Making a difference...together

BEDDIS WATER SERVICE
ANNUAL REPORT ON OPERATIONS
16 JULY 2010

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

Operations

With few exceptions, the Beddis water system has operated reliably and within budget in the past year. Watermains have occasionally required flushing in order to control growth of non-coliform or background bacteria. While these bacteria are not harmful to human health, when present in large numbers they have the potential to obscure other, more harmful bacteria in samples and cause errors in detection at the lab. For this reason, a maximum non coliform bacteria count of 100 colony forming units (CFU) per 100 ml is a guideline the Capital Regional District (CRD) strives to maintain. A residual concentration of chlorine is maintained in the system for this purpose.

On four occasions in the past year, one of the raw water intake pumps that supply the Beddis system has stopped operating for a period of several hours before being discovered. The interruptions in operation are caused when a thermal overload switch (similar to a circuit breaker) trips, and are attributed to short power outages or "brownouts" that are common in the Gulf Islands. Since there is currently very little automation and no remote monitoring in the Beddis system, when an intake pump stops operating other systems such as booster pumps and chlorine dosing pumps continue to operate without a supply of water, potentially damaging equipment and causing elevated chlorine concentrations in the Lautman tank. This condition has necessitated the replacement of overheated mechanical seals and PVC inlet and outlet piping on a booster pump, and flushing of the Lautman tank and portions of the distribution system. Due to the storage capacity of the Lautman tank, these problems have not resulted in significant service interruptions or water quality problems at customer connections. Completion of the new water treatment plant will include improved monitoring and controls to prevent recurrence of this problem.

A watermain on Hillview Place failed on June 11, and was temporarily repaired with no impact on service to area residents. At the time of writing of this report, operations staff were investigating options for a permanent repair. The failure was likely caused by intrusion of the roots of several mature cedar trees near the main.

Routine maintenance in the Beddis system in the past year has included distribution valve exercising, replacement of lake intake check valves, and cleaning and interior inspection of the two operating tanks. Both tanks were observed to be in good interior condition, although the Sky Valley tank could not be closely inspected, as personnel are not able to safely enter the tank.

Some of the standpipes in the distribution system are subject to freezing in winter. It is planned to replace these standpipes with self-draining units in 2010.

Capital Project

Progress on the Beddis treatment and distribution upgrade project was suspended in May 2009 due to lack of funding to complete the work, and has not progressed since that time. Staff are working with the Beddis Water Service Commission (BWSC) on a strategy to complete the full scope of the original upgrade project (bring the new water treatment plant and tank into operation and remove the old Sky Valley tank), and to complete a strategic asset management plan (SAMP). Additional borrowing will be required in order to complete this work, in an amount yet to be determined, which will impact the annual cost of water service to

Beddis owners and residents.

The SAMP would enable the BWSC to make informed decisions about the priorities for future capital works such as watermain replacement, and to budget appropriately for operation, maintenance and replacement of assets without large variations in the annual cost of service from year to year.

As of 31 December 2009 a total of $1,179,454 had been expended on the project (Figure 1). At the request of Salt Spring Island Electoral Area Director Garth Hendren, the CRD Board assigned Community Works Fund (Gas Tax) grant grants to the Beddis capital project of $80,000 in 2009 and $62,000 in 2010. Capital expenditures in 2009 of $265,502 were recovered from the balance of $173,649 carried forward from 2008, the 2009 Gas Tax grant, interest earnings of $5,772 and the $6,081 transfer from the operating account, leaving a balance of zero at 31 December 2009. The available funding for 2010 consists of the $62,000 Gas Tax grant. The balance of funding required to complete the project will need to be raised through new borrowing or transfers from the operating budget.

Beddis Upgrade Project Expense to 31 Dec 2009 - $1,179,454

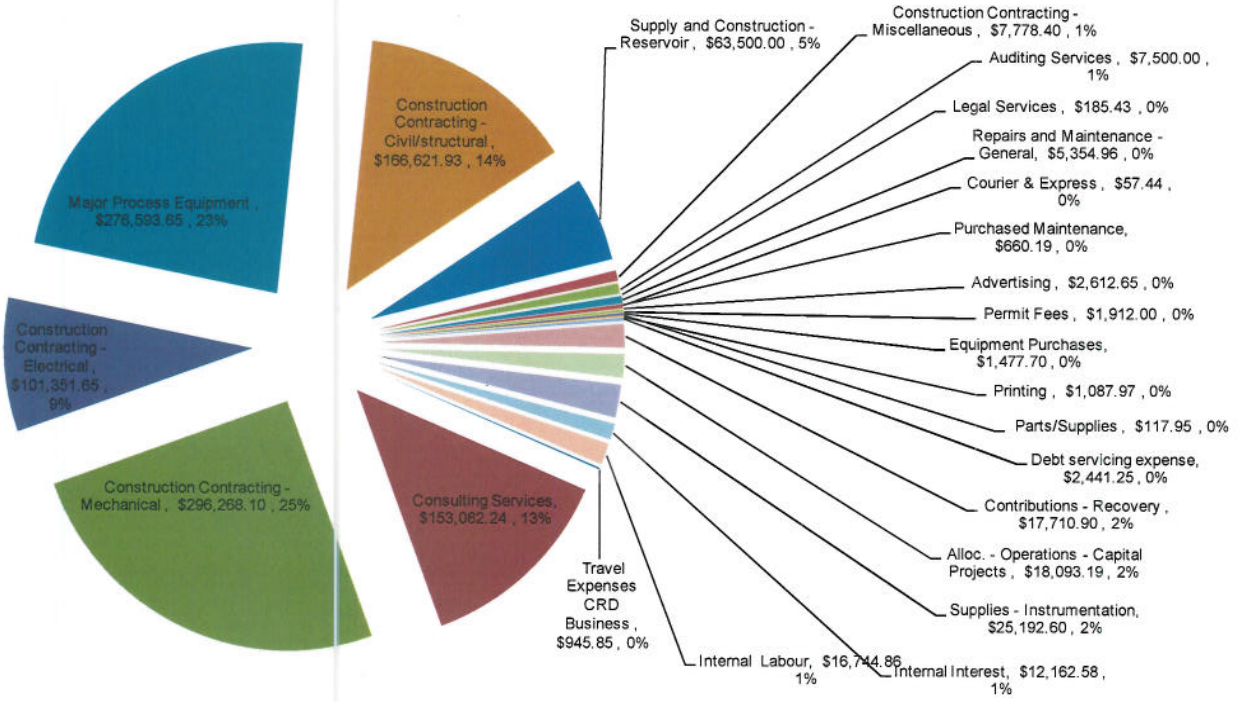

Figure 1. Capital Project Expense to 31 December 2009

Water Supply and Demand

Annual water production since 2006 is shown in Figure 1. A total of 28,864 cubic metres (m^3) of water was abstracted from Cusheon Lake in 2009, nearly 13% less than in 2008, and the lowest annual total since the CRD began operating the system in 2005. Figure 2 shows monthly water production since May 2005. Winter water production is consistently about 2,000 m^3/month, and the roughly doubling of production in July and August suggests significant irrigation usage in the Beddis area. The variation in annual production is associated with summer seasonal demand by the customers with consumption in the highest quartile (annual consumption greater than 250 m^3), and is likely affected by weather variations from year to year on irrigation usage.

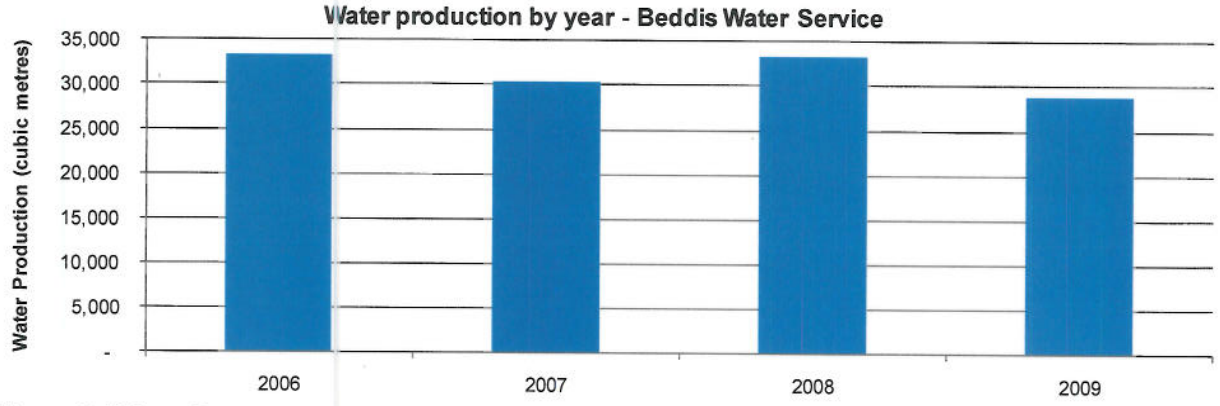

Figure 2. Water Production Year

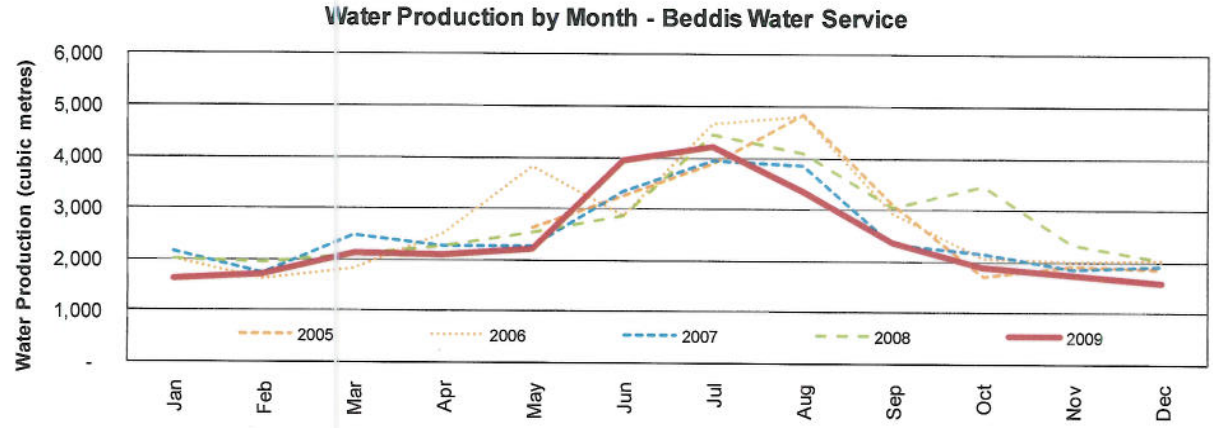

Figure 3. Water Production by Month, 2005-2009

The Beddis system is fully metered, and meters were read bimonthly prior to 2010. 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 2009 was 5,098 m^3, or 18% of overall production. This is higher than what is considered to be best practice for distribution system management, reflecting the age and condition of the distribution mains and service connections in the Beddis system. Non-revenue water by billing period is shown in Figure 3, showing the significant variability in non-revenue water over time. The variation occurs as distribution leaks develop and are identified and repaired. A single leak in the Beddis system, while difficult to detect, may have a large impact on non-revenue water.

The average single-family residence in the Beddis area used 190 m^3 in 2009, 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 172 m^3. For comparison, two services on Salt Spring Island with severely limited groundwater sources average 100-120 m^3/year per customer. Water use per customer for the Beddis area is shown in Figure 4.

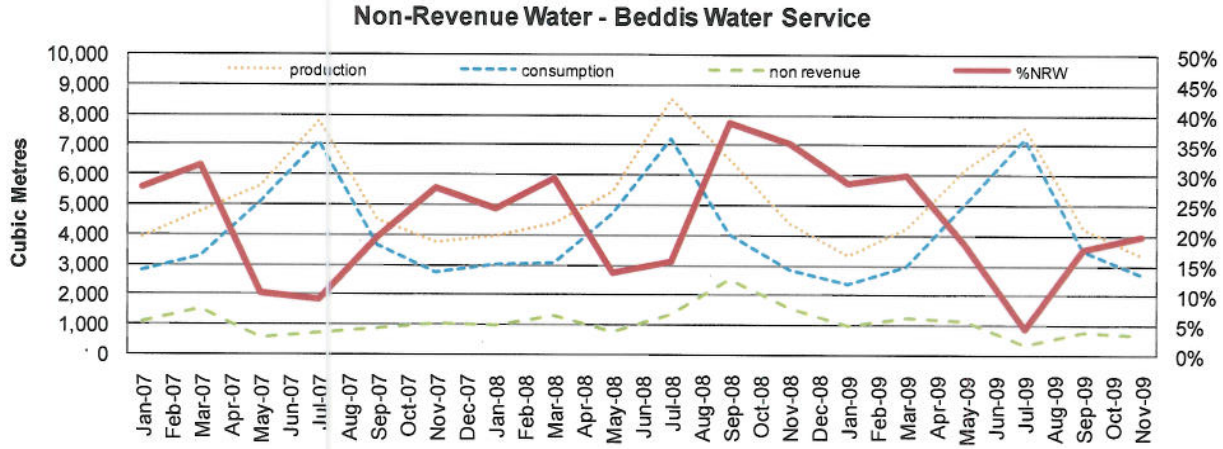

Figure 4. Non-Revenue Water

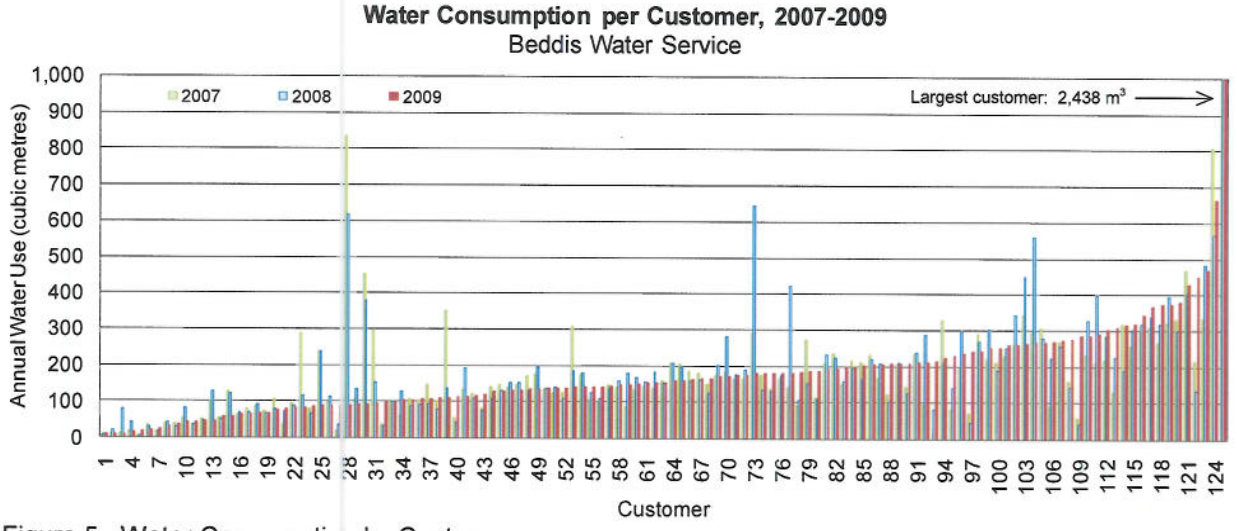

Figure 5. Water Consumption by Customer

Water Quality

The water provided by the Beddis Water System is safe to drink. The CRD carries out regular testing of the water supply to ensure water quality testing meets the Health Canada *Guidelines for Canadian Drinking Water Quality*, (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, with the exception that turbidity (an optical measure of suspended matter in the water) often exceeds 1.0 NTU (although it rarely exceeds 2.0 NTU).

High turbidity poses potential problems for drinking water quality. Particles of matter suspended in the water can harbour pathogens and protect them from exposure to disinfection processes, reducing the reliability of their inactivation. When chlorine is added to water with high turbidity, the reaction between chlorine and organic matter produces potentially carcinogenic by-products, and uses up the chlorine that is needed to prevent bacterial re-growth in the distribution system. The latter problem is evident in the monthly reports for Beddis, where free chlorine in the system occasionally falls below the guideline of 0.3 mg/l. This is typically rectified by flushing mains and retesting, but there is a significant annual cost of this corrective maintenance. The new treatment plant will maintain turbidity well below 1 NTU, which in our short operating experience at Fulford has already greatly improved the stability of free chlorine residuals in the distribution system, reducing

distribution maintenance requirements.

2009 Financial Report

Attached is a copy of the *Statement of Financial Activities* as prepared by CRD Finance and Corporate Services for the year 2009. The statement provides an overview of the revenues and expenditures for the year. Revenues are generated primarily through parcel taxes and user fees (fixed and variable based on water use), 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.

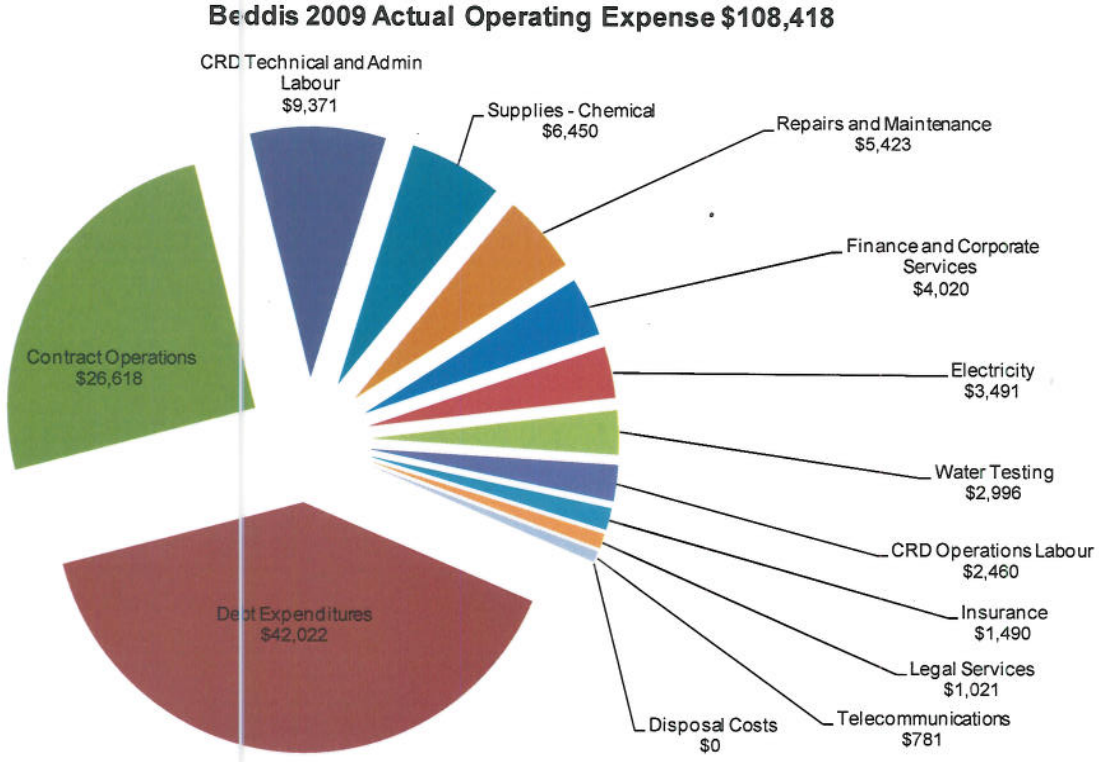

Figure 6. 2009 Operating Expense

The difference between revenue and expense is added to any surplus or deficit carried forward from the prior year. If there is a significant surplus, funds may be transferred to a reserve or capital project account. The surplus or deficit balance after any transfers is carried to the following year. Regional district services are not permitted to plan to carry forward a deficit, so a deficit in a given year usually requires a tax or fee increase in the following year to recover costs and prevent a subsequent deficit.

The Beddis 2009 revenue of $140,641 includes of $57,348 in water sales, $31,500 in fixed charges and $50,614 in parcel taxes. Other revenue includes $596 in late payment charges. The total expenditures for 2009 were $108,418, of which $47,421 is the annual cost of borrowing for capital work, 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. A breakdown of operating expense is shown in Figure 3.

The difference between revenue and expenditures in 2009 amounted to a net revenue of $32,223 at year-end, of which $6,081 was applied to the capital fund. The remainder added to a $4,183 surplus carried forward from 2008, leaving a surplus of $30,325 carried forward to 2010. The balance in the Beddis Capital Reserve Fund at 31 December 2009 was $4,957, and the balance in the capital fund was zero.

Water System Problems - Who to Call:

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

North Salt Spring Waterworks District (contract operator): 250-537-9902
CRD local operator (Ganges Wastewater Treatment Plant): 250-537-4314

If you do not reach someone at these numbers, report emergency events directly to:

1-250-388-6275 - ask for pager 2614

When connected to the pager message system, please leave your name, your phone number, a brief description of the problem and that the problem is with the **Beddis** water system. Expect a phone call from a CRD duty operator within a short time.

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Ted Robbins, B,Sc, CTech
Senior Manager, Water Management
Concurrence

CS:ls
Attachments: 1