



Greater Vernon Water (GVW) Water Quality Report for May 2024

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

1. Sources

GVW has two sources that are 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. Tables 1 and 2 summarize the results for bacteria and turbidity.

Table 1 Duteau Creek Intake

Parameter	Laboratory		# of Samples	# of Deviations	Min	Max	Average
E.coli²	Caro	MPN/100 mL	4	-----	<1	2	<1
E.coli²	RDNO Lab	MPN/100 mL	8	-----	1	3.1	1.5
Total Coliform	Caro	MPN/100 mL	4	-----	62	116	113
Total Coliform	RDNO Lab	MPN/100 mL	8	-----	50.4	127.4	85.0
Turbidity	GVW WQ Tech	NTU	4	-----	0.85	0.97	0.91
Turbidity	SCADA ¹ Daily Average ³	NTU	31 Days	-----	0.55	0.95	0.70

¹SCADA: Supervisory Control and Data Acquisition.

²Drinking Water Treatment Objectives (Microbiological) 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.

³SCADA data for this online analyzer is a 24 hour average taken every 10 minutes..

Table 2 Kalamalka Lake Intake

Parameter	Laboratory		# of Samples	# of Deviations	Min	Max	Average
E.coli ³	Caro	MPN/100 mL	4	-----	<1	1	<1
E.coli ³	RDNO Lab	MPN/100 mL	8	-----	<1	3.1	<1
Total Coliform	Caro	MPN/100 mL	4	-----	2	7	5
Total Coliform	RDNO Lab	MPN/100 mL	8	-----	<1	7.5	4.4
Turbidity ²	GVW WQ Tech	NTU	4	-----	0.85	1.31	1.00
Turbidity ²	SCADA ¹ Average ⁴	NTU	31 Days	-----	0.48	0.81	0.61

¹SCADA: Supervisory Control and Data Acquisition.

²Operation Guideline: As outlined in Deviation Response Plan, turbidity <3 NTU.

³Drinking Water Treatment Objectives (Microbiological) 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.

⁴SCADA data for this online analyzer is a 24 hour average with readings taken every 15 seconds.

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.

The majority of the Duteau Creek water (approx. 85%) is treated. 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)	0.00	0.00	0.00	0.06
Max (ML/Day)	3.77	0.14	0.00	3.47
Average (ML/Day)	1.82	0.01	0.00	0.71
Monthly Total (ML)	56.44	0.40	0.00	21.92

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 clarification is achieved by Dissolved Air Flotation (DAF). Chlorine is added after clarification to ensure contact time for the removal of viruses, followed by Ultra-violet (UV) disinfection. Finally, an additional dose chlorine is added before entering the distribution system to maintain a set point for the residual chlorine value. MHWTP uses a dual disinfection process of 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
Free Chlorine ²	SCADA ¹ Daily Average	mg/L	31 Days	-----	1.84	2.02	1.90
E.coli	Caro	CFU/100 mL	5	-----	<1	<1	<1
E.coli	RDNO Lab	MPN/100 mL	5	-----	<1	<1	<1
Total Coliform	Caro	CFU/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	-----	0.24	0.47	0.34
Pre UVT ³	SCADA ¹ Daily Average	%	31 Days	-----	85.06	90.21	88.30

¹SCADA: Supervisory Control and Data Acquisition.

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

³UVT is monitored pre-UV treatment which is used to determine UV dosage.

This month, no 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 Removal Achieved	31 Days

¹4-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
Free Chlorine	SCADA ¹ Daily Average	mg/L	31 Days	-----	1.92	2.02	2.00
E.coli	Caro	CFU/100 mL	4	-----	<1	<1	<1
E.coli	RDNO Lab	MPN/100 mL	4	-----	<1	<1	<1
Total Coliform	Caro	CFU/100 mL	4	-----	<1	<1	<1
Total Coliform	RDNO Lab	MPN/100 mL	4	-----	<1	<1	<1
Turbidity²	SCADA ¹ Daily Average	NTU	31 Days	-----	0.47	0.81	0.59
Pre UVT	SCADA ¹ Daily Average	%	31 Days	-----	90.87	91.70	91.25

¹SCADA: Supervisory Control and Data Acquisition.

²Operation Guideline: As outlined in Deviation Response Plan, free chlorine >0.80 mg/L, turbidity <3.0 NTU.

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

4. Distribution

GVW has two distribution systems that interconnect: Duteau System typically supplied by Duteau Creek and Kalamalka System typically supplied by Kalamalka Lake. GVW has approximately 22,350 service connections.

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)	16.10	13.46
Max (ML/Day)	55.70	24.13
Average (ML/Day)	29.29	19.51
Monthly Total (ML)	878.80	585.34

Tables 8 and 9 summarize results for chlorine, bacteria, and turbidity for each distribution system. These systems are monitored by handheld instruments weekly.

Table 8 Duteau Distribution

Parameter	Laboratory		# of Samples	# of Deviations	Min	Max	Average
Free Chlorine ¹	Operator Grab Samples	mg/L	56	-----	0.10 ²	1.78	1.04
Total Chlorine	Operator Grab Samples	mg/L	56	-----	0.28	2.09	1.24
E.coli	Caro	CFU/100 mL	25	-----	<1	<1	<1
E.coli	RDNO lab	MPN/100 mL	33	-----	<1	<1	<1
Total Coliform	Caro	CFU/100 mL	25	-----	<1	<1	<1
Total Coliform	RDNO Lab	MPN/100 mL	33	-----	<1	<1	<1
Turbidity	Operator Grab Samples	NTU	56	-----	0.2	3.33 ³	0.55

¹GVW WQ Deviation Response Plan: free chlorine >0.20 mg/L, turbidity <1 NTU.

²Sample site was flushed after reading as part of GVW flushing program. ³Site location is Noble Canyon B/O which is a known problem and is on GVW flushing program.

Table 9 Kalamalka Distribution

Parameter	Laboratory		# of Samples	# of Deviations	Min	Max	Average
Free Chlorine ¹	Operator Grab Samples	mg/L	78	-----	0.51	2.04	1.16
Total Chlorine	Operator Grab Samples	mg/L	78	-----	0.69	2.34	1.46
E.coli	Caro	CFU/100 mL	43	-----	<1	<1	<1
E.coli	RDNO Lab	MPN/100 mL	34	-----	<1	<1	<1
Total Coliform	Caro	CFU/100 ml	43	-----	<1	<1	<1
Total Coliform	RDNO Lab	MPN/100 mL	34	-----	<1	<1	<1
Turbidity ¹	Operator Grab Samples	NTU	78	-----	0.31	1.67	0.82

¹Operation Guidelines: free chlorine >0.20 mg/L, turbidity <3 NTU.

The GVW distribution system contains six sampling sites (Table 10) that frequently have free chlorine <0.2 mg/L due to the sample sites being located at the end of the distribution line. Measures are currently in place to mitigate this issue including regular monitoring and flushing. The three sites at Boss Creek represent a localized area.

Table 10 Low Chlorine Sites and Mitigation Measures

Frequent Low Free Chlorine Sites	Mitigation Measures
O’Keefe Ranch SS	On a localized Water Quality Advisory
9007 Aberdeen Rd SS	Regular monitoring and flushing
Noble Canyon B/O	Regular monitoring and flushing
Boss Creek PH 1 (Lower) Return/Inlet	Regular monitoring
Boss Creek PH 2 (Upper) Discharge/Outlet	Regular monitoring
Boss Creek PH 2 (Upper) return/inlet	Regular monitoring

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 4 customer calls this month.

Table 11 Water Quality Customer Calls for the month

# of Calls	Type of Call	Issue/Inquiry	Investigation	Comments
1	Information	Water Quality inquiry	No	Told customer where to find Water Quality Information on the RDNO website.
1	Information	Customer was wondering when they would be back on Duteau water	No	Information on water source change and how to subscribe to updates was sent to customer.
1	Information	Question about calcium and mineral build up in their water.	No	Customer was told about hard water and high mineral counts in Kalamalka lake. Customer was directed to website for more information.
1	Issue	Customer is at end of the line and typically got flushed by Vernon. Customer installed irrigation to valve and is worried he will no longer get flushed.	No	Customer was informed that by running irrigation he will flush his lines. Customer will remove irrigation in winter so CoV can continue to flush his property.

6. Operational or Maintenance Activity

Operational activity within the GVW service area are tracked and recorded using an online database. There were a total of 35 operational activities this month outlined in Table 12.

Table 12 Monthly operational work and maintenance for the City of Vernon

NUMBER OF LOCATIONS	TYPE OF WORK
8	Hydrant Maintenance
0	Hydrant Maintenance – Corrective
0	New Hydrant Install
5	Water Service GIS Locate
3	Water Main Break Repair
1	Property Damage Repair
0	Water Valve Maintenance
3	Water Valve Repair
4	Water Service Install
10	Water Service Repair
0	Reservoirs Cleaned
1	New Hydrant Sticker Install

7. Localized WQA’s and Other Activity

On May 2, 2024, the localized Precautionary Boil Water Notice in the area along Shantz Rd that was issue on April 30, 2024 was RESCINDED.

On May 6, 2024, customers on Fortress Cres and 6768-6831 Foothills Dr were notified that they would be without water on May 8, 2024 due to maintenance work that needed to be performed.