Comox Valley REGIONAL DISTRICT

Staff report

DATE: October 3, 2011

FILE: 5340-01

TO: Chair and Members
Comox Valley Sewage Commission

FROM: Debra Oakman, CMA
Chief Administrative Officer

RE: Sewerage service prioritized 10-year capital plan

Purpose
To provide the completed prioritized 10-year capital plan for the Comox Valley sewerage service.

Policy analysis
On October 26, 2010 the following recommendation was passed by the board:

> *"THAT a prioritized ten-year capital project list be developed for the sewer service based on the approved and adopted sewer master plan once completed."*

On June 14, 2011 the following recommendation was passed by the committee of the whole:

> *"THAT the sewage commission consider implementation steps of the Comox Valley regional sewerage master plan around the core service areas.*

Executive summary
The majority of infrastructure associated with the Comox Valley water pollution control centre (CVWPCC), pump stations and forcemain is approaching its original design capacity. In 2007 the sanitary sewer master plan (SMP) study was commissioned to develop a long term planning strategy in order to ensure that future sewer system capacity met the demands of the community. The SMP was received by the committee of the whole on June 14, 2011 and in it the plan identifies both the long term and more immediate needs of the sewer service.

In October 2010 it was recommended that the SMP be utilized to help inform a shorter term capital plan for the sewer service and in June 2011 the 10-year prioritized capital plan was completed. This work was reviewed by staff as part of the sewer advisory committee and further updated in September 2011. Prioritization of the projects within this plan have been determined based on factors such as expected remaining service life of existing infrastructure, growth based demand for additional capacity and social influences. It is recommended that the 10-year prioritized capital project list be used to update the sewerage development cost charges (DCCs) bylaw project list, and that the 2012-2016 financial plan incorporate projects from the list.

Recommendations from the chief administrative officer:
THAT the 10-year prioritized capital plan as summarized in Table No. 1 of the staff report dated October 3, 2011 and titled "Sewerage service prioritized 10-year capital plan" be adopted;

AND FINALLY THAT Bylaw 2445, being, the "Comox Valley Sewerage System Development Cost Charges Bylaw No. 2445, 2002," be immediately updated to incorporate the findings of the 10-year prioritized capital plan report.

Respectfully:

D. Oakman

Debra Oakman, CMA
Chief Administrative Officer

History/background factors

The majority of infrastructure associated with the Comox Valley sewerage service was installed in the early 1980's as part of the CVWPCC and associated pump stations and forcemain. Although various upgrades have occurred over the past 30 years, many parts of the system are approaching their ultimate design capacity. In addition, a large section of forcemain installed in a foreshore area is subject to the effects of wave action and has been temporarily protected by the installation of large rock filled gabion baskets. The recommended long term fix for this section of forcemain is to relocate it along an inland route.

In 2006 it was recognized that a long term planning strategy was required in order to ensure that future sewerage system capacities met the demands of the growing community and in 2007 a contract was awarded to McElhanney Consulting Services for the preparation of a SMP for portions of the Comox Valley. The report was held in draft form for an extended period pending growth and population projections from the recently adopted regional growth strategy (RGS). In late 2010 the SMP project restarted and the final report was received on June 14, 2011 by the committee of the whole. Using a triple bottom line approach to weigh social, environmental, and economic benefits the SMP identifies both the long term and more immediate needs of the Comox Valley sewerage service and recommends significant capital expenditure requirements in the near future.

In October 2010 a staff report titled "Timing of need for the Greenwood Trunk sewer" was presented to the sewage commission. This report recommended that before determining the timing, or progressing any single sewerage service project, a prioritized list of capital projects would be required.

The "Comox Valley Regional District – 10 Year Sewerage System Capital Plan" report has now been completed (Appendix A). The report utilizes the extensive long-term planning work completed as part of the SMP and establishes the shorter term (10 year) project priorities for the core service area. Project prioritization is determined based on factors such as expected remaining service life of existing components, growth based demand for additional capacity and social influences.

Using the above primary factors, projects were initially listed in order of descending priority, based on the following set of "drivers" upon which each project was determined to be required:

1. Service interruption, system failure probability or system at capacity – projects which eliminate or mitigate vulnerability in the existing system. These projects are critically required to maintain service to existing customers and provide expansion for new users within existing catchments.
2. Health and safety issues requiring remedy.
3. Existing infrastructure at the end of its useful service life.
4. Capacity increases for community need (schools, hospitals, emergency services, etc.).
5. Incorporating changes in the Municipal Sewage Regulations or other environmental regulations such as Canadian Council of Ministers of the Environment regulations.
6. System efficiency enhancements.
7. Land developer needs (new commercial and residential development).

The above ranking criteria was reviewed by technical staff at a sewage advisory meeting on June 21, 2011. Staff felt that the criteria was too subjective, and that the inclusion of weighting factors may help provide a more objective ranking matrix. Table No. 3A as presented in the "10 Year Sewerage System Capital Plan" report has been updated to include weighting factors. This work is presented in a short letter report titled, "Comox Valley Sewer System Master Plan 10 Year Capital Plan Development" and is attached as Appendix "B".

In addition to determining project priority based on a set of weighted criteria, the SMP also sets the "year of need" for projects based both on system capacity and projections of service need based on population growth and distribution. It is important to consider both the "project ranking" and the "year of need" in determining the 10-year prioritized capital plan.

Based on the above, the following table summarizes the 10-year prioritized capital project list.

Table No. 1: Prioritized Capital Project List – Summary

Overall Priority	Project Name	Description	Weighted Priority	Year of Need	Cost ($)
1	Courtenay PS Upgrade	Upgrade raw sewage pumps to provide interim capacity increase. Existing pumps at 100%	1	2011	2,500,000
2	Sludge Thickening and Dewatering	New DAF unit and centrifuge. Existing DAF at 100%	4	2012	1,160,000
3	Sludge Composting Expansion	Double capacity of existing compost facility. Existing facility at 95%.	5	2012	2,895,000
4	Colby Pump station	Increase capacity of existing PS. Existing pump station at 80%	2	2013	100,000
5	Docliddle Pump Station and Forcemain to CVWPCC	New pump station and forcemain req'd to bypass Willemar Bluffs	3	2013	8,235,000
6	Greenwood Trunk	New Gravity Sewer to serve new development	9	2015	2,940,000
7	CFB Comox Pump Station Upgrade	New larger pumps	9	2015	400,000
8	Primary Clarifier	New primary clarifier. Existing at 80%.	7	2015	1,929,000
9	CVWPCC – Ph 1	Phase one of major treatment plant upgrade (MSR compliance)	8	2016	5,000,000
10	Hudson Trunk	New Gravity Sewer to serve new development (residential)	9	2016	1,057,500
11	CVWPCC – Ph 2	Phase two of major treatment plant upgrade (MSR compliance)	8	2019	24,000,000
12	New Courtenay Pump Station	Replace Courtenay pump station	6	2020	19,000,000

The above list recommends that approximately $69 million of capital improvements be completed over the next 10-year period. Many of these projects are not included on the Comox Valley sewerage system DCC project list, and as such DCC funds are currently not being collected for these projects. It is recommended that the DCC project list and accompanying bylaw be updated to include the 10-year prioritized capital plan project list.

It is also recommended that major capital projects for the Comox Valley sewerage system generally proceed based on the priorities summarized in Table No. 1 and that project priority be reviewed on an annual basis.

Options

1. To adopt the 10-year prioritized capital project list as presented in Table No. 1.
2. To not adopt the 10-year prioritized capital project list as presented in Table No. 1

The 10-year prioritized capital project list was developed by utilizing the extensive planning work completed as part of the SMP and by objectively extracting the highest priority projects for the core service area from that work. Project priorities have been determined based on expected remaining service life of existing components, growth based demand for additional services and social influences. Based on the above, only option 1 is recommended.

Financial factors

The 10-year prioritized capital plan totals approximately $69 million in spending over the next 10 years. Many of these projects are not included on the Comox Valley sewerage system DCC project list and as such DCC funds are currently not being collected for these projects. It is recommended that the DCC bylaw be updated.

The 10-year prioritized capital project list will have a significant impact on the 2012-2016 financial plan for the sewerage service. This impact will likely result in a higher future municipal requisition. This will be further reviewed as part of the next budget cycle in early 2012.

Legal factors

None

Sustainability implications

The Comox Valley sustainability strategy is a regional plan that creates new knowledge and leading approaches to sustainability for communities in the Comox Valley. The strategy includes several targets related to new capital infrastructure including objectives to reduce overall greenhouse gas emissions by 80 per cent from 2007 levels and to reduce energy use per capita by 50 per cent. These objectives will be incorporated into the design of all new infrastructure.

Intergovernmental factors

The Comox Valley sewerage system serves the City of Courtenay and the Town of Comox. Project priorities are reviewed by a staff level advisory committee with representation from the City, Town and regional district. A thorough review of the 10-year prioritized plan was completed by the advisory committee at its meeting on September 22, 2011. Although the committee recognizes the financial challenges involved with the prioritized project list it strongly endorses bringing this list forward into an updated DCC bylaw for the sewerage service.

Interdepartmental involvement

The CVRD property services branch is leading this work.

Citizen/public relations

Currently, only residents within the municipal boundary of either the City of Courtenay or the Town of Comox participate in the sewer service. The large amount of capital spending required in the next 10 years will likely result in higher user rates to residents. Careful messaging from the Comox Valley Regional District, City of Courtenay and Town of Comox to affected residents will be required.

Prepared by:

M. Rutten

Marc Rutten, P. Eng.
Senior Manager of Engineering Services

Concurrence:

K. Lorette

Kevin Lorette, P. Eng., MBA
General Manager of Property Services Branch

Attachments: Appendix A – "CVRD – 10 Year Sewerage System Capital Plan"
Appendix B – "CV Sewer System Master Plan 10 Year Capital Plan Development"

APPENDIX A

Comox Valley
REGIONAL DISTRICT

COMOX VALLEY REGIONAL DISTRICT – 10 YEAR SEWERAGE SYSTEM CAPITAL PLAN

June, 2011

McElhanney

McElhanney

DRAFT

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June 16, 2011

MCSL File: 2211-46970-2

Comox Valley Regional District
600 Comox Road
Courtenay, BC V9N 3P6

Attention: **Mr. Marc Rutten, P.Eng.**
Senior Manager of Engineering Services

Dear Sir,

COMOX VALLEY REGIONAL DISTRICT - 10 YEAR SEWERAGE SYSTEM CAPITAL PLAN

1.0 INTRODUCTION

This 10 year sewerage system capital plan stems largely from the CVRD Sewer Master Plan (SMP) update work undertaken in 2009-2010.

The SMP outlines a preferred overall capital plan strategy, intended to provide sewerage service in the region over a 50 year planning horizon. This includes both existing and projected future service areas, both within and outside of the CVRD's existing sewerage commission boundaries.

By contrast, this 10 year capital plan report is explicitly intended to identify capital infrastructure project needs within the existing sewerage commission jurisdiction, or the CVRD "core area", as it was referred to in the SMP.

The goal of this 10-year sewerage capital plan is to aggregate and analyze the CVRD's sewage infrastructure capital requirements; then prepare a document which the CVRD can use to aid in system upgrade prioritization and financial planning. We expect this capital plan will be updated by CVRD staff on a 'rolling' basis, meaning the tables and project lists will be updated annually, reflecting the evolution of ongoing land use and infrastructure planning in the Comox Valley.

2.0 CONTEXT

The CVRD's recent major planning initiatives include the following four components:

- The Comox Valley Sustainability Strategy
- The Regional Growth Strategy (RGS)

- The Regional Water Strategy
- The Sanitary Sewage Master Plan (SMP)

The above strategies have been developed in order to establish a comprehensive, high level land use planning and servicing framework for the region. This 10 Year Sewer Capital Plan is meant to supplement and expand on the findings of the SMP, through incorporation of other sources of CVRD infrastructure planning documents [existing asset management plans and PSAB reporting] as well as financial planning information.

The 10 year plan also includes the development and incorporation of project priority selection criteria. The plan is intended to guide CVRD staff toward rationalization of system component priorities over a shorter planning period than the SMP (which uses a 50-year planning horizon).

3.0 BACKGROUND

The CVRD carries a current operating budget for sewer infrastructure based on the CVRD Staff Report entitled '*2011-2015 Financial Plan – Comox Valley Sewerage Service – Function 335'.* This document is used to inform the annual '*Comox Valley Sewerage Service Budget',* via estimates of both expected capital project costs and on-going operating costs.

Capital projects are often differentiated from operating budget costs through the definition of some threshold project dollar value. Capital projects are often debt financed and thus should be identified well in advance of the actual need for commissioning of the asset, often a number of years in advance. Attending to issues such as property acquisition and environmental approvals often require significant duration.

Typically, capital projects have a useful service life greater than one year and are expensive, long lived assets, not regularly recurring. Often, regularly recurring assets, even if over the decided 'capitalization' dollar value threshold, might still be carried in an annual operating budget, rather than considered in a capital planning context.

Existing financial planning tools which the CVRD uses to predict upcoming sewer system capital expenditures include the Asset Management Plans (AMPs) for the Comox Valley Water Pollution Control Center (CVWPCC) and the CVRD pumping stations (those that route sewage to the CVWPCC).

These asset management plans are used to predict when specific existing sewage infrastructure components will need to be replaced, given an estimated life-span of the particular component.

4.0 TEN YEAR CAPITAL PLAN - OUTLINE

The 10 year capital plan is based on the following sources of information:

1. The SMP serves as the primary source of information. Table 20 and the *Suggested Development Cost Charge Project List Update* Table from the SMP contain the majority of detail regarding timing and cost of upgrade/expansion/extension projects in the CVRD "core area", predicted as required over the next 10 years.

2. Firsthand knowledge of system operation, as conveyed to us by CVRD staff (specifically, Jim Elliott).

3. The CVRD's Asset management plans

4. PSAB [depreciated tangible asset] listings as compiled by the CVRD

The 10 year capital plan is intended to compliment the AMPs, by providing a timeline and breakdown of costs for upgrade/extension/expansion projects, predicted to be required during the planning period.

Capital projects are typically the work performed by contractors via a tendered procurement process. The scope of capital projects typically entails replacement of [or major improvements to] existing infrastructure, or for completely new infrastructure [either capacity expansion or geographic extensions].

By contrast, this 10 year capital plan does not include costs for repairs to, or routine maintenance of, existing infrastructure.

Further, O&M costs expected due to new or upgraded infrastructure are not covered in the 10 year capital plan. Rather, it is assumed that the appropriate CVRD AMP will be updated at the time of each capital project completion (to include details of the new or upgraded component).

The 10 year capital plan provides details such as project cost breakdown, approximate DCC funding component, AMP funding component, relative project priority, expected year of project need and the total capital funding required in any given calendar year. These details were either compiled from various existing sources, or determined through calculation and estimation by McElhanney (see *PROCESS* section, below, for a further discussion of the sources of this information).

5.0 CAPITAL PROJECT TYPES

GROWTH RELATED VS. EXISTING SYSTEM REPLACEMENT NEED

By definition, the CVRD's AMPs do not attempt to predict when particular existing system components will need to be expanded [or extended], due to service population growth. Thus, it was agreed with CVRD staff that AMP projects would be listed in the 10 year capital plan only if a given component of infrastructure is expected to be increased in size or capacity, upon its eventual replacement.

Only the incremental value of the increase in capacity is to be included in the 10 year plan, and only if such increase in capacity is expected to cost more than $50,000. In so doing, the existing AMP process[es] is not materially affected, with annual funding for the AMPs therefore expected to remain unchanged.

Conversely, funding of the cost to increase capacity, due to growth in demand for service over time, would be a capital cost to be tracked separately. Presumably increases in capacity will be DCC eligible projects, whereas replacement of existing infrastructure, due simply to the expiration of component service life, would not be included in a DCC funding structure. Thus, the value representative of existing equipment replacement [but not expansion] will be cited as 'benefit to existing users', in the DCC bylaw funding tabulations, where an existing component is to be enlarged upon replacement.

6.0 PRIORITIZATION OF PROJECTS

In large measure, the CVRD's 2010 SMP provides the justification or rationalization for projects being included in this 'rolling' 10 year capital plan. The goal of this 10 year plan is to provide a closer examination of projects requiring funding over the next decade. It is expected this plan will be used to assist annually in the establishment 5 year capital plan budgets.

The SMP provides an indication as to the year of need for capital work, over a 50 year time-line. Clearly, there is a need to bridge the planning and budgeting gap, between a 50 year planning document and the CVRD's annual sewer function budgeting. Thus, the 50 year plan informs the 10 year capital plan which, in turn, informs the more detailed 5 year capital budget.

It should be a goal of the 10 year planning process that the same CVRD philosophies and goals drive both the annual operating plan and the longer term capital budgeting process. A means of ranking capital projects is necessary, given the differing goals and objectives of the differing stakeholders and recognizing that the dollar value of requests for capital work will often outstrip available resources. In addition, it is important to establish and follow a planning structure which is able to explain to the broader community why specific priorities were established in a particular order.

Three primary factors govern the decision to expend capital on regional sewerage infrastructure. These are the expected remaining service life of existing components, growth based demand for additional capacity and social influences. These over arching planning criteria are broken down further below. We note that 'weightings' are very often applied to the more specific criteria, such as are listed below, in order to apply intended bias or preference toward specific criteria. In our view, such weightings require CVRD input, likely at the political level, if such are to be introduced and rigorously applied, in a typical decision matrix format.

Over a 10 year period, circumstances are likely to arise which will require the relative priority of projects, [as listed in the rolling 10 year plan], to be adjusted. As a starting frame of reference, it has been agreed with CVRD staff that the following series of criteria will be used to establish relative project priorities. The 10 year plan projects are listed in an approximate order of descending priority, based on the following set of 'drivers', or principle criteria:

- Service interruption – system failure [that portion of cost attributable to new service population]. Provision of vulnerable pipeline component redundancy [bluffs foreshore, Courtenay P.Stn. discharge, etc].

- Health and safety issues requiring remedy [re: community as a whole as compared to workers at the treatment plant].

- Existing infrastructure at end of useful service life. Known to require replacement.

- System extensions or capacity increases, brought about through community need [Institutional – schools or hospitals, emergency services development, etc].

- Legislated requirements [legally mandated] for change – eg: the Municipal Sewage regulation – MSR. This could include disinfection requirements, treatment and pumping redundancy requirements, green initiatives, etc. Environmental regulations, such as CCME.

- System efficiency enhancements, eg: reduction in operating costs, IRR and IRM initiatives. Sustainability initiatives, etc.

- Land developer need – new commercial and residential development, typically. Economic development benefits to the community.

- Takes advantage of outside funding

- Linked to other capital projects – presumption of 'economy of scale'.

The derivation of these project 'drivers' [and their relative ranking] is a somewhat subjective process. It is therefore recommended that the proposed order of required sewerage system projects be regularly discussed and agreed upon at the RD sewerage technical committee level.

7.0 TEN YEAR PLAN TABLES

Four tables have been prepared, comprising the working 10 year plan. It is expected these tables will be updated by CVRD staff annually, as part of the typical budgeting process.

Table 1, the "Detailed Project List" indicates projects having been included in the capital plan, complete with further project details.

Table 2, the breakdown of costs, presents the total expected costs of each project/component, and a breakdown of potential funding sources. Project costs were gathered from various sources and updated to 2011 dollars, assuming a 4% annual inflation rate.

The AMP for a particular component (if applicable) was then consulted to determine if funding already exists for replacement of a particular component, therefore presumably allocate-able toward the "replacement portion" of upgrade cost.

Lastly, a breakout of probable funding sources was determined for each project on the 10 year plan list, based on differentiation between existing system users and new [future] users. I.e.: that portion of each project costs attributable to new users (and therefore funded through DCCs), vs. the portion of cost attributable to existing users. The following methodology was employed:

1. If a project was simply an end of service life replacement project [and therefore funding is 100% attributable to existing users] then it remains on the appropriate AMP and is not included in the capital plan.

2. If need for a project was partially attributable to new users (and therefore DCC funded) and partially to existing users, the percentage attributable was determined using population projections and estimated life-span of the component.

3. Any projects that are purely expansion/extension projects, benefitting only new users, were assumed to be 100% funded through DCCs.

Table 3, the scheduling portion of the 10 Year Capital Plan, provides estimates of the approximate durations for design and construction lead time, as expected required prior to project commissioning. These estimates were determined based on the cost and complexity of each project and previous experience with similar projects.

Table 4, the summary sheet, presents the sum of estimated capital costs for planned projects in any given calendar year. An estimate is provided of expected DCC funding and the remaining, resultant values, to be funded by other means.

8.0 ASSUMPTIONS & LIMITATIONS

- Various simplifying assumptions and limitations were adopted; summarized as follows:

- Projects included in the 10 year capital plan are restricted to servicing of the 'core area' as defined by the SMP (i.e. the existing CVRD sewage commission mandate area).

- The cost estimates for all projects/components are considered 'Class D' accuracy (per CEBC definition).

- This plan focuses on the expenditures side of CVRD sanitary sewer capital planning. While an indication is provided as to how project costs might be recovered differentially from existing and new users, the CVRD DCC bylaw does require updating as soon as practicable. The capital plan does not focus on means of project funding, setting taxation rates, borrowing requirements, etc.

- The capital plan relies on information from the SMP, including population growth estimates, project costs, system performance criteria/evaluations, etc. Therefore, assumptions outlined in the SMP are implicitly applicable as assumptions pertaining to this capital plan.

- Phase 1 upgrade to the CVWPCC is scheduled to occur likely within the period of this 10 year capital plan. Determination of the Phase 1 CVWPCC upgrade cost was provided by Dayton & Knight, based on 'cost curves' derived from their past experience with similar projects. Table 6-12, Page 27, of the Dayton & Knight CVWPCC systems assessment, prepared as part of SMP Technical Memo #1, is reproduced as follows:

TABLE 6-12
LOADING ON EXISTING PROCESSES & POTENTIAL SERVICE POPULATION

Process	Current Flow/Load as % of Installed Capacity	Installed Service Population
Mechanical Bar Screens	52%	71,000
Grit Removal Tanks	40%	91,000
Primary Sedimentation Tanks	79%	46,000
Aeration Basins	90%	40,000
Secondary Clarifiers	80%	45,000
Effluent Pump Station and Outfall	78%	47,000
Gravity Thickeners	100%	36,000
DAF Thickener	55%**	66,000**
Centrifuge Dewatering	38%	96,000

**After expected DAF project, proposed herein for year 2012, resultant will be component functioning at 55% capacity and 66,000 service population. Per Table 7, page 16 of the SMP, Volume 1, the DAF process is currently at essentially 100% capacity, with a 33,000 service population.

We presume the 'Phase 1' CVWPCC upgrades will include some of the above noted components. In addition, planned upgrades per the existing AMP overlap the 'phase 1' treatment plant upgrade scope.

Thus, for purposes of initial discussion only, we have assumed sludge thickening and dewatering and primary clarifier comprise part of the phase 1 scope. In addition, a $5,000,000 expenditure at calendar year 2016 has been assumed, with the balance of the $32,200,000 [i.e. approximately $24,100,000] carried at year 2019.

- As determined in consultation with CVRD staff, only projects over $50,000 were included. Any smaller projects are considered to be covered by the appropriate AMP or in the annual operating budget.

- Provisional items are included, based on discussions with CVRD operations staff. Further analysis is required for these components prior to confirmation of need, and thus, inclusion in the 10 year capital plan.

9.0 CONCLUSIONS

- Based on the 10 year planning horizon, the capital plan funding requirement is just under $69 million, excluding 'provisional' projects as listed. From the CVED SMP population projection tables, the expected change in 'core area' population, between 2010 and 2021, tributary to the RD system, would be roughly 15,397. [53,738 – 38,341]. DCCs are anticipated, roughly speaking, to cover $61.5 million of this total. Thus, the expected DCC per capita will be $3944, or roughly $9,600 per residential unit, based on an occupancy rate of 2.4 persons per single family dwelling unit.

- The CVRD sanitary sewer DCC bylaw component requires review and adjustment ASAP.

10.0 RECOMMENDATIONS

- The DCC project list and 10 year capital plan list are inter-related, and therefore both should be updated concurrently in future. We recommend this updating exercise take place every 3 years. This will help to ensure that DCC bylaw updates reliably reflect demands and funding requirements. Under ideal conditions, DCC funds would be collected prior to construction of a given project. However, this rarely occurs, in practise, since capital projects intended to service new (growth) areas are typically required before the service population which will directly benefit from the project has sufficiently materialized. Thus, the capital plan will help the CVRD anticipate when these funds are required, what population a project is expected to serve, and how long it will take for that population to materialize (using SMP population projections).

- On an ongoing, 'rolling' basis, the CVRD should undertake more detailed cost estimates for the next three years of capital plan projects. This implies more detailed assessment of project components, i.e. preliminary design effort. It will allow the CVRD to reassess priority of the upcoming projects as costs are better defined. In addition, scheduling requirements and interconnectivity with other potential upgrades can be refined.

- An RFP for the preliminary design of the CVWPCC Phase 1 upgrading should be prepared and issued in 2011, with the details of the project then added to the capital plan as they become apparent.

- Funding means, grant opportunities, debt financing thresholds should be examined, as a CVRD finance staff initiative. Clearly, attention needs to be paid to the community's general capacity and wiliness to pay, etc.

- PSAB listings [i.e.: tangible assets listings], existing treatment and pumping system asset management plans, the 10 year capital plan and overall SMP should be reviewed in conjunction annually.

- The list of 'provisional' projects requires further attention. Some additional study is required in order to assess if these projects should be transferred to the main body of the 10 year capital plan list.

Yours truly,

MCELHANNEY CONSULTING SERVICES LTD.

Ian S. Whitehead, P.Eng.
Regional Manager

ISW:njg

Enclosures

DRAFT

COMOX VALLEY REGIONAL DISTRICT
10 YEAR CAPITAL PLAN - SEWERAGE SYSTEM

TABLE #1 - COMPONENT DESCRIPTIONS, RATIONALIZATION & COST INFORMATION

Project Reference Number	Primary Asset Grouping	CVRD Asset Detail	Description	Replacement (R), or Upgrade (U) Project [% of each]	Expected Commissioning Year Required	Primary Driver for Work	Estimated Capital Cost [2011 Dollars]	AMP/ERF Money to Offset Upgrade Cost [2011 Dollars]	NET Upgrade Cost (Upgrade Cost - AMP Allocated Funds)	Information Source	Comments (including Factors or Constraints that may affect project need)
	A. CVWPCC										
a1		Sludge Composting - [at Pigeon Lake]	Expansion of existing service	U	2012	Capacity	$ 2,894,063	$ -	$ 2,894,063	SMP DCC Update Table	-At CVRD landfill site
a2		Sludge Thickening & Dewatering	Expansion of existing service	U	2012	Capacity	$ 1,157,625	$ -	$ 1,157,625	SMP DCC Update Table	-2nd DAF, 3rd Gravity Thickener, 3rd Centrifuge
a3		Primary Clarifier	Expansion of existing service	U	2014	Capacity	$ 1,928,603	$ -	$ 1,928,603	SMP DCC Update Table	-Duplicate Basins, Sludge Pumps, Scum Pumps and Screen
a4		CVWPCC Expansion [Phase 1]	Expansion of existing service	U	varies	Capacity	$ 32,200,000	$ -	$ 32,200,000	SMP Table 20	-This is a provisional item, listed in the SMP as necessary in 2011, but MSR is likely a significant driving force behind this project so project timing depends on timing of MSR registration. D&K determined project upgrade costs, but did not provide breakdown of specific upgrade components.
a5		Remainder of CVWPCC Expansion Phase 1 budget, after projects a2 and a3 are completed			varies		$ 29,113,772	$ -	$ 29,113,772		
	B. PUMPING STATIONS										
	CFB Comox PS	*(no scheduled upgrades until 2029)*									
b1	**Courtenay PS**	Raw Sewage Pumps & discharge header to pressure sewer u/s end	Pumps ("short-term upgrade")	R/U [36%/64%]	2011	Capacity, Docliddle	$ 2,500,000	$ 765,000	$ 1,735,000	SMP Table 20	-Current capacity issues necessitate upgrades, and the proposed Docliddle station will necessitate changes/upgrades to pumps due to the change in system head. This assumes ONLY the pumps/VFDs will be replaced along with associated electrical/piping works necessary.
b2		New Courtenay Pump Station	Entire new pump station ("long-term upgrade")	U	2020	Capacity	$ 12,500,000	$ 410,000	$ 12,090,000	SMP Table 20	-This cost is assuming that the pumps/VFDs replaced in the short-term upgrade can NOT be re-used. It is possible that if these upgrades are coordinated properly, the pumps may be able to be re-tooled (for example just new impellers) and re-used in the major upgrade, brining the total cost down.
b3	**Docliddle PS**	Docliddle PS	Proposed Pumping Station	R/U [30%/70%]	2013	Docliddle	$ 6,000,000	$ -	$ 6,000,000	SMP Table 20	-New Docliddle PS required in order to bypass/replace the Willemar Bluffs forcemain that currently connects the Courtenay and Jane St PS to the CVWPCC
b4	**Colby Road PS**	Colby PS	Upgrades		2013		$ 100,000	$ 37,000	$ 63,000	McElhanney	
	C. CONVEYANCE INFRASTRUCTURE										
	Forcemain: Courtenay PS to Docliddle	**Twin Existing FM**	**Proposed FM from Courtenay PS to proposed Docliddle PS**	**R/U [30%/70%]**	**2020**	**Redundancy, Docliddle, Efficiency**				SMP Table 20	-Needed to provide redundancy in case of failure of the existing forcemain, and existing forcemain is nearing capacity (twinning it would significantly reduce friction losses)
c1		Courtenay PS to Indian Reserve	Forcemain along Dyke Rd	R/U [30%/70%]	2020	Redundancy, Docliddle, Efficiency	$ 3,144,000	$ -	$ 3,144,000	SMP Table 20	(see above)
c2		Indian Reserve to Comox Marina	Forcemain along foreshore	R/U [30%/70%]	2020	Redundancy, Docliddle, Efficiency	$ 1,577,000	$ -	$ 1,577,000	SMP Table 20	(see above)
c3		Crossing Comox Marina	Forcemain along foreshore	R/U [30%/70%]	2020	Redundancy, Docliddle, Efficiency	$ 360,000	$ -	$ 360,000	SMP Table 20	(see above)
c4		Comox Marina to Jane St. PS	Forcemain along foreshore	R/U [30%/70%]	2020	Redundancy, Docliddle, Efficiency	$ 375,250	$ -	$ 375,250	SMP Table 20	(see above)
c5		Jane St PS to Croteau Rd	Forcemain along foreshore	R/U [30%/70%]	2020	Redundancy, Docliddle, Efficiency	$ 1,045,000	$ -	$ 1,045,000	SMP Table 20	(see above)
c6		Croteau Rd, from foreshore to Docliddle PS	Forcemain	R/U [30%/70%]	2020	Redundancy, Docliddle, Efficiency	$ 28,500	$ -	$ 28,500	SMP Table 20	(see above)
	Forcemain: Docliddle to CVWPCC	**New FM**	**Proposed forcemain/sewer from proposed Docliddle PS to CVWPCC**	**R/U [82%/18%]**	**2013**	**Docliddle**		$ -	$ -	SMP Table 20	-New FM/sewer needed to convey sewage from proposed Docliddle PS (see above) to CVWPCC
c7		Forcemain section	per CH2MHILL forcemain relocation report	R/U [82%/18%]	2013	Docliddle	$ 693,000	$ -	$ 693,000	SMP Table 20	(see above)
c8		Gravity section	per CH2MHILL forcemain relocation report	R/U [82%/18%]	2013	Docliddle	$ 696,000	$ -	$ 696,000	SMP Table 20	(see above)
c9		Inverted Siphon section	per CH2MHILL forcemain relocation report	R/U [82%/18%]	2013	Docliddle	$ 846,000	$ -	$ 846,000	SMP Table 20	(see above)
c10	**Greenwood Trunk**	Greenwood trunk (North)		U	2012	Developer	$ 2,940,000	$ -	$ 2,940,000	SMP Table 20	-Table 20 of SMP says it should be completed 2015, but correspondence dated April 1, 2011 states that it should be the first expansion priority, only current/immediate operational shortfalls should be put ahead of it
c11	**Hudson Trunk**			U	2015	Developer	$ 1,057,500	$ -	$ 1,057,500	SMP Table 20	(see above)
	D. PROVISIONAL PROJECTS										
d1		**New CVWPCC Outfall**					$ 5,000,000				
d2		**Expansion of Composting Facility**					$ 3,000,000				
		TOTALS					**$ 68,956,313**				

1 **NOTE: Total cited excludes the $32.2 million line item above, as this is carried under the projects above and below it, per above.**
2 **NOTE: SMP section 6, pages 70 suggests it might be most cost effective to replace the foreshore pressure sewer, between the Courtenay stn and Docliddle stn at time of initial Courtenay Stn pump replacement. stn at time of initial Courtenay stn pump replacement. However, in an attempt to reduce the total capital cost in early years of the capital plan, this upstream pressure sewer segment replacement has been pressure sewer segment replacement has been indicated as deferred to year 2016.**
3 **NOTE: it is assumed the full extent of Brent Road treatment plant phase 1 expansion is required to suit new growth and thus is 100% DCC recoverable.**
4 **NOTE: Provisional project cost estimates are only very rough guesses, intended to highlight very approximate magnitude of potential funding need. Overall totals do not include these provisional sums.**

COMOX VALLEY REGIONAL DISTRICT
10 YEAR CAPITAL PLAN - SEWERAGE SYSTEM

TABLE #2 - PROJECT COST BREAKDOWN

Project Reference Number	Project Number/Name	CVRD Asset	Description	Expected Construction Year Required	Estimated Capital Cost [2011 Dollars]	AMP/ERF Money to Offset Upgrade Cost [2011 Dollars]	NET Upgrade Cost (Upgrade Cost - AMP Allocated Funds)	Replacement (R), or Upgrade (U) Project [% of each]	DCC Funding Component [2011 Dollars]	Remainder of Funding Required [2011 Dollars]	Cost Estimate Source	Risk Factors Affecting Cost
a1	**A. CVWPCC**	Sludge Composting - [at Pigeon Lake]	Expansion of existing service	2012	$ 2,894,063	$ -	$ 2,894,063	U	$ 2,894,063	$ -	SMP DCC Update Table	
a2		Sludge Thickening & Dewatering	Expansion of existing service	2012	$ 1,157,625	$ -	$ 1,157,625	U	$ 1,157,625	$ -	SMP DCC Update Table	
a3		Primary Clarifier	Expansion of existing service	2014	$ 1,928,603	$ -	$ 1,928,603	U	$ 1,928,603	$ -	SMP DCC Update Table	
a4		CVWPCC Expansion [Phase 1]	Expansion of existing service	varies	$ 32,200,000	$ -	$ 32,200,000	U	$ 32,200,000	$ -	SMP Table 20	
a5		Remainder of CVWPCC Expansion phase 1 budget, after projects a2 and a3 are completed		varies	$ 29,113,772		$ 29,113,772		$ 29,113,772			$29 million+ is net of project items a2 and a3 and is considered 100% DCC rebate-able.
	B. PUMPING STATIONS											
	CFB Comox PS	*(no scheduled upgrades until 2029)*										
b1	**Courtenay PS**	Raw Sewage Pumps & discharge header to pressure sewer u/s end	Pumps ("short-term upgrade")	2011	$ 2,500,000	$ 765,000	$ 1,735,000	R/U [36%/64%]	$ 1,110,000	$ 625,000	SMP Table 20	
b2		New Courtenay Pump Station	Entire new pump station ("long-term upgrade")	2020	$ 12,500,000	$ 410,000	$ 12,090,000	U	$ 12,090,000	$ -	SMP Table 20	
b3	**Dockiddle PS**	Dockiddle PS	Proposed Pumping Station	2013	$ 6,000,000	$ -	$ 6,000,000	R/U [30%/70%]	$ 4,200,000	$ 1,800,000	SMP Table 20	
b4	**Colby PS**	Colby PS	Upgrades	2013	$ 100,000	$ 37,000	$ 63,000	U	$ 63,000	$ -	McElhanney	
	C. CONVEYANCE INFRASTRUCTURE											
	Forcemain: Courtenay PS to Docliddle	**Twin Existing FM**	**Proposed FM from Courtenay PS to proposed Docliddle PS**	**2020**				R/U [30%/70%]			SMP Table 20	
c1		Courtenay PS to Indian Reserve	Forcemain along Dyke Rd	2020	$ 3,144,000	$ -	$ 3,144,000	R/U [30%/70%]	$ 2,200,800	$ 943,200	SMP Table 20	
c2		Indian Reserve to Comox Marina	Forcemain along foreshore	2020	$ 1,577,000	$ -	$ 1,577,000	R/U [30%/70%]	$ 1,103,900	$ 473,100	SMP Table 20	
c3		Crossing Comox Marina	Forcemain along foreshore	2020	$ 360,000	$ -	$ 360,000	R/U [30%/70%]	$ 252,000	$ 108,000	SMP Table 20	
c4		Comox Marina to Jane St. PS	Forcemain along foreshore	2020	$ 375,250	$ -	$ 375,250	R/U [30%/70%]	$ 262,675	$ 112,575	SMP Table 20	
c5		Jane St PS to Croteau Rd	Forcemain along foreshore	2020	$ 1,045,000	$ -	$ 1,045,000	R/U [30%/70%]	$ 731,500	$ 313,500	SMP Table 20	
c6		Croteau Rd, from foreshore to Docliddle PS		2020	$ 28,500	$ -	$ 28,500	R/U [30%/70%]	$ 19,950	$ 8,550	SMP Table 20	
	Forcemain: Docliddle to CVWPCC	**New FM**	**Proposed forcemain/sewer from proposed Docliddle PS to CVWPCC**	**2013**				R/U [82%/18%]			SMP Table 20	
c7		Forcemain section	per CH2MHILL forcemain relocation report	2013	$ 693,000	$ -	$ 693,000	R/U [82%/18%]	$ 124,740	$ 568,260	SMP Table 20	
c8		Gravity section	per CH2MHILL forcemain relocation report	2013	$ 696,000	$ -	$ 696,000	R/U [82%/18%]	$ 125,280	$ 570,720	SMP Table 20	
c9		Inverted Siphon section	per CH2MHILL forcemain relocation report	2013	$ 846,000	$ -	$ 846,000	R/U [82%/18%]	$ 152,280	$ 693,720	SMP Table 20	
c10	**Greenwood Trunk**	Greenwood trunk (North)		2012	$ 2,940,000	$ -	$ 2,940,000	U	$ 2,940,000	$ -	SMP Table 20	
c11	**Hudson Trunk**			2015	$ 1,057,500	$ -	$ 1,057,500	U	$ 1,057,500	$ -	SMP Table 20	
	D. PROVISIONAL PROJECTS											
d1		New CVWPCC Outfall			$ 5,000,000							
d2		Expansion of Composting Facility			$ 3,000,000							
		TOTALS			**$ 68,956,313**				**$ 61,527,688**			

1 **NOTE: Total cited excludes the $32.2 million line item above, as this is carried under the projects above and below it, per above.**
2 **NOTE: SMP section 6, pages 70 suggests it might be most cost effective to replace the foreshore pressure sewer, between the Courtenay stn and Docliddle stn at time of initial stn at time of initial Courtenay stn pump replacement. However, in an attempt to reduce the total capital cost in early years of the capital plan, this upstream pressure sewer pressure sewer segment replacement has been indicated as deferred to year 2016.**
3 **NOTE: It is assumed the full extent of Brent Road treatment plant phase 1 expansion is required to suit new growth and thus is 100% DCC recoverable.**
4 **NOTE: Provisional project cost estimates are only very rough guesses, intended to highlight very approximate magnitude of potential funding need. Overall totals do <u>not</u> include these provisional sums.**

COMOX VALLEY REGIONAL DISTRICT
10 YEAR CAPITAL PLAN - SEWERAGE SYSTEM

TABLE #3 - PROJECT PRIORITIZATION & SCHEDULING

Project Reference Number	Project Name	CVRD Asset	Description	Estimated Capital Cost [2011 Dollars]	Estimated Year of Need	Project Priority	Preliminary Design Duration [months]	Detailed Design Duration [months]	Procurement/ Construction Duration [months]	Total Project Duration [months]	Approvals Required	Comments
b1	**Courtenay PS**	Raw Sewage Pumps & discharge header to pressure sewer u/s end	Pumps ("short-term upgrade")	$ 2,500,000	2011	1	1	2	2	5		
a1	**CVWPCC**	Sludge Composting - [at Pigeon Lake]	Expansion of existing service	$ 2,894,063	2012	2	2	3	4	9		
a2	**CVWPCC**	Sludge Thickening & Dewatering	Expansion of existing service	$ 1,157,625	2012	2	2	3	3	8		
b3	**Docliddle PS**	New Pump Station	Proposed Pumping Station	$ 6,000,000	2013	3	3	3	3	9		
	Forcemain: Docliddle to CVWPCC	**New FM**	**Proposed forcemain/sewer from proposed Docliddle PS to CVWPCC**		**2013**	**3**	4	6	4	14		
c7		Forcemain section	per CH2MHILL forcemain relocation report	$ 693,000	2013	3						
c8		Gravity section	per CH2MHILL forcemain relocation report	$ 696,000	2013	3						
c9		Inverted Siphon section	per CH2MHILL forcemain relocation report	$ 846,000	2013	3						
b4	**Colby PS**	PS Upgrades	Upgrades	$ 100,000	2013	3	1	1	1	3		
a3	**CVWPCC**	Primary Clarifier	Expansion of existing service	$ 1,928,603	2014	4	2	4	3	9		
c10	**Greenwood Trunk**	Gravity Sewer	Forcemain/Gravity Sewer	$ 2,940,000	2015	5	3	4	4	11		
c11	**Hudson Trunk**	Gravity Sewer	Forcemain/Gravity Sewer	$ 1,057,500	2015	5	3	4	4	11		
a4	**CVWPCC**	CVWPCC Phase 1 - first portion [rough assumption as to scope]	Expansion of existing service	$ 5,000,000	2016	6	6	9	6	21		
a5	**CVWPCC**	Remainder of CVWPCC Expansion phase 1 budget, after projects a2, a3 and a4 are completed		$ 24,113,772	2019	7	6	9	6	21		
b2	**Courtenay PS**	New Courtenay Pump Station	Entire new pump station ("long-term upgrade")	$ 12,500,000	2020	8	3	4	4	11		
	Forcemain: Courtenay PS to Docliddle	**Twin Existing FM**	**Proposed FM from Courtenay PS to proposed Docliddle PS**		**2020**	**8**	4	6	4	14		
c1		Courtenay PS to Indian Reserve	Forcemain along Dyke Rd	$ 3,144,000	2020	8						
c2		Indian Reserve to Comox Marina	Forcemain along foreshore	$ 1,577,000	2020	8						
c3		Crossing Comox Marina	Forcemain along foreshore	$ 360,000	2020	8						
c4		Comox Marina to Jane St. PS	Forcemain along foreshore	$ 375,250	2020	8						
c5		Jane St PS to Croteau Rd	Forcemain along foreshore	$ 1,045,000	2020	8						
c6		Croteau Rd, from foreshore to Docliddle PS		$ 28,500	2020	8						
	D. PROVISIONAL PROJECTS											
		New CVWPCC Outfall		$ 5,000,000								
		Expansion of Composting Facility		$ 3,000,000								
		TOTALS		$ 68,956,313								

1 **NOTE: Total cited excludes the $32.2 million line item above, as this is carried under the projects above and below it, per above.**
2 **NOTE: SMP section 6, pages 70 suggests it might be most cost effective to replace the foreshore pressure sewer, between the Courtenay stn and Docliddle stn at time of stn at time of initial Courtenay stn pump replacement. However, in an attempt to reduce the total capital cost in early years of the capital plan, this upstream pressure pressure sewer segment replacement has been indicated as deferred to year 2016.**
3 **NOTE: It is assumed the full extent of Brent Road treatment plant phase 1 expansion is required to suit new growth and thus is 100% DCC recoverable.**
4 **NOTE: Provisional project cost estimates are only very rough guesses, intended to highlight very approximate magnitude of potential funding need. Overall totals do <u>not</u> include these provisional sums.**

COMOX VALLEY REGIONAL DISTRICT
10 YEAR CAPITAL PLAN - SEWERAGE SYSTEM

TABLE #4 - ANNUAL EXPENDITURES SUMMARY

Year	Estimated Capital Cost	Approx. Estimated DCC Funding Component	Remainder of Funding Required
2011	$ 2,500,000.00	$ 1,110,000.00	$ 1,390,000.00
2012	$ 4,051,688.00	$ 4,051,688.00	$ -
2013	$ 8,335,000.00	$ 4,665,300.00	$ 3,669,700.00
2014	$ 1,928,603.00	$ 1,928,603.00	$ -
2015	$ 3,997,500.00	$ 3,997,500.00	$ -
2016	$ 5,000,000.00	$ 5,000,000.00	$ -
2017	$ -		$ -
2018	$ -		$ -
2019	$ 24,113,772.00	$ 24,113,772.00	$ -
2020	$ 19,029,750.00	$ 16,660,825.00	$ 2,368,925.00
TOTAL	**$ 68,956,313.00**	**$ 61,527,688.00**	**$ 7,428,625.00**

In 2011 dollars

not including 'provisional' projects

MCSL

JUNE 16, 2011

PROJECT 2211-46970-2

McElhanney

APPENDIX B

September 19, 2011

Our File: 2211-46970-2

Comox Valley Regional District
600 Comox Road
Courtenay, BC V9N 3P6

Attention: Mr. Marc Rutten, P.Eng.
Senior Manager of Engineering Services

Dear Sir,

COMOX VALLEY SEWER SYSTEM MASTER PLAN 10 YEAR CAPITAL PLAN DEVELOPMENT

Attached is an updated and modified 'Table 3', as was presented as part of our June 2011 draft 10 year CVRD sewerage system capital plan report, entitled "Table 3a". As discussed during our meeting of September 12, 2011, we have added a scoring matrix to assisting in evaluating the relative need of the projects as listed in the 10 year capital plan. The matrix is based on the nine evaluation criteria having been outlined on page 5 of the June 2011 report.

As discussed, we first considered a matrix evaluation without weighting of the nine criteria. This resulted in relative ranking, or scores which, in our view, had insufficient absolute variation. The degree of subjectivity in assigning scores, in our view, limits the value, or legitimacy, of the resulting outcome.

We then added descending magnitude weighing factors, intended to reflect the agreed descending order of importance of the nine primary decision drivers. You will note the weighting factors have been stepped down essentially linearly, seeing there to be no rationale to assign other than a linear progression.

NOTES:

1. As requested, we have collapsed the two sets of reference # "C" projects into two single (separate) lines, in order to simplify the sheet.

2. Note the Jane Street pump station replacement, as had formerly been part of the SMP Table 20, Appendix "S", expected in year 2011 (i.e. year #1, per Figure 1 of the SMP, page 65), is not included in the 10 year capital plan. This is due to the presumption the Docliddle station is built at optimized geodetic elevation (12m) and that the catchment area optimally tributary to it is achieved.

...continued

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3. The year of required works, as outlined in the 10 year plan, differs from SMP Table 20, reflecting what we believe to be the realities of cash flow and borrowing, i.e. limits on realistically available funding in a given year. In so doing, however, the CVRD should be aware, for example, that deferral of pressure sewer twinning (Courtenay pump station to Docliddle pump station), from year 2011 to year 2020, implies deferral of system redundancy. These trade-offs in capital project priorities based on cash flow expectations and public willingness to support borrowing require political discussion, in our view.

4. Core Area route option 1 would have required the CFB Comox station to be replaced with a new +/- $5 million station, day one, as a result of pumped flow over the hill toward it from the proposed new Courtenay pumping station. Thus, no $400k intermediate upgrade to 46 HP pumps at the CFB Comox Station, as there would be no need for such.

   Subsequently, for route option 6, [the preferred Core Area final route], we moved the CFB station upgrade down the list to year 2029, and detuned it from a $5 million unit to a $2.5 million price tag, but did not add back in the intermediate $400k change out [required at or about the time the Hudson and/or Greenwood trunk is built] from 2 - 35 HP pumps to 3 - 46 HP pumps.

   Therefore, this $400k has been added into the 10 year plan, per the attached updated tables. We have assumed, contrary to the 2006 DCC table, a 50% benefit to existing users. This should be confirmed as part of the pending DCC bylaw update process.

OBSERVATIONS

- The 10 year capital plan deals only with the CVRD 'Core Area', and as such, questions such as how diversion of west Courtenay areas to a new south treatment plant might help to defer Courtenay PS upgrading are not applicable.

- The CVRD SMP document uses system capacity and projections of service population growth as the primary driver for relative ranking of component upgrades/extensions. System redundancy, particularly pertaining to the foreshore pressure sewer, was also an initial driver. The 10 year capital plan attempts to take expected year of replacement need into consideration, based on existing PSAB and CVRD Asset Management Plan documentation.

...continued

- In our view, replacement of existing infrastructure, known to be at or near the end of useful service life, wherein there is an elevated probability of service interruption and/or environmental degradation, must take precedence over system expansion to suit new development growth.

- Relative project ranking resulting from the matrix analysis should really be received and reviewed as a rough 'check' on the legitimacy and defence-ability of the project priority list originally presented in the June 2011 document. As such, to assist in comparative discussion, we have added a column in the attached table, indicating the year of expected need, per the June report.

Yours truly,

MCELHANNEY CONSULTING SERVICES LTD.

Ian S. Whitehead, P.Eng.
Regional Manager

ISW/njg

Enclosure

COMOX VALLEY REGIONAL DISTRICT
10 YEAR CAPITAL PLAN - SEWERAGE SYSTEM

TABLE #3a - PROJECT PRIORITIZATION & SCHEDULING - [supplementary matrix evaluation]

							WEIGHTING FACTORS											
							5	5	4.5	3.5	3	2.5	2	1.5	1			
							service interruption - system failure probability due to other than capacity	community health and safety	replacement infrastructure - end of useful service life **or** at capacity	new community need [schools, hospitals, etc.]	legislative requirements or changes	system efficiency enhancements	land developer need	expected probability of partial funding through outside grants	linked to other capital projects - economy of scale			
							Scores assigned from 1 to 10, with 10 being very important and 1 being least important. Assigning '5' means essentially neutral issue/outcome											
							Criteria number, taken from 10 year capital plan report, June 2011											
Project Reference Number	**Project Name**	**CVRD Asset**	**Description**	**Estimated Capital Cost [2011 Dollars]**	**Estimated Year of Need [per June 2011 report]**	**Project Priority [per June 2011 report]**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	Un-Adjusted Totals	**WEIGHTED TOTALS**	**PRIORITY RANKING, [based on weighted scoring]**	
b1	**Courtenay PS**	Raw Sewage Pumps & discharge header to pressure sewer u/s end	Pumps ("short-term upgrade")	$ 2,500,000	2011	1	9	9	9	7	5	6	9	7	5	66	219	1	
a1	**CVWPCC**	Sludge Composting - [at Pigeon Lake]	Expansion of existing service	$ 2,894,063	2012	2	9	7	5	7	9	8	7	5	5	62	201	6	
a2	**CVWPCC**	Sludge Thickening & Dewatering	Expansion of existing service	$ 1,157,625	2012	2	9	7	5	7	9	8	7	6	5	63	202	5	
b3	**Docliddle PS**	New Pump Station	Proposed Pumping Station	$ 6,000,000	2013	3	9	9	8	7	5	5	5	7	5	60	204	4	
c7-c9	**Forcemain: Docliddle to CVWPCC**	**new pressure sewer, gravity sewer and inverted siphon sections**	**Proposed forcemain/sewer from proposed Docliddle PS to CVWPCC**	$ 2,235,000	2013	3	9	9	8	7	5	5	5	5	5	58	201	6	
b4	**Colby PS**	PS Upgrades	Upgrades	$ 100,000	2013	3	9	8	9	7	5	5	9	5	5	62	208	3	
a3	**CVWPCC**	Primary Clarifier	Expansion of existing service	$ 1,928,603	2014	4	2	7	8	5	9	8	6	5	5	55	170	8	
c10	**Greenwood Trunk**	Gravity Sewer	Forcemain/Gravity Sewer	$ 2,940,000	2015	5	1	1	1	9	5	7	10	4	5	43	110	10	
c11	**Hudson Trunk**	Gravity Sewer	Forcemain/Gravity Sewer	$ 1,057,500	2015	5	1	1	1	9	5	7	10	4	5	43	110	10	
b5	**CFB Comox PS**	Pumping station interim upgrading	new pumps and power	$ 400,000	2015	5	1	1	1	9	5	7	10	4	5	43	110	10	
a4	**CVWPCC**	CVWPCC Phase 1 - first portion [rough assumption as to scope]	Expansion of existing service	$ 5,000,000	2016	6	2	7	5	5	9	8	6	6	5	53	158	9	
a5	**CVWPCC**	Remainder of CVWPCC Expansion phase 1 budget, after projects a2, a3 and a4 are completed		$ 24,113,772	2019	7	2	7	5	5	9	8	6	6	5	53	158	9	
b2	**Courtenay PS**	New Courtenay Pump Station	Entire new pump station ("long-term upgrade")	$ 12,500,000	2020	8	9	9	9	7	5	6	8	7	5	65	217	2	
c1-c6	**Forcemain: Courtenay PS to Docliddle**	**Twin Existing FM**	**Proposed FM from Courtenay PS to proposed Docliddle PS**	$ 6,529,750	2020	8	7	7	8	5	5	5	5	5	5	52	174	7	
	D. PROVISIONAL PROJECTS																		
		New CVWPCC Outfall		$ 5,000,000			5	9	5	5	6	6	5	5	5	**51**	166	8	+/-
		Expansion of Composting Facility		$ 3,000,000			5	5	5	5	5	5	5	6	5	**46**	142	9	+/-
		TOTALS																	

1 **NOTE: Total cited excludes the $32.2 million line item above, as this is carried under the projects above and below it, per above.**

2 **NOTE: SMP section 6, pages 70 suggests it might be most cost effective to replace the foreshore pressure sewer, between the Courtenay stn and stn at time of initial Courtenay stn pump replacement. However, in an attempt to reduce the total capital cost in early years of the capital plan, this pressure sewer segment replacement has been indicated as deferred to year 2016.**

3 **NOTE: It is assumed the full extent of Brent Road treatment plant phase 1 expansion is required to suit new growth and thus is 100% DCC recoverable.**

4 **NOTE: Provisional project cost estimates are only very rough guesses, intended to highlight very approximate magnitude of potential funding need. (**