



Making a difference...together

**BEDDIS WATER SERVICE COMMITTEE
OPERATIONS REPORT
26 MAY 2009**

The following is provided for information to residents and users of the Beddis water service.

Capital Project

The Beddis Water Service received a grant under the Canada/British Columbia Infrastructure Program in 2005 for the purpose of constructing a new water treatment plant to meet current drinking water standards, and completing needed upgrades to the distribution system including a new storage reservoir to replace the aging and seismically unstable Sky Valley Reservoir. The original project budget was \$882,500. The grant funded up to two thirds of eligible project costs, to a maximum grant amount of \$506,894. The balance was provided through a combination of savings of the former improvement district, and the borrowing of \$325,500 under the Municipal Finance Authority (MFA) over a 15 year term.

The combination of higher than planned construction cost inflation rates and slower than planned construction progress has caused actual costs to exceed the original budget, including contingency. In 2008 the committee approved a total budget increase of \$205,000 funded from reserves, resulting in a revised project budget of \$1,087,600.

The capital project is nearing completion. Construction is substantially complete, and the new water treatment plant is nearly ready for commissioning. The following work has been completed in the past year:

1. Conversion of original treatment plant to a pumphouse and chlorine room
2. Mechanical and electrical connections in the new treatment building
3. Location of process tanks adjacent to the new treatment building, and interconnections between tanks and both buildings
4. General process control programming (site-specific coding and debugging will be completed during commissioning).

Costs of mechanical construction work in the past three months have significantly exceeded those anticipated in October 2008, when staff last updated project cost estimates for the committee, resulting in a current balance of capital project expenses of \$1,119,491. It is anticipated that additional expenditure of \$85,000 is required in order to complete mechanical and electrical connections, commission the equipment and process control systems and bring the new plant into full operation, resulting in a shortfall in available funding of \$117,000 to complete the project. Staff will arrange a meeting with the committee as soon as possible in order to approve a funding strategy to complete commissioning.

Future Capital Works

The following improvements to the water distribution system are recommended in order for the system to operate reliably and cost-effectively in the long term:

1. Decommission and remove the elevated Sky Valley tank, which poses a significant risk of structural failure during a seismic event. Upon removal of the original tank, a small pressure booster station will be required at the new Sky Valley water tank to serve the upper properties along Sky Valley Road. The estimated cost of this work is roughly \$110,000.
2. To optimize water flow and improve water quality in the distribution system, the lower water tank on Lautman Drive should be relocated to the new Sky Valley site. This would also eliminate a small water

pump station at the Lautman tank and would address an access issue operators have with the tank and pump station. To move the tank and take the pump station out of service, a new main is needed from the lake pump station to Lautman and then Lautman to the new tank. Higher head pumps would be installed at the lake at that time, and a new pressure reducing valve station will be needed at Lautman to ensure low lying properties do not receive too high a pressure from the new tank elevation. The estimated cost of this work is roughly \$150,000.

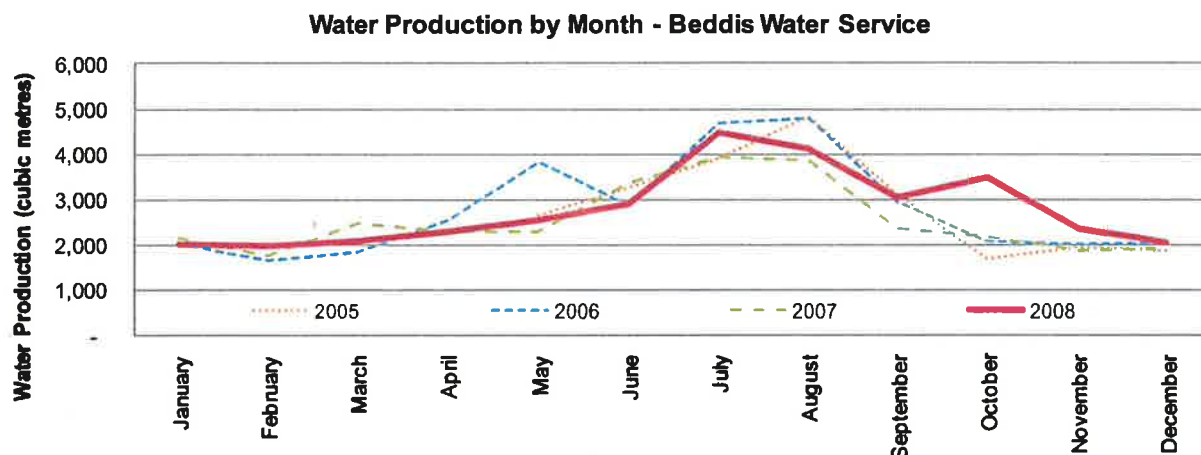
3. The new treatment system should be fitted with a transfer switch to enable quick deployment of emergency backup power during a prolonged outage. The estimated cost of this work is roughly \$10,000.

CRD staff will work with the committee in the 2010 budget process to develop a timeline and funding strategy to complete this work in the next few years.

Water Supply and Demand

Monthly water production is shown in Figure 1. A total of 33,227 cubic metres (m³) of water was abstracted from Cusheon Lake in 2008, nearly ten percent more than in 2007. Although production was similar for most of each year, summer use in 2008 was greater (indicating higher irrigation usage or seasonal occupancy), and October production was unusually high in 2008. Winter water production is consistently about 2,000 m³/month, and the roughly doubling of production in July and August suggests significant irrigation usage in the Beddis area.

Figure 1. Water Production by Month, 2005-2008



The Beddis system is fully metered, and meters are read bimonthly. Meter data enables water production and consumption to be compared in order to estimate leakage losses in the distribution system. The difference between production and total metered consumption is called non-revenue water. Non-revenue water is not strictly related to distribution leaks, but also includes meter error (older meters tend to under-read usage as they wear) and unmetered uses such as fire hydrant usage and distribution system maintenance. Non-revenue water in 2008 was 8,388 m³, or 25% of overall production. While this is significantly higher than what is considered to be best practice for distribution system management, it is typical of the larger distribution systems in the Gulf Islands. Non-revenue water by billing period is shown in Figure 2.

The average single-family residence in the Beddis area used 199 m³ in 2008, which is similar to other CRD water service areas on Salt Spring Island with surface water sources. However, a single customer in the Beddis area accounts for a significant proportion of overall use. When this customer is excluded, the average is reduced to 181 m³, which is low compared with other surface water systems. For comparison, two services on Salt Spring with severely limited groundwater sources average 100-120 m³/year per customer. A distribution of water use per customer for the Beddis area is shown in Figure 3.

Figure 2. Non-Revenue Water, 2007-2008

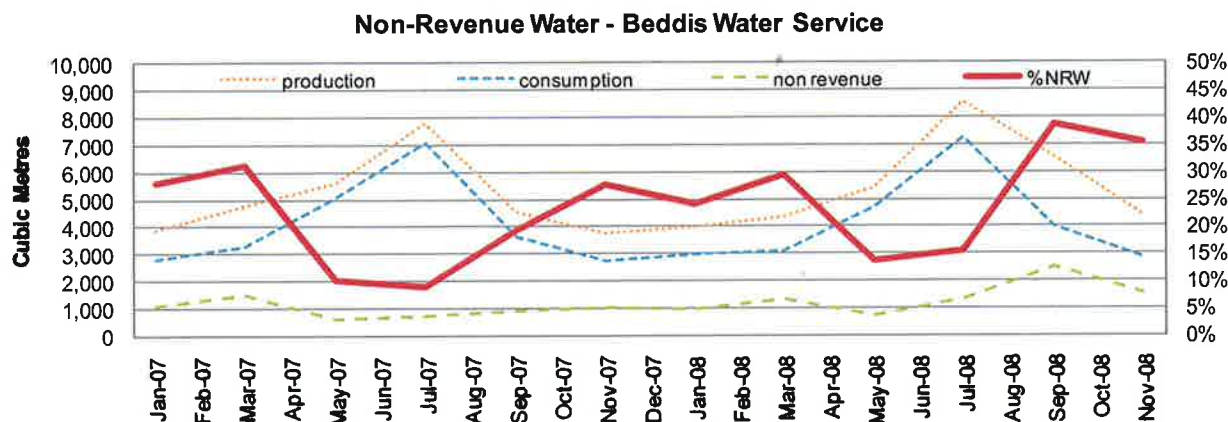
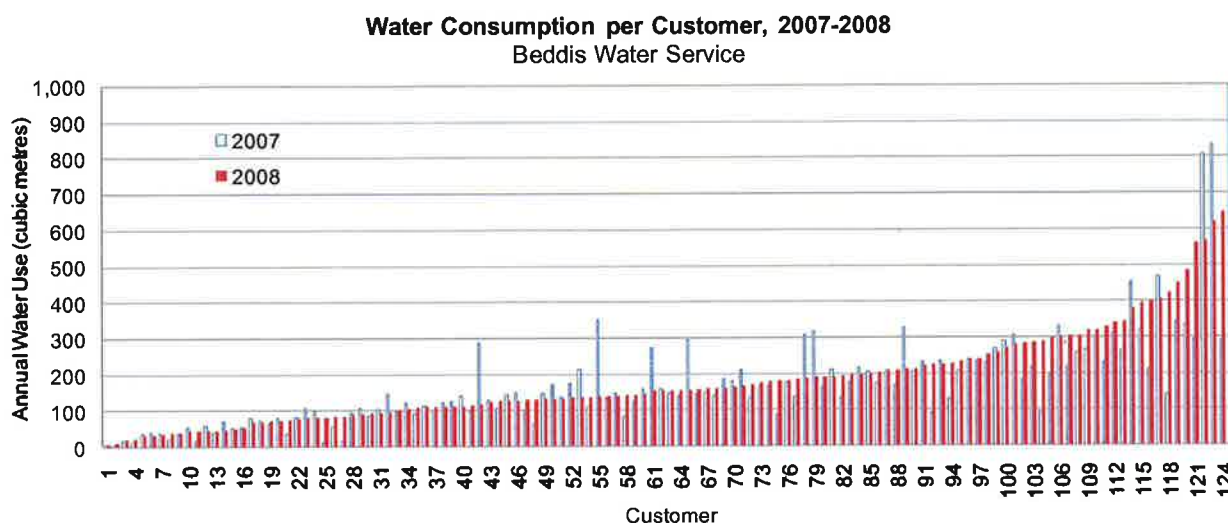


Figure 3. Water Consumption by Customer, 2007-2008



Water Quality

The CRD carries out regular testing of the water supply to ensure water quality testing meets the guidelines set out in the *Canadian Drinking Water Guidelines (CDWG)*, and the requirements of the *British Columbia Drinking Water Protection Act and Regulation* as administered by the Vancouver Island Health Authority (VIHA). Water delivered to the Beddis area typically meets the CDWG and VIHA standards. However, turbidity in summer associated with algae growth in Cusheon Lake often exceeds 1.0 NTU.

The Beddis water treatment plant was designed in anticipation of more stringent standards similar to those in other jurisdictions. In 2008, VIHA introduced a new treatment standard for surface water sources (i.e. lakes, rivers or streams). The new standard, called the 4.3.2.1 Policy, requires that a drinking water treatment process for a surface water source must:

- Achieve a four-log (99.99%) reduction in viruses from source water
- Achieve a three-log (99.9%) reduction in Giardia cysts and Cryptosporidium oocysts
- Include a minimum of two stages of treatment, typically filtration and disinfection
- Achieve a maximum turbidity of 1.0 NTU in treated water (turbidity is a measure of suspended

particles in the water, measured by transmission of light through a sample of water)

The new Beddis water treatment plant will meet the 4.3.2.1 Policy using a treatment process based on dissolved air flotation (DAF), which is very well suited to the high algae content typical of the lakes in the Gulf Islands. The DAF process is followed by filtration and two-stage UV and chlorine disinfection, with a provision to add potassium permanganate as needed to neutralize toxins that can be produced by some algae blooms.

Financial Report

Attached is a copy of the *Statement of Financial Activities* as prepared by the CRD Finance and Corporate Services for the year 2008. The statement provides an overview of the revenues and expenditures for last year. The revenue of \$141,844 includes \$50,980 parcel tax, \$89,854 user fees, and small amounts for interest on savings and miscellaneous revenue such as late payment charges.

Expenditures include all costs to administer the service. General government services are charges levied by CRD Corporate Services for the financial processing of the budget and collection of fees and charges. Other includes all expenses needed for the operation of the service including all CRD labour costs for day to day operations, CRD service personnel hours performing maintenance and repairs, chemicals, electricity, water testing costs, maintenance parts allowances for electrical and mechanical equipment, rental or equipment as necessary and allowances for technical and staff support to the committee, and for the payment of debt. The total expenditures for 2008 were \$107,983, of which \$41,991 is the annual cost of the 15-year borrowing required for the capital project and the remainder is the cost of operation and administration of the service. Operating expenses were much lower than budgeted, since the budget included an unused allocation for operating the new treatment plant that did not enter service in 2008.

The difference between revenue and expenditures in 2008 amounted to a net revenue of \$33,861 at year-end. This amount added to the surplus of \$9,678 carried forward from 2007. A transfer of \$39,356 to the reserve fund left a surplus of \$4,183 carried forward to 2009. The current balance in the reserve fund is \$4,871.

It is likely that parcel tax or user fee levels for the Beddis Water Service will need to increase in 2010 in order to fund completion of the capital project and other capital improvements. Also, until the new water plant has operated for at least a full year, actual ongoing costs for operation will be uncertain. Additional revenue may be needed if operating costs prove to be greater than anticipated in the 2009 budget.

CS:ls

Attachments: 1

CAPITAL REGIONAL DISTRICT

WATER REVENUE FUND STATEMENT OF FINANCIAL ACTIVITIES (UNAUDITED) For the year ended December 31, 2008

	Beddis Water Supply
REVENUES	
Transfers from government	\$ 50,980
Sale of services	89,854
Other revenue from own sources:	
Interest earnings	492
Other revenue	487
Grants in lieu of taxes	31
	<u>141,844</u>
EXPENDITURES	
General government services	3,950
Grants in aid	-
Other	103,744
Salaries and wages	-
Other fiscal services	289
Recovery	-
	<u>107,983</u>
NET REVENUES (EXPENDITURES)	
	33,861
Transfers to own funds:	
Water Capital Fund	-
Reserve Funds	39,356
Equipment Replacement Fund	-
Transfers from own funds:	
Reserve Funds	-
	<u>(5,495)</u>
CHANGE IN FUND BALANCE	(5,495)
Opening balance	9,678
CLOSING BALANCE	<u>\$ 4,183</u>