Plan - free chlorine >0.20 mg/L turbidity <1.0 NTU.

²Treatment Plant and Distribution bacterial samples are included in the required monthly bacterial sampling amounts as per Drinking Water Protection Regulations Schedule B.

4. Water Quality Customer Calls and Notifications

Customer calls within the Grindrod Water Utility service area are tracked and recorded. There were two customer calls this month.

Table 4 Water Quality Customer Calls for the month

Issue/Inquiry	Investigation	Comments
Issue	No	Customer called RDNO due to a leak at their meter. RDNO replaced the leaking meter.
Inquiry	No	Customer inquired about GRW rates and debt repayment. This information was provided by RDNO.

5. Operational or Maintenance Activity

Operational activities within the Grindrod Water service area are tracked and recorded. There was one distribution operational activity this month.

Table 5 outlines the routine distribution operational and maintenance activities during the month.

Table 5 Monthly Operational Work and Maintenance

NUMBER OF LOCATIONS	TYPE OF WORK
0	Standpipe Maintenance
0	Water Service Locate
0	Water Main Break Repair
0	Water Service Install/Inspection
0	Water Turn On/Off
0	Water Service and/or Curb Stop Repair
0	Water Meter/ERT Install
0	Water Meter/ERT Inspection
0	Water Meter/ERT Maintenance
1	Water Meter/ERT Replacement
0	Water Meter Manual Read
0	Water Investigation
0	Reservoir Cleaning

Grindrod Water (GRW) Water Quality Report for July 2025

The following is the water quality summary for the Grindrod Water (GRW) Utility.

1. Source

The GRW system draws raw water from the Shuswap River through a screened intake line to a wet well. The raw water is pumped from the wet well through a small treatment plant referred to as a package treatment plant and into a below ground storage reservoir. There is no elevated storage in the whole system and as a result pumps run continuously to maintain pressure. A generator was installed in 2024 to provide water during a power outage. Table 1 summarizes the bacterial and turbidity results for the untreated water at the treatment plant.

Table 1 Grindrod Water Treatment Plant – Untreated

Parameter	Laboratory	Units	# of Samples	# of Deviations	Result	Min	Max	Average
E.coli	CARO	MPN/100 mL	1	-----	2.0	-----	-----	-----
Total Coliform	CARO	MPN/100 mL	1	-----	921.0	-----	-----	-----
Turbidity	Operator Grab Sample	NTU	13	-----	-----	1.31	3.72	2.21
Turbidity	SCADA ¹ Daily Average	NTU	31 Days	-----	-----	2.41	6.06	3.81

¹SCADA: Supervisory Control and Data Acquisition.

2. Treatment Plant

The Grindrod package water treatment plant was designed for a filter flow rate of 66 U.S. gpm (4.2 liters per second) but is operated at about 53 U.S. gpm (3.3 Lps). The flow rate is determined by the operating speed of the pump in the wet well and meeting the turbidity guidelines. The treatment plant consists of a hydraulic flocculation chamber, a tube settler/clarifier and a mixed media filter. The plant discharge turbidity is typically below 0.2 NTU. Table 2 summarizes the results for chlorine and turbidity for the treated water at the treatment plant.

Table 2 Grindrod Water Treatment Plant - Treated

Parameter	Laboratory	Units	# of Samples	# of Deviations	Result	Min	Max	Average
Free Chlorine ²	SCADA ¹ Daily Average	mg/L	31 Days	-----	-----	0.64	1.85	1.09
Free Chlorine ²	Operator Grab Sample	mg/L	13	-----	-----	0.68	1.72	1.00
Total Chlorine	Operator Grab Sample	mg/L	13	-----	-----	0.72	1.84	1.09
E.coli	CARO ³	CFU/100 mL	2	-----	-----	<1	<1	<1
Total Coliform	CARO ³	CFU/100 mL	2	-----	-----	<1	<1	<1
Turbidity ²	SCADA ¹ Daily Average	NTU	31 Days	-----	-----	0.03	0.15	0.07
Turbidity ²	Operator Grab Sample	NTU	13	-----	-----	0.09	0.23	0.14

¹SCADA: Supervisory Control and Data Acquisition.

²Operation Guideline: As outlined in Deviation Response Plan - free chlorine >0.20 mg/L; turbidity <1.0 NTU.

³Treatment Plant and Distribution bacterial samples are included in the required monthly bacterial sampling amounts as per Drinking Water Protection Regulations Schedule B.

3. Distribution

GRW provides potable water to 4 commercial, 3 institutional, 1 industrial, 1 recreational park, and 50 residential connections. The population served is approximately one hundred fifty (150). Table 3 summarizes the results for chlorine and turbidity for the distribution system from the following sample station locations: Fourth Ave, 135 3rd Ave, and James St. The amount of water volume used at Grindrod for July was 4016 m³.

Table 3 Grindrod Distribution Parameters

Parameter	Laboratory	Units	# of Samples	# of Deviations	Result	Min	Max	Average
Free Chlorine ¹	Operator Grab Sample	mg/L	13	-----	-----	0.51	1.58	0.92
Total Chlorine	Operator Grab Sample	mg/L	13	-----	-----	0.55	1.67	1.00
E.coli	CARO ²	CFU/100 mL	2	-----	-----	<1	<1	<1
Total Coliform	CARO ²	CFU/100 mL	2	-----	-----	<1	<1	<1
Turbidity ¹	Operator Grab Sample	NTU	13	-----	-----	0.09	0.24	0.16

¹Operation Guideline: As outlined in Deviation Response Plan - free chlorine >0.20 mg/L turbidity <1.0 NTU.

²Treatment Plant and Distribution bacterial samples are included in the required monthly bacterial sampling amounts as per Drinking Water Protection Regulations Schedule B.

4. Water Quality Customer Calls and Notifications

Customer calls within the Grindrod Water Utility service area are tracked and recorded. There were two customer calls this month.

Table 4 Water Quality Customer Calls for the month

# of Calls	Issue/Inquiry	Investigation	Comments
2	Water System Capacity	No	Which lots can connect and why are there limitations on connecting to the water system. The water system is stressed in the summer with current water use patterns. A capacity study and universal metering is being planned in the future to address this concern.

5. Operational or Maintenance Activity

Operational activities within the Grindrod Water service area are tracked and recorded. There were 0 distribution operational activity this month.

Table 5 outlines the routine distribution operational and maintenance activities during the month.

Table 5 Monthly Operational Work and Maintenance

NUMBER OF LOCATIONS	TYPE OF WORK
0	Standpipe Maintenance
0	Water Service Locate
0	Water Main Break Repair
0	Water Service Install/Inspection
0	Water Turn On/Off
0	Water Service and/or Curb Stop Repair
0	Water Meter/ERT Install
0	Water Meter/ERT Inspection
0	Water Meter/ERT Maintenance
0	Water Meter/ERT Replacement
0	Water Meter Manual Read
0	Water Investigation
0	Reservoir Cleaning

Grindrod Water (GRW) Water Quality Report for August 2025

The following is the water quality summary for the Grindrod Water (GRW) Utility.

1. Source

The GRW system draws raw water from the Shuswap River through a screened intake line to a wet well. The raw water is pumped from the wet well through a small treatment plant referred to as a package treatment plant and into a below ground storage reservoir. There is no elevated storage in the whole system and as a result pumps run continuously to maintain pressure. A generator provides water during a power outage. Table 1 summarizes the bacterial and turbidity results for the untreated water at the treatment plant.

Table 1 Grindrod Water Treatment Plant – Untreated

Parameter	Laboratory	Units	# of Samples	# of Deviations	Result	Min	Max	Average
E.coli	CARO	MPN/100 mL	1	-----	19	-----	-----	-----
Total Coliform	CARO	MPN/100 mL	1	-----	548	-----	-----	-----
Turbidity	Operator Grab Sample	NTU	13	-----	-----	0.83	2.04	1.47
Turbidity	SCADA ¹ Daily Average	NTU	31 Days	-----	-----	1.86	3.65	2.43

¹SCADA: Supervisory Control and Data Acquisition.

2. Treatment Plant

The Grindrod package water treatment plant was designed for a filter flow rate of 66 U.S. gpm (4.2 liters per second) but is operated at about 53 U.S. gpm (3.3 Lps). The flow rate is determined by the operating speed of the pump in the wet well and meeting the turbidity guidelines. The treatment plant consists of a hydraulic flocculation chamber, a tube settler/clarifier and a mixed media filter. The plant discharge turbidity is typically below 0.2 NTU. Table 2 summarizes the results for chlorine and turbidity for the treated water at the treatment plant.

Table 2 Grindrod Water Treatment Plant - Treated

Parameter	Laboratory	Units	# of Samples	# of Deviations	Result	Min	Max	Average
Free Chlorine ²	SCADA ¹ Daily Average	mg/L	31 Days	-----	-----	1.17	2.16	1.50
Free Chlorine ²	Operator Grab Sample	mg/L	13	-----	-----	1.12	1.75	1.44
Total Chlorine	Operator Grab Sample	mg/L	13	-----	-----	1.17	1.77	1.51
E.coli	CARO ³	CFU/100 mL	2	-----	-----	<1	<1	<1
Total Coliform	CARO ³	CFU/100 mL	2	-----	-----	<1	<1	<1
Turbidity ²	SCADA ¹ Daily Average	NTU	31 Days	-----	-----	0.03	0.06	0.03
Turbidity ²	Operator Grab Sample	NTU	13	-----	-----	0.08	0.23	0.14

¹SCADA: Supervisory Control and Data Acquisition.

²Operation Guideline: As outlined in Deviation Response Plan - free chlorine >0.20 mg/L; turbidity <1.0 NTU.

³Treatment Plant and Distribution bacterial samples are included in the required monthly bacterial sampling amounts as per Drinking Water Protection Regulations Schedule B.

3. Distribution

GRW provides potable water to 4 commercial, 3 institutional, 1 industrial, 1 recreational park, and 50 residential connections. The population served is approximately one hundred fifty (150). Table 3 summarizes the results for chlorine and turbidity for the distribution system from the following sample station locations: Fourth Ave, 135 3rd Ave, and James St. The amount of water volume used at Grindrod for July was 3467 m³.

Table 3 Grindrod Distribution Parameters

Parameter	Laboratory	Units	# of Samples	# of Deviations	Result	Min	Max	Average
Free Chlorine ¹	Operator Grab Sample	mg/L	13	-----	-----	0.94	1.61	1.38
Total Chlorine	Operator Grab Sample	mg/L	13	-----	-----	1.05	1.76	1.47
E.coli	CARO ²	CFU/100 mL	2	-----	-----	<1	<1	<1
Total Coliform	CARO ²	CFU/100 mL	2	-----	-----	<1	<1	<1
Turbidity ¹	Operator Grab Sample	NTU	13	-----	-----	0.06	0.21	0.15

¹Operation Guideline: As outlined in Deviation Response Plan - free chlorine >0.20 mg/L turbidity <1.0 NTU.

²Treatment Plant and Distribution bacterial samples are included in the required monthly bacterial sampling amounts as per Drinking Water Protection Regulations Schedule B.

4. Water Quality Customer Calls and Notifications

Customer calls within the Grindrod Water Utility service area are tracked and recorded. There were zero customer calls this month.

Table 4 Water Quality Customer Calls for the month

# of Calls	Issue/Inquiry	Investigation	Comments
-----	-----	-----	-----

5. Operational or Maintenance Activity

Operational activities within the Grindrod Water service area are tracked and recorded. There were zero distribution operational activity this month.

Table 5 outlines the routine distribution operational and maintenance activities during the month.

Table 5 Monthly Operational Work and Maintenance

NUMBER OF LOCATIONS	TYPE OF WORK
0	Standpipe Maintenance
0	Water Service Locate
0	Water Main Break Repair
0	Water Service Install/Inspection
0	Water Turn On/Off
0	Water Service and/or Curb Stop Repair
0	Water Meter/ERT Install
0	Water Meter/ERT Inspection
0	Water Meter/ERT Maintenance
0	Water Meter/ERT Replacement
0	Water Meter Manual Read
0	Water Investigation
0	Reservoir Cleaning

Grindrod Water (GRW) Water Quality Report for September 2025

The following is the water quality summary for the Grindrod Water (GRW) Utility.

1. Source

The GRW system draws raw water from the Shuswap River through a screened intake line to a wet well. The raw water is pumped from the wet well through a small treatment plant referred to as a package treatment plant and into a below ground storage reservoir. There is no elevated storage in the whole system and as a result pumps run continuously to maintain pressure. A generator provides water during a power outage. Table 1 summarizes the bacterial and turbidity results for the untreated water at the treatment plant.

Table 1 Grindrod Water Treatment Plant – Untreated

Parameter	Laboratory	Units	# of Samples	# of Deviations	Result	Min	Max	Average
E.coli	CARO	CFU ² /100 mL	1	-----	>200 ²	-----	-----	-----
Total Coliform	CARO	CFU ² /100 mL	1	-----	>200 ²	-----	-----	-----
Turbidity	Operator Grab Sample	NTU	12	-----	-----	0.63	1.49	1.01
Turbidity	SCADA ¹ Daily Average	NTU	30 Days	-----	-----	1.84	4.28	2.82

¹SCADA: Supervisory Control and Data Acquisition.

²CARO analyzed this sample in CFU/100mL method instead of MPN/100mL method, which resulted in overgrown Total Coliforms and E.coli.

2. Treatment Plant

The Grindrod package water treatment plant was designed for a filter flow rate of 66 U.S. gpm (4.2 liters per second) but is operated at about 53 U.S. gpm (3.3 Lps). The flow rate is determined by the operating speed of the pump in the wet well and meeting the turbidity guidelines. The treatment plant consists of a hydraulic flocculation chamber, a tube settler/clarifier and a mixed media filter. The plant discharge turbidity is typically below 0.2 NTU. Table 2 summarizes the results for chlorine and turbidity for the treated water at the treatment plant.

Table 2 Grindrod Water Treatment Plant - Treated

Parameter	Laboratory	Units	# of Samples	# of Deviations	Result	Min	Max	Average
Free Chlorine ²	SCADA ¹ Daily Average	mg/L	30 Days	-----	-----	1.04	1.45	1.24
Free Chlorine ²	Operator Grab Sample	mg/L	12	-----	-----	1.32	1.77	1.52
Total Chlorine	Operator Grab Sample	mg/L	12	-----	-----	1.39	1.84	1.60
E.coli	CARO ³	CFU/100 mL	2	-----	-----	<1	<1	<1
Total Coliform	CARO ³	CFU/100 mL	2	-----	-----	<1	<1	<1
Turbidity ²	SCADA ¹ Daily Average	NTU	30 Days	-----	-----	0.04	0.06	0.05
Turbidity ²	Operator Grab Sample	NTU	12	-----	-----	0.08	0.17	0.12

¹SCADA: Supervisory Control and Data Acquisition.

²Operation Guideline: As outlined in Deviation Response Plan - free chlorine >0.20 mg/L; turbidity <1.0 NTU.

³Treatment Plant and Distribution bacterial samples are included in the required monthly bacterial sampling amounts as per Drinking Water Protection Regulations Schedule B.

3. Distribution

GRW provides potable water to 4 commercial, 3 institutional, 1 industrial, 1 recreational park, and 50 residential connections. The population served is approximately one hundred fifty (150). Table 3 summarizes the results for chlorine and turbidity for the distribution system from the following sample station locations: Fourth Ave, 135 3rd Ave, and James St. The amount of water volume used at Grindrod for July was 2310 m³.

Table 3 Grindrod Distribution Parameters

Parameter	Laboratory	Units	# of Samples	# of Deviations	Result	Min	Max	Average
Free Chlorine ¹	Operator Grab Sample	mg/L	12	-----	-----	1.20	1.68	1.42
Total Chlorine	Operator Grab Sample	mg/L	12	-----	-----	1.27	1.79	1.50
E.coli	CARO ²	CFU/100 mL	2	-----	-----	<1	<1	<1
Total Coliform	CARO ²	CFU/100 mL	2	-----	-----	<1	<1	<1
Turbidity ¹	Operator Grab Sample	NTU	12	-----	-----	0.06	0.24	0.15

¹Operation Guideline: As outlined in Deviation Response Plan - free chlorine >0.20 mg/L turbidity <1.0 NTU.

²Treatment Plant and Distribution bacterial samples are included in the required monthly bacterial sampling amounts as per Drinking Water Protection Regulations Schedule B.

4. Water Quality Customer Calls and Notifications

Customer calls within the Grindrod Water Utility service area are tracked and recorded. There were zero customer calls this month.

Table 4 Water Quality Customer Calls for the month

# of Calls	Issue/Inquiry	Investigation	Comments
-----	-----	-----	-----

5. Operational or Maintenance Activity

Operational activities within the Grindrod Water service area are tracked and recorded. There were zero distribution operational activity this month.

Table 5 outlines the routine distribution operational and maintenance activities during the month.

Table 5 Monthly Operational Work and Maintenance

NUMBER OF LOCATIONS	TYPE OF WORK
0	Standpipe Maintenance
0	Water Service Locate
0	Water Main Break Repair
0	Water Service Install/Inspection
0	Water Turn On/Off
0	Water Service and/or Curb Stop Repair
0	Water Meter/ERT Install
0	Water Meter/ERT Inspection
0	Water Meter/ERT Maintenance
0	Water Meter/ERT Replacement
0	Water Meter Manual Read
0	Water Investigation
0	Reservoir Cleaning

Grindrod Water (GRW) Water Quality Report for October 2025

The following is the water quality summary for the Grindrod Water (GRW) Utility.

1. Source

The GRW system draws raw water from the Shuswap River through a screened intake line to a wet well. The raw water is pumped from the wet well through a small treatment plant referred to as a package treatment plant and into a below ground storage reservoir. There is no elevated storage in the whole system and as a result pumps run continuously to maintain pressure. A generator provides water during a power outage. Table 1 summarizes the bacterial and turbidity results for the untreated water at the treatment plant.

Table 1 Grindrod Water Treatment Plant – Untreated

Parameter	Laboratory	Units	# of Samples	# of Deviations	Result	Min	Max	Average
E.coli	CARO	CFU ² /100 mL	0 ²	-----	-----	-----	-----	-----
Total Coliform	CARO	CFU ² /100 mL	0 ²	-----	-----	-----	-----	-----
Turbidity	Operator Grab Sample	NTU	13	-----	-----	0.53	1.25	0.75
Turbidity	SCADA ¹ Daily Average	NTU	31 Days	-----	-----	1.09	3.91	2.57

¹SCADA: Supervisory Control and Data Acquisition.

²Due to a transcription error, this sample was not analyzed this month.

2. Treatment Plant

The Grindrod package water treatment plant was designed for a filter flow rate of 66 U.S. gpm (4.2 liters per second) but is operated at about 53 U.S. gpm (3.3 Lps). The flow rate is determined by the operating speed of the pump in the wet well and meeting the turbidity guidelines. The treatment plant consists of a hydraulic flocculation chamber, a tube settler/clarifier and a mixed media filter. The plant discharge turbidity is typically below 0.2 NTU. Table 2 summarizes the results for chlorine and turbidity for the treated water at the treatment plant.

Table 2 Grindrod Water Treatment Plant - Treated

Parameter	Laboratory	Units	# of Samples	# of Deviations	Result	Min	Max	Average
Free Chlorine ²	SCADA ¹ Daily Average	mg/L	31 Days	-----	-----	1.06	1.57	1.24
Free Chlorine ²	Operator Grab Sample	mg/L	13	-----	-----	1.43	1.83	1.64
Total Chlorine	Operator Grab Sample	mg/L	13	-----	-----	1.56	1.91	1.72
E.coli	CARO ³	CFU/100 mL	2	-----	-----	<1	<1	<1
Total Coliform	CARO ³	CFU/100 mL	2	-----	-----	<1	<1	<1
Turbidity ²	SCADA ¹ Daily Average	NTU	31 Days	-----	-----	0.05	0.42	0.20
Turbidity ²	Operator Grab Sample	NTU	13	-----	-----	0.09	0.27	0.15

¹SCADA: Supervisory Control and Data Acquisition.

²Operation Guideline: As outlined in Deviation Response Plan - free chlorine >0.20 mg/L; turbidity <1.0 NTU.

³Treatment Plant and Distribution bacterial samples are included in the required monthly bacterial sampling amounts as per Drinking Water Protection Regulations Schedule B.

3. Distribution

GRW provides potable water to 4 commercial, 3 institutional, 1 industrial, 1 recreational park, and 50 residential connections. The population served is approximately one hundred fifty (150). Table 3 summarizes the results for chlorine and turbidity for the distribution system from the following sample station locations: Fourth Ave, 135 3rd Ave, and James St. The amount of water volume used at Grindrod for November was 1542 m³.

Table 3 Grindrod Distribution Parameters

Parameter	Laboratory	Units	# of Samples	# of Deviations	Result	Min	Max	Average
Free Chlorine ¹	Operator Grab Sample	mg/L	13	-----	-----	1.39	1.72	1.57
Total Chlorine	Operator Grab Sample	mg/L	13	-----	-----	1.45	1.79	1.64
E.coli	CARO ²	CFU/100 mL	2	-----	-----	<1	<1	<1
Total Coliform	CARO ²	CFU/100 mL	2	-----	-----	<1	<1	<1
Turbidity ¹	Operator Grab Sample	NTU	13	-----	-----	0.07	0.29	0.15

¹Operation Guideline: As outlined in Deviation Response Plan - free chlorine >0.20 mg/L turbidity <1.0 NTU.

²Treatment Plant and Distribution bacterial samples are included in the required monthly bacterial sampling amounts as per Drinking Water Protection Regulations Schedule B.

4. Water Quality Customer Calls and Notifications

Customer calls within the Grindrod Water Utility service area are tracked and recorded. There were zero customer calls this month.

Table 4 Water Quality Customer Calls for the month

# of Calls	Issue/Inquiry	Investigation	Comments
-----	-----	-----	-----

5. Operational or Maintenance Activity

Operational activities within the Grindrod Water service area are tracked and recorded. There were zero distribution operational activity this month.

Table 5 outlines the routine distribution operational and maintenance activities during the month.

Table 5 Monthly Operational Work and Maintenance

NUMBER OF LOCATIONS	TYPE OF WORK
0	Standpipe Maintenance
0	Water Service Locate
0	Water Main Break Repair
0	Water Service Install/Inspection
0	Water Turn On/Off
0	Water Service and/or Curb Stop Repair
0	Water Meter/ERT Install
0	Water Meter/ERT Inspection
0	Water Meter/ERT Maintenance
0	Water Meter/ERT Replacement
0	Water Meter Manual Read
0	Water Investigation
0	Reservoir Cleaning

Grindrod Water (GRW) Water Quality Report for November 2025

The following is the water quality summary for the Grindrod Water (GRW) Utility.

1. Source

The GRW system draws raw water from the Shuswap River through a screened intake line to a wet well. The raw water is pumped from the wet well through a small treatment plant referred to as a package treatment plant and into a below ground storage reservoir. There is no elevated storage in the whole system and as a result pumps run continuously to maintain pressure. A generator provides water during a power outage. Table 1 summarizes the bacterial and turbidity results for the untreated water at the treatment plant.

Table 1 Grindrod Water Treatment Plant – Untreated

Parameter	Laboratory	Units	# of Samples	# of Deviations	Result	Min	Max	Average
E.coli	CARO	CFU ² /100 mL	1	-----	>=8	-----	-----	-----
Total Coliform	CARO	CFU ² /100 mL	1	-----	850	-----	-----	-----
Turbidity	Operator Grab Sample	NTU	13	-----	-----	0.51	1.25	0.98
Turbidity	SCADA ¹ Daily Average	NTU	30 Days	-----	-----	1.53	4.44	2.52

¹SCADA: Supervisory Control and Data Acquisition.

²Due to a laboratory error, this sample was ran using the CFU/100mL method instead of the MPN/100mL method. Due to background bacteria, the plates could not accurately be read.

2. Treatment Plant

The Grindrod package water treatment plant was designed for a filter flow rate of 66 U.S. gpm (4.2 liters per second) but is operated at about 53 U.S. gpm (3.3 Lps). The flow rate is determined by the operating speed of the pump in the wet well and meeting the turbidity guidelines. The treatment plant consists of a hydraulic flocculation chamber, a tube settler/clarifier and a mixed media filter. The plant discharge turbidity is typically below 0.2 NTU. Table 2 summarizes the results for chlorine and turbidity for the treated water at the treatment plant.

Table 2 Grindrod Water Treatment Plant - Treated

Parameter	Laboratory	Units	# of Samples	# of Deviations	Result	Min	Max	Average
Free Chlorine ²	SCADA ¹ Daily Average	mg/L	30 Days	-----	-----	1.05	1.65	1.39
Free Chlorine ²	Operator Grab Sample	mg/L	13	-----	-----	1.28	1.85	1.62
Total Chlorine	Operator Grab Sample	mg/L	13	-----	-----	1.36	1.92	1.68
E.coli	CARO ³	CFU/100 mL	2	-----	-----	<1	<1	<1
Total Coliform	CARO ³	CFU/100 mL	2	-----	-----	<1	<1	<1
Turbidity ²	SCADA ¹ Daily Average	NTU	30 Days	-----	-----	0.04	0.28	0.08
Turbidity ²	Operator Grab Sample	NTU	13	-----	-----	0.10	0.17	0.13

¹SCADA: Supervisory Control and Data Acquisition.

²Operation Guideline: As outlined in Deviation Response Plan - free chlorine >0.20 mg/L; turbidity <1.0 NTU.

³Treatment Plant and Distribution bacterial samples are included in the required monthly bacterial sampling amounts as per Drinking Water Protection Regulations Schedule B.

3. Distribution

GRW provides potable water to 4 commercial, 3 institutional, 1 industrial, 1 recreational park, and 50 residential connections. The population served is approximately one hundred fifty (150). Table 3 summarizes the results for chlorine and turbidity for the distribution system from the following sample station locations: Fourth Ave, 135 3rd Ave, and James St. The amount of water volume used at Grindrod for November was 1389 m³.

Table 3 Grindrod Distribution Parameters

Parameter	Laboratory	Units	# of Samples	# of Deviations	Result	Min	Max	Average
Free Chlorine ¹	Operator Grab Sample	mg/L	13	-----	-----	1.18	1.72	1.47
Total Chlorine	Operator Grab Sample	mg/L	13	-----	-----	1.21	1.79	1.53
E.coli	CARO ²	CFU/100 mL	2	-----	-----	<1	<1	<1
Total Coliform	CARO ²	CFU/100 mL	2	-----	-----	<1	<1	<1
Turbidity ¹	Operator Grab Sample	NTU	13	-----	-----	0.12	0.20	0.15

¹Operation Guideline: As outlined in Deviation Response Plan - free chlorine >0.20 mg/L turbidity <1.0 NTU.

²Treatment Plant and Distribution bacterial samples are included in the required monthly bacterial sampling amounts as per Drinking Water Protection Regulations Schedule B.

4. Water Quality Customer Calls and Notifications

Customer calls within the Grindrod Water Utility service area are tracked and recorded. There was one customer call this month.

Table 4 Water Quality Customer Calls for the month

# of Calls	Issue/Inquiry	Investigation	Comments
1	Water Pressure	Yes	RDNO investigated and found it was an internal plumbing issue.

5. Operational or Maintenance Activity

Operational activities within the Grindrod Water service area are tracked and recorded. There were three distribution operational activities this month.

Table 5 outlines the routine distribution operational and maintenance activities during the month.

Table 5 Monthly Operational Work and Maintenance

NUMBER OF LOCATIONS	TYPE OF WORK
0	Standpipe Maintenance
0	Water Service Locate
0	Water Main Break Repair
1	Water Service Install/Inspection
0	Water Turn On/Off
0	Water Service and/or Curb Stop Repair
2	Water Meter/ERT Install
0	Water Meter/ERT Inspection
0	Water Meter/ERT Maintenance
0	Water Meter/ERT Replacement
0	Water Meter Manual Read
0	Water Investigation
0	Reservoir Cleaning

Grindrod Water (GRW) Water Quality Report for December 2025

The following is the water quality summary for the Grindrod Water (GRW) Utility.

1. Source

The GRW system draws raw water from the Shuswap River through a screened intake line to a wet well. The raw water is pumped from the wet well through a small treatment plant referred to as a package treatment plant and into a below ground storage reservoir. There is no elevated storage in the whole system and as a result pumps run continuously to maintain pressure. A generator provides water during a power outage. Table 1 summarizes the bacterial and turbidity results for the untreated water at the treatment plant.

Table 1 Grindrod Water Treatment Plant – Untreated

Parameter	Laboratory	Units	# of Samples	# of Deviations	Result	Min	Max	Average
E.coli	CARO	MPN/100 mL	1	-----	12	-----	-----	-----
Total Coliform	CARO	MPN/100 mL	1	-----	411	-----	-----	-----
Turbidity	Operator Grab Sample	NTU	13	-----	-----	0.58	1.78	1.20
Turbidity	SCADA ¹ Daily Average	NTU	31 Days	-----	-----	1.42	3.60	2.53

¹SCADA: Supervisory Control and Data Acquisition.

2. Treatment Plant

The Grindrod package water treatment plant was designed for a filter flow rate of 66 U.S. gpm (4.2 liters per second) but is operated at about 53 U.S. gpm (3.3 Lps). The flow rate is determined by the operating speed of the pump in the wet well and meeting the turbidity guidelines. The treatment plant consists of a hydraulic flocculation chamber, a tube settler/clarifier and a mixed media filter. The plant discharge turbidity is typically below 0.2 NTU. Table 2 summarizes the results for chlorine and turbidity for the treated water at the treatment plant.

Table 2 Grindrod Water Treatment Plant - Treated

Parameter	Laboratory	Units	# of Samples	# of Deviations	Result	Min	Max	Average
Free Chlorine ²	SCADA ¹ Daily Average	mg/L	31 Days	-----	-----	0.95	1.43	1.21
Free Chlorine ²	Operator Grab Sample	mg/L	13	-----	-----	1.15	1.47	1.35
Total Chlorine	Operator Grab Sample	mg/L	13	-----	-----	1.28	1.65	1.45
E.coli	CARO ³	CFU/100 mL	2	-----	-----	<1	<1	<1
Total Coliform	CARO ³	CFU/100 mL	2	-----	-----	<1	<1	<1
Turbidity ²	SCADA ¹ Daily Average	NTU	31 Days	-----	-----	0.06	0.37	0.15
Turbidity ²	Operator Grab Sample	NTU	13	-----	-----	0.10	0.37	0.20

¹SCADA: Supervisory Control and Data Acquisition.

²Operation Guideline: As outlined in Deviation Response Plan - free chlorine >0.20 mg/L; turbidity <1.0 NTU.

³Treatment Plant and Distribution bacterial samples are included in the required monthly bacterial sampling amounts as per Drinking Water Protection Regulations Schedule B.

3. Distribution

GRW provides potable water to 4 commercial, 3 institutional, 1 industrial, 1 recreational park, and 50 residential connections. The population served is approximately one hundred fifty (150). Table 3 summarizes the results for chlorine and turbidity for the distribution system from the following sample station locations: Fourth Ave, 135 3rd Ave, and James St. The amount of water volume used at Grindrod for November was 1365 m³.

Table 3 Grindrod Distribution Parameters

Parameter	Laboratory	Units	# of Samples	# of Deviations	Result	Min	Max	Average
Free Chlorine ¹	Operator Grab Sample	mg/L	13	-----	-----	0.85	1.44	1.18
Total Chlorine	Operator Grab Sample	mg/L	13	-----	-----	0.94	1.47	1.27
E.coli	CARO ²	CFU/100 mL	2	-----	-----	<1	<1	<1
Total Coliform	CARO ²	CFU/100 mL	2	-----	-----	<1	<1	<1
Turbidity ¹	Operator Grab Sample	NTU	13	-----	-----	0.09	0.34	0.21

¹Operation Guideline: As outlined in Deviation Response Plan - free chlorine >0.20 mg/L turbidity <1.0 NTU.

²Treatment Plant and Distribution bacterial samples are included in the required monthly bacterial sampling amounts as per Drinking Water Protection Regulations Schedule B.

4. Water Quality Customer Calls and Notifications

Customer calls within the Grindrod Water Utility service area are tracked and recorded. There were zero customer calls this month.

Table 4 Water Quality Customer Calls for the month

# of Calls	Issue/Inquiry	Investigation	Comments
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5. Operational or Maintenance Activity

Operational activities within the Grindrod Water service area are tracked and recorded. There was one distribution operational activity this month.

Table 5 outlines the routine distribution operational and maintenance activities during the month.

Table 5 Monthly Operational Work and Maintenance

NUMBER OF LOCATIONS	TYPE OF WORK
0	Standpipe Maintenance
0	Water Service Locate
0	Water Main Break Repair
0	Water Service Install/Inspection
0	Water Turn On/Off
0	Water Service and/or Curb Stop Repair
1	Water Meter/ERT Install
0	Water Meter/ERT Inspection
0	Water Meter/ERT Maintenance
0	Water Meter/ERT Replacement
0	Water Meter Manual Read
0	Water Investigation
0	Reservoir Cleaning