

Core Area Liquid Waste Management Plan

Annual Programs Report | October 2018



CRD

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Core Area Liquid Waste Management Plan

This brochure provides a brief summary of the 2017 to mid-2018 activities undertaken to meet the Core Area Liquid Waste Management Plan (the Plan) objectives and 2017 compliance reporting where required under the Plan.

The Capital Regional District (CRD), on behalf of the core area participants—Colwood, Esquimalt, Esquimalt First Nation, Langford, Oak Bay, Saanich, Songhees Nation, Victoria and View Royal—manages wastewater and stormwater according to strategies and activities outlined in the Plan. The 25-year Plan was originally approved by the BC Ministry of Environment (MOE) under the Environmental Management Act on March 26, 2003 and was most recently amended with Amendment No. 12, which received conditional approval in 2018.

CRD liquid waste management involves planning, operation and maintenance, as well as various other activities that have regulatory reporting requirements and commitments to support, inform and educate stakeholders about liquid waste and environmental protection.

There are five general objectives of the Plan:

- to ensure efficient, and optimal, operation and maintenance of liquid waste infrastructure
- to reduce contaminants in the liquid waste infrastructure and the environment
- to monitor and assess risks associated with the liquid waste infrastructure
- to report out to satisfy provincial and federal regulatory requirements and inform stakeholders and the public
- to plan and implement liquid waste infrastructure upgrades

There are 10 programs that work to achieve the Plan objectives:

- sewage treatment planning
- operations, maintenance and capital implementation
- corrosion and odour control
- wastewater and marine environment monitoring
- source control
- harbours environmental action
- stormwater quality
- inflow and infiltration management
- trucked liquid waste management
- onsite wastewater management



Planning

The Plan contains commitments for upgrading core area sewage infrastructure to reduce risks to human health and the environment.

The Wastewater Treatment Project will provide tertiary treatment for wastewater from the core area municipalities and is being built to meet provincial and federal regulations by December 31, 2020. The CRD's core area sewage system serves approximately 280,000–320,000 people (varies seasonally) with approximately 67 km of sewer mains, 16 pump stations and two outfalls.

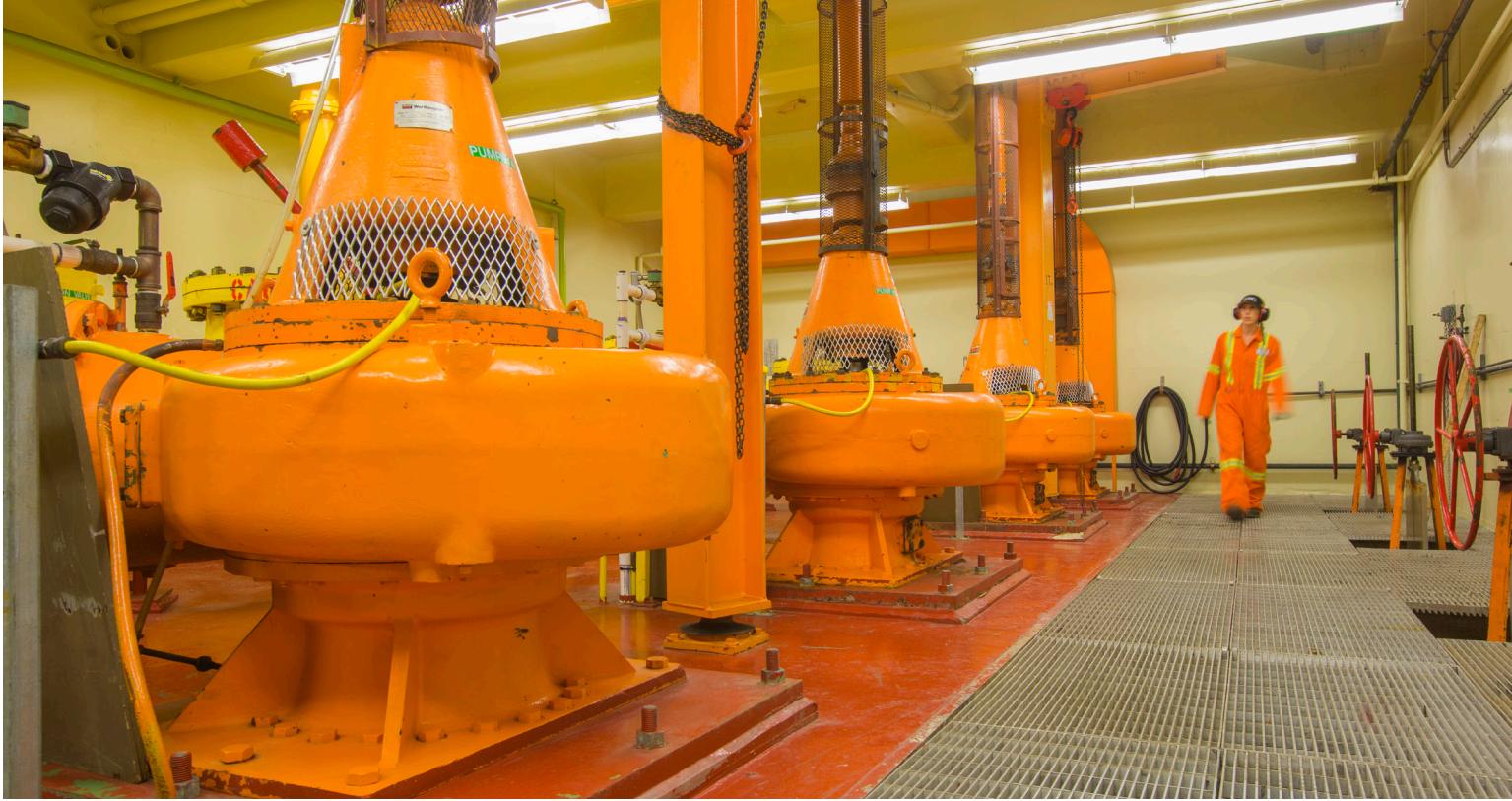
The Project consists of three main components:

- McLoughlin Point Wastewater Treatment Plant that will provide tertiary treatment to the core area's wastewater;
- Residuals Treatment Facility at Harland Landfill that will process residual solids into Class A biosolids for beneficial use; and
- Upgrades to the conveyance system.

Construction of the McLoughlin Point Wastewater Treatment Plant began in spring 2017 and has included completion of the cross-harbour undersea forcemain, deep foundations, base slab and underground piping. Construction of the Residuals Treatment Facility began in spring 2018, with work underway on excavations. The facility is scheduled to be complete in 2020.

The upgrades to the Clover Point and Macaulay Point pump stations commenced in spring 2018. At Clover Point, excavation of the foundation for the expansion to the pump station is under construction. At Macaulay Point, demolition and excavation are underway. Upgrades to both pump stations are scheduled to be complete in mid-2020.

In fall 2018, two more aspects of the conveyance system will begin construction: the Clover Force main and the Residual Solids Conveyance Line. The Clover Force main will connect the Clover Point Pump Station to the cross-harbour undersea pipe at Ogden Point to convey wastewater to the McLoughlin Point Wastewater Treatment Plant. The Residual Solids Conveyance Line will transport residual solids from McLoughlin Point to the Residuals Treatment Facility where they will be turned into Class A biosolids.



Operations and Maintenance

The proper operation of liquid waste infrastructure is critical to ensuring environmental and human health protection.

The Integrated Water Services Department

The Integrated Water Services Department (Operations) is responsible for the operation and maintenance of the core area wastewater system, including sewage collection from municipal systems, and conveyance, screening and disposal through CRD trunk systems and the ocean outfalls at Macaulay and Clover points. The 2017 operating budget was approximately \$4.2 million.

Significant activities included:

- moved the entire Macaulay Point Operations and Maintenance team as well as machine shop out of Macaulay Point to a temporary location during construction of the new Wastewater Treatment Plant.
- SCADA Master Plan Phase II (Equipment Replacement Strategy) completed and the phased approach to equipment replacement continues.
- continuation of video inspections of core area trunk lines for condition and defects.
- Macaulay and Clover points pump station phased demolition has started prior to major upgrades tied to the overall Wastewater Treatment Plant Project.
- continued maintenance including: pipe rehabilitation, relining of 300m of trunk main and root ball removal
- maintaining odour control equipment throughout the conveyance system to reduce sewer odours as part of the Corrosion & Odour Control Program (Corrosion)

The Regional Source Control Program

The Regional Source Control Program (RSCP) protects core area sewage collection and treatment facilities, public health and safety and the marine-receiving environment by reducing the amount of contaminants that industries, businesses, institutions and households discharge into the district's sanitary sewer systems. The 2017 budget for this work in the core area was approximately \$1.37 million.

Significant activities included:

- ensuring an annual Code of Practice inspection frequency for the Food Service and Kitchen Cleaning sectors (>1300 regulated businesses) to ensure grease trap requirements are being met and that conveyance system grease blockages are avoided. Two grease blockages in municipal sewers were investigated in 2017 and 5 tickets were issued to non-compliant Food Services and Kitchen Cleaning operations.
- collaborating with the Corrosion program to establish sulphide-generating trends at various hotspot locations in the conveyance system to ensure that concentrations of sulphide in the system do not reach levels that increase potential for pipe corrosion.
- development of a new media campaign to promote the BC Medication Return Program in collaboration with Island Health and the Health Products Stewardship Association.



The Inflow and Infiltration Program

Inflow and infiltration (I&I) management is an important component of ensuring proper operation of the sewage conveyance system. The I&I Program engages with core area municipalities and First Nations to identify and reduce the amount of rain and groundwater that enters the sanitary sewer system in an effort to reduce sewer overflows. The 2017 budget for this work was approximately \$400,000.

The primary objective of the Core Area Inflow & Infiltration Management Plan is to reduce overflows to less than four times the average dry weather flow at Clover Point and the Wastewater Treatment Plant at McLoughlin Point by 2030.

Significant activities included:

- carried out a project to document flow data accuracy from municipal pump stations; work will continue through 2018-2019.
- conducted a pilot study designed to identify "semi-combined" sewers based on a review of historical plumbing codes and GIS data.
- developed a draft I&I benchmarking template for potential use nationally, which was reviewed by the National Water and Wastewater Benchmarking Initiative's I&I Task Force and efforts are currently underway to finalize the template.
- participation at 14 public events to provide private property owners with information related to I&I, cross-connections and sewage back-ups.
- continued developing an educational approach focused on industry stakeholders by creating an educational booklet, which was reviewed and refined by the stakeholders.
- developed a new educational brochure for use by the public.

The Stormwater Quality Program

The Stormwater Quality Program (Stormwater) plans, promotes and coordinates stormwater quality initiatives in consultation with the municipalities and First Nations. The program helps assess the operation of municipal stormwater infrastructure and its impacts to the environment, both freshwater and marine. The 2017 budget for the program was approximately \$675,000.

Significant activities included:

- ongoing monitoring and evaluation of stormwater discharges along the coastline between the Colwood-Metchosin border in the west and the Saanich-Central Saanich border in the east, including the major harbours, to identify stormwater conveyance system operational issues such as cross-connections or failing infrastructure.
- developed "Homeowner's Guide: Home Heating Oil Tanks" highlighting information about maintenance, spill response and insurance.
- completing a Green Stormwater Infrastructure Design Guidelines document to promote efforts to reduce stormwater input into the conveyance system.
- worked with the CRD Climate Action Program to implement and promote the Oil to Heat Pump Incentive program.
- participated at numerous outreach events to provide private property owners with information regarding stormwater management.
- hosted Community Integrated Watershed Management meetings and workshops.
- offered a bio-engineering creek restoration workshop for community watershed stewards. This was held on Haliburton Brook, a tributary of Beaver Lake.
- developed "Watershed-Wise Best Management Practices" brochures to promote contaminant reduction into watersheds and ultimately the stormwater infrastructure and marine environments.

The Onsite Wastewater Management Program

The Onsite Wastewater Management Program (Septic) is a pollution prevention program for septic systems that aims to protect public health and safety, local surface and groundwater resources, and the environment. The program strives to reduce the number of malfunctioning onsite wastewater systems by promoting proper care and maintenance, and regulating maintenance frequency. The region-wide 2017 budget for the program was approximately \$226,000.

Significant activities included:

- 200 residents with onsite wastewater systems in Saanich, View Royal, Colwood and Langford were invited to participate in a Maintenance Assessment pilot program. 24 residents responded and 19 completed the assessment.
- worked with Applied Science Technologists & Technicians of British Columbia (ASTTBC) staff to develop a reporting format for the Onsite Wastewater Management program Maintenance Assessment pilot. The form was developed to ensure consistency and compliance with British Columbia Sewerage System Regulations.
- co-hosted monthly "Friday Afternoon Wastewater Group" with the British Columbia Onsite Sewage Association with participation open to all who are involved with the industry.
- delivered two Septic Savvy workshops.
- coordinated the Onsite Sewage and Trucked Liquid Waste Service Providers Annual General Meeting.
- coordinated and delivered, in partnership with ASTTBC, an Onsite Sewage Maintenance seminar.
- redesigned and produced a new Confirmation of Maintenance form with input from ASTTBC and industry members to ensure consistency and clarity with British Columbia Sewerage System Regulations.

Corrosion and Odour Control Program

The objective of the Corrosion and Odour Control program is to identify locations where sewer corrosion is a concern and where odours may cause a public nuisance). Staff respond to odour nuisance complaints submitted by the public, of which there were four in 2017–2018. The 2017 budget for this program was approximately \$115,000.



Contaminant Reduction

Liquid waste can contain contaminants that have the potential to adversely impact human health and the environment. There are various commitments and activities in the Plan to reduce the input of these contaminants to the environment.

Source Control

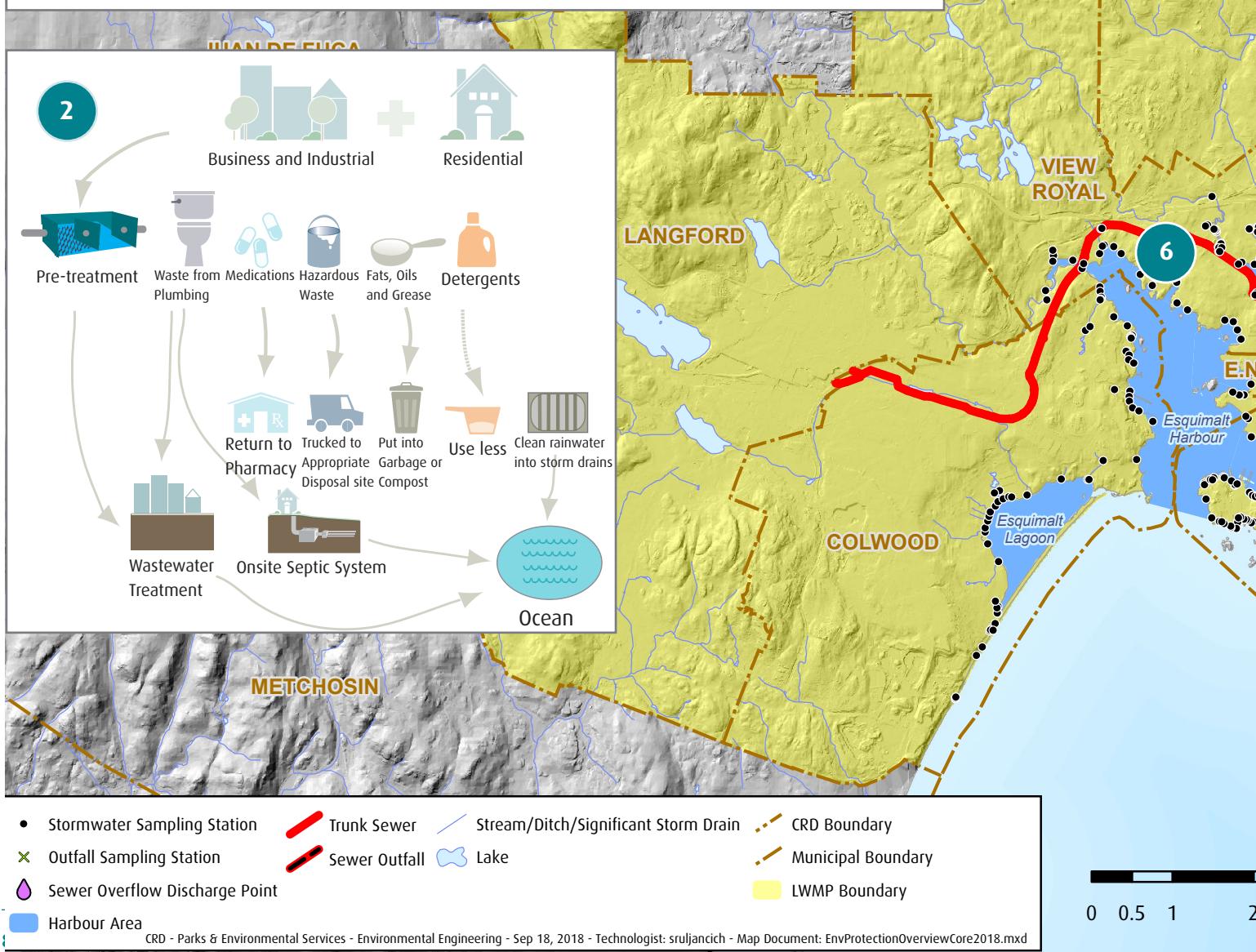
The Regional Source Control Program (RSCP) reduces inputs of contaminants into the sewer system in numerous ways, which leads to the reduction of contaminants to the environment.

Significant activities included:

- staff initiated a collaborative notification process in 2016 with municipal business licensing staff to help identify any industrial or commercial businesses that should be regulated under source control permits. In 2017, seven municipalities established information sharing procedures, and negotiations continue with three remaining municipalities.
- the CRD Board sent letters to Ministry of Environment and Climate Change Strategy and the Health Products Stewardship Association (HPSA) requesting changes to the BC Recycling Regulation and support from the HPSA for the collection and proper disposal of household veterinary medications under British Columbia Medication Return Program.

Program linkages

- 1** Operations staff work to operate, maintain and replace the core area trunk sewer, pump stations and outfalls.
- 2** The source control, trucked liquid waste and septic programs all work together to ensure potential contaminants are properly disposed of and do not enter into the environment.
- 3** Inflow and infiltration issues occur throughout the core area. The I&I program works with stakeholders to reduce the amount of rain and groundwater entering the sanitary sewer system.
- 4** The marine program monitors and assesses the impacts of wastewater discharged through the two core area outfalls.
- 5** The stormwater program monitors and assesses the impacts of stormwater discharged at approximately 550 locations in the core area.
- 6** The harbours program coordinates environmental protection and improvement efforts in Victoria and Esquimalt harbours, Portage Inlet, the Gorge Waterway and Esquimalt Lagoon.
- 7** The core area wastewater treatment project is working to construct a tertiary treatment plant at McLoughlin Point and a residuals treatment facility at Hartland Landfill.







Stormwater

The Stormwater program also undertakes activities that reduce contaminant input to the environment and protect human health.

Significant activities included:

- continuing work with municipalities to resolve high-risk stormwater discharges by undertaking upstream investigations to find sources of contaminants and bacteria. These efforts resulted in repairs of sewage stormwater cross-connection and municipal infrastructure relining and replacement projects.
- staff have narrowed down sources of chemical contamination in 10 of the 18 stormwater catchments recommended for corrective action in recent years.
- completed “Green Stormwater Infrastructure Common Design Guidelines for the Capital Region”, a tool with regionally appropriate design guidelines and considerations to build Green Stormwater Infrastructure facilities (i.e. swales, raingardens) on public, private and institutional lands.
- continued school programs to educate children about their impacts on (and interactions with) the environment, watershed functionality and contaminant behavior in watersheds.

The Trucked Liquid Waste Program

The Trucked Liquid Waste (TLW) Program objectives are to ensure non-domestic/non-septage liquid waste is handled and disposed of in an appropriate and responsible manner. The Program educates service providers regarding disposal options, waste pre-treatment, and maintenance requirements. The 2017 budget for the regional program was approximately \$58,000.

Significant activities included:

- continuing outreach to generators and haulers to provide information about proper management and disposal of wastes, technical reports, and tools for waste haulers.
- maintenance of a service provider directory for TLW generators.
- delivering outreach material targeting catch basin maintenance to reduce contaminant loading to the stormwater system.
- conducting a TLW service provider survey to identify emerging industry trends and gather information to support outreach planning.

The Harbours Environmental Action Program

The Harbours Environmental Action Program coordinates environmental protection and water quality improvements in the marine waters of the core area: Victoria and Esquimalt harbours, Esquimalt Lagoon, Gorge Waterway and Portage Inlet. The program goals are to advocate for environmental protection, decrease contaminant inputs and protect and enhance habitat and water quality in these harbour receiving environments. These commitments are collaboratively implemented with community groups, municipal partners, First Nations and other agencies through environmental projects and multi-stakeholder harbour initiatives. The 2017 budget for this work was approximately \$330,000.

Significant activities included:

- successfully applying to Transport Canada's Abandoned Boat Program to assess the cost of removing and disposing of abandoned boats in Tsehum, Victoria and Sooke harbours, and to develop an awareness and education campaign about boat owners' responsibilities for proper recycling and disposal of vessels to reduce the incidence of vessel abandonment.
- extensive water quality sampling in Colwood and Colquitz creeks, including assessment of diversity and abundance of benthic invertebrate populations as an indication of creek health.
- training volunteers to monitor water quality in tributary creeks at Esquimalt Lagoon. These efforts complement the monitoring done by CRD staff every 5 years in the lagoon watershed.
- co-hosting Green Shores Workshops to educate local municipal staff, developers, consultants and shoreline residents on best practices to reduce pollutants entering the environment.





Monitoring and Assessing Risks

There are numerous activities under the Plan that are undertaken to monitor and assess risks to human health and the environment of liquid waste.

Wastewater and Marine Environment Program

The Wastewater and Marine Environment Program (Marine) monitors and assesses wastewater quality and quantity, and the potential effects of the Clover and Macaulay points outfalls to the marine environment. Monitoring is undertaken over a 5-year cycle. The 2017 budget for this work was approximately \$1.3 million (included in the \$4.2 million core area sewer system operating budget).

Significant activities included:

- wastewater, surface water, and seafloor monitoring to meet regulatory requirements, assess risks to human health and the environment, and confirm proper operation of the outfall diffusers.
- a fish survey to assess risks to bottom fish and crabs.
- assessment of the environmental fate of pharmaceuticals and personal care products.

Stormwater

The Stormwater program assesses risks from stormwater discharges to human health and the marine environment.

Significant activities included:

- monitoring stormwater discharges against environmental quality guidelines based on the level of metals and organic contaminants measured in sediment from within the stormwater collection system.
- monitoring stormwater discharges for bacterial contamination and assessing the relative risk that contamination may pose to human health.
- monitoring the health of core area creeks using water quality parameters, including the assessment of invertebrate animals living in the creek sediment.





Source Control

Monitoring through the Source Control program assesses risks of various contaminant sources released into the sewage system. Additional monitoring is performed by businesses holding authorizations and permits.

Significant activities included:

- collaboration with the CRD's Odour and Corrosion Control Program in monitoring trends in sulfide levels.
- monitoring of the fermentation sector to support a review of the code, as well as follow-up monitoring in the dry cleaning sector in conjunction with inspections for facilities that have significant contaminant exceedances in the previous year.
- developing a Significant Incident Response protocol, including the development of new sewer catchment maps.
- undertaking a major review of the fermentation code of practice for craft breweries and distilleries.
- sponsoring a student project with the Royal Roads University's Environmental Science Program to investigate operational effectiveness of commonly used dry-cleaning wastewater treatment units.

Harbours

The Harbours program is supported by the Stormwater Quality program's assessment of where sewage and other contaminants are causing adverse impacts in the harbours and both programs work together with municipalities and stakeholders to eliminate risks.

Corrosion

The Corrosion program undertakes routine monitoring from approximately May through September each year.

Significant activities included:

- completion of a corrosion/odour control condition assessment and strategic asset management plan.
- implementation of corrosion and odour control tests for areas of the conveyance system where there is corrosion/odour potential.
- baseline odour studies at McLoughlin Point and Hartland Landfill in anticipation of the construction of the tertiary treatment plant and residuals treatment facility, respectively.
- pre-planning for baseline odour studies for the residuals conveyance line route between McLoughlin Point and Hartland Landfill.

Reporting

The CRD is required to submit data and other information to satisfy provincial and federal regulatory requirements.

These include:

- monthly and quarterly electronic compliance reports summarizing wastewater quality compared to limits in the permits and authorizations for the core area wastewater facilities.
- annual reports summarizing the Marine and Source Control program activities, including monitoring and regulatory efforts, as well as any new initiatives and emerging contaminants that may be targeted in the future. Annual reports are made available to the public and are also used internally to assess outfall functionality and to determine whether there are any trends in contaminants that may warrant Source Control program investigation or operational changes.
- every five years, an updated I&I Management Plan is developed in collaboration with the municipalities, which includes I&I and overflow reduction commitments for the next 5 years. The most recent plan was submitted to MOE in September 2017. Interim reports summarizing I&I and overflow reduction efforts undertaken by the stakeholder municipalities and the CRD.

The CRD also regularly communicates through other non-regulatory efforts:

- annual reports by the Stormwater program to inform the municipal and First Nations stakeholders. These reports summarize the monitoring activities and include a risk assessment of the stormwater discharges monitored that year, which is used by the municipalities to prioritize remediation and repairs of the stormwater infrastructure.
- annual brochures by the Harbours program summarizing the efforts of the various multi-stakeholder initiatives such as the Gorge Waterway Initiative and the Esquimalt Lagoon Stewardship Initiative.
- annual reports by the Septic and Trucked Liquid Waste programs that summarize their activities throughout the year.
- informal reports to various multi-stakeholder initiatives such as the Department of National Defence's Esquimalt Harbour Advisory Committee (Harbours program) and a new Community Integrated Watershed Management group (Stormwater program). These initiatives provide a forum for sharing information between partners and create opportunities for collaboration on environmental projects and outreach activities.
- participating in various community, outreach and education events and celebrations, and sponsoring free public talks. These events provide avenues to share information with the general public.
- emergency notifications are issued as required, often in response to an operational event such as storm-related stormwater and wastewater combined discharges. Island Health is consulted for any event that has the potential to impact human health. Both the provincial and federal governments are also notified.

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October 2018

