

**REPORT TO LYALL HARBOUR / BOOT COVE WATER LOCAL SERVICE COMMITTEE
MEETING OF FRIDAY, 19 JANUARY 2007**

**SUBJECT MUNICIPAL RURAL INFRASTRUCTURE GRANT PROGRAM - 2007 GRANT
APPLICATION**

PURPOSE

To provide the Lyall Harbour/Boot Cove Water Local Service committee (the committee) with information regarding a new program announced jointly by the Province of BC and Canada to provide a one time infrastructure funding for water projects as might benefit the Lyall Harbour/Boot Cove water local service area.

BACKGROUND

There is an opportunity for the Capital Regional District (CRD) to make application to the Province of BC for funding for a water based project for Lyall Harbour Boot Cove water system upgrade under the *Canada BC Municipal Rural Infrastructure Grant Program*. The program is a short term, one year program. While it is expected that BC and Canada will sign a longer term agreement for a new program later this year or next year, staff have received no confirmation of the commencement for such a program, hence it is recommended that an application be tendered under this interim program which has a final submission date of 31 January 2007.

PROGRAM REQUIREMENTS

Staff have reviewed the program application documents. The program sets out criteria for the evaluation of projects including the following:

- Exhibits long term sustainability, including operational viability, asset management (maintenance) and environmental sensitivity.
- Contributes to environmental, economic, community and innovation objectives.
- Requires senior government financial support to enable the project to be implemented.
- Complies with all environmental assessment requirements.
- Uses new approaches, best practice and best available technology.
- Demonstrates clear, measurable outputs and milestones.

Individual applications will be evaluated based on how well they meet the program objectives and degree to which they meet the following criteria:

- Represents good value for money.
- Enhances and protects public health.
- Enhance and protects environmental health.
- Supports sustainability principles.
- Consistent with integrated long-term planning and management.
- Utilizes best technologies and practices.
- Demonstrates efficient use of resources.
- Uses new and innovative approaches.
- Supports sustainable long term economic growth.

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In addition to these broad categories, an application for a water project must include a plan or report summarizing the community's demand management/water conservation strategies which should identify:

- Current and planned demand management/water conservation initiatives, including universal metering, inclined block pricing, conservation plumbing fixtures, leakage reduction, rebate programs, education programs, xeriscaping etc.
- Existing water usage and targeted goal for reducing water consumption.
- A schedule of when conservation actions/measures will be implemented.
- Details of how conservation actions/measures will be funded and managed.

It could be assumed that a water project for Lyll Harbour would generally be considerate of the following:

- Water quality, especially when the lake level is at its lowest, needs to be enhanced to protect the public health. During last summer's low water levels, turbidity levels were excessive in the lake, non coliform bacteria could not be controlled in the system, BC Ferry Corp. posted the washroom at the dock. As noted in the Vancouver area (and many other local communities) boil water advisory this past fall and winter, there will be increasing vigilance by drinking water officials to monitor and address high turbidity levels.
- Water losses from the system tax the storage capacity in the lake. Loss control through metering is probably a minimum standard to strive for.
- Filter backwash frequency is maximum when the lake water level, and hence water quality, drops.
- Filter backwash is lost water from the system, and is a significant usage; a demand on the supply.
- Filter backwash is currently discharged to the environment, which is not environment friendly.
- Peak demand, and especially fire demand exceeds the maximum operating level for the filters. During this time, material is washed through the filters to the system, contributing to higher than acceptable levels of turbidity in the distribution system, compromising disinfection, and feeding the regrowth of non coliform bacteria.
- There is no protection against virus, Giardia, or Cryptosporidium. An ultraviolet disinfection system would provide the protection, but cannot tolerate the turbidity levels.
- The CRD maintains a world class *Supervisory Control and Data Acquisition System* (SCADA) based at its control locations in Sidney and Esquimalt which permits standby staff to remotely review all operating conditions of remote facilities. Lyll Harbour is not taking advantage of this system.
- As witnessed with Tofino, if the community were to consistently run short or out of water, long term sustainability, especially of the business sector of the community would be called into question.

POTENTIAL GRANT SCENARIOS

A project for Lyll Harbour water, which would have the best opportunity to attract a rural municipal infrastructure grant would likely have most or all of the following components:

- A program to install, or address the installation of water meters, one time or five year.
- Integrated with the water metering, backflow prevention devices to further enhance public health.
- A reservoir to provide daily balancing, controlled filter flows, and provide a source of water for fire protection. The reservoir needs to be of sufficient capacity to provide long run times for the water treatment technology, hence 50,000 lgal is likely.
- Enhancement of the present filter operation, likely through the addition of a chemical coagulant to improve capture and reduce turbidity.
- Addition of a membrane treatment module downstream of the filters, as an alternative to enhancement of the water filters.
- Addition of Dissolved air flotation (DAF) at Money lake to reduce loading on the filters as a further alternative to enhancement of the filters or use of membranes.

- Addition of slow sand filtration at Money lake to reduce loading on the filters as a further alternative to enhancement of the filters or use of membranes or DAF.
- Reuse of the present stainless steel tank to capture and hold filter backwash water.
- Treatment for the backwash water to concentrate material, and permit reuse of filtrate back into the water system. This has a dual benefit in enhancing the environmental acceptability of the project while contributing significantly to reduced water usage from the system.
- Use of ultraviolet disinfection to address virus, Giardia and Cryptosporidium
- Provide continuous monitoring and control of CL₂ for secondary disinfection
- Integrate operations, install SCADA system to permit remote monitoring, continuous data collection and enhanced system control

COMPONENT COSTS

Various components of the project have been previously costed and are again provided for the consideration of the committee. Other costs have been developed on a conceptual basis to provide order of magnitude comparisons between options. No final design work has been completed on the concepts. The costs are developed from inquiries to consultants and to system suppliers. The estimates do not include the costs for CRD engineers to oversee the program, develop the final design, tender the works, complete submissions required for the grant process or administration costs of the CRD, none of which are eligible for funding under the grant program.

Meters:

Water metering – purchase 173 units @ \$350/unit	\$60,550
Water metering / check valves– install, 142 units @\$380/unit	\$54,340
Programmer	<u>\$15,110</u>
Total, meter / check valve program	\$130,000

Water Storage Tank, 50,000 l gallons:

Lump sum, bolted tank, valving control, transport , install (\$2.00/gallon)	\$100,000
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Water Treatment Trains:

1. 40 l gpm DAF pretreatment (or Slow Sand Filtration), use existing filters UV disinfection + CL ₂ , residuals from filters collected and returned to DAF, DAF residuals disposal system	\$1,000,000
2. Filter coagulant, use existing filters, UV disinfection + CL ₂ , residuals from filters collected, processed through small DAF plant, DAF residuals disposal.	\$650,000
3. Use filters for pretreatment, new membrane treatment unit, UV Disinfection + CL ₂ , residuals from filters and membranes treated through small DAF	\$960,000
4. 20 l gpm DAF at lake, residuals management at lake, no residuals management nor recovery of filter backwash, UV disinfection + CL ₂	\$650,000

GRANT OPTIONS

Two cost options arise. Both would include metering, and a 50,000 imperial gallon reservoir and one of the options for treatment. Each option for a treatment train has advantages and disadvantages.

Train 1 and Train 3 would use demonstrated technology and would result in the least water wasted from the system for backwashing, and hence would also be most environmentally sensitive. The process would provide additional capacity for peak day flows as are currently experienced. The operating cost for the additional processes involved could affect the operating budget. Water produced would be of very high quality, and exceed water quality objectives. These are the highest cost options at a total construction cost in the order of \$1,230,000.

Train 2 performance would need to be researched and demonstrated. It would require a careful balance of chemical addition and monitoring to ensure performance was maintained. While this type of process is used commonly in industry, it is not common with these type of pressure filters, hence there is likely to be a requirement from the province to undertake a more stringent evaluation of this application than with the other treatment train options. The combination of this processing plus a secondary DAF process for residuals would also likely affect the operating budget. Water produced should address water quality objectives. A grant, in the amount of \$880,000 would be sought for this option.

Train 4 is a compromise approach. The use of a smaller DAF plant at Money Lake would be used as a pretreatment for the filters. With the reduced flow through the filters, loading would again be reduced, hence the need to backwash would be reduced, with the associated savings in process water. As the works would be physically separate from the main building, and as no particular changes to the filter process would be considered, the need to address full reclamation of backwash water, as a condition of the grant process, could be avoided. The plant, under peak day conditions, might require supplemental flow from Money Lake, which would bypass the DAF process. This might lead to temporary periods of lower than desirable quality of water reaching the filter building, but would be similar to what is currently the standard. With the proper sizing of the storage reservoir, and with coordinated operation by a new SCADA system, the duration of compromised operation should be minimal. The plant will have construction challenges at the Money Lake site as it would be prudent not to locate the structure in the path of a dam breach. This is a similar cost option as Train 2, at \$880,000.

The basic difference between the DAF options is one of capacity. The smaller unit proposed has a maximum capacity of 20 lpm, the larger unit has a maximum capacity (and size and mass) of three times that amount. Once losses are managed by metering, and waste water reduced by filter backwash reduction, the smaller unit should provide sufficient water for a typical day at a rate of 170 gallons per parcel. The larger unit would provide for twice the water per parcel, however as was seen this year, the source may not support this level of usage in any case.

FINANCIAL IMPLICATIONS

The federal provincial grant programs do not consider regular charges from the CRD for administration of such projects as an eligible cost for reimbursement. On this basis, CRD has found it necessary to include an allowance for engineer's time to prepare the application, support the application, carry out environmental assessments as required, seek quotations or tenders for all contracts for the work, and to administer the project works, which would add some \$50,000 to a project of this nature. The committee could also consider the need for a contingency for this type of work, which is also not included in the estimates. When calculating the amount of borrowing required for each option, the committee could consider either providing funding for extraordinary costs through the operating budget, or to add the costs to the borrowing.

Assuming the initial process is to take place, the amount to be borrowed would be one third of the estimated costs outlined above, which, choosing the lower cost options would amount to one third of \$880,000 or approximately \$300,000. The annual cost to borrow \$300,000 over a 15 year period is approximately \$33,000 at current rates. Collected as a parcel tax to 170 taxable folios, the annual cost would increase the current tax by \$194. The higher cost options would result in a parcel tax increase of about \$265.

Timing of the borrowing would likely be delayed until 2008, as it would be necessary to obtain the assent of the electors of Lyll Harbour to support the initiative if/when the province advises the CRD that a grant has been received. On this basis the committee may wish to increase parcel taxes for 2007 to either \$195 or \$265 to begin to provide the necessary funds in reserve to facilitate the non eligible costs for the project. Should the project not proceed (no grant) the funds would be held in reserve until the next grant program was announced or to be used to initiate some of the works contemplated in the project.

The approval of the borrowing must be obtained from the electors in the Lyll Harbour / Boot Cove water area, at such time as a grant is approved for the project. The committee will need to consider whether or not to obtain the assent of the electors by Petition to the CRD Board, or by Referendum.

SUMMARY/CONCLUSIONS

The province has announced a new *Municipal Rural Infrastructure Grant Program* which would be of interest to the Lyll Harbour/Boot Cove water area. Staff have identified requirements for the program and have suggested some options for the committee to consider should it wish CRD to put forward an application under the program. While a number of options were considered, staff favour an option which would include metering of the water area, a necessary component of the grant application process, a new 50,000 imperial gallon reservoir, located at the community centre site, which would provide for more optimum use of the proposed water treatment system, and would provide sufficient water for fire protection to the area, and a dissolved air flotation (DAF) plant to address water quality concerns, primarily turbidity, and non coliform bacteria. Two potential DAF options are available. A full capacity plant would handle the needs of the water area at current flows and would handle the additional loading to permit all backwash water from the filter system to also be treated and recovered. A smaller capacity unit would provide sufficient water for a conserving society but would not have sufficient capacity to also provide reclamation of the filter backwash water.

The committee could suggest a project with sufficient funds to accommodate a full capacity DAF plant, which would raise the parcel tax by \$265, or the lesser plant at \$194.

ALTERNATIVES

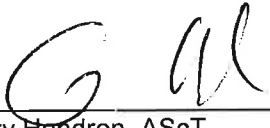
The committee could direct staff to make an application for another project. The committee could elect not to have CRD make an application for this program at this time.

RECOMMENDATION

That the Lyll Harbour/Boot Cove Water Local Service committee indicate whether they wish CRD to make an application for a grant for the water system under the *Canada BC Municipal Rural Infrastructure Program*, and if yes, to then recommend to the CRD Board:

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1. which option staff should make an application for, and in what amount; and
2. if the committee wishes to raise parcel taxes for 2007, to set aside funds into reserve for the project, the proposed increase amount.



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