Fulford Water System

2019 Annual Report

CRD | Drinking Water

Introduction

This report provides a summary of the Fulford Water Service for 2019. It includes a description of the service, summary of the water supply, demand and production, drinking water quality, operations highlights, capital project updates and financial report.

Service Description

The Fulford Water Utility is a semi-rural residential community located on Salt Spring Island. It services the Fulford Elementary School and a small commercial component; including the BC Ferries Terminal. The service was created in 1968 as the Fulford Water Improvement District and became a CRD service in 2004. The Fulford Water Utility (Figure 1) is comprised of 102 parcels of land with 91 of those parcels connected. Within those 91 parcels, there are 95 single family equivalents (SFE) as the use on some parcels represent more than one dwelling.

The utility obtains its drinking water from Lake Weston, a small lake that lies within an uncontrolled multi-use watershed outside and northeast of the service area. The Capital Regional District (CRD) holds two licenses to divert a total of up to 291.6 cubic metres per day and store up to 49,339 cubic metres. Lake Weston is estimated to have a total volume of 1,090,000 cubic metres. Lake Weston is subject to seasonal water quality changes and is affected by periodic algae blooms.

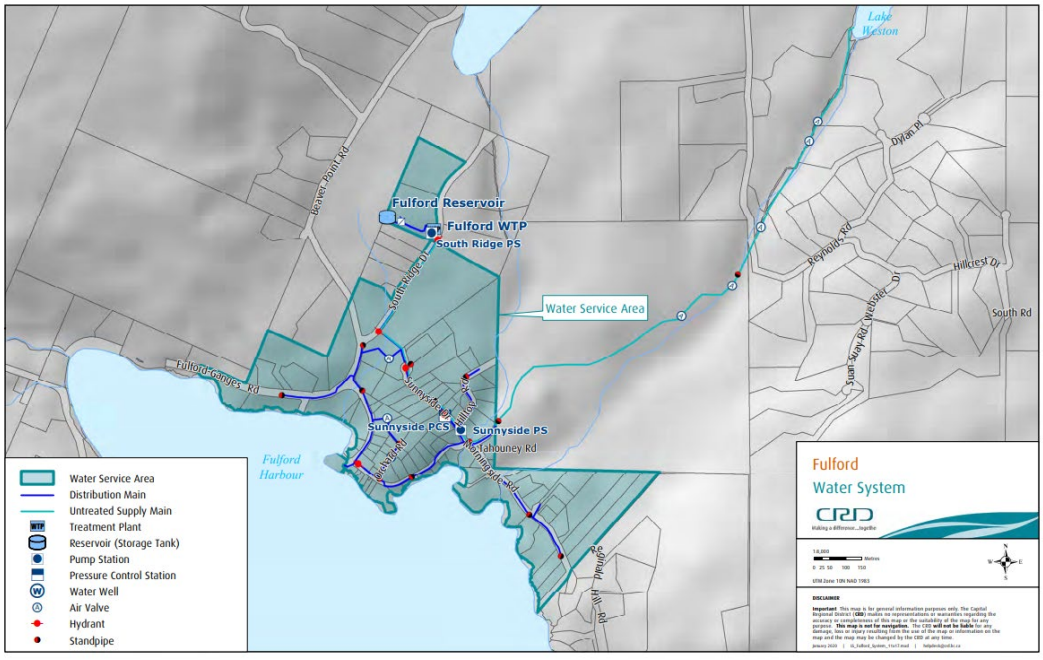

Figure 1: Fulford Water Service

The Fulford water system is primarily comprised of:

- a water treatment plant (WTP) that draws water from Lake Weston and treats it at a location on South Ridge Drive, adjacent to the Fulford Elementary School. The water is treated using a rapid mix system, flocculation, dissolved air floatation (DAF) and filters, ultraviolet disinfection, then chlorination prior to being pumped, via the distribution system to a reservoir. The water treatment plant (WTP) design flow rate is 4.5 litres/sec (60 Igpm);
- one raw water pump station on Sunnyside Drive near Hilltop Road (flow rate of two pumps running is 2.3 litres/sec (30 Igpm);
- approximately 4,500 m of water distribution pipe;
- 1 water reservoir – 360 m^3 (80,000 Ig);
- fire hydrants, standpipes, and gate valves;
- water service connections complete with water meters on commercial properties only;
- 1 pressure reducing valve station on Sunnyside Drive near Hilltop Road.

Water Supply

Annual water production since 2014 is shown in Figure 2. A total of 27,302 m^3 of water was extracted from Lake Weston in 2019. This is an 11% decrease from the previous year and a 6% decrease from the 5 year average.

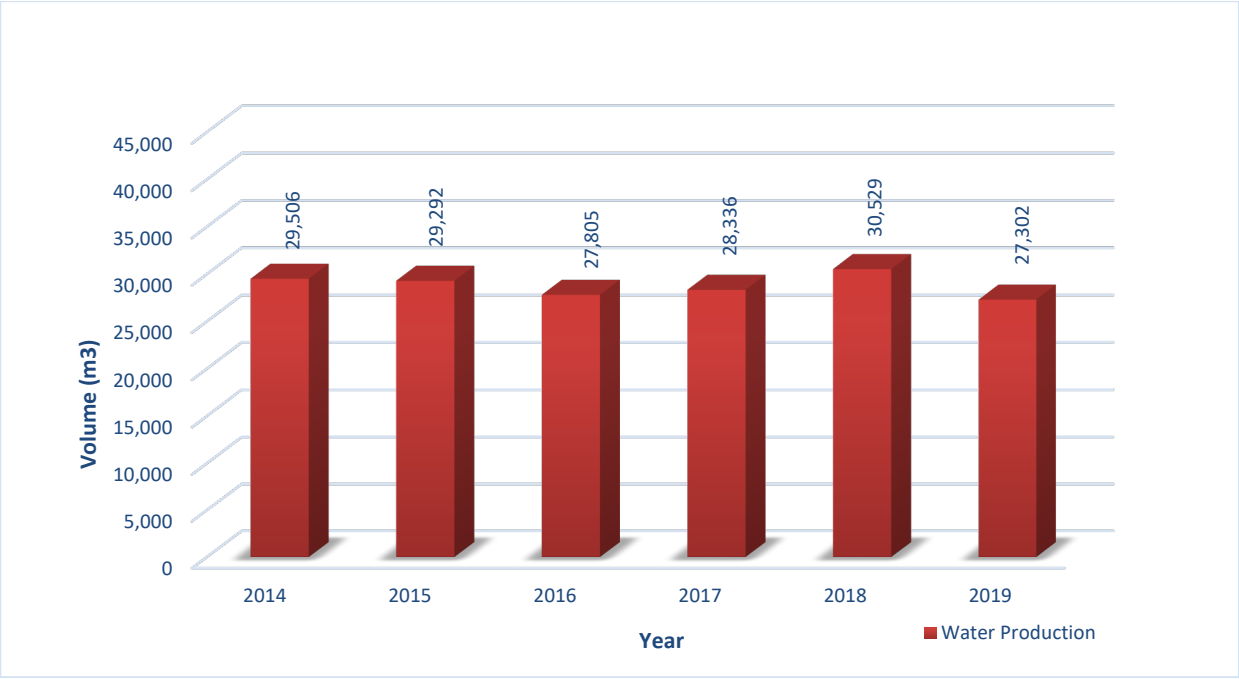

Figure 2: Fulford Water Service Annual Water Production and Demand

Water production by month for the past five years is shown in Figure 3. Water consumption, for most water systems, is greatest during the summer months. Water usage for Cedar Lane is fairly consistent throughout the year likely the result of conservative indoor and outdoor water use.

Water Usage

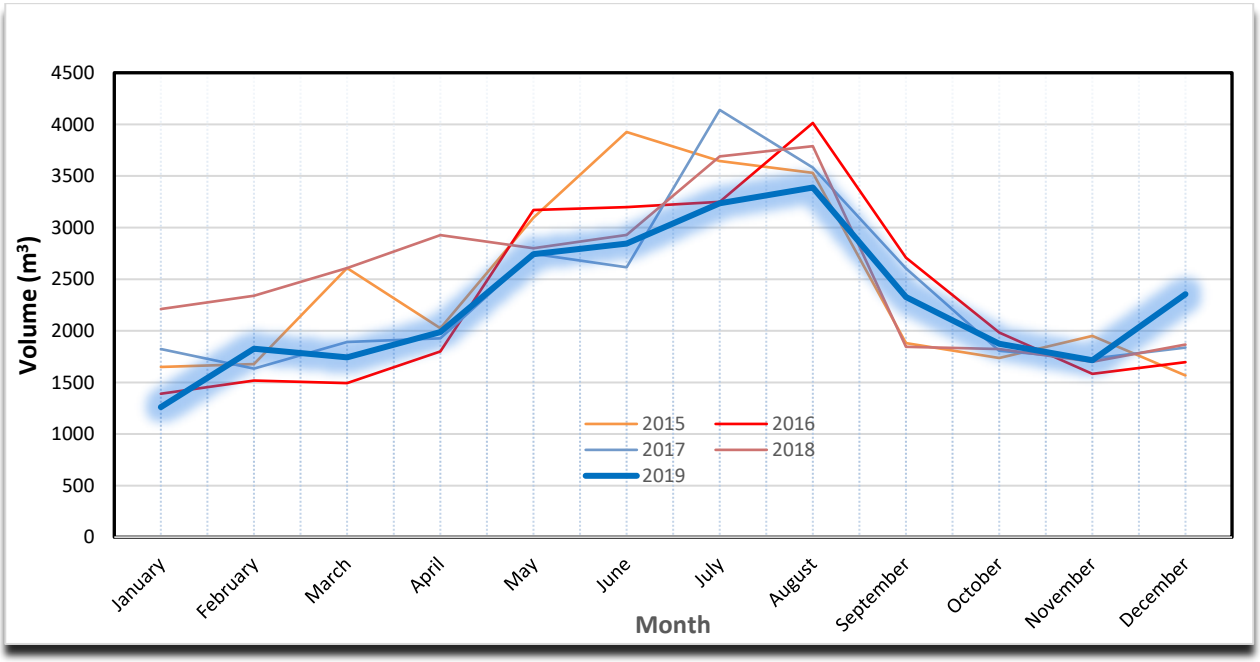

Figure 3: Fulford Water Service Monthly Water Production

The Fulford Water System does not have residential water meters and therefore the average per single family equivalent (SFE) is simply a calculated value. Utilizing 95 SFE and deducting an allowance of 20% for non-revenue water such as water system leaks, fire hydrant usage and water system maintenance and operational use (water main flushing, filter system backwashing), the average SFE is 230m3 per year for 2019 compared to 257m3 per year in 2018.

Drinking Water Quality

In general, the Fulford Water System provided good quality drinking water to its customers in 2019. A number of samples for a variety of water quality parameters were collected and analysed throughout the year and confirmed that the DAF and disinfection treatment stages were effective in treating raw water from Lake Weston.

Typical Fulford drinking water quality characteristics for 2019 are summarized as follows:

Raw Water:

- Lake Weston exhibited low concentrations of total coliform bacteria (TC) throughout most parts of the year with higher concentrations during the summer months. No *E. coli* bacteria were found in the raw water throughout the entire year.
- No parasitic cysts and oocysts (Giardia and Cryptosporidium) were detected in the raw source water from the lake.
- Raw water from the lake was soft (~35.0 mg/L $CaCO_3$).
- A total organic carbon (TOC) concentration range from 4.8 to 5.5 mg/L indicates a mesotrophic (semi-productive) lake status. This has been consistent with historic data.

- Four metal test results showed moderately low iron and very low manganese concentrations in the raw water. These metals in exceedance of the Guidelines for Canadian Drinking Water Quality (GCDWQ) limits can cause, if untreated, aesthetic issues such as water discolouration. The raw water colour was elevated consistently which may be a result of iron concentrations plus tannin and lignin, all natural components found in local lakes.
- The raw water turbidity (cloudiness) was consistently very low with the highest values just over 1 nephelometric turbidity units (NTU) during the winter months. The annual median turbidity was 0.52 NTU.

Treated Water:

- Treated water was bacteriologically safe to drink; no indicator bacteria were found in any of the 72 samples throughout the year.
- Treated water turbidity was well below the GCDWQ limit of 1 NTU;
- TOC (median 2.1 mg/L) in the treated water was slightly lower than in 2018. As TOC is a precursor for disinfection by-products, concentrations consistently much higher than 2 mg/L can lead to exceedances with these substances.
- Disinfection by-products such as trihalomethanes (THM) were well below the GCDWQ limit of 100 µg/L with an annual average of 63 µg/L. In the past, there have been occasional single-test results above the guideline limit. Haloacetic acids (HAA) were not tested in 2018 due to a history of concentrations consistently well below the GCDWQ limit of 80 µg/L.
- The water temperature was in exceedance of the aesthetic objective of 15ºC between June and September. There is no mitigation for this.
- The free chlorine residual concentrations in the distribution system were within the desired range (0.3 – 2.17 mg/L) and indicate an effective secondary disinfection process.

Water Quality data collected from this drinking water system can be reviewed on the CRD website:

https://www.crd.bc.ca/about/data/drinking-water-quality-reports/

Operational Highlights

The following is a summary of the major operational issues that were addressed during the 2019 operating period:

- Corrective maintenance performed on the Water Treatment Plant UV system.
- Emergency repairs of the Water Treatment Plant flash mixer
- Emergency repairs of the Water Treatment Plant chlorine analyser (sensor probe replaced).
- Water system leak repair (standpipe connection).
- Water system leak repair Fulford/Ganges Road.
- Water system leak investigation

Capital Project Updates

The following capital projects were planned for 2019:

1. Water Main Replacement - Morningside Road at Weston Creek ($60,600 allocated, $32,579 spent): The water main along Morningside Road is exposed and spans Weston Creek making it susceptible

to damage by people, vehicles, rocks or stream debris. Due to a wet year in 2019 and high stream water level, this project was deferred until the next dry season in 2020.

2. Asset Management Plan ($10,000 allocated, $9,090 spent): Asset management plan to recommend a prioritized list of infrastructure replacements which will serve as the basis for future capital spending. The asset management plan was continued in 2019, and will be completed in 2020.

3. Safe Work Procedures ($11,000 allocated, 0 spent). The work scope includes reviewing and developing safe work procedures for operational and maintenance tasks. The work was not started in 2019. However it has commenced in early 2020 and is expected to complete in 2020.

4. Decommission Reynolds Rd Strainer Facility ($15,000 allocated, 0 spent). This project was not started in 2019. However it has commenced in early 2020 and is expected to complete in 2020.

Financial Report

Please refer to the attached Statement of Operations. Revenue includes parcel taxes (Transfers from Government), fixed user fees (User Charges), consumption based revenue (Water Sales) not metered, interest on savings (Interest Earnings), a transfer from the maintenance reserve account, and miscellaneous revenue such as late payment charges (Other Revenue).

Expenses includes all costs of providing the service. General Government Services includes budget preparation, financial management, utility billing and risk management services. CRD Labor and Operating Costs includes CRD staff time as well as the costs of equipment, tools and vehicles. Debt servicing costs are interest and principal payments on long term debt. Other Expenses includes all other costs to administer and operate the water system, including insurance, supplies, water testing and electricity.

The difference between Revenue and Expenses is reported as Net Revenue (expenses). Any transfers to or from capital or reserve accounts for the service (Transfers to Own Funds) are deducted from this amount and it is then added to any surplus or deficit carry forward from the prior year, yielding an Accumulated Surplus (or deficit) that is carried forward to the following year.

2019 User Fee charges were $1,255.89 per Single Family Equivalent (SFE) and 2019 Parcel Tax charges were $771.73 per Taxable Parcel.

Water System Problems - Who to Call:

To report any event or to leave a message regarding the Cedar Lane water system, call either:

CRD water system emergency call centre:	**1-855-822-4426 (toll free)**
CRD water system emergency call centre:	**1-250-474-9630 (toll)**
CRD water system general enquiries (toll free):	**1-800-663-4425**

When phoning with respect to an emergency, please specify to the operator, the service area in which the emergency has occurred.

Submitted by:	Matt McCrank, M.Sc., P.Eng., Senior Manager, Infrastructure Operations Glenn Harris, Ph.D., R.P.Bio., Senior Manager, Environmental Protection Rianna Lachance, BCom, CPA, CA, Senior Manager, Financial Services Karla Campbell, Senior Manager, Salt Spring Electoral Area
Concurrence	Ted Robbins, BSc, C.Tech, General Manager, Integrated Water Services

attachment

CAPITAL REGIONAL DISTRICT

FULFORD WATER
Statement of Operations (Unaudited)
For the Year Ended December 31, 2019

	2019	2018
Revenue		
Transfers from government	74,790	74,793
User Charges	119,835	119,309
Sale - Water	17,053	18,288
Other revenue from own sources:		
Interest earnings	363	167
Other revenue	474	4,376
Transfer from Operating Reserve	8,000	-
Total Revenue	220,516	216,932
Expenses		
General government services	8,471	9,020
Contract for Services	68,369	59,365
CRD Labour and Operating costs	19,679	39,613
Debt Servicing Costs	55,473	55,451
Other expenses	37,273	40,566
Total Expenses	189,264	204,015
Net revenue (expenses)	31,252	12,917
Transfers to own funds:		
Capital Reserve Fund	24,112	5,917
Operating Reserve Fund	7,140	7,000
Annual surplus (deficit)	-	-
Accumulated surplus, beginning of year	-	-
Accumulated surplus, end of year	$ -	-

CAPITAL REGIONAL DISTRICT

FULFORD WATER
Statement of Reserve Balances (Unaudited)
For the Year Ended December 31, 2019

	Capital Reserve	
	2019	**2018**
Beginning Balance	99,187	70,865
Transfer from Operating Budget	24,112	5,917
Transfers from completed capital projects	1,415	41,782
Interest Income	2,517	1,623
Transfer to Capital Project	(38,100)	(21,000)
Ending Balance	89,131	99,187

	Operating Reserve	
	2019	**2018**
Beginning Balance	17,212	9,877
Transfer from Operating Budget	7,140	7,000
Transfer to Operating Budget	(8,000)	-
Interest Income	604	336
Ending Balance	16,956	17,212