Service Plan for Core Area Liquid Waste ~~Management Plan~~ Service

2016-2019
(2018)
~~October 2015~~

Capital Regional District

Date submitted: ***November 8, 2017~~August 28, 2017~~***

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Making a difference...together

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1 Overview

1.1 Scope

The Capital Regional District (CRD) provides wastewater management to residential, commercial, industrial and institutional customers, equivalent to a population of approximately 330,000 persons distributed throughout the cCore aArea communities. These communities include the cities of Victoria, Langford and Colwood, the districts of Oak Bay and Saanich, the Township of Esquimalt, the Town of View Royal and the Songhees and Esquimalt First Nations communitiesColwood, Esquimalt, Langford, Oak Bay, Saanich, Victoria and View Royal, and the Songhees and Esquimalt First Nations. In 2006, the CRD commenced the planning for the expansion and upgrading of the wastewater management system with the principal goal of moving from the existing preliminary level of treatment to secondary tertiary treatment.

The municipalities of Esquimalt, Oak Bay and Victoria are fully served by sewers. The majority of properties in View Royal have sewers but a few still remain outside of the service area. A large, predominantly rural area of Saanich is outside of the sewerage service area. Increasing areas of Colwood and Langford are served by sewers, with plans for further expansion. In the long term, both these municipalities are expected to be fully served by sewers.

Properties not served by sewers utilize onsite septic systems or small treatments plants to provide wastewater treatment. These onsite systems primarily rely on tile fields or other distribution methods for ground disposal of treated effluent.

The Core Area Liquid Waste Management Plan Service, as a whole, is delivered and supported by a number of CRD services and programs delivered by various CRD departments and divisions. The main service and program areas are described below in Section 2.

1.2 Primary Contacts

Core Area Wastewater Planning, Regulatory, Scientific and Technical Programs

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Core Area Wastewater Conveyance System Operations and Engineering

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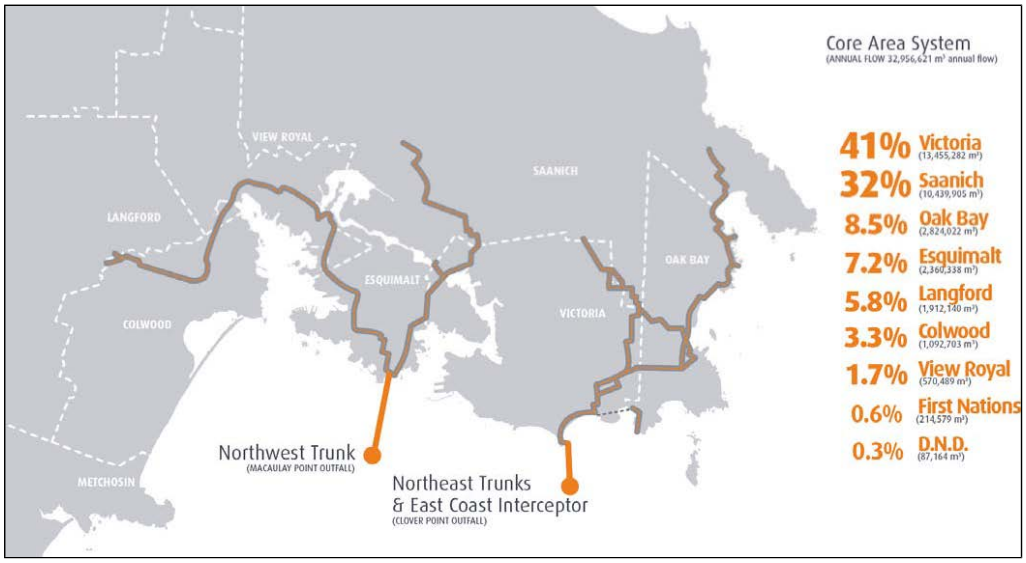
2 Services & Programs

2.1 Regional Trunk System Overview*



*2014 Actual Flows

2.2 Conveyance System Operations & Engineering

The services provided under this function include the operation, maintenance, engineering and capital project delivery for the Core Area Wastewater System, including wastewater collection, conveyance, screening and disposal through the ocean outfalls. The conveyance system is primarily composed of the four trunks:

Northw ~~W~~est Trunk - This~~The North West Trunk~~ sewer system includes the Macaulay Point pump station and outfall, as well as the Marigold, Craigflower and Lang Cove pump stations, and interconnecting trunk sewer main infrastructure.

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Operating costs are recovered by requisition to all participating members based on member percentage of total sewage input. Costs for the Northw ~~W~~est Trunk are shared by Colwood, Esquimalt, Langford, Oak Bay, Saanich, Victoria and View Royal, and the Songhees and Esquimalt First Nations~~Saanich, Victoria, Esquimalt, View Royal, Colwood, Langford, Songhees First Nation and Esquimalt First Nation~~ under a separate agreements.

Northe ~~E~~ast Trunk – Clover - ~~The North East Trunk Clover~~ This sewer system includes the Clover Point pump station and outfall, as well as the Harling Point pump station and interconnecting trunk sewer main infrastructure.

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Operating costs are recovered by requisition to all participating municipalities based on each participant's percentage of total sewage input. Costs for the Northe ~~E~~ast Trunk Clover are shared by ~~Victoria, Saanich and~~ Oak Bay, Saanich and Victoria.

Northe East Trunk – Bowker - The North East Trunk Bowker This sewer system includes the Trent pump station and interconnecting trunk sewer main infrastructure.

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Operating costs are recovered by requisition to all participating municipalities based on each participant's percentage of total sewage input. Costs for the Northe East Trunk Bowker are shared by Victoria, Saanich and Oak Bay, Saanich and Victoria.

East Coast Interceptor - The East Coast Interceptor Trunk This sewer system includes seven pump stations, the largest being the Currie Road pump station in Oak Bay and the Penrhyn pump station in Saanich East, as well as the interconnecting trunk sewer main infrastructure. The East Coast Interceptor conveys sewer flows to the Northe East Trunk Clover for eventual discharge at Clover Point.

Operating costs are recovered by requisition to all participating municipalities based on each participant's percentage of total sewage input. Costs for the East Coast Interceptor are shared by Victoria, Saanich and Oak Bay, Saanich and Victoria.

These services are delivered by the Infrastructure Operations Division and the Infrastructure Engineering Division, both under the Integrated Water Services Department.The Core Area Liquid Waste Management Plan provides the context and content for delivering wastewater services in the core area. There are several chapters in the plan which relate to specific services delivered by the CRD.

Core Area Liquid Waste Management Plan (CALWMP) - The CRD completed a Liquid Waste Management Plan in July 2000 to serve the municipalities of Colwood, Esquimalt, Langford, Oak Bay, Saanich, Victoria, View Royal, and the Songhees and Esquimalt Nations. The plan provides a strategy for managing liquid wastes for the next 25 years, and was approved by the Minister of Environment in March 2003. Since that time, the Plan has had eleven12 amendments, though the twelfth amendment has not yet been approved by the BC Ministry of Environment. Every 3-5, the CALWMP is consolidated to include amendments to that date; consolidation was last done in 2011. Over the next 1-2 years, staff plan to consolidate the CALWMP, up to and including Amendment No. 12, review and audit the objectives and commitments, and revise the CALWMP with provincial, municipal and stakeholder input. Staff are also working to ensure that all conditions imposed by the BC Ministry of Environment, when CALWMP amendments were conditionally approved, have been met. This program component will also support the development of the regional Integrated Resource Management plan, through cost-sharing with the Environmental Resource Management division.

2.3 Planning, Regulatory, Scientific & Technical Support Programs

The services provided under this function include the planning for and administration of the Core Area Liquid Waste Management Plan (CALWMP) and Treatment Program, and the programs that fulfill the commitments made under the CALWMP, including the following programs: Infiltration and Inflow & Infiltration Management Program, the Wastewater and & Marine Environment Program, the Regional Source Control Program, the Stormwater Quality Management ProgramIntegrated Watershed Management, the Harbours Environmental Action Program, the On-site Septic System Program, and Management of Trucked Liquid Waste Management and Corrosion & Odour Control. These services and programs are delivered by technical and scientific staff in the Environmental PlanningFacilities Management & Engineering Services Division, the Environmental Partnerships Division, and the Environmental Protection Division.

Core Area Liquid Waste Management Plan (CALWMP) - The CRD completed a Liquid Waste Management Plan in July 2000 to serve the municipalities of Colwood, Esquimalt, Langford, Oak Bay, Saanich, Victoria, View Royal, and the

~~Songhees and Esquimalt Nations. The plan provides a strategy for managing liquid wastes for the next 25 years, and was approved by the Minister of Environment in March 2003. Since that time, the Plan has had eleven amendments.~~

~~Infiltration and~~ Inflow & Infiltration Management Program (I&I)- ~~Infiltration and i~~Inflow ~~(I&I)~~ and infiltration refers to rain~~water~~ and groundwater that enters the sanitary sewer. A certain amount of ~~I&I~~inflow and infiltration is unavoidable and is accounted for in routine sewer design. However, when ~~I&I~~ it exceeds design allowances, sewer capacity is consumed and may result in overflows, risks to health, damage to the environment and increased conveyance costs. The purpose of the program is to reduce the amount of rain~~water~~ and groundwater entering the sanitary sewer system when it is cost-effective to do so. Reduction of ~~I&I~~inflow and infiltration ~~in the system~~ lowers the risk of sanitary sewer overflows and can decrease the costs of conveying and treating wastewater. This program works closely with municipalities to identify and prioritize problem areas in the conveyance system.

Wastewater ~~and~~ & Marine Environment Program (WMEP)~~–~~ ~~The Wastewater and Marine Program~~ This program provides regulatory compliance monitoring and scientific assessment services ~~on behalf of Integrated Water Services to assess~~ to identify the potential effects of the outfalls on ~~the marine environment and~~ human health and the marine environment. The program includes assessment of wastewater flows, surface water and water column quality, the seafloor and organisms living near the outfalls.

~~The program includes assessment of wastewater flows, surface water and water column quality and assessment of the seafloor and organisms living near the outfall.~~ The results are shared internally to guide the efforts of the Regional Source Control Program and to inform Infrastructure Operations staff on outfall functionality. ~~The Wastewater and Marine~~ Program staff work~~s~~ closely with regulatory agencies to ensure compliance and provide~~s~~ scientific assessment and annual reporting for the general public. The monitoring and analysis follows a rigorous quality assurance and quality control regime, in the field and in the laboratory, that ensures the quality of the ~~data~~ collected data.

Regional Source Control Program - ~~The Regional Source Control~~ This program ~~is a pollution prevention initiative aimed at reducing~~reduces the amount of contaminants that industry, businesses, institutions and households discharge into the district's sanitary sewer systems~~.~~. This pollution prevention ~~The~~ program has been active region-wide since the adoption of the CRD's Sewer Use Bylaw in August 1994. Source c~~C~~ontrol is recognized as a cost~~-~~ effective way of reducing the impacts of wastewater on the environment.

~~Stormwater Quality Management~~ Integrated Watershed Management ~~Program~~ Program (IWMP) - ~~The Stormwater, Harbours and Watersheds Program (SHWP)~~This program monitors and investigates stormwater quality at all discharges in the core area. Information and data are provided to ~~plans, promotes and coordinates the management of stormwater quality in the LWMP area, in consultation with the municipalities, the Department of National Defence and First Nations~~ municipal staff to inform their municipal infrastructure plans. The program also promotes best practices for stormwater management.

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Harbours Environmental Action Program (HEAP)~~,~~ – This program ~~The Harbours Environmental Action Program (HEAP)~~ coordinates environmental protection and improvement efforts in Victoria and Esquimalt harbours, Portage Inlet, the Gorge Waterway and Esquimalt Lagoon. HEAP works with community groups, municipal partners and other agencies to achieve the following goals: decrease contaminant inputs, protect and enhance habitat quality, set environmental quality objectives, achieve environmentally protective land uses~~,~~ and monitor environmental quality.

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On-~~S~~site Septic System Program (Onsite) - Septic systems~~, also known as on-site sewage systems,~~ are an effective treatment option when designed, installed and maintained properly. This program provides administration and oversight of maintenance requirements for onsite septic systems in Colwood, Langford, Saanich and View Royal. Educational programs are also provided for system owners.~~Lack of maintenance, such as regular pump outs, is the number one cause of system failure in the CRD. The program provides administration and implementation of CRD Bylaw 3479 which outlines maintenance requirements for on-site septic systems. The bylaw requires owners with Type 1 systems (septic tanks) to have pumped out their system every five years.~~

~~Owners of Type 2 or Type 3 systems (often package treatment plants) are required to maintain their system according to the maintenance plan for the system, and ensure it is maintained by an Authorized Person at least once per calendar year.~~

~~**Management of**~~ **Trucked Liquid Waste** **Management Program (TLW)** - Many industrial, commercial and institutional operations produce liquid waste that is not suitable for discharge to the sanitary sewer or storm water system. These wastes are generated at operations such as: restaurants (grease interceptors), car washes (vehicle wash interceptors), automotive repair shops (oil water separators), parking lots (catch basins / stormwater rehabilitation units), dry cleaners (PERC from dry cleaning machines), photo processors (fixer), and laboratories (various chemicals). These by-products are considered ~~to be~~ high-strength liquid ~~wastes~~ or obstructive wastes and it is ~~therefore~~ illegal to discharge these wastes to the sanitary sewer system or the storm drain system. Proper disposal of these wastes requires a licensed hauler to pick up the waste~~,~~ and transport it to a proper disposal facility.

Corrosion & Odour Control Program – This program identifies locations where sewer corrosion is a concern and where odours may cause a public nuisance. Staff also respond to odour nuisance complaints submitted by the public.

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3 Core Area Wastewater Treatment Program

3.1 Project Overview

The municipalities of Colwood, Esquimalt, Langford, Oak Bay, Saanich, Victoria and View Royal ~~Victoria, Saanich, Oak Bay, Esquimalt, View Royal, Colwood and Langford~~ collectively are participants of the Core Area Liquid Waste Management Plan ~~Service~~ which is managed and operated by the ~~Capital Regional District~~ (CRD~~) in accordance with the Core Area Liquid Waste Management Plan (CALWMP)~~.

~~CALWMP is a 25-year plan under the Environmental Management Act which outlines CRD's wastewater management strategies, including wastewater treatment.~~

The CALWMP is the main planning document for the core area's wastewater treatment program. The current ~~plan~~ plan (CALWMP Amendment No. 11) was developed by the ~~CAWT~~ Core Area Wastewater Treatment Project Board and approved by the BC Minister of Environment on September 30, 2016. The District of Oak Bay has also developed a plan to eliminate the 2 combined sewer overflow points in the core area conveyance system (CALWMP Amendment No. 12), but this plan has not yet been approved by the BC Ministry of Environment.

The currently approved plan (CALWMP Amendment No. 11) consists of a centralized wastewater treatment plant at McLoughlin Point, a residual treatment facility at Hartland Landfill and a ~~, a resource recovery centre to process residual solids and a~~ conveyance system of pump stations and pipes throughout the core area to convey wastewater to the respective treatment facilities. This plan is being implemented by the Core Area Wastewater Treatment Project Team.

In addition, the CRD is investigating Integrated Resource Management opportunities. This investigation will determine how liquid waste residuals and solid waste can be best managed to generate beneficial reuse opportunities.

4 Governance & Financial Information

The CRD has the authority to collect, convey, treat and dispose of sewage as detailed under the service establishment bylaw (CRD Bylaw 2312).

Core Area Liquid Waste Management Committee – The CRD Core Area Liquid Waste Management Committee is a standing committee established by the CRD Board to oversee and make recommendations to the Board regarding the

administration and regulatory reporting for the CALWMP. ~~Core Area Liquid Waste Management Plan. The mandate of the committee is to oversee and make recommendations to the Board regarding the administration and regulatory reporting for the Core Area LWMP,~~ core area trunk sewers and sewage disposal systems, and opportunities for resource recovery. The ~~CAWT~~ Core Area Wastewater Treatment Project Board was established by the CRD Board in May of 2016 and has been delegated authority to administer all aspects of the management of the Core Area Wastewater Treatment Project, including implementation of the project by the project team.

4.1 ~~4.1~~ Financial Overview

Trunk Sewers and Sewage disposal was the second service established for the CRD. The service was established by Letters Patent in 1967. The service was established with flexibility to incorporate service expansion and fairness in costing for both capital and operating costs. During the 1990s, as provincial legislation changed, the Core Area and West Shore municipalities and portions of the Juan de Fuca Electoral Area (Songhees and Esquimalt Nation lands) were established as a Liquid Waste Management Planning Area for those participants (municipality or nation).

Cost Sharing/Apportionment

Operating Costs

Annual Operating Costs – Annual cost sharing for the operation of the four trunk systems (Northwest Trunk, Northeast Trunk (Bowker), Northeast Trunk (Clover), East Coast Interceptor) is based on annual flows from the prior year for each system. There are various flow meters throughout the systems that allow the CRD to determine annual flow volumes received from each participant. The operating costs for each system are then divided amongst the participants based on those flows and then requisitioned/invoiced on an annual basis.

Operating Maintenance Reserves – The trunk systems carry maintenance reserve funds for operating expenses anticipated on a cyclical basis and for minor equipment replacement. Contributions to this reserve fund are made annually through the trunk operating budgets based on the flow volumes from each participant. The funds are drawn down as required for works in each trunk system.

Apportioning annual operating costs to each participant based on annual flow on a 'trunk-by-trunk' basis has been the historical method and is not proposed to change with the implementation of the new treatment project works and facilities, except with the addition of the new works and facilities. It is proposed to begin establishing the operating budget for the new treatment project works and facilities in 2019.

Capital Costs

Annual Capital Projects – Annual capital projects, or 'minor' capital, across the four trunk systems has historically been funded through a combination of debt, grants, capital reserve funds and annual requisition. The project costs have been apportioned on the basis of design capacity benefit that each participant derives from each component of the system. Where the benefit is not an increase in capacity, the design capacity benefit is based on the existing maximum allocated capacity for each participant and for each facility.

Capital Reserves – Since capital funds are apportioned by participant, the capital reserves are segregated by participant and drawn down by participant based on the design capacity benefit of specific projects.
In light of various new capital investment through the Core Area Wastewater Treatment Project, including the plant, piping infrastructure, outfalls, pumping stations, etc., we will reassess the impact and benefits of normalizing all capital costs through a design capacity benefit model, including minor capital, reserve funds, etc.

Core Area Wastewater Treatment Project – In 2013, the CRD commenced an annual requisition ramp-up to reach an annual funding level that would cover the new treatment program annual operating and capital costs.

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The annual funding has been providing working capital, funding new debt servicing costs for the project, and funding some project related capital costs directly which will reduce the longer term and ongoing debt servicing costs for the project.

Trunk sSewers and sSewage dDisposal was the second service established for the CRD. This service was established by Letters Patent in 1967. The Service was established with flexibility to incorporate service expansion and fairness in costing for both cCapital and oOperating cCosts. During the 1990s, as provincial legislation changed:, the Core Area and Wests Shore municipalities and portions of the Juan de Fuca Electoral Area (Songhees and& Esquimalt First Nations lands) were established as a Liquid Waste Management Planning area for those participants.

Annual Operating cost sharing is calculated on prior year flows, whereas Capital Project cost sharing is calculated on future Design Capacity Benefit.

Annual Cost Ssharing for the operation of various wWastewater sSystems (Northw West and Western Communities Trunk, Bowker System, East Coast Interceptor, etc.) is based on the prior year annual flows from the prior year for each wWastewater sSystem. There are various meters throughout the system that allow engineering staff to calculate the annual volumes of flow received from each participant (municipality/first nation), by system and sub- system. The costs for each system are then divided amongst the participants based on those flows and then requisitioned/invoiced on an annual basis.

Capital project cost sharing is based on future DDesign cCapacity bBenefit. Expected capacity for each participant is calculated and costs are shared on that basis. Funding for these projects comes from a combination of dDebt, gGrants, cCapital rReserve and aAnnual rRequisition.

Maintenance Reserve – Tthere is a maintenance reserve for operations, funded by system/sub system, and drawn from by system/sub- system – thus preserving the operating cost sharing. Any operating surplus is transferred to the Capital Reserve. Since the cost sharing for cCapital projects is different from oOperating, when funds go into the Capital Rreserve, they are segregated by participant contribution, not by system.

Capital project cost sharing is based on future Design Capacity Benefit. Expected capacity for each participant is calculated and costs are shared on that basis. Funding for these projects comes from a combination of Debt, Grants, Capital Reserve and Annual Requisition.

Design Capacity Benefit – Ccapital costs and net annual debt costs for the four 4 trunks and facilities are apportioned on the basis of the design capacity benefit that each participating area derives from each component of the system. Where the benefit is not an increase in capacity, the design capacity benefit is based on the existing maximum allocated capacity for each participant and for each facility.

Capital Reserve – Ssince funds are segregated by participant, capital project funding is drawn from individual participant envelopes, based on design capacity benefit from the infrastructure project. Up until 2013, there were no budgeted annual contributions to the Capital Reserve to fund eventual sSecondary (or higher) waste water treatment infrastructure. In 2013, an annual contribution program was commenced started to provide funding towards the capital cost of NEW new infrastructure.

Some fFunds from these segregated reserves have also been were used for consulting services to support planning and public engagement processes for the Eastside and Westside Select Committees, according to municipally agreed upon cost-sharing.

Core Area Wastewater Treatment Program – In 2013, the committee commenced an annual ramp up of participant costs, to smooth spread the increase in eventual annual costs over a number of years. The annual funding ($20 million in 2017 and $25 million in 2018) 2016 amount $15 million) is providing working capital, funding any new annual debt servicing costs for the project, and down- payment on total capital costs, which will reduce the longer term on going debt servicing costs for the project.

Liquid Waste Management Plan – This budget is funded on the current design capacity benefit flows for the new Core Area Wastewater Treatment Program.

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Appendix B – Additional FTE's

Financial Services Project Support:

- Description: There will be added volume and complexity created by the Core Area Wastewater Treatment Project including invoice and payment volumes, added internal controls, and grant funding complexity.
- Impact: Two 4-year term positions are required to manage the distributed workload across the finance department in various areas including financial analysis, accounts payable, payroll, and required grant reporting.
- Funding: These term positions will be funded by an allocation from CAWTP and will have no impact on other services or requisition.

Infrastructure Engineering and Operations (Integrated Water Services)CAWTP:

- Description: The design and construction of the infrastructure related to CAWTP began in 2017 and will continue through 2020. Beginning in 2019, the new infrastructure will be commissioned and integrate into ongoing system engineering and operations functions.
- Impact: Operations – One FTE is required, a Supervisor of Operations for the wastewater treatment plant to proactively engage in the transition from the project to ongoing operations.
- Funding: This FTE will be funded from committed funds from the CAWTP for 2018 with funding transitioning to a new CAWTP operating budget being developed for 2019.
- Impact: Engineering –
- Core Area Wastewater Engineering – 2 FTEs are requested; these FTEs will support ongoing (Integrated Water Services) core sewer engineering associated with the expansion of the system at McLoughlin Point, upgrades of the conveyance system, and related ancillary works
  - a wastewater engineer – technical support for on-going engineering related to Core Area conveyance and treatment system processes
  - a GIS/drafting technician – technical support for on-going wastewater design and system information management
- Funding: These positions will be funded through requisition beginning in 2018.

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