Making a difference...together

LYALL HARBOUR / BOOT COVE WATER LOCAL SERVICE COMMITTEE
ANNUAL REPORT ON OPERATIONS
06 NOVEMBER 2010

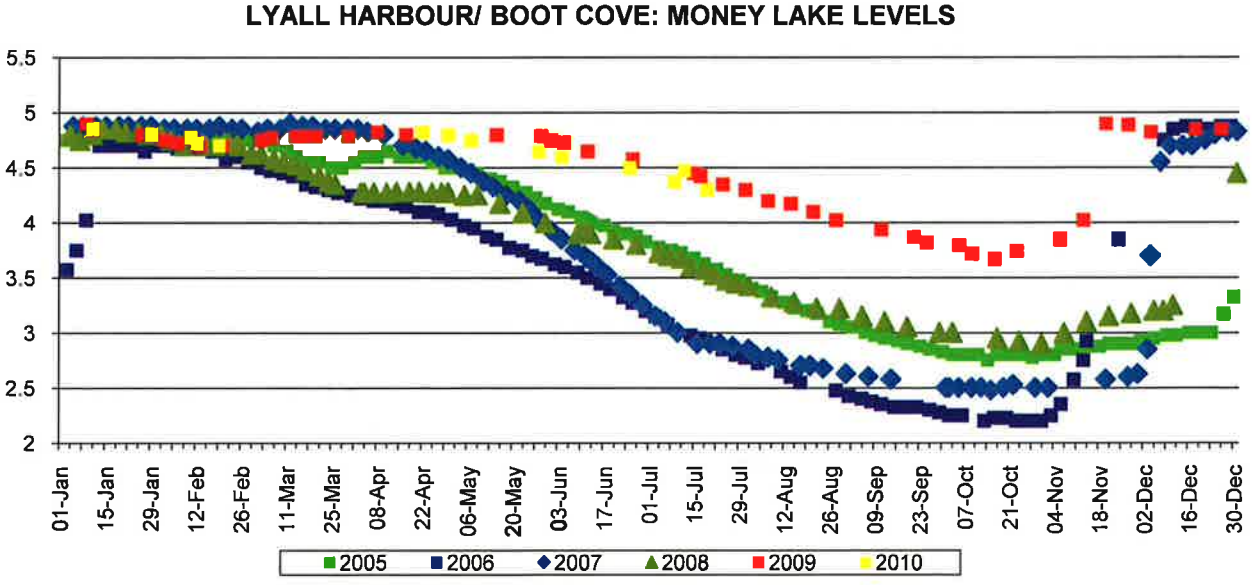
The following is provided for information to residents and users of the Lyall Harbour / Boot Cove water service.

Operations

The Lyall Harbour / Boot Cove water system operated reliably in 2009, although high quantity of algae in Money Lake increased the level of effort required to operate the water treatment plant's filtration system during the early summer. The plant must treat water to meet peak instantaneous demands as there is no storage capability (reservoir tank) currently within the system. The available supply of water is most severely impacted during the summer months, when the residential demand is highest and the algae are most prominent.

In 2009, the recirculation of seepage water to Money Lake was reinstated, greatly increasing the retention of water through the summer months (Figure 1). Due to changes in the patterns of seepage through or around the dam observed in the past few years, staff have retained the services of a consulting engineer to advise on safe operation and maintenance of the dam. The dam is considered safe to operate, but further work may be necessary in order to better understand seepage pathways and to protect the abutment slope where the majority of seepage currently appears. Staff will recommend a program of work on the dam as part of the 2011 capital plan.

Figure 1. Money Lake Water Levels 2005 - July 2010



Improvements to chlorination in 2009 are performing as anticipated, to address reduced overnight flow rates through the system by ensuring adequate residual disinfection throughout the system. This was necessary to ensure that the water sitting in the distribution system overnight remains safe for drinking when a house's taps are turned on in the morning and the system begins to flow.

Water Supply and Demand

A total of 20,818 cubic metres (m^3) was drawn from Money Lake in 2009; a decrease of approximately 7.6% over the previous year. Since 2004, water production has decreased by roughly two thirds, reflecting improved management of distribution system losses and customer awareness and effort to conserve Saturna Island's precious water resources. Annual water production since 2004 is shown in Figure 2 and monthly water production from 2005 is shown in Figure 3.

Figure 2. Water Production 2004 – 2009 (cubic metres)

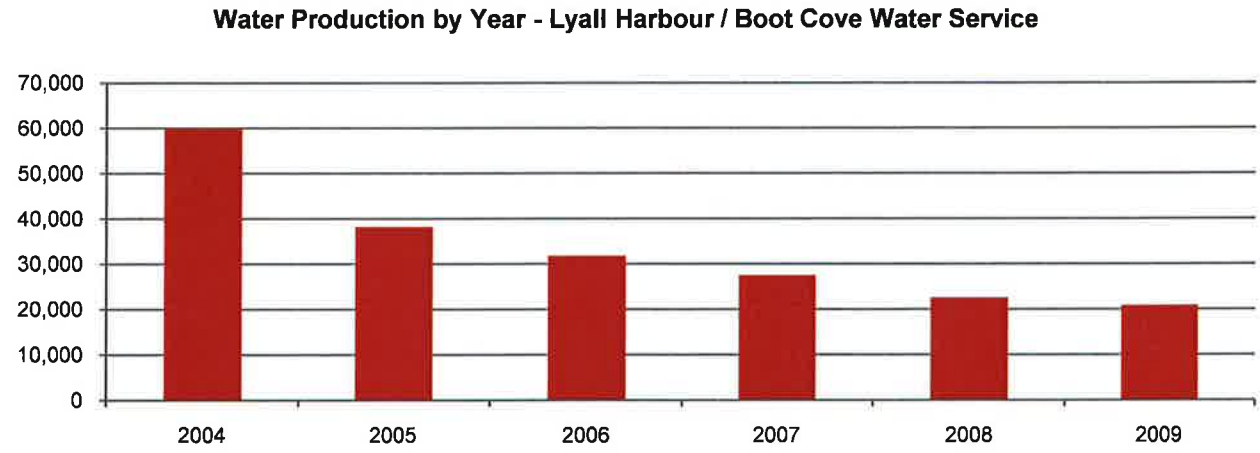
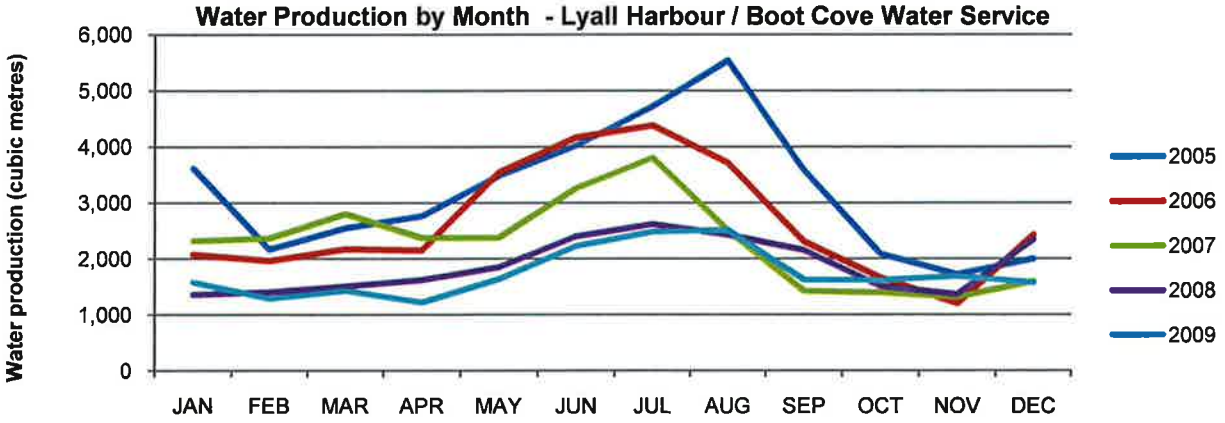


Figure 3. Water Production by Month 2004 – 2009



Customer water meters have enabled staff to estimate 2009 residential consumption volumes to be 17,252 m^3 based on a recorded ten month period. The difference between production and total consumption, called non-revenue water, of 3,566 m^3 equates to 17% of the total amount of treated water produced. This is higher than the 10-12% that is typically observed in municipal systems. Non-revenue water is attributed primarily to system leaks, fire fighting and system flushing (filters and distribution system) activities.

Water Quality

The water provided by the Lyall Harbour / Boot Cove water system is safe to drink. The CRD carries out regular testing of the water supply for compliance with the Health Canada *Guidelines for Canadian*

Drinking Water Quality, 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 Lyall Harbour / Boot Cove area typically meets these standards, with the exception that turbidity (an optical measure of suspended matter in the water) often exceeds 1.0 Nephelometric Turbidity Units (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. And 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. Turbidity values of 6.3 NTU and 13 NTU were recorded in Money Lake in July 2009 and June 2010, respectively; however, the treated water turbidity levels in June 2010 were only slightly above the Canadian Drinking Water Quality Guideline of 1.0 NTU at 1.33.

Non-coliform or background bacteria are present in a water system, and although not harmful to human health, have the potential, if present in large quantities, to obscure more harmful bacteria from being detected in the lab. A maximum non-coliform bacteria count of 200 colony forming units (CFU) per 100 ml is used as an operational trigger to flush a watermain to remove organic sediments. A periodic count in excess of the 200 CFU/ml prompts the operator to flush affected portions of the system. July 2009 showed a single sample reading in the Lyall Harbour – Boot Cove water system greater than the Total Coliforms (TC) objective. The affected part of the distribution system was flushed and retested to confirm compliance with the objective.

System Upgrade Project

In 2008, a $1,279,200 Canada – British Columbia Municipal Rural Infrastructure Fund grant was awarded to the CRD to complete water treatment and distribution system upgrades, and to install customer water meters for the Lyall Harbour / Boot Cove water service. Grantable works must be completed by March 31, 2012.

The installation of the water meters is now complete. The total cost of this work was $114,132, approximately $37,000 less than the approved budget (including Gas Tax funding for radio read components). In all, 143 meter assemblies were installed, including 14 undeveloped lots within the service area for which service connections had previously been provided. The inaugural radio reading of the activated meters was successfully performed in early April 2010. Meters are being read quarterly to help identify potential private side system leaks or higher than average water consumption in the service area.

The upgrade project plan included the construction of a new water treatment plant including a dissolved air flotation (DAF) process to meet current legislated requirements for treating drinking water from a surface water (lake or stream) source. The CRD has installed similar systems on Salt Spring Island. However, based on updates to cost estimates informed by 2009 and 2010 construction tender prices for CRD projects on Salt Spring Island, it is now anticipated that the capital cost to construct a DAF based treatment plant for the Lyall Harbour/Boot Cove Water Service Area would exceed the available budget.

Staff met informally with the Lyall Harbour/Boot Cove Water Local Service Committee in August 2010 to discuss alternative means of achieving the project objectives. The Committee directed staff to pursue alternatives that meet the original core project objectives without significantly changing the original project budget, and to consider a budget increase only as a last resort. Such alternatives may include upgrading the existing water treatment plant in place of construction of a new plant, or developing a new water source that requires less treatment than water drawn directly from Money Lake. In October 2010 the Committee authorized staff to engage a consultant to evaluate options based on available source water data and recommend a modified upgrade plan that meets the original project objectives. This work will be assigned to a consulting engineer in November, and is expected to be complete before December 31.

Option to Introduce a Water Consumption Charge

Based on meter readings in 2010 to date, the estimated average annual consumption per Lyall Harbour / Boot Cove customer account (connection) is 112 m^3 with a median annual consumption of 74 m^3. Of the 141 active services in the Lyall Harbour / Boot Cove water service area, 25 (17%) use less than ten cubic metres annually, whereas 19 (13%) consume more than 200 m^3.

Figure 4. 2010 Projected Annual Consumption by Customer

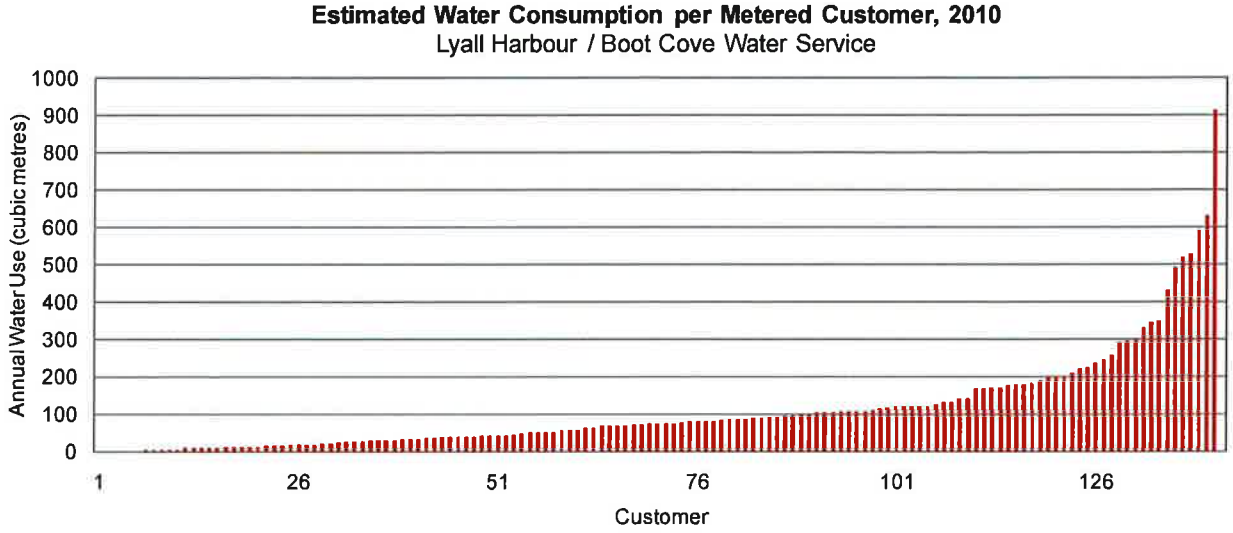
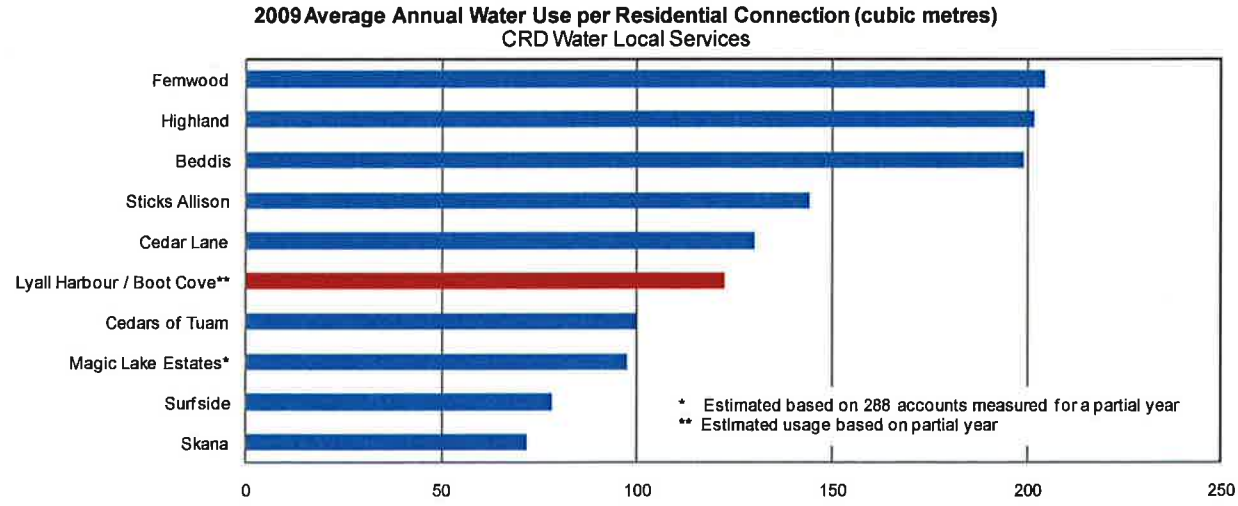


Figure 5. Average Annual Water Consumption per Connection – CRD Water Local Services



The Lyall Harbour/Boot Cove water system user's average consumption rate is 20% less than the Salt Spring Island and Southern Gulf Island's average of 141m^3; likely due to a higher than average proportion of part-time occupancy. Approximate 2010 consumption per Lyall Harbour / Boot Cove customer is shown in Figure 4, and a comparison of average consumption per customer with other CRD water local services is shown in Figure 5.

With the water system now fully metered, it is possible to recover a portion of the cost of water service based on consumption. The Lyall Harbour/Boot Cove water service currently recovers capital and operating costs through a parcel tax and fixed annual user charge ($560 and $325, respectively). The user charge is assessed on the basis of a *Single Family Equivalent* (SFE): Each dwelling unit or

equivalent is assessed one annual user charge, and non-residential customers are assessed multiples of a residential charge based on estimates of water use intensity. Maintaining accurate records of the number of dwellings per connected parcel is difficult, and there is potential for significant inequities to arise in the assessment of SFE per connection. The Lyall Harbour / Boot Cove system currently includes 171 taxable folios, 141 active water service connections, and 157 SFE recognized for the purpose of billing.

Other metered water services in the CRD recover a portion of their annual costs using consumption charges using a tiered (inclining block) structure that encourages water conservation and establishes a "user-pay" mechanism that recovers a larger share of the cost of service from the most intensive users of the service. Two possible alternatives for Lyall Harbour / Boot Cove are presented in Table 1, and the impacts on total annual cost of service of each alternative are illustrated in Figures 6 and 7.

Table 1. Example Consumption Charge Structures (per single family residential property)

	Current Structure – No Consumption Charge	**Alternative 1 – Inclining Block**	**Alternative 2 – Uniform Rate**
Fee Structure			
Parcel Tax	$560	$560	$560
Fixed Annual Charge	$325 per SFE	$275 per connection	$275 per connection
Consumption Charge per m^3 per Three Months			
First 37.5 m^3	$0	$0.50/ m^3	$1.00/ m^3
Next 67.5 m^3	$0	$1.00/ m^3	$1.00/ m^3
Greater than 105 m^3	$0	$4.00/ m^3	$1.00/ m^3
Financial Impact			
Total Revenue	$142,008	$150,093	$145,781
Average cost per single family residential parcel	$885	$955	$937
Cost per customer - 25th percentile usage	$885	$850	$864
Cost per customer - median usage	$885	$873	$908
Cost per customer - 75th percentile usage	$885	$914	$961

The general result of both alternatives is that very low water users (typically seasonal residents) would pay slightly less for water service than they would pay under the current flat annual fee structure; while high water users (i.e. those using more than 200 m^3/year) would pay significantly more. The primary difference between the two alternatives is the extent to which high users subsidize low users. Under the inclining block structure, customers using several times more than the average (i.e. 300 to 900 m^3/year) would pay between $1,500 and $4,000 annually for water service. Under the uniform rate structure, these customers would pay between $1,100 and $1,800. Most customers currently assessed more than one SFE would benefit from either consumption charge structure.

In order to implement a consumption charge, the Lyall Harbour / Boot Cove Water Service Committee would recommend that the CRD Board amend the Fee and Charge Bylaw for the service.

Figure 6. Water Use vs. Annual Cost per Customer: Alternative 1 – Inclining Block Rate

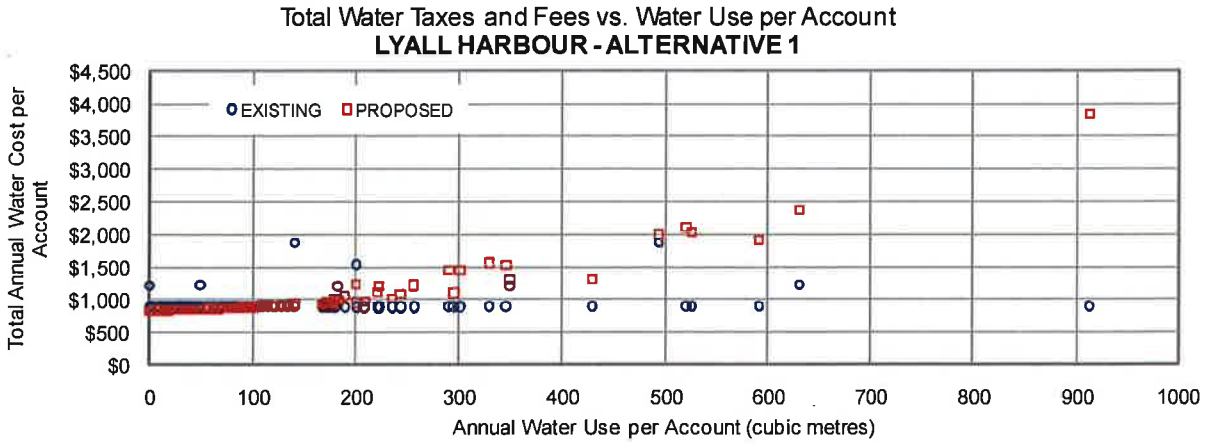
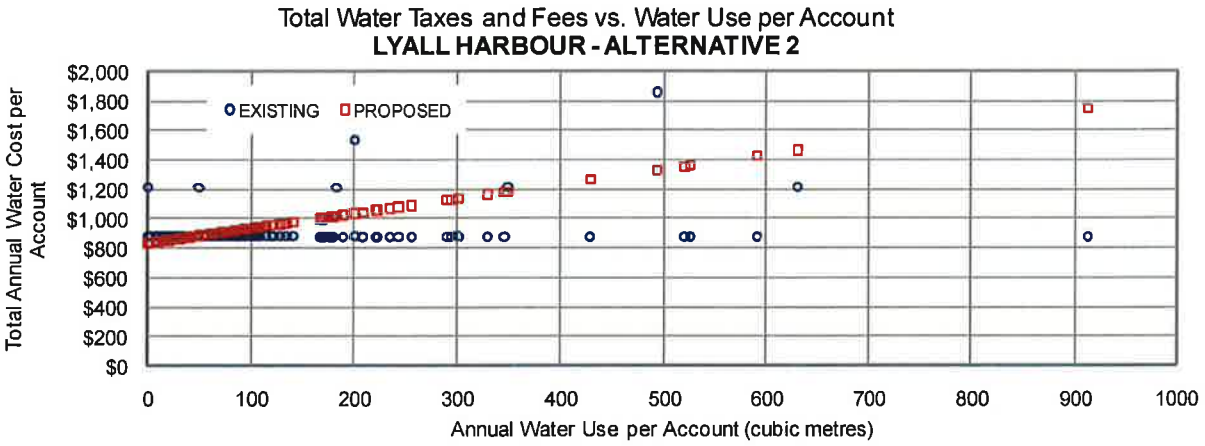


Figure 7. Water Use vs. Annual Cost per Customer: Alternative 2 – Uniform Rate



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 through parcel taxes and user fees (fixed and variable based on total community 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 the CRD Corporate Services for the financial processing of the budget and the collection of fees and charges. *Other* includes all expenses needed to operate the service including all CRD labour costs for day to day operations, CRD service personnel hours performing maintenance and repairs, chemicals, electricity, water testing, maintenance parts allowances for electrical and mechanical equipment, rental or equipment purchased as necessary and allowances for technical and staff support to the committee, and for the payment of debt.

The difference between revenue and expense is added to any surplus or deficit carry 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 Lyall Harbour/Boot Cove 2009 revenue of $149,052 includes $90,984 parcel tax, $51,106 user fees and $5,900 connection charges. Expenditures include:

- Operation and maintenance costs $74,848
- Administration and engineering $26,146
- Capital costs (debt servicing) $4,872
- Insurance $1,250
- Connection costs $2,171

The difference between revenue and expenditures in 2009 of $39,524 was carried forward to 2010 as a surplus. The Lyall Harbour / Boot Cove Water Service held $43,500 in capital reserves at December 31, 2009.

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Concurrence

J.A. (Jack) Hull, MBA, PEng
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Concurrence

Attachment: 1

GP/CS/ls

CAPITAL REGIONAL DISTRICT

WATER REVENUE FUND
Statement of Financial Activities (Unaudited)
For the Year Ended December 31, 2009

		Lyall Harbour/ Boot Cove Water Service Area
Revenue		
Transfers from government	$	90,984
Sale of services		51,106
Other revenue from own sources:		
Other licenses and permits		-
Interest earnings		297
Other revenue		6,533
Grants in lieu of taxes		132
		149,052
Expenditure		
General government services		4,730
Other		99,927
Other fiscal services		4,871
		109,528
Net revenue (expenditure)		39,524
Transfers to own funds:		
Water Capital Fund		-
Reserve Funds		-
Equipment Replacement Fund		-
Change in fund balance		39,524
Opening balance		-
Closing balance	$	39,524