REGIONAL DISTRICT NORTH OKANAGAN

## Greater Vernon Water (GVW) Water Quality Report for December 2025

The following is the water quality summary for the Greater Vernon Water (GVW) utility.

### 1. Potable Sources

GVW has two sources that are routinely used for potable water. The two sources are Duteau Creek and Kalamalka Lake. Raw (untreated) water samples are taken at the intakes of Duteau Creek and Kalamalka Lake once per week. Two additional groundwater sources, Antwerp Deep Well and Ranch Well 3, may also be used in emergency situations or when there is additional demand to the system. Tables 1 and 2 summarize the results for bacteria and turbidity for the potable water sources in use.

### Table 1 Duteau Creek Intake

| Parameter | Laboratory | | # of Samples | # of Deviations | Min | Max | Average[4] |
|---|---|---|---|---|---|---|---|
| **E.coli[2]** | RDNO Lab | MPN/100 mL | 10[5] | ----- | 1 | 7.4 | 4.3 |
| **Total Coliform** | RDNO Lab | MPN/100 mL | 10[5] | ----- | 103.9 | 648.2 | 246.6 |
| **Turbidity** | Operator Grab Samples | NTU | 5 | ----- | 1.16 | 1.58 | 1.38 |
| **Turbidity** | SCADA[1] Daily Average[3] | NTU | 31 Days | ----- | 0.79 | 1.41 | 0.99 |

[1]SCADA: Supervisory Control and Data Acquisition.
[2]Drinking Water Treatment Objectives (Microbilological) for Surface Water Supplies in British Columbia (Sec 4.3): The number of E. coli in raw water samples should not exceed 20/100 mL in at least 90% of the weekly samples from the previous six months.
[3]SCADA data for this online anazlyer is a 24 hour average of readings taken every 10 minutes
[4]Non detect values are used at ½ the reporting limit for average calculations.
[5]Each sample includes at least one duplicate sample taken for quality assurance purposes.
[6]Duteau Creek Intake sees a yearly increase in Total Coliforms and E.coli begining in middle to late spring and lasting throughout the summer. We are currently seeing Coliform counts starting to drop from their peak in August and Early September.

### Table 2 Kalamalka Lake Intake

| Parameter | Laboratory | | # of Samples | # of Deviations | Min | Max | Average[4] |
|---|---|---|---|---|---|---|---|
| **E.coli[2]** | RDNO Lab | MPN/100 mL | 10[5] | ----- | <1 | 8.5 | 3.4 |
| **Total Coliform** | RDNO Lab | MPN/100 mL | 10[5] | ----- | 9.6 | 32.7 | 16.5 |
| **Turbidity** | Operator Grab Samples | NTU | 5 | ----- | 0.38 | 0.47 | 0.41 |
| **Turbidity** | SCADA[1] Average[3] | NTU | 31 Days | ----- | 0.29 | 0.45 | 0.34 |

[1]SCADA: Supervisory Control and Data Acquisition.
[2]Drinking Water Treatment Objectives (Microbilological) for Surface Water Supplies in British Columbia (Sec 4.3): The number of E. coli in raw water samples should not exceed 20/100 mL in at least 90% of the weekly samples from the previous six months.
[3]SCADA data for this online anazlyer is a 24 hour average with readings taken every 15 seconds.
[4]Non detect values are used at ½ the reporting limit for average calculations.
[5]Each sample includes at least one duplicate sample taken for quality assurance purposes.

## 2. Agriculture/ Irrigation Sources

The sources used for irrigation supply include Duteau Creek, King Edward/Deer Creek, Goose Lake, Coldstream Ranch Well #2 and Well #3. Table 3 summarizes the daily flows for each irrigation system.

Duteau Creek is separated into a potable water system and a non-chlorinated, non-potable water system, the latter of which is used exclusively for irrigation purposes. The other sources are separated from the potable system and are not chlorinated.

The irrigation season is from April 15 to September 15. Irrigation water used during the off season is used mainly for livestock watering. This water comes from Ranch Well #2, Ranch Well #3, King Edward and Duteau Creek.

### Table 3 Irrigation Volumes for Irrigation Sources over the Month

| Irrigation Sources | DCWTP | Well 3 | Well 2 | King Edward[1] |
|---|---|---|---|---|
| **Min (ML/Day)** | 0.00 | 0.00 | 0.00 | NA |
| **Max (ML/Day)** | 0.00 | 0.00 | 0.05 | NA |
| **Average (ML/Day)** | 0.00 | 0.00 | 0.00 | NA |
| **Monthly Total (ML)** | 0.00 | 0.00 | 0.05 | NA |

[1]Due to a faulty sensor at King Edward Intake, most of December data is unusable. However, irrigation volume during the winter months at King Edward is typically negligible. The sensor was repaired on December 23rd.

## 3. Treatment Plants

GVW has two treatment plants: Duteau Creek Water Treatment Plant (DCWTP) and Mission Hill Water Treatment Plant (MHWTP). At the DCWTP, water is treated with a coagulant and mixed to create a floc before Dissolved Air Flotation (DAF) achieves clarification. Chlorine is added after clarification to ensure contact time for the removal of viruses, followed by Ultra-violet (UV) disinfection. Finally, an additional dose of chlorine is added before entering the distribution system to maintain residual chlorine throughout the system. MHWTP contains dual disinfection which includes UV and chlorine.

Tables 4 and 6 summarize results for chlorine, bacteria, turbidity, and UV Transmittance (UVT). Table 5 summarizes the log removal of viruses at the DCWTP.

### Table 4 Duteau Creek Water Treatment Plant Reservoir

| Parameter | Laboratory | Units | # of Samples | # of Deviations | Min | Max | Average[4] |
|---|---|---|---|---|---|---|---|
| **Free Chlorine[2]** | SCADA[1] Daily Average | mg/L | 31 Days | ----- | 1.79 | 1.93 | 1.90 |
| **E.coli** | RDNO Lab | MPN/100 mL | 6 | ----- | <1 | <1 | <1 |
| **Total Coliform** | RDNO Lab | MPN/100 mL | 6 | ----- | <1 | <1 | <1 |
| **Turbidity[2]** | SCADA[1] Daily Average | NTU | 31 Days | ----- | 0.15 | 0.31 | 0.19 |
| **Pre UVT[3]** | SCADA[1] Daily Average | % | 31 Days | ----- | 86.5 | 88.9 | 88.0 |

[1]SCADA: Supervisory Control and Data Acquisition.
[2]Operation Guideline: As outlined in Deviation Response Plan, free chlorine >1.0 mg/L, turbidity <1.0 NTU.
[3]UVT is monitored pre-UV treatment which is used to determine UV dosage.
[4]Non detect values are used at ½ the reporting limit for average calculations.

This month, 0 $m^3$ of off-spec water occurred at DCWTP

### Table 5 DCWTP – Log Removal of Viruses

| Log Removal of Viruses[1] | |
|---|---|
| **Days Monitored** | 31 Days |
| **Days 4-Log Inactivation Achieved** | 31Days |

[1]4-log virus removal logged by the minute on SCADA.

**Table 6 Mission Hill Water Treatment Plant**

| Parameter | Laboratory | Units | # of Samples | # of Deviations | Min | Max | Average[3] |
|---|---|---|---|---|---|---|---|
| **Free Chlorine** | SCADA[1] Daily Average | mg/L | 31 Days | ----- | 1.99 | 2.02 | 2.00 |
| **E.coli** | RDNO Lab | MPN/100 mL | 6 | ----- | <1 | <1 | <1 |
| **Total Coliform** | RDNO Lab | MPN/100 mL | 6 | ----- | <1 | <1 | <1 |
| **Turbidity[2]** | SCADA[1] Daily Average | NTU | 31 Days | ----- | 0.29 | 0.44 | 0.34 |
| **Pre UVT** | SCADA[1] Daily Average | % | 31 Days | ----- | 91.88 | 92.34 | 92.06 |

[1]SCADA: Supervisory Control and Data Acquisition.
[2]Operation Guideline: As outlined in Deviation Response Plan, free chlorine >0.8 mg/L, turbidity <3.0 NTU.
[3]Non detect values are used at ½ the reporting limit for average calculations.
[4]Turbidity increase in MHWTP due to Marl in Kalamalka Lake during summer months. Marl is now ending and turbidity is starting to return to normal.

This month, no off-spec water occurred at MHWTP.

## 4. Distribution

While the domestic GVW system has areas that are normally served by either of the two main sources (DCWTP or MHWTP), the system is interconnected with the ability to move water from each source to various parts of the system. The distribution areas from either source may change depending on water demands, source water availability or water quality, and is therefore considered a combined system for the purposes of data reporting. GVW has approximately 23,000 service connections. When possible, water source change notices may be put out to advise customers of a change.

Table 7 summarizes the daily flow for each distribution system. The Duteau and Kalamalka systems have many locations where they can be interconnected. This means there are areas where there is a blend of water quality and can be identified by the conductivity of the water.

**Table 7 Volumes for GVW Distribution Systems over the Month**

| Volumes | DCWTP | MHWTP |
|---|---|---|
| **Min (ML/Day)** | 3.80 | 11.53 |
| **Max (ML/Day)** | 6.80 | 15.42 |
| **Average (ML/Day)** | 5.68 | 13.27 |
| **Monthly Total (ML)** | 176.00 | 411.29 |

Table 8 summarizes results for chorine, bacteria, and turbidity for the combined distribution system which includes both the Duteau distribution system and the Kalamalka distribution system. These results are from grab samples taken weekly at designated spots within the distribution system.

**Table 8 Duteau and Kalamalka Distribution[5]**

| Parameter | Laboratory | | # of Samples | # of Deviations | Min | Max | Average[2] |
|---|---|---|---|---|---|---|---|
| **Free Chlorine[1]** | Operator Grab Samples | mg/L | 129 | 3[4] | 0.15 | 2.11 | 1.08 |
| **Total Chlorine** | Operator Grab Samples | mg/L | 129 | ----- | 0.29 | 2.20 | 1.33 |
| **E.coli** | RDNO Lab | MPN/100 mL | 120[3] | ----- | <1 | <1 | <1 |
| **E.coli** | CARO | CFU/100 mL | 1 | ----- | <1 | <1 | <1 |
| **Total Coliform** | RDNO Lab | MPN/100 mL | 120[3] | ----- | <1 | <1 | <1 |
| **E.coli** | CARO | CFU/100 mL | 1 | ----- | <1 | <1 | <1 |
| **Turbidity[1]** | Operator Grab Samples | NTU | 129 | ----- | 0.20 | 1.36 | 0.52 |

[1]GVW WQ Deviation Response Plan: free chlorine >0.20 mg/L, turbidity <5 NTU.
[2]Non detect values are used at ½ the reporting limit for average calculations.
[3]Three samples per week are ran in duplicate for quality assurance purposes.
[4]There were three sample locations which had free chlorine <0.2 mg/L. All three of these sites were part of the City of Vernon monitoring of low chlorine sites program and are being monitored on a regular basis to confirm compliance.
[5]In consultation with Interior Health, there were no distribution samples collected the week of December 21-27. Greater Vernon Water was able to collect enough samples to satisfy the guideline requirments without adjusting the sampling frequency in any of the other weeks in December.

## 5. Water Quality and Customer Calls and Notifications

Water Quality Customer Calls within the GVW Service area are tracked and recorded. There were a total of five (5) customer calls this month.

### Table 9 Water Quality Customer Calls for the month

| Type of Call | Issue/Inquiry | Investigation | Comments |
|---|---|---|---|
| Inquiry | Water Source | No | The customer called wondering if their water was supplied by BX creek. RDNO staff explained that water was supplied by Duteau Creek in that area and directed them to the website for more information. |
| Issue | Murky Water | No | The RDNO received two calls from the same area about murky water. There were no known issues in the area and it was determined that the two calls came from the same strata unit. The strata unit investigated internally and were able to mediate the issue internally. |
| Inquiry | Water Hardness | No | The customer requested the water hardness in their area. The customer was given the most recent water hardness values and directed to the website for additional information. |
| Inquiry | Water Hardness | No | The customer requested the water hardness in their area. The customer was given the most recent water hardness values and directed to the website for additional information. |

## 6. Operational or Maintenance Activity

Operational activity within the GVW City of Vernon service area is tracked and recorded using an online database. There was a total of 42 operational activities outlined this month in Table 10.

### Table 10 Monthly operational work and maintenance for the City of Vernon

| NUMBER OF LOCATIONS | TYPE OF WORK |
|---|---|
| 0 | Hydrant Maintenance |
| 0 | Hydrant Maintenance – Corrective |
| 1 | New Hydrant Install |
| 7 | Water Service GIS Locate |
| 2 | Water Main Break Repair |
| 1 | Property Damage Repair |
| 0 | Water Valve Maintenance |
| 7 | Water Valve Repair |
| 0 | Water Service Install |
| 24 | Water Service Repair |
| 0 | Reservoirs Cleaned |

## 7. Localized WQA's and Other Activity

Water quality events are tracked and recorded below. The type of notices for any given event varies based on the severity of the event and the availability of water to adequately flush the area. This month, there was a total of zero Type 1 breaks where no advisory was required, fourteen (14) Water Quality Advisories (WQA), and three (3) Boil Water Notices (BWN)

### Table 11 Monthly public notifications

| Type of Notice | Reason | Area | Length or Time in Place | Number of Connections Affected |
|---|---|---|---|---|
| Water Outage and BWN | Scheduled Water Main Repair | Black Rock Rd | December 8 – December 12 | 24 |
| WQA | Water Main Break | 1102 Pottery Rd | December 10 – December 12 | 18 |
| BWN | Power Outage | Stepping Stones Crescent | December 16 – December 19 | 39 |
| BWN | Water Main Break | 3506 39 Ave | December 16 – December 19 | 6 |
| BWN | Water Main Break | Pottery Rd and 18 St | –December 30 – January 6 | 40 |