

APPROVED

**AMENDMENT NO. 6
TO
CAPITAL REGIONAL DISTRICT
CORE AREA LIQUID WASTE MANAGEMENT PLAN
As Approved by Minister on 26 March 2003**

(On approval, this amendment to be added to plan Chapter 18 – Amendments)

SUBJECT: WASTEWATER TREATMENT STRATEGY, COST AND SCHEDULE

TYPE OF AMENDMENT: MINISTER DIRECTED

PURPOSE

To outline a strategy for implementation of wastewater treatment to serve sewered areas within the boundaries of the Core Area Liquid Waste Management Plan, to present preliminary capital costs for implementation of the strategy and to provide an implementation schedule.

AMENDMENT

Chapter 14 "WASTEWATER TREATMENT AND DISPOSAL FOR AREAS SERVED BY MUNICIPAL COLLECTION SYSTEMS AND SPECIFIC PRIVATE COLLECTION SYSTEMS" (note: the title was amended by Amendment No. 5) is amended as follows:

The entire contents of the chapter are rescinded and replaced with the text below, except for the additions contained in Amendment No. 5 pertaining to the Dockside Green development. The paragraphs added by Amendment No. 5 shall have a new heading, "DOCKSIDE GREEN DEVELOPMENT", and shall be placed at the end of the chapter.

Replacement for Chapter 14:

"GENERAL

The Capital Regional District (CRD) commits to implementation of land-based wastewater treatment to serve the Core Area Liquid Waste Management Plan (LWMP) sewerage areas. The provisional implementation plan provides for construction of up to five integrated liquid treatment facilities and one or more sludge processing facilities. The target date for completion of the facilities is 31 December 2016. The CRD further commits to provide an additional amendment outlining plans for wastewater treatment in more detail by 31 December 2008, once specific locations for treatment facilities and details of treatment processes at each location have been determined.

Background information to this amendment is provided in a companion document entitled *The Core Area Wastewater Management Program, Wastewater Treatment Made Clear, The Path Forward, The Supporting Report to the Response to the Minister of Environment*.

FACILITY LOCATIONS AND PROVISIONAL SCHEDULE

The attached Figure 14.1 shows the potential locations for the liquid treatment facilities and the location of the proposed sludge treatment facility at the north end of Hartland Landfill. Figure 14.2 provides a provisional schedule for completion of four liquid treatment facilities and the sludge treatment facility by the target date.

The schedule is provisional because of land acquisition and rezoning uncertainties and because the CRD has assumed representative processes and technologies at each facility but has not finalized the details of the processes and technologies to be provided. Because the CRD is undertaking an integrated approach to wastewater management, the processes provided at one location may impact on other locations, particularly in the areas of sludge and wet weather flow management. Final determination of processes to be provided at each location may be dependent on the locations and sizes of properties ultimately selected and could affect the timing for construction of individual facilities. More detailed planning is required in the next phase. However, the CRD is committed to completion of all facilities by the target date of 31 December 2016, subject only to factors which are beyond the control of the CRD. These include land acquisition and funding of capital costs.

LAND ACQUISITION

The Capital Regional District must acquire land in a timely fashion in order to meet its commitment to provide secondary treatment by 31 December 2016. The land at Macaulay Point is owned by the Government of Canada and under the control of the Department of National Defence. The federal government has a lengthy procedure that must be followed when it wishes to divest land, including consultation with First Nations.

The land at Clover Point is owned by the City of Victoria and is subject to a covenant for parks use. Issues relating to the covenant will need to be resolved.

Potential properties on the West Shore include both private and federal government land. The availability of the federal land is unknown and divestiture by the government is subject to the same procedures as the Macaulay Point land.

At the Saanich East location, potential sites could include property that is institutionally, publicly or privately owned.

FUNDING OF CAPITAL COSTS

The commitment to secondary treatment by December 2016 is made on the premise that one-third of the capital funding will be available from the Province of British Columbia and one-third from the Government of Canada, in accordance with commitments made by representatives of those governments. If senior government funding is not forthcoming, it may be necessary for the CRD to phase in treatment facilities over a longer period of time to mitigate the impact on taxpayers within the plan area.

WASTEWATER TREATMENT IMPLEMENTATION PLAN

The provisional implementation plan provides for construction of up to five liquid treatment facilities and one or more sludge processing facilities. Generally, the CRD's commitment is to provide for secondary treatment or better for flow up to two times average dry weather flow (ADWF) and primary treatment or better for flow in excess of two times ADWF, up to four times ADWF. The corresponding effluent quality is a maximum of 45 mg/L five-day carbonaceous biochemical oxygen demand (CBOD₅) and total suspended solids (TSS) for secondary treatment and a maximum of 130 mg/L CBOD₅ and TSS for primary treatment. At Clover Point, extreme wet weather flow over four times ADWF will be fine screened and blended with the treated effluent at the facility prior to discharge. A review of changes to applicable provincial and federal legislation related to effluent quality will be carried out prior to final design of facilities.

Screening of wastewater flow in excess of four times ADWF is an interim measure until flow can be reduced below that level. Events of this magnitude occur infrequently and the total volume represents a small fraction of the total annual flow. During these flow events, dilution with stormwater should reduce CBOD₅ and TSS concentrations of screened effluent to levels that are below the regulatory requirement for primary treatment. Over time, as measures to control inflow and infiltration (I&I) are implemented, the frequency of occurrence of flow in excess of four times ADWF will be reduced and eventually eliminated. Flow in excess of two times ADWF also will be substantially reduced over time.

Macaulay Point and Clover Point Plants

Central to the proposal for wastewater treatment is provision of a treatment facility near Macaulay Point designed to provide secondary treatment for flow up to two times ADWF, including two times ADWF diverted from Clover Point, and a minimum of primary treatment for flow in excess of two times ADWF. The effluent streams will be blended prior to discharge through the existing Macaulay Point outfall or a new outfall located near Macaulay Point.

A treatment facility at Clover Point will treat wet weather flow in excess of two times ADWF. Flow between two times ADWF and four times ADWF will receive a minimum of primary treatment. Flow in excess of that amount will be fine screened. The effluent streams will be blended prior to discharge through the existing Clover Point outfall.

The CRD proposal for screening of flow in excess of four times ADWF at Clover Point is an interim solution until measures to control I&I are able to eliminate flows of that magnitude. It is acknowledged by the CRD that failure to reduce peak flow at Clover Point may result in a need for a higher level of treatment for peak flows in the future.

The Capital Regional District commits to commence a review of the success of the I&I program to reduce flow at Macaulay Point and Clover Point, and its effects on the number and frequency of flow events in excess of two times and four times ADWF, by 31 December 2021, or five years after completion of treatment facilities at Macaulay Point and Clover Point, whichever occurs first. The results of the review will be submitted to the Ministry of Environment within one year of commencement.

Water Reclamation Plants

The implementation strategy envisages the construction of water reclamation plants at the Saanich East location and in the vicinity of the West Shore 'A' or West Shore 'B' locations shown on Figure 14.1. Construction of a water reclamation plant at the West Shore 'C' location is also being considered to serve the proposed Westhills development south of Langford Lake. If the West Shore 'C' plant is constructed, wastewater flow to the other West Shore plant would be reduced accordingly.

Saanich East Plant

A Saanich East plant could provide high quality reclaimed water for use in the vicinity. Potential uses include toilet flushing and irrigation. Heat recovery from treated effluent is also being considered.

Excess treated wastewater will be discharged through the existing Finnerty Cove outfall, subject to determination of the suitability of the outfall with respect to capacity, condition and

discharge location. A treatment plant at Saanich East, with local use of effluent and discharge through the Finnerty Cove outfall, will provide additional capacity for peak sewage flows downstream in the east coast interceptor and reduce the potential for sanitary sewer overflows.

A treatment plant at Saanich East would provide a minimum of secondary treatment for flow up to two times ADWF and a minimum of primary treatment for flow in excess of two times ADWF. Flow in excess of four times ADWF is not expected to occur at this location.

West Shore 'A' or 'B' Plant

A treatment plant at West Shore 'A' or West Shore 'B' could provide high quality reclaimed water for use in the vicinity. Potential uses include toilet flushing and irrigation at Royal Roads University, within Department of National Defence or Parks Canada properties, or at new commercial buildings to be constructed within the gravel pit. Heat recovery from treated effluent is also being considered.

Excess treated wastewater will be discharged through a new outfall. Provision of a treatment plant on the West Shore will alleviate concerns about trunk sewer capacity to serve future development in Colwood and Langford.

A treatment plant at West Shore 'A' or West Shore 'B' would provide a minimum of secondary treatment for flow up to two times ADWF and a minimum of primary treatment for flow in excess of two times ADWF. Flow in excess of four times ADWF is not expected to occur at this location.

West Shore 'C' Plant

A plant at West Shore 'C' is being considered by the owners of the proposed Westhills development. In keeping with the plans of the owners to provide a community that meets LEED™ (Leadership in Energy and Environmental Design) standards, the treatment plant would produce high quality effluent for use in the development. Details of plant capacity, area to be served, effluent quality, disposal of excess treated effluent and sludge management are at a preliminary stage of discussion between the developer and the Ministry of Environment.

Wastewater Conveyance

Trunk sewers and pumping facilities will be required to convey wastewater from existing trunks to new treatment plants at the West Shore and Saanich East locations and to convey two times ADWF from Clover Point to Macaulay Point for treatment.

Sludge Treatment

Land at the north end of Hartland landfill is the designated site for construction of a sludge treatment facility as shown on Figure 14.1. Cost estimates are based on construction of thermophilic anaerobic digesters at this location to produce a Class 'A' biosolids product suitable for a variety of uses. These could include application to forest land and farm land, topsoil production and land remediation. However, the viability of this approach will need to be confirmed by a comprehensive market analysis at an early stage in program planning. Other options for sludge treatment could include one of several thermal conversion

technologies with energy recovery. If anaerobic digestion is used to treat the sludge, the CRD intends to capture the methane gas for use as a source of energy.

Depending on the size and location of land available to the CRD at Macaulay Point and on the West Shore, another option is to include sludge treatment facilities at either or both locations. These options have the potential to reduce transportation of sludge and the energy consumption and greenhouse gas production associated with additional transportation.

Options for integrated treatment of sludge with municipal solid waste to produce energy and/or soil amendment products will be considered.

ENVIRONMENTAL IMPACT STUDIES

Environmental impact studies will be carried out at treatment plant sites and new outfall locations, in accordance with provincial and federal legislation.

COST ESTIMATE

Based on the four plant option with a separate sludge treatment facility (option 2-1 in the companion document), provision of treatment is expected to cost \$1.0 billion in 2007 dollars or \$1.2 billion inflated to the mid-point of facility construction."

AMENDMENT

Minister's Condition No. 1 – Letter dated 26 March 2003 is amended as follows:

In the 26 March 2003 Core Area LWMP approval letter from the minister of environment (then Water, Land and Air Protection), the LWMP was amended to include the following condition number 1:

"On or before June 30, 2003 continue the Marine Monitoring Advisory Group with invited membership from Environment Canada, Ministry of Water, Land and Air Protection, Fisheries and Oceans Canada, University of Victoria, Royal Roads University and Camosun College. The terms of reference for the group are to review, on an annual schedule, all environmental monitoring programs and provide recommendations for improving the programs. The group will also review all data and reports associated with the environmental monitoring including the programs identified below, and will prepare their own report. The report, for the preceding year, shall be submitted to the CRD and the Regional Environmental Protection Manager (manager), Vancouver Island Region by June 30 of each year with the first report due by June 30, 2004¹.

The environmental monitoring programs shall include a field program to study endocrine disrupting chemicals, persistent organic pollutants and other micro-contaminants such as pharmaceutical drugs found in CRD liquid waste, and their potential environmental impacts. This should include, but is not limited to effluent characterization to identify and quantify the contaminants and biological assays using new techniques such as gene chip arrays to determine their sub-lethal impacts. This program must be started by March 31, 2004. The CRD is encouraged to work with the Greater Vancouver Regional District LWMP Environmental Monitoring Committee to develop compatible partnership programs.

The environmental monitoring program must include a field program to assess sediment transport mechanisms at the Macaulay Point and Clover Point outfalls to determine the fate of the sediments being

¹ Submission date amended to 30 November by minister of environment 18 October 2005.

discharged into the environment. The Marine Monitoring Advisory Group is to recommend the time frame for implementing this project. The results of the assessment shall be submitted to the manager on or before December 31, 2008 unless required sooner as determined by the Marine Monitoring Advisory Group.

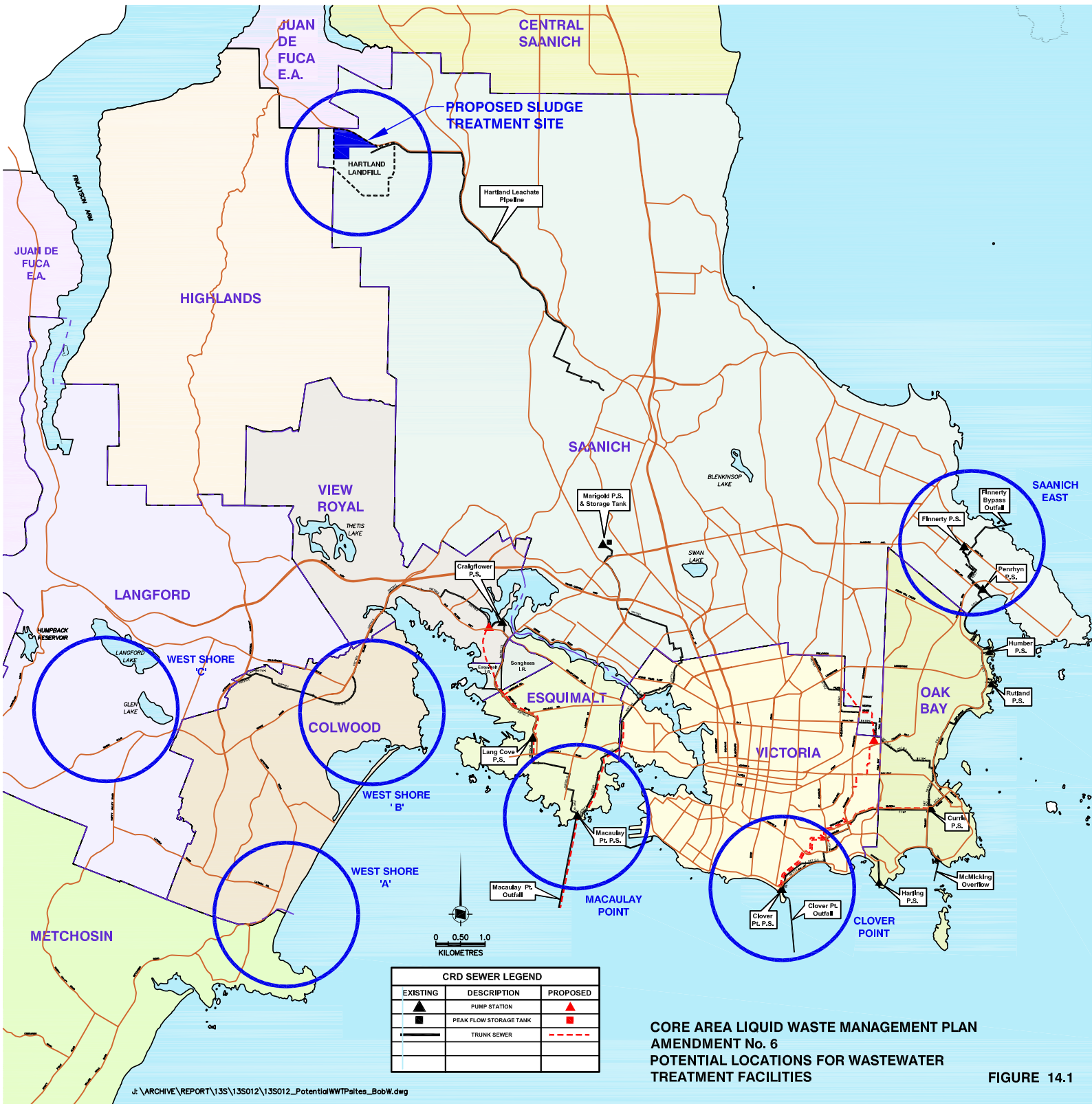
Within three months of receipt of the Marine Monitoring Advisory Group's annual report, the CRD shall develop an implementation action plan to address the reports recommendations, with firm schedules and submit it to the manager."

Amend condition 1 by amending the third paragraph to read:

"The CRD Board has committed to implementation of land-based wastewater treatment to serve the Core Area LWMP sewerage areas at an estimated capital cost of \$1.2 billion. The implementation of higher levels of treatment for wastewater discharged through the Clover Point and Macaulay Point outfalls will significantly reduce the amount of suspended solids in the wastewater and will virtually eliminate the deposition of wastewater solids on the seafloor. Therefore, an assessment of sediment transport mechanisms at the outfalls is not required."

AMENDMENT APPROVALS

Capital Regional District Board Approval	13th	day of	June	2007
Ministry of Environment Approval	14th	day of	December	2007





Reference: 95462

DEC 14 2007

Denise Blackwell, Chair, and Directors
Capital Regional District
PO Box 1000
Victoria BC V8W 2S6

Dear Chair Blackwell and Directors:

Denise & Co.

This is further to my acknowledgement letter of June 29, 2007 in regards to Amendment #6 to the Capital Regional District (CRD) Core Area Liquid Waste Management Plan.

I appreciate the work and thought that you have put into preparing the submission, and how much is yet to be done. I note and appreciate your efforts in assessing new technologies as part of the treatment selection process.

The strategies you are proposing to optimize the beneficial use of reclaimed water, biosolids and other resources are commendable. I agree that these opportunities offer significant potential, and encourage you to study if reuse of resource recovery can be optimized through a more distributed infrastructure model. I also encourage you to explore additional benefits that may be realized by integrating solid and liquid waste resource recovery opportunities, and to seek out interested partners within the CRD to test these opportunities. The BC Government will work with you to identify and optimize these benefits.

I also appreciate your work to date with Partnerships BC to assess P3 opportunities, as requested by the Province at the October 2006 Union of Municipalities of British Columbia convention. I look forward to your continued work with them, and the Ministry of Community Services, in review of your business case, procurement options, and proposed governance structure.

I believe that there is substantial agreement on the following objectives for moving forward:

1. Meet the regulatory standard for liquid waste.
2. Minimize total project cost to the taxpayer by maximizing economic and financial benefits, including beneficial reuse of resources and generation of offsetting revenue.

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3. Optimize the distribution of infrastructure based on number 2 above.
4. Aggressively pursue opportunities to minimize and reduce greenhouse gas emissions (eg. reduced requirement of energy for pumping purposes, and beneficial re-use of energy).
5. Optimize 'smart growth' results (e.g. district services, density, 'Dockside Green' like innovation).
6. Examine the opportunity to save money, transfer risk and add value through a public private partnership.

The treatment schedule established in Amendment #6 is hereby approved, subject to the requirements set out below.

In accordance with Section 24 (3) (b) of the *Environmental Management Act*, a business plan, demonstrating how to achieve the above objectives, shall be submitted to me no later than June 30, 2008.

CRD shall submit a Liquid Waste Management Plan amendment on or before December 31, 2008, which shall include, but not be limited to, the following:

- decisions on the selected physical infrastructure model, selected resource recovery options, and P3 approach (including supporting rationale) to demonstrate the above principles;
- identifying the site locations for sewage treatment facilities;
- the results of environmental impact studies for each sewage facility (site assessment);
- the results of environmental impact studies for each new discharge location;
- draft operational certificates for each sewage treatment facility/discharge location;
- Class B detailed capital and operating costs to implement the plan, and costs per user, both with and without government funding, and
- consultation summary reports (public and First Nations).

With regard to your request to waive the requirement for the sediment transport study, I will hold this requirement in abeyance to allow ministry and CRD staff to review the need for this study in consultation with other regulatory agencies and stakeholders. Condition 1, paragraph 3 in the March 26, 2003 approval of the Core Area Liquid Waste Management is hereby amended as follows:

“The CRD may be required to carry out a field program to assess sediment transport mechanisms at the Macaulay Point and Clover Point outfalls to determine the fate of sediments being discharged to the environment. The need, or lack of need, for the assessments will be established by the Minister after submission of the December 31, 2008 amendment to the plan.”

On a related matter, Ministry of Environment staff and a consultant are undertaking a review of the receiving environment monitoring programs for the Macaulay Point and Clover Point outfalls



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in anticipation of changes in the treatment strategy. Please arrange for the necessary CRD staff to work with ministry staff on this initiative.

Thank you for the progress you have made so far. Please continue to work with the Ministry of Environment, Regional Environmental Protection staff through this next stage of the amendment process.

I look forward to continuing to work with you on this important environmental endeavour.

Sincerely,

Barry Penner
Minister

pc: Honourable Ida Chong, MLA (Oak Bay-Gordon Head)
Honourable Murray Coell, MLA (Saanich North and Islands)
Kelly Daniels, Chief Administrative Officer, Capital Regional District
Dwayne Kalynchuk, General Manager, Environmental Services, Capital Regional District
Randy Alexander, Regional Manager, Environmental Protection Division, Nanaimo