REGIONAL DISTRICT NORTH OKANAGAN

Greater Vernon Water (GVW) Water Quality Report for July 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	11[5]	-----	1	86[6]	31.1
Total Coliform	RDNO Lab	MPN/100 mL	11[5]	-----	142.1	3448[6]	1662.1[7]
Turbidity	Operator Grab Samples	NTU	5	-----	1.69	2.27	1.96
Turbidity	SCADA[1] Daily Average[3]	NTU	31 Days	-----	1.12	1.69	1.28

[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 include 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.
[7]One Total Colifom sample was above the undiluted upper limit resulting in a reported value of >2419.16 MPN/100mL. The value used for this sample for calculation purposes was 2419.16 MPN/100mL.

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	2.0	<1
Total Coliform	RDNO Lab	MPN/100 mL	10[5]	-----	4.1	38.4	13.3
Turbidity	Operator Grab Samples	NTU	5	-----	0.70	2.19	1.34
Turbidity	SCADA[1] Average[3]	NTU	31 Days	-----	0.65	2.10	1.26

[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 include 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
Min (ML/Day)	3.52	0.05	0.00	3.75
Max (ML/Day)	12.50	4.89	1.12	10.73
Average (ML/Day)	9.45	2.36	0.20	6.92
Monthly Total (ML)	293.01	73.03	6.31	214.54

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	-----	1.85	1.99	1.91
E.coli	RDNO Lab	MPN/100 mL	5	-----	<1	<1	<1
Total Coliform	RDNO Lab	MPN/100 mL	5	-----	<1	<1	<1
Turbidity[2]	SCADA[1] Daily Average	NTU	29 Days[5]	-----	0.23	0.40	0.28
Pre UVT[3]	SCADA[1] Daily Average	%	31 Days	-----	84.21	88.00	86.11

[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.
[5]On July 22 at 3:17 pm, the analyzer was being cleaned when an error occurred allowing water to enter the body of the analyzer. The analyzer was taken offline and allowed to dry overnight before being placed back in service July 23 at 8:05 am. July 22 and July 23 have been removed from this table due to inaccurate results during this timeframe.

This month, 35 m^3 of off-spec water occurred representing <0.01% of the water treated in July at DCWTP. A couple quick increases in flow occurred, causing UV dose to drop slightly below the required 12mj/cm^2, before lamp intensity increased sufficiently.

Table 5 DCWTP – Log Removal of Viruses

Log Removal of Viruses[1]	
Days Monitored	31 Days
Days 4-Log Inactivation Achieved	30 Days

[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	-----	1.70	2.20	2.00
E.coli	RDNO Lab	MPN/100 mL	5	-----	<1	<1	<1
Total Coliform	RDNO Lab	MPN/100 mL	5	-----	<1	<1	<1
Turbidity[2]	SCADA[1] Daily Average	NTU	31 Days	-----	0.61	2.12[4]	1.23
Pre UVT	SCADA[1] Daily Average	%	31 Days	-----	90.76	91.64	91.16

[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.

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)	32.60	23.01
Max (ML/Day)	86.90	37.48
Average (ML/Day)	61.54	32.15
Monthly Total (ML)	1846.10	964.49

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

Parameter	Laboratory		# of Samples	# of Deviations	Min	Max	Average[2]
Free Chlorine[1]	Operator Grab Samples	mg/L	138	5[4]	0.04	2.01	1.10
Total Chlorine	Operator Grab Samples	mg/L	138	-----	0.16	2.25	1.36
E.coli	RDNO Lab	MPN/100 mL	144[3]	-----	<1	<1	<1
E.coli	CARO	CFU/100 mL	1	-----	<1	<1	<1
Total Coliform	RDNO Lab	MPN/100 mL	144[3]	-----	<1	<1	<1
E.coli	CARO	CFU/100 mL	1	-----	<1	<1	<1
Turbidity[1]	Operator Grab Samples	NTU	138	-----	0.19	2.68	0.91

[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 five sample locations which had free chlorine <0.2 mg/L. Three of the sites were part of the City of Vernon flushing of low chlorine sites program. All five sites were sampled and bacterial testing showed <1 MPN/100mL for both E.coli and Total Coliforms.

5. Water Quality and Customer Calls and Notifications

Water Quality Customer Calls within the GVW Service area are tracked and recorded. There was a total of seven (7) customer calls this month.

Table 9 Water Quality Customer Calls for the month

Type of Call	Issue/Inquiry	Investigation	Comments
Inquiry	Water Hardness	No	The customer was looking at purchasing a shower head filter and was wondering if they had hard water. The customer was told they are on Kalamalka Lake water source which is a hard water source. They were referred to the website for additional water quality information.
Issue	Brown Water	Yes	The customer noticed turbid, brown water the previous evening around 20:00. The water was still turbid in the morning. Online monitoring of the nearby pumpstation noted a brief spike in flows at 19:47. Suspected cause of the turbidity. Operators flushed the water main.
Inquiry	Water Quality	No	A customer called asking if it was safe to drink the water after receiving a water interruption notice. RDNO staff explained to the customer that water is flushed after crews have completed work in the area and the water is sampled and analyzed before the WQA is rescinded. The water is treated and safe to drink but the customer is advised to take precautions if they are immune compromised.
Issue	Soil Tasting Water	Yes	The customer called the District of Coldstream to complain about water tasting like soil. There was no turbidity in the water. Customer had a large water main and irrigation system was turned off. Suspected stale water in the service line. Customer was advised to flush service line by turning on the irrigation system. The water main was flushed by operators as an extra precaution.

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 116 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
38	Water Service GIS Locate
3	Water Main Break Repair
3	Property Damage Repair
0	Water Valve Maintenance
12	Water Valve Repair
36	Water Service Install
23	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
WQA	Water Main Break	2001-2401 42 Ave	July 7 – July 9	31
Loss of Water Notice/ WQA	Leak Detection	849-899 Mt Bulman Pl	July 7 – July 9	48
Loss of Water Notice/ WQA	Cut and Cap existing water main	42 Ave between 20-25 St	July 7 – July 10	40
BWN	Water Main Break	6676-6699 Cameo Dr, 6641-6671 Jade Rd, 6595-6679 Topaz Rd	July 9 – July 15	34

Loss of Water Notice/ WQA	Planned Water Tie In's	40-43 Ave between 20-25 St area	July 14 – July 16	100
Loss of Water Notice/ WQA	Leak Detection	Mt Grady Rd area	July 16 – July 18	56
Loss of Water Notice/ WQA	Planned Water Tie In's	Lardeau Way area	July 17 – July 21	18
WQA	Water Main Break	27 Ave East of Alvaston Pl	July 21 – July 23	16
Loss of Water Notice/ WQA	Cut and Cap existing water main		July 21 – July 23	
Loss of Water Notice/ WQA	Water Main Repair	849-899 Mt Bulman Pl	July 23 – July 25	48
Loss of Water Notice/ WQA	Planned Water Tie In's	2500 42 Ave and 4108-4115 & 4017 25 St	July 23 – July 23	10
Loss of Water Notice/ WQA	Leak Detection	Mt Ida Dr and Mt Robson Pl area	July 24 – July 26	34
WQA	Water Main Break	4593 East Vernon Rd	July 25 – July 28	2
BWN	Power Outage Resulting in Loss of Pressure	Dixon Dam Rd and East Vernon Rd area between Briggs Rd and Brookside Rd	July 28 – July 31	49
BWN	Power Outage Resulting in Loss of Pressure	Goose Lake Rd Area	July 28 – July 31	4
Loss of Water Notice/ WQA	Planned Water Upgrades	Noble Canyon Rd	July 31 – August 12	5