island health

DRINKING WATER SYSTEM ANNUAL REPORT

Reporting Period: January 1st to December 31st, 2023 (year)

Water System Kerry Village Water System

Water System Owner Cowichan Valley Regional District

Primary Contact Name (Operator or Manager) Vanessa Thomson

Phone Number (Operator or Manager) 250-746-2535

E-mail (Operator or Manager) Vanessa.Thomson@cvrd.bc.ca

DESCRIBE YOUR WATER SUPPLY SYSTEM

What is the Source(s) of Raw Water?

☒ Deep Well ☐ Shallow Well ☐ Surface Water ☐ Other

If other, specify details:

Does the Drinking Water System have Primary Disinfection? ☒ Yes ☐ No

☒ Chlorination ☐ Ultraviolet Light ☐ Ozone ☐ Other

If other, specify details:

Does the Drinking Water System have Secondary Disinfection? ☒ Yes ☐ No

☒ Chlorination ☐ Other

If other, specify details:

Does the Drinking Water System have Filtration? ☐ Yes ☒ No

Check all boxes that apply

☐ Cartridge Filter(s) ☐ Carbon Filter ☒ Sand Filtration ☐ Reverse Osmosis ☐ Other

If other, specify details: Filox sand filtration

PUBLIC REPORTING

Emergency Response & Contingency Plan (ERCP)

Is your ERCP up to Date? ☒ Yes ☐ No

How do you Inform the System Users of the ERCP?

☒ Hand Delivered ☒ Bulletin Board ☒ Newspaper ☐ Utility Bill Insert ☒ Website

☒ Other (specify details) Radio, Social Media

Drinking Water System Annual Report

How do you Inform the System Users of the Annual Report?

☐ Hand Delivered ☐ Bulletin Board ☐ Newspaper ☐ Utility Bill Insert ☒ Website

☐ Other (specify details)

COMPLIANCE WITH OPERATING PERMIT

List the conditions of your Operating Permit (Contact the DWO for a copy if needed):

Operating conditions attached.

Are you in compliance with your Operating Permit? ■ Yes ☐ No

BACTERIOLOGICAL TESTING AND DRINKING WATER PROTECTION REGULATION WATER QUALITY STANDARDS

How many bacteriological samples were collected during this reporting period? 52

What is the minimum required sampling frequency for this system? (#samples/month) 4 samples/month

Additional sampling details:

Was the minimum required sampling frequency achieved? ■ Yes ☐ No

Comments:

Bacteriological summary attached to this report? ■ Yes ☐ No

If no, how do the users of the system view the results?

WATER QUALITY STANDARDS FOR POTABLE WATER

Parameter:	***Standard:***	**Did this system meet standard?**	
Escherichia coli (for all samples)	No detectable *Escherichia coli* per 100ml	■ Yes	☐ No
Total Coliform Bacteria *(if only 1 sample collected in a 30 day period)*	No detectable total coliform bacteria per 100ml	■ Yes	☐ No
Total Coliform Bacteria *(if more than 1 sample collected in a 30 day period)*	No more than 10% of samples contain total coliform bacteria, **and** No sample has more than 10 total coliform bacteria per 100ml	■ Yes	☐ No

If the system did not meet any of above Drinking Water Protection Regulation standards, record the results in the table below; attach additional sheets if necessary.

Date	TC/100ml	E.coli/100ml	Reason	Corrective Action

CHEMICAL SAMPLING COMPLETED DURING THIS REPORTING PERIOD

Was any chemical sampling conducted during reporting period? ■ Yes ☐ No

If no, when were the last chemical samples conducted for this system? (date) ☐ Don't know

If yes, attach a list of the chemical results Full Spectrum Report for Distribution

If any water samples did not meet the Guidelines for Canadian Drinking Water Quality, record the results in the table below; attach additional sheets if necessary.

Next scheduled full chemical test *(*date) Source - August 2024

Parameter	Result	Corrective Action / Treatment / Comments

ADDITIONAL TESTING

Does the system have analyzers for continuous monitoring? ■ Yes ☐ No

If yes, check all boxes that apply:

■ Chlorine ☐ Turbidity ☐ Other (details)

Are the results available on request?

If any additional testing or sampling was conducted, record results in the table below; attach additional sheets if necessary.

Additional Testing & Reason for Sampling	Corrective Action Taken
Manganese - ensure levels are below MAC	All results below MAC and AO
in finished water (< 120 ug/L)	

WATER QUALITY COMPLAINTS

Were there any water quality complaints in this reporting period? (e.g. taste, odour, colour etc.) ■ Yes ☐ No

If yes, complete the table below; attach additional sheets if necessary.

Date	Water Quality Complaint	Corrective Action / Treatment
August 22 2023	Colour complaint	

OPERATIONAL PROBLEMS

Were there any operational problems during this reporting period? (e.g. insufficient water supply, malfunction of disinfection equipment, line breaks, elevated turbidity etc.). ☒ Yes ☐ No

If yes, complete the table below; attach additional sheets if necessary.

Incident Date	Type of Operational Problem	Corrective Action Taken

MAJOR UPGRADES/REPAIRS & EXPENSES

Were there any major upgrades/repairs or any major costs incurred during this reporting period? ☒ Yes ☐ No

If yes, complete the table below; attach additional sheets if necessary.

Major Upgrades/Expenses	Details
Improvements required by DWO	
Additions/changes to system	
Purchase or install new equipment	Filox pressure vessels for Manganese and Iron treatment
Equipment repair or replacement	
Annual maintenance of system	System flushing, hydrant maintenance, genset serviced, chlorine equipment serviced
Specialist report	
Other	

FUTURE IMPROVEMENTS

Are there any plans for future improvements? ☒ Yes ☐ No

If yes, complete the table below; attach additional sheets if necessary.

Future Upgrades or Improvements	Estimated Date of Completion
Well 1080 Shawnigan Mill Bay Road (Sheldrake)	Installed/Complete - pending license

Click here to enter a date. February 8, 2024 **DATE COMPLETED:**	Tai Williams **COMPLETED BY:**

APPENDIX A

WATR SYSTEM OPERATING CONDITIONS FOR

Kerry Village Water System

Bourban Road

Cobble Hill, BC

The permit holder is advised that the following Terms and Conditions are in addition to other legislated responsibilities and obligations outlined in the Drinking Water Protection Act, ([SBC 2001] Chapter 9) and the B.C. Reg. 200/2003 O.C. 508/2003 Drinking Water Protection Regulation.

1. **Authorized Waterworks System**
   The water supply system owner is authorized to operate 2 groundwater wells: New Well #1 (WTN 115228/WID 52150) and Briarwood Well #2 (WTN 52011/WID 22414), an iron and manganese treatment system consisting of pre-oxidation with chlorine, dual Greensand Plus and Filox-R media filters, backwash pump, distribution pumps, fire pump, other related appurtenances to disinfect water, and a distribution system consisting of storage and transmission facilities to supply potable water for domestic purposes the existing and future development of the community of Kerry Village, in Cobble Hill BC.
2. **Performance Standards**

   The water supply system owner shall ensure that the manganese removal system is operated in a manner to maintain the concentration of manganese in the finished water at or below 0.12 m
3. **Performance Objectives**

   3.1 New Well #1 (WTN 115228/WID 52150) and Briarwood Well #2 (WTN 52011/WID 22414) were assessed in accordance with the British Columbia Ministry of Health "Guidance Document for Determining Ground Water at Risk of Containing Pathogens (GARP), Version 3, September 2017" and a determination of "At Low Risk (GARP)" was made.

   Determining whether a ground water source is GARP is not regarded as a one-time process but is subject to the results of continued long-term monitoring of the water supply system and the conditions of the aquifer, well capture zone, and watershed over time. Changes to water quality or conditions may require the water to be treated in accordance with the Drinking Water Treatment Objectives (Microbiological) for Ground Water Supplies (GWTO) in British Columbia Version 1, November 2015 (or most recent version).

   3.2 The water supply system owner shall ensure a minimum chlorine residual as outlined in the "British Columbia Guidelines (Microbiological) on Maintaining Water Quality in Distribution Systems, Version 1 / August 2016 (or most recent edition).

   3.3 The water supply system owner shall ensure a maximum acceptable concentration of manganese in the finished water is not exceeded as outlined in the "Guideline for Canadian Drinking Water Quality (GCDWQ) Guideline Technical Document for Manganese and the British

Columbia Ministry of Health: Guidance on Manganese in Drinking Water Version 1.1 May 2019 (or most recent edition).
Minor deviations of these objectives may need attention by operating staff, but may not necessarily constitute a treatment violation.

4. Water Quality Monitoring and Reporting Requirements

The water system operator shall adhere to a monitoring program as approved by the Drinking Water Officer (DWO) and maintain detailed and accurate records of all monitoring performed. The monitoring program must include but is not limited to the following:

4.1 Chemical, Physical, Protozoan, and Bacteria Monitoring

The water supply system owner shall provide and maintain suitable sampling ports to obtain raw and finished water samples.

4.1.1 Monthly Bacteriological Sampling

- S 1 New Well #1 (commencing once the well is online)
- S 4 Briarwood Well #2

Semi-Monthly Bacteriological Sampling

- S 2 Water Treatment Building
- S 3 1070 Briarwood Kerry Village
-

4.1.2 A chemical analysis of finished/treated water from the distribution system in accordance with the list of parameters specified in the Island Health's *Source Water Assessment Guideline Appendix B: Minimum Sampling Parameters for Ground Water Sources* at a frequency of no less than once every 5 years. Maximum acceptable concentrations must comply with the Guidelines for Canadian Drinking Water Quality.

4.1.3 Chemical analyses of the treated water specific to the concentration of manganese, at a frequency of no less than once every year. Samples must be collected from sites representative of water quality immediately following the manganese removal treatment equipment, and from a location within the distribution system that is most likely to have the highest concentration of manganese. Maximum acceptable concentrations must comply with the Guidelines for Canadian Drinking Water Quality.

21 July 2023 _____ _____

Date **Issued by: Environmental Health Officer**

Kerry Village Water System

Facility Information

Location 175 Ingram Street Duncan

Type 15 - 300 Connections

Facility Sampling History

Location	Date	Total Coliform	E. Coli/Enterococci
S2 1045 Bourbon Rd Treatment Building	18-Dec-2023	LT1	LT1
S3 1070 Briarwood Kerry Village	11-Dec-2023	LT1	LT1
S2 1045 Bourbon Rd Treatment Building	04-Dec-2023	LT1	LT1
S3 1070 Briarwood Kerry Village	27-Nov-2023	LT1	LT1
S3 1070 Briarwood Kerry Village	20-Nov-2023	LT1	LT1
S3 1070 Briarwood Kerry Village	14-Nov-2023	LT1	LT1
S2 1045 Bourbon Rd Treatment Building	07-Nov-2023	LT1	LT1
S3 1070 Briarwood Kerry Village	30- Oct-2023	LT1	LT1
S2 1045 Bourbon Rd Treatment Building	23- Oct-2023	LT1	LT1
S3 1070 Briarwood Kerry Village	16- Oct-2023	LT1	LT1
S2 1045 Bourbon Rd Treatment Building	10- Oct-2023	LT1	LT1
S3 1070 Briarwood Kerry Village	04- Oct-2023	LT1	LT1
S2 1045 Bourbon Rd Treatment Building	25-Sep-2023	LT1	LT1
S3 1070 Briarwood Kerry Village	18-Sep-2023	LT1	LT1
S3 1070 Briarwood Kerry Village	05-Sep-2023	LT1	LT1
S2 1045 Bourbon Rd Treatment Building	29-Aug-2023	LT1	LT1
S3 1070 Briarwood Kerry Village	22-Aug-2023	LT1	LT1
S2 1045 Bourbon Rd Treatment Building	14-Aug-2023	LT1	LT1
S3 1070 Briarwood Kerry Village	08-Aug-2023	LT1	LT1
S2 1045 Bourbon Rd Treatment Building	01-Aug-2023	LT1	LT1
S3 1070 Briarwood Kerry Village	25-Jul-2023	LT1	LT1
S2 1045 Bourbon Rd Treatment Building	18-Jul-2023	LT1	LT1
S3 1070 Briarwood Kerry Village	11-Jul-2023	LT1	LT1
S2 1045 Bourbon Rd Treatment Building	04-Jul-2023	LT1	LT1
S3 1070 Briarwood Kerry Village	27-Jun-2023	LT1	LT1
S2 1045 Bourbon Rd Treatment Building	20-Jun-2023	LT1	LT1
S1 Water Treatment Building RAW	12-Jun-2023	LT1	LT1
S3 1070 Briarwood Kerry Village	12-Jun-2023	LT1	LT1
S2 1045 Bourbon Rd Treatment Building	05-Jun-2023	LT1	LT1
S3 1070 Briarwood Kerry Village	29-May-2023	LT1	LT1
S2 1045 Bourbon Rd Treatment Building	23-May-2023	LT1	LT1
S3 1070 Briarwood Kerry Village	16-May-2023	LT1	LT1
S2 1045 Bourbon Rd Treatment Building	08-May-2023	LT1	LT1
S3 1070 Briarwood Kerry Village	01-May-2023	LT1	LT1
S2 1045 Bourbon Rd Treatment Building	25-Apr-2023	LT1	LT1
S3 1070 Briarwood Kerry Village	17-Apr-2023	LT1	LT1
S2 1045 Bourbon Rd Treatment Building	11-Apr-2023	LT1	LT1
S3 1070 Briarwood Kerry Village	03-Apr-2023	LT1	LT1
S2 1045 Bourbon Rd Treatment Building	27-Mar-2023	LT1	LT1
S1 Water Treatment Building RAW	21-Mar-2023	LT1	LT1
S3 1070 Briarwood Kerry Village	21-Mar-2023	LT1	LT1
S2 1045 Bourbon Rd Treatment Building	13-Mar-2023	LT1	LT1
S3 1070 Briarwood Kerry Village	07-Mar-2023	LT1	LT1

Kerry Village Water System

Facility Information

Location 175 Ingram Street Duncan

Type 15 - 300 Connections

Facility Sampling History

Location	Date	Total Coliform	E. Coli/Enterococci
S2 1045 Bourbon Rd Treatment Building	01-Mar-2023	LT1	LT1
S3 1070 Briarwood Kerry Village	21-Feb-2023	LT1	LT1
S2 1045 Bourbon Rd Treatment Building	13-Feb-2023	LT1	LT1
S3 1070 Briarwood Kerry Village	06-Feb-2023	LT1	LT1
S2 1045 Bourbon Rd Treatment Building	31-Jan-2023	LT1	LT1
S3 1070 Briarwood Kerry Village	24-Jan-2023	LT1	LT1
S2 1045 Bourbon Rd Treatment Building	17-Jan-2023	LT1	LT1
S3 1070 Briarwood Kerry Village	10-Jan-2023	LT1	LT1
S2 1045 Bourbon Rd Treatment Building	03-Jan-2023	LT1	LT1

KERRY VILLAGE WATER SYSTEM

DISTRIBUTION - S3

			Sample ID	S3 - 1070 BRIARWOOD DR (WTX 27ADC)
			Sampling Date	10/11/23
			Sampling Time	10:10 AM
Parameter Name	***MAC***	***AO***	***Units***	***Result***
Nitrite (N)	1		mg/L	<0.0050
Nitrate (N)	10		mg/L	<0.020
Conductivity			uS/cm	310
pH			pH	7.91
Total Dissolved Solids		500	mg/L	180
Alkalinity (PP as CaCO3)			mg/L	<1.0
Alkalinity (Total as CaCO3)			mg/L	130
Bicarbonate (HCO3)			mg/L	160
Carbonate (CO3)			mg/L	<1.0
Hydroxide (OH)			mg/L	<1.0
Chloride (Cl)		250	mg/L	15
Sulphate (SO4)		500	mg/L	6.5
True Colour		15	Col. Unit	<2.0
Nitrate plus Nitrite (N)			mg/L	<0.020
Langelier Index (@ 20C)			N/A	0.17
Langelier Index (@ 4C)			N/A	-0.08
Saturation pH (@ 20C)			N/A	7.74
Saturation pH (@ 4C)			N/A	7.99
Dissolved Fluoride (F)	1.5		mg/L	0.082
Tannins and Lignins			mg/L	<0.2
Turbidity	see remark	see remark	NTU	<0.10
Total Hardness (CaCO3)			mg/L	113
Total Aluminum (Al)	2900		ug/L	<3.0
Total Antimony (Sb)	6		ug/L	<0.50
Total Arsenic (As)	10		ug/L	0.67
Total Barium (Ba)	2000		ug/L	26.9
Total Beryllium (Be)			ug/L	<0.10
Total Bismuth (Bi)			ug/L	<1.0
Total Boron (B)	5000		ug/L	97
Total Cadmium (Cd)	7		ug/L	<0.010
Total Chromium (Cr)	50		ug/L	<1.0
Total Cobalt (Co)			ug/L	<0.20
Total Copper (Cu)	2000	1000	ug/L	4.18
Total Iron (Fe)		300	ug/L	<5.0
Total Lead (Pb)	5		ug/L	<0.20
Total Manganese (Mn)	120	20	ug/L	1.4
Total Molybdenum (Mo)			ug/L	2.9

KERRY VILLAGE WATER SYSTEM

DISTRIBUTION - S3

			Sample ID	S3 - 1070 BRIARWOOD DR (WTX 27ADC)
			Sampling Date	10/11/23
			Sampling Time	10:10 AM
Parameter Name	***MAC***	***AO***	***Units***	***Result***
Total Nickel (Ni)			ug/L	<1.0
Total Selenium (Se)	50		ug/L	<0.10
Total Silicon (Si)			ug/L	10100
Total Silver (Ag)			ug/L	<0.020
Total Strontium (Sr)	7000		ug/L	312
Total Thallium (Tl)			ug/L	<0.010
Total Tin (Sn)			ug/L	<5.0
Total Titanium (Ti)			ug/L	<5.0
Total Uranium (U)	20		ug/L	0.28
Total Vanadium (V)			ug/L	<5.0
Total Zinc (Zn)		5000	ug/L	5.4
Total Zirconium (Zr)			ug/L	<0.10
Total Calcium (Ca)			mg/L	34.5
Total Magnesium (Mg)			mg/L	6.56
Total Potassium (K)			mg/L	0.489
Total Sodium (Na)		200	mg/L	18.2
Total Sulphur (S)			mg/L	<3.0
Total Mercury (Hg)	1		ug/L	<0.0019
Total Total Kjeldahl Nitrogen (Calc)			mg/L	0.051
Total Organic Carbon (C)			mg/L	1
Total Nitrogen (N)			mg/L	0.051
Total Ammonia (N)			mg/L	<0.015
Sulphide (as H2S)		0.05	mg/L	<0.0020
Total Sulphide		0.05	mg/L	<0.0018
Total Coliforms	0		CFU/100mL	0
E. coli	0		CFU/100mL	0
Heterotrophic Plate Count			CFU/mL	<1.0
Fecal Coliforms			CFU/100mL	0
Non-Coliform (Background)			CFU/100mL	<1
Iron Bacteria			CFU/mL	<25
Sulphate reducing bacteria			CFU/mL	<75
Total Trihalomethanes	100		ug/L	43
Bromodichloromethane			ug/L	6.9
Bromoform			ug/L	<1.0
Dibromochloromethane			ug/L	1.1
Chloroform			ug/L	35
Dalapon			ug/L	<5.0

KERRY VILLAGE WATER SYSTEM

DISTRIBUTION - S3

			Sample ID	S3 - 1070 BRIARWOOD DR (WTX 27ADC)
			Sampling Date	10/11/23
			Sampling Time	10:10 AM
Parameter Name	***MAC***	***AO***	***Units***	***Result***
Monochloroacetic Acid			ug/L	<5.0
Monobromoacetic Acid			ug/L	<5.0
Dichloroacetic Acid			ug/L	11
Trichloroacetic Acid			ug/L	11
Bromochloroacetic Acid			ug/L	<5.0
Dibromoacetic Acid			ug/L	<5.0
Total Haloacetic Acids	80		ug/L	22

KERRY VILLAGE WATER SYSTEM

Manganese

			Sample ID	SI-WATER TREATM. BLDG WTX: 28050	S1 WATER TREATMENT BLDG (WTX 28050)	S1 WATER TREATMENT BLDG (WTX 28050)	S1 WATER TREATMENT BLDG (WTX 28050)
			Sampling Date	01/04/23	04/11/23	07/20/23	10/11/23
			Sampling Time	10:53 AM	09:55 AM	10:25 AM	10:10 AM
Parameter Name	***MAC***	***AO***	***Units***	***Result***	***Result2***	***Result3***	***Result4***
Total Manganese (Mn)	120	20	ug/L	1.3	1.3	<1.0	1.7