



Making a difference...together

BEDDIS WATER SERVICE 2018 ANNUAL REPORT

April 15 2019

Introduction

This report provides a summary of the Beddis Water Service for 2018. 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 Beddis Water Utility is a rural residential community located on Salt Spring Island. The service was created in 1969 as the Beddis Waterworks District and became a CRD service in 2004. The Beddis Water Utility (Figure 1) is comprised of 137 parcels of land of which 127 are presently connected to the system.

The utility obtains its drinking water from Cusheon Lake, a relatively small lake that lies within an uncontrolled multi-use watershed. The Capital Regional District (CRD) holds two licenses to divert a total of up to 102,850 m³ per year. Cusheon Lake is subject to seasonal water quality changes and is affected by periodic algae blooms.

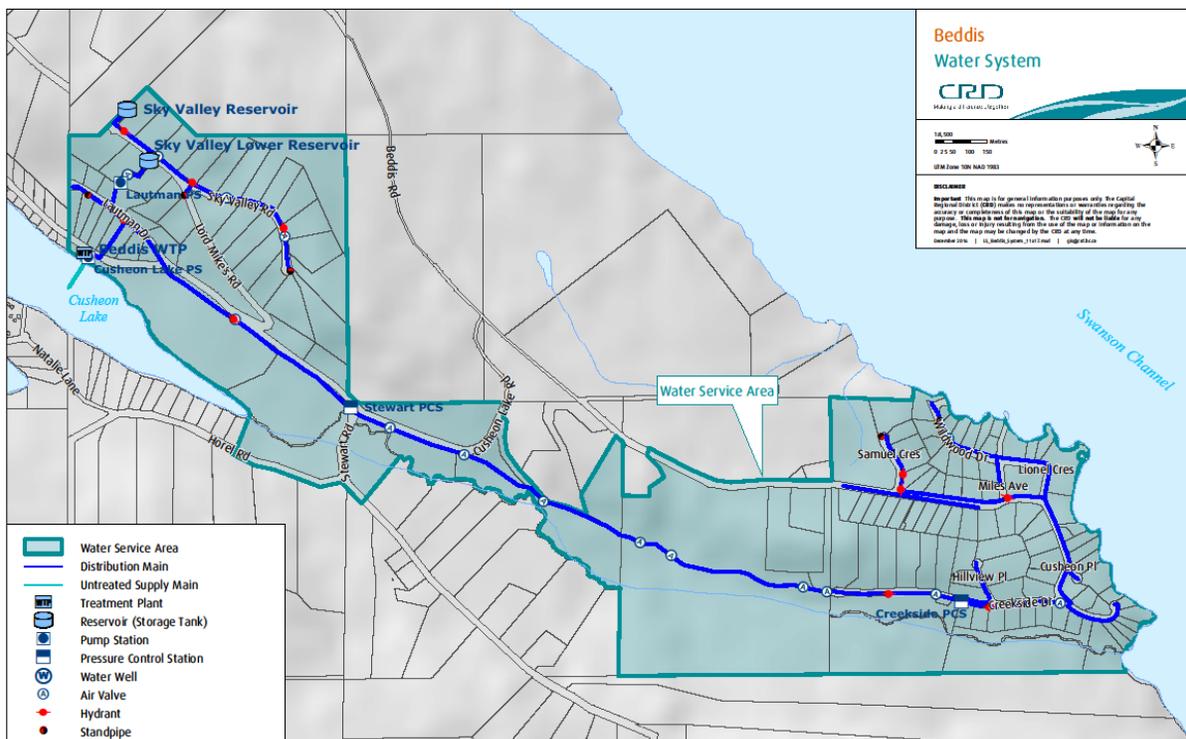


Figure 1: Beddis Water Service

The Beddis water system is primarily comprised of:

- a water treatment plant (WTP) that draws water from Cusheon Lake and treats it at a location on Cusheon Road approximately 250m west of Lautman Drive. The water is treated using a rapid mix system, flocculation, dissolved air floatation (DAF) and filters, then chlorination prior to being pumped, via the distribution system to reservoirs. The water treatment plant (WTP) design flow is rate is 16.35 m³/hour (60 l/gpm);
- approximately 7,200 m of water distribution pipe;
- 1 pump station/re-chlorination station;
- 2 water reservoirs – one 45 m³ (10,000 lgal) and one 76 m³ (16,700 lgal);
- fire hydrants, standpipes, and gate valves;
- water service connections complete with water meters;
- 2 pressure reducing valve stations – one at Stewart Road and one on Creekside Drive.

Water Production and Demand

Referring to Figure 2, 25,362 cubic meters (m³) of water was extracted (water production) from Cusheon Lake in 2018; a 4% increase from the previous year and is 2% less than the five year average. Water demand (customer water billing) for the service totaled 18,681 m³ of water; a 3% decrease from the previous year and an 8% decrease from the five year average.

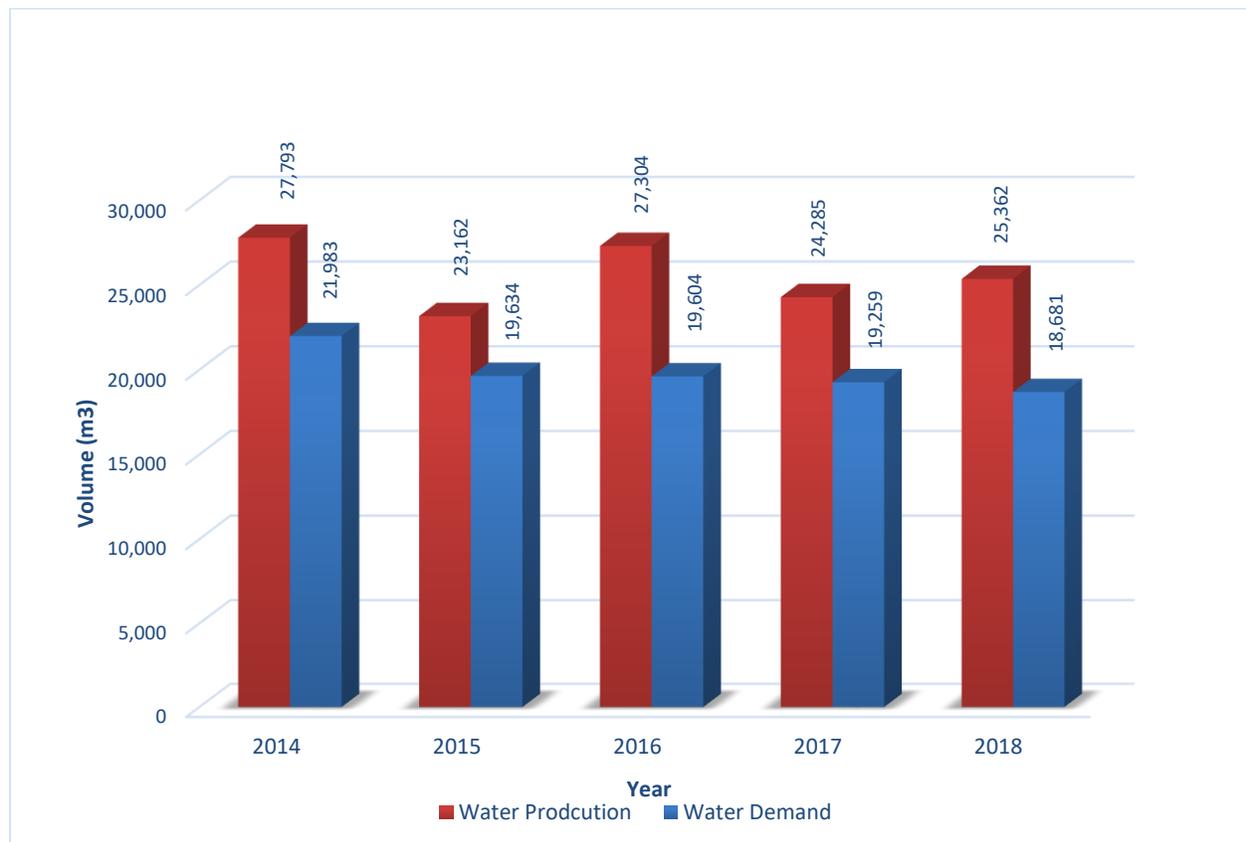


Figure 2: Beddis Water Service Annual Water Production and Demand

Water production by month for the past five years is shown in Figure 3.

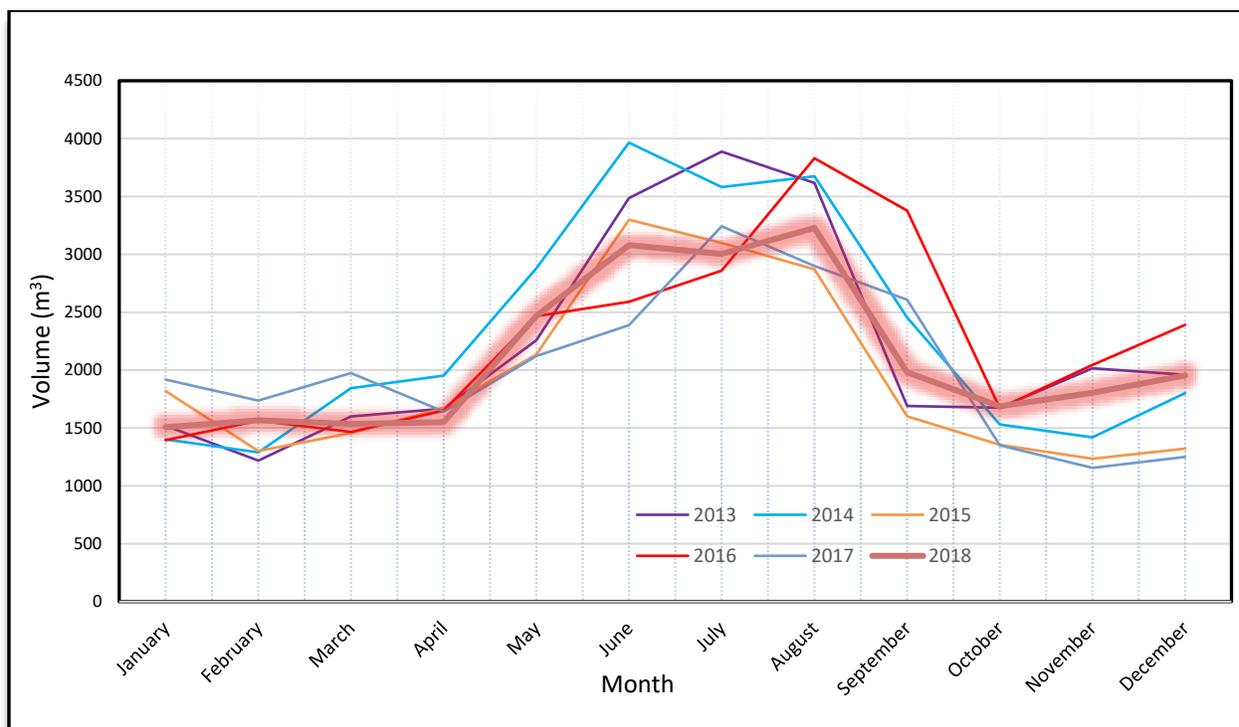


Figure 3: Beddis Water Service Monthly Water Production

The Beddis Water System is fully metered, and water meters are read quarterly. Water meter information enables water production and consumption to be compared in order to estimate leakage losses in the distribution system. The difference between water produced and water demand (total metered consumption) is called non-revenue water and includes distribution leaks, meter error, and unmetered uses such as fire hydrant usage, distribution system maintenance, and process water for the treatment plant. Non-revenue water is approximately 26%. Water loss is estimated to be approximately 21% which is considered high for small water system such as Beddis. However, water loss for the service can be attributed to a higher number of water main breaks in 2018.

Water Quality

In 2018, the analytical results of water samples collected from the Beddis Water System indicated that the drinking water was of good quality. The source water from Cusheon Lake was of good quality throughout the year with low concentrations of algae, metals and generally low turbidity. Indicator bacteria concentrations (*E.coli* and total coliforms) in the raw water were very low between October and April and higher during the warm weather season. The DAF treatment system functioned very well under these source water conditions. The annual average of the disinfection by-product concentrations was well below the limit in the Guidelines for Canadian

Drinking Water Quality (GCDWQ). Other than water temperature, there have been no exceedances of any monitored water quality parameter in the system. The entire system was on a Boil Water Advisory from December 23, 2018 to January 2, 2019 due to system depressurization caused by a severe wind storm on December 20.

The data below provides a summary of the water quality characteristics in 2018:

Raw Water:

- The raw water exhibited typically low concentrations of total coliform and *E. coli* bacteria throughout the year with significantly higher concentrations of total coliform and *E. coli* bacteria during the summer months.
- One sample exhibited a low concentration of parasitic oocysts (*Cryptosporidium*). No *Giardia* cysts were detected.
- The raw water samples indicated fluctuating and elevated concentrations of iron and manganese. Episodes of elevated iron and manganese concentrations can lead to discolouration of the drinking water (only an aesthetic problem).
- The raw water was soft (median hardness 35 mg/L CaCO₃).
- The raw water turbidity (cloudiness) was typically below 1 NTU with some higher peaks in the fall and winter. Highest recorded raw turbidity was 3.9 NTU on February 14.
- The mean annual total organic carbon, an indicator of organic compounds and material in the lake water, was a moderate 4.79 mg/L, slightly higher than 2017.

Treated Water:

- The treated water was bacteriologically safe to drink. No sample tested positive for total coliform or *E. coli* bacteria.
- The treated water turbidity was consistently well below the turbidity limit of 1.0 NTU with a range from 0.11 NTU to 0.48 NTU.
- The annual average levels of disinfection by-products (TTHM = 74 µg/L) across the distribution system were below the 100 µg/L limit in the GCDWQ. One sample was recorded right at the 100 µg/L limit. Haloacetic acid concentrations (HAA) were not tested in 2018 due to the data history of very low concentrations in this system.
- The treated water total organic carbon (TOC) was lower than during the previous year, with a median value of 2.18 mg/L. There is currently no guideline in the GCDWQ for TOC levels, however the USEPA suggests a treated water TOC concentration of < 2 mg/L as confirmation of effective treatment and disinfection by-product control.
- All treated water sampled were low in iron and manganese concentration and well below the aesthetic limits as per GCDWQ. Cusheon Lake is known for the potential of seasonally high iron and manganese concentrations. Such exceedances can lead to water discolouration.

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 2018 operating period:

- Replacement of a failed water level control system at the Sky Valley Reservoir
- Watermain repair at 107 Hillview Road.
- Two watermain repairs on Sky Valley Road
- Corrective maintenance (replacement) performed on the water treatment plant booster pump #2.
- Procurement of a critical spare Sky Valley Booster Pump.
- Emergency calls related to low water pressure at 1315 Beddis Road
- Emergency response to December 20th windstorm event.

CAPITAL IMPROVEMENTS

The following two capital projects were planned for 2018:

1. Intake Assessment and Design (\$20,000 allocated, \$0 spent). The intake pumps have been drawing in air/gas, resulting in reduced flow, and even air-locking of the pump(s). Design engineering services were procured, to provide a detailed analysis, technical memo, and (if necessary) construction/procurement tender package, to facilitate construction/installation of a recommended solution. This work was started in 2018, but is currently on hold.
2. Asset Management Plan (\$17,130 allocated, \$11,438 spent). Asset Management Plan will recommend a prioritized list of infrastructure replacements, which will serve as the basis for future capital spending plans. Additional funds may be required for staff to complete the plan. The asset management plan was started in 2018, and is anticipated to be completed in 2019.

2018 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*), 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 Labour 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.

2018 User Fee charges were \$595.04 per Single Family Equivalent (SFE) and 2018 Parcel Tax charges were \$554.98 per Taxable Parcel.

The balances in the Beddis Water service capital funds and reserve accounts at December 31, 2018 were:

Description	Balance at end of 2018
Operating Reserve Fund	\$19,652
Capital Reserve Fund (1069 101894)	\$75,255
Funds remaining to spend on projects in progress (WLA3193)	\$5,806
Funds remaining to spend on projects in progress (WLA3825)	\$5,537

Water System Problems - Who to Call:

To report any event or to leave a message regarding the Beddis 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)
North Salt Spring Waterworks District (contract operator): 250 537-9902
CRD local operator (Ganges Wastewater Treatment Plant): 250-537-4314
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.

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CAPITAL REGIONAL DISTRICT

BEDDIS WATER Statement of Operations (Unaudited) For the Year Ended December 31, 2018

	2018	2017
Revenue		
Transfers from government	72,240	71,590
User Charges	75,570	71,262
Sale - Water	84,199	70,491
Other revenue from own sources:		
Interest earnings	102	107
Other revenue	427	506
Transfer from Operating Reserve Account		
Total revenue	232,538	213,956
Expenses		
General government services	8,520	7,820
Contract for Services	64,835	65,528
CRD Labour and Operating costs	33,996	14,912
Debt Servicing Costs	66,495	66,539
Other expenses	46,558	43,351
Total expenses	220,403	198,150
Net revenue (expenses)	12,135	15,806
Transfers from/to own funds:		
Capital Reserve Fund	-	6,550
Operating Reserve Fund	12,135	9,256
Annual surplus (deficit)	-	-
Accumulated surplus, beginning of year	-	-
Accumulated surplus, end of year	\$ -	-

CAPITAL REGIONAL DISTRICT

BEDDIS WATER Statement of Reserve Balances (Unaudited) For the Year Ended December 31, 2018

	Capital Reserve	
	2018	2017
Beginning Balance	73,505	36,825
Transfer from Operating Budget	-	470
Transfers from completed capital projects	-	35,881
Interest Income	1,749	330
Transfer to Capital Project	-	-
Ending Balance	<u>75,255</u>	<u>73,505</u>

	Operating Reserve	
	2018	2017
Beginning Balance	7,307	18,418
Transfer from/(to) Operating Budget	12,135	(11,558)
Interest Income	210	446
Ending Balance	<u>19,652</u>	<u>7,307</u>