

Beaver Falls Waterworks District Annual Drinking Water Report 2014



Water system: Beaver Falls Waterworks District

Date of report: March 2015

Period of monitoring covered by this report: January 1, 2014 – December 31, 2014

Interior Health Permit to Operate Facility Number: 0210637

IHA Permit: Drinking Water System 1-300 Connections

Connections: 197 active

Location of water supply system: Beaver Falls BC

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Introduction

This annual report provides an overview of the Beaver Falls Waterworks District (BFWD) water system and summarizes the water quality from January 1, 2014 to December 31, 2014. This report also includes a summary of inquiries and complaints; completed and proposed maintenance activities and the Emergency Response Plan. This report is required by Interior Health Authority as part of the Beaver Falls Waterworks District Operating Permit.

Beaver Falls Waterworks System

The community of Beaver Falls lies within the Regional District of Kootenay Boundary (RDKB) in BC and forms a part of the RDKB Electoral Area "A". Beaver Falls is primarily a residential community with some commercial areas. The population is approximately 594 people, with a total land area of about 15 square km.

The Beaver Falls Waterworks (BFWD) originated October 1, 1959 under the provincial Letters Patent.

The water supply distribution system includes the two production wells, 16 fire hydrants, two Imperial gallon reservoirs and approximately 5 km of looped AC(asbestos cement) steel and PVC piping. The storage system is then gravity fed back into the community within the Improvement District. The BFWD provides potable water to 197 active connections. Other private domestic water wells also exist in Beaver Falls Waterworks Improvement District.

The BFWD's potable water supply is currently sourced from Well No. 1 and Well No.2 located approximately 17 m northwest of Beaver Creek. The water comes from an underground aquifer and sourced from groundwater extracted from the two production wells (Wells #1, #2,). The BFWD wells are situated adjacent to Beaver Creek, just outside the southwest municipal boundary of the Village of Fruitvale in the vicinity of Scout Camp, which is accessed from Bluebird road on the east side of Highway 3B. Well No.1, which is located approximately 42 m to the northeast of Well No.2, Wells No.1 and No.3 are located in the same pump house. The pump house is located approximately 37 m north of Beaver Creek. A third production well (Well No.3) was drilled in 2005 (approximately 3 m from Well No.1), with the intention of using it as a replacement Well No. 1 however, it was not put into use.

Well #1

Well No.1 is located inside a locked and secured masonry pump house (Pump house No.1) with a concrete slab around the well. Well No.1 was drilled to a total depth of 20.7 m (68 ft) below ground surface in 1973. The well is completed with 250 mm (10 inch) diameter well casing and nominal 200 mm (8 inch) telescopic, stainless steel well screen. The well screen assembly is approximately 7.6 m (25 ft) in length, and consists of five, 1.5 m (5-ft) lengths of well screen, with slot sizes varying between 60-slot (0.060 inch) and 100-slot (0.100 inch). The largest slot-size well screen (100-slot) is located at the bottom of the assembly and the smallest slot size (60-slot) is at the middle of the assembly. The screen is equipped with a K-packer located at 12.5 m (41 ft) belowground surface. In October 2014, Precision Service & Pumps Inc. performed a well test and concluded that the pumping rate has decreased since the last test in 2010 and well redevelopment is recommended. The pumping rate is currently at 114 US gpm.

Well #2

According to the well record, Well No.2 was drilled to a total depth of 28.1 m (92 ft) below ground surface in 1985. The well is completed with 250 mm (10 inch) diameter well casing and nominal 200 mm (8 inch) telescopic, stainless steel well screen. The well screen assembly is approximately 7.6 m (25 ft) in length, and consists of five, 1.5 m (5-ft) lengths of well screen, with slot sizes varying between 20-slot (0.020 inch) and 120-slot (0.120 inch). The largest slot-size well screen (120-slot) is located at the top of the assembly and the smallest slot size (20-slot) is at the middle of the assembly. The screen is equipped with a K-packer located at 19.9 m (65 ft) below ground surface. In October 2014, Precision Service & Pumps Inc. performed a well test and concluded that this well's performance has not declined and showed it is pumping at 200 US gpm.

Reservoirs

The BFWD has two reservoirs that are located on Deer Road which is on the west side of Hwy 3B. Built in 1966, reservoir #1 holds 545,000 litres and #2 holds 300,000 litres it was built in 1986. Both reservoirs are constructed of steel.

SCADA (Supervisory Control and Data Acquisition)

The SCADA system is used to monitor and control the wells and reservoir. The SCADA system was installed in September of 2014 replacing the circular chart recorder.

Routine Maintenance Program

Fire Hydrants are flushed every spring along with pressure testing and removal of winter markers. In the fall, they are inspected, pressure tested, winter markers are placed on hydrants and any worn parts are replaced. Easy access to hydrants is maintained throughout the year; during winter months, hydrants are cleared of snow and during summer months, grass is cut.

Chlorination at the reservoir and system flush is completed twice per year, once in the spring and once in the fall.

Inventory and equipment count is done yearly at the beginning of January.

Water usage is monitored through the SCADA system.

We are the process of updating our mapping to show water lines, valves etc.

Valve exercising to ensure valves are in proper working condition.

Water Quality Complaints

There have been no water complaints for 2014. In June of 2014, testing indicated that there were some Total Coliform counts in the water. Ratepayers were notified in accordance with the Emergency Response Plan. Chlorination flushing of the water lines occurred and this corrected the coliform counts.

Cross Connection Program

The BFWD is working on a cross connection program. The BFWD Water System Operator has completed Cross Connection Course through BCWWA.

2014 Improvements

SCADA system was installed in September 2014 in Pump house #1.

Maintenance work for the new upgrades to connections for two properties located on the west end of Hwy 3B as well as one property on Jorgenson Road

Well performance tests performed by Precision Service & Inc on October 24, 2014.

2015 Proposed Improvements

Increased pressure for Christie Rd residents

Forsythia Bank project

Well #1 Rehabilitation

Water Consumption

In 2014, the BFWD total water consumption was 94,280 cubic meters. The minimum daily demand in January was 175.6 cubic meters and the maximum daily demand in August was 461.31 cubic meters.

Emergency Response Plan

The BFWD has an Emergency Response Plan (ERP) in place. The plan is reviewed and updated each year. The BFWD ERP can be viewed on our website at www.beaverfallswaterworksdistrict.myruralwater.com. The Plan identifies potential emergencies and action plans. A copy of this report is submitted to Interior Health drinking water officer.

Water Sampling and Testing

As required by the Interior Health Authority (IHA), the Beaver Falls Waterworks District (BFWD) Water System Operator takes water samples for the purpose of testing of Total Coliforms and e-Coli. The samples are sent to Caro Analytical Services in Kelowna, results are emailed back to the BFWD and to Interior Health. There are eight sampling sites used with one sample taken weekly and alternating between sites. A complete chemical analysis of Well 1 was completed in January 2014 and Well #2 Completed Jan 2014 samples done by Caro Analytical Services.

2014 Water Sample Reports for Beaver Falls Waterworks District

Date	Site	Coliforms, Total CFU/ 100ml	E.Coli CFU/100ml
Jan-10	Site 6, Bluebird	<1	<1
Jan-10	Site 5, Hwy 3B	<1	<1
Jan-29	Well #2	<1	<1
Feb-06	Site 2, Beaver Rd	<1	<1
Feb-06	Site 5, Hwy 3B	<1	<1
Feb-21	Site 6, Bluebird	<1	<1
Feb-21	Site 5, Hwy 3B	<1	<1
Mar-07	Site 10 Fox Rd	<1	<1
Mar-07	Site 5, Hwy 3B	<1	<1
Mar-18	Site 10 Fox Rd	<1	<1
Mar-18	Site 5, Hwy 3B	<1	<1
Apr-02	Site 10, Fox Rd	<1	<1
Apr-02	Site 5, Hwy 3B	<1	<1
May-07	Site 5, Hwy 3B	<1	<1
May-07	Site 10, Fox Rd	1	<1
May-23	Site 10, Fox Rd	<1	<1
May-23	Site 5, Hwy 3B	1	<1
Jun-05	Site 5, Hwy 3B	1	<1
Jun-05	Site 2, Beaver Rd	<1	<1
Jun-19	Site 10, Fox Rd	4	<1
Jun-19	Site 1, Christie Rd	6	<1
Jul-10	Site 6, Bluebird	<1	<1
Jul-10	Site 1, Christie Rd	<1	<1
Jul-24	Site 6, Bluebird	<1	<1
Jul-24	Site 1, Christie Rd	1	<1
Aug-07	Site 1, Christie Rd	<1	<1
Aug-07	Site 8, Hwy 3B	<1	<1
Aug-21	Site 9, Hwy 3B	<1	<1
Aug-21	Site 10, Fox Road	<1	<1
Sep-05	Site 6, Bluebird	<1	<1
Sep-05	Site 10, Fox Rd	<1	<1
Sep-25	Pumphouse #1	<1	<1
Sep-30	Pumphouse #1	<1	<1
Oct-09	Site 10, Fox Rd	<1	<1
Oct-23	Site 10, Fox Rd	<1	<1
Oct 28	Pumphouse #1	≥ 1	<1
Nov-04	Site 10, Fox Rd	<1	<1
Nov-13	Pumphouse #1	<1	<1
Dec-04	Site 10, Fox Rd	<1	<1
Dec-23	Pumphouse #1	<1	<1

Precision
Testing

Well #1:

Comprehensive Drinking Water Analysis completed by Caro Analytical Services on January 22, 2014.

Copy emailed to IHA.



SAMPLE ANALYTICAL DATA

REPORTED TO PROJECT Beaver Falls Waterworks District
Drinking Water

WORK ORDER REPORTED 4010960
Jan-29-14

Analyte	Result / Recovery	Canadian DWQ Guideline	MRL / Limit	Units	Prepared	Analyzed	Notes
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Sample ID: Well #2 (4010960-01) [Water] Sampled: Jan-21-14 09:30

Anions

Alkalinity, Total as CaCO3	101	No Guideline	1	mg/L	N/A	Jan-22-14	
Chloride	22.5	AO ≤ 250	0.10	mg/L	N/A	Jan-22-14	
Fluoride	< 0.10	MAC = 1.5	0.10	mg/L	N/A	Jan-22-14	
Nitrogen, Nitrate as N	1.68	MAC = 10	0.010	mg/L	N/A	Jan-22-14	
Nitrogen, Nitrite as N	< 0.010	MAC = 1	0.010	mg/L	N/A	Jan-22-14	
Sulfate	17.0	AO ≤ 500	1.0	mg/L	N/A	Jan-22-14	

General Parameters

Colour, True	< 5	AO ≤ 15	5	Color Unit	N/A	Jan-23-14	
Conductivity (EC)	325	No Guideline	2	uS/cm	N/A	Jan-22-14	
Cyanide, total	< 0.010	MAC = 0.2	0.010	mg/L	Jan-28-14	Jan-28-14	
pH	7.69	AO = 6.5 - 8.5	0.01	pH units	N/A	Jan-22-14	
Turbidity	0.1	See Guidelines	0.1	NTU	N/A	Jan-22-14	
UV Transmittance @ 254nm	97.6	No Guideline	0.1	%	N/A	Jan-24-14	

Calculated Parameters

Hardness, Total (Total as CaCO3)	116	No Guideline	5.0	mg/L	N/A	N/A	
Solids, Total Dissolved	164	No Guideline	2.0	mg/L	N/A	N/A	

Total Recoverable Metals

Aluminum, total	< 0.05	AO ≤ 0.1	0.05	mg/L	Jan-23-14	Jan-24-14	
Antimony, total	< 0.001	MAC = 0.006	0.001	mg/L	Jan-23-14	Jan-24-14	
Arsenic, total	< 0.005	MAC = 0.01	0.005	mg/L	Jan-23-14	Jan-24-14	
Barium, total	< 0.05	MAC = 1	0.05	mg/L	Jan-23-14	Jan-24-14	
Beryllium, total	< 0.001	No Guideline	0.001	mg/L	Jan-23-14	Jan-24-14	
Boron, total	< 0.04	MAC = 5	0.04	mg/L	Jan-23-14	Jan-24-14	
Cadmium, total	< 0.0001	MAC = 0.005	0.0001	mg/L	Jan-23-14	Jan-24-14	
Calcium, total	38.4	No Guideline	2.0	mg/L	Jan-23-14	Jan-24-14	
Chromium, total	< 0.005	MAC = 0.05	0.005	mg/L	Jan-23-14	Jan-24-14	
Cobalt, total	< 0.0005	No Guideline	0.0005	mg/L	Jan-23-14	Jan-24-14	
Copper, total	< 0.002	AO ≤ 1	0.002	mg/L	Jan-23-14	Jan-24-14	
Iron, total	< 0.10	AO ≤ 0.3	0.10	mg/L	Jan-23-14	Jan-24-14	
Lead, total	< 0.001	MAC = 0.01	0.001	mg/L	Jan-23-14	Jan-24-14	
Magnesium, total	5.0	No Guideline	0.1	mg/L	Jan-23-14	Jan-24-14	
Manganese, total	< 0.002	AO ≤ 0.05	0.002	mg/L	Jan-23-14	Jan-24-14	
Mercury, total	< 0.0002	MAC = 0.001	0.0002	mg/L	Jan-23-14	Jan-24-14	
Molybdenum, total	< 0.001	No Guideline	0.001	mg/L	Jan-23-14	Jan-24-14	
Nickel, total	< 0.002	No Guideline	0.002	mg/L	Jan-23-14	Jan-24-14	
Phosphorus, total	< 0.2	No Guideline	0.2	mg/L	Jan-23-14	Jan-24-14	
Potassium, total	1.9	No Guideline	0.2	mg/L	Jan-23-14	Jan-24-14	
Selenium, total	< 0.005	MAC = 0.01	0.005	mg/L	Jan-23-14	Jan-24-14	
Silicon, total	11	No Guideline	5	mg/L	Jan-23-14	Jan-24-14	
Silver, total	< 0.0005	No Guideline	0.0005	mg/L	Jan-23-14	Jan-24-14	
Sodium, total	10.3	AO ≤ 200	0.2	mg/L	Jan-23-14	Jan-24-14	
Uranium, total	0.0002	MAC = 0.02	0.0002	mg/L	Jan-23-14	Jan-24-14	
Vanadium, total	< 0.01	No Guideline	0.01	mg/L	Jan-23-14	Jan-24-14	

REPORTED TO PROJECT Beaver Falls Waterworks District
Drinking Water

WORK ORDER REPORTED 4010960
Jan-29-14

Analyte	Result / Recovery	Canadian DWQ Guideline	MRL / Limit	Units	Prepared	Analyzed	Notes
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Sample ID: Well #2 (4010960-01) [Water] Sampled: Jan-21-14 09:30, Continued

Total Recoverable Metals, Continued

Zinc, total	< 0.04	AO ≤ 5	0.04	mg/L	Jan-23-14	Jan-24-14	
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Microbiological Parameters

Coliforms, Total	< 1	MAC < 1	1	CFU/100mL	Jan-22-14	Jan-23-14	
E. coli	< 1	MAC < 1	1	CFU/100mL	Jan-22-14	Jan-23-14	