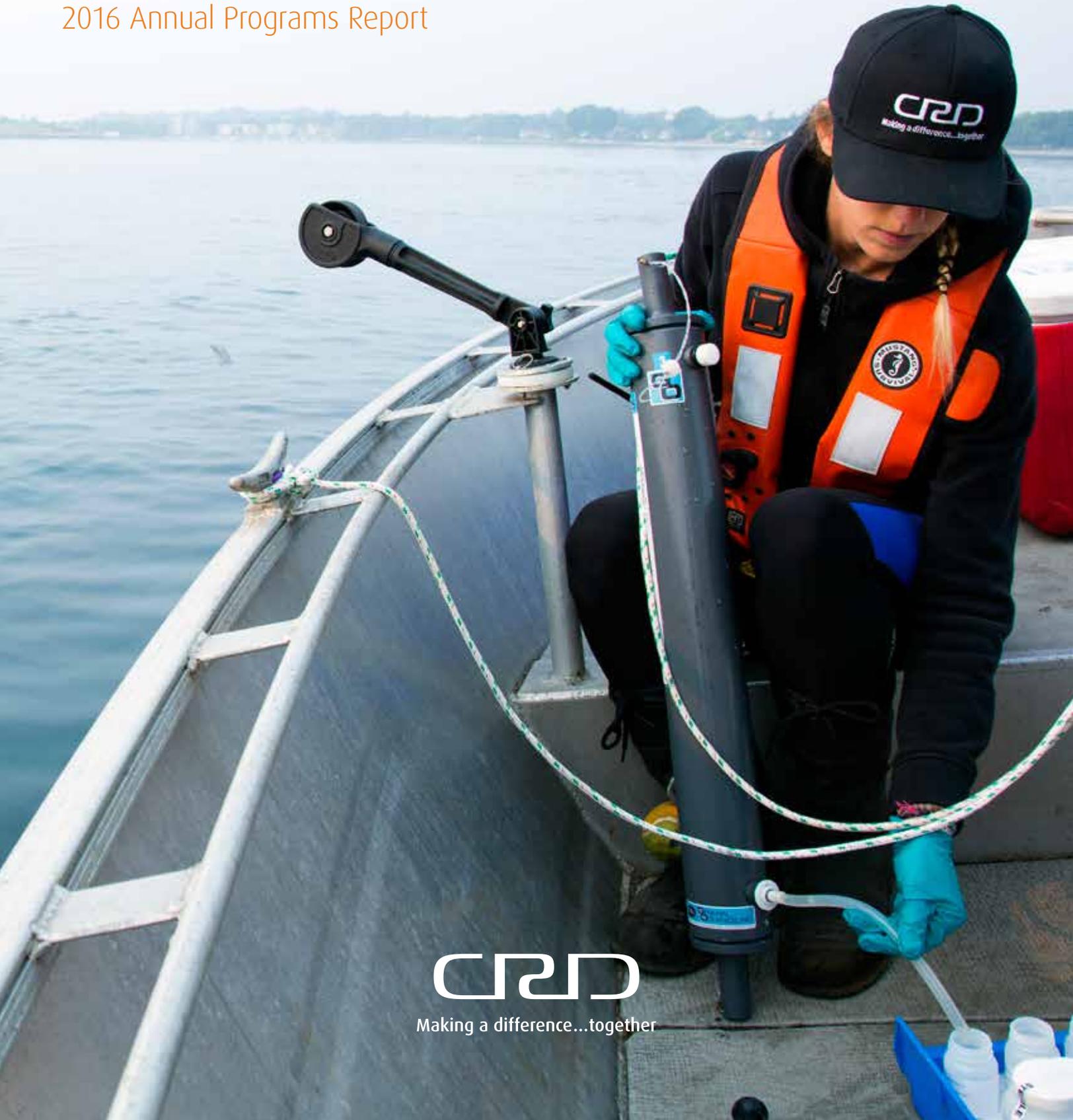


Core Area Liquid Waste Management Plan

2016 Annual Programs Report



CRD

Making a difference...together

Core Area Liquid Waste Management 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 Core Area Liquid Waste Management Plan (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 (Amendment No. 11) in 2016. Amendment No. 12 has also been submitted to MOE, but not yet approved.

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 5 general objectives of the Plan:

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

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

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

This brochure provides a brief summary of the 2016 to mid-2017 activities undertaken to meet the Plan objectives by the various programs.



Planning

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

The CRD has committed to installing a new tertiary treatment plant at McLoughlin Point and a residuals treatment facility at Hartland Landfill. The McLoughlin Point treatment plant and associated conveyance system upgrades will substantially reduce both the input of contaminants to the marine environment, as well as the prevalence of wet weather overflows, thereby reducing risk to both human health and the environment. In 2016, the CRD submitted a business case in support of provincial and federal funding for this project, and delegated authority to a new Core Area Wastewater Treatment Project Board to manage and implement construction of the new and upgraded facilities. Construction of various system components, including the McLoughlin Point treatment plant, began in early 2017. The District of Oak Bay has also committed, through the Plan, to eliminate the 2 combined sewer overflow points contained in their portion of the core area conveyance system. The elimination of these 2 discharges will stop the 8–10 wet weather sewer overflows that they experience in a typical year. A recently updated Inflow and Infiltration (I&I) Management Plan commits municipalities to undertake I&I reduction efforts. These efforts will substantially reduce both wet weather overflow events, as well as the volume of sewage requiring treatment at the future McLoughlin Point treatment plant.

The Plan was first approved in 2003. Since then, it has gone through 12 amendments. Every 3–5 years, the Plan is consolidated to include amendments to that date; this was last done in 2011. Over the next 1–2 years, staff plan to consolidate the Plan, up to and including Amendment No. 12, to review and audit objectives and commitments, and revise with municipal and stakeholder input.



Operations, Maintenance and Capital Planning

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 2016 operating budget was approximately \$4.2 million. Minor capital projects are planned for the conveyance system on an ongoing basis, with some projects being deferred to align with the treatment project.

Significant activities included:

- completion of a Supervisory Control and Data Acquisition system equipment replacement strategy with the initiation of phased implementation.
- video inspection of core area trunk lines and the Macaulay and Clover points outfalls for condition assessment.
- completion of preventative maintenance work orders planned for the year.
- 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 (Source Control) 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 2016 budget for this work in the core area was approximately \$1.3 million.

Significant activities included:

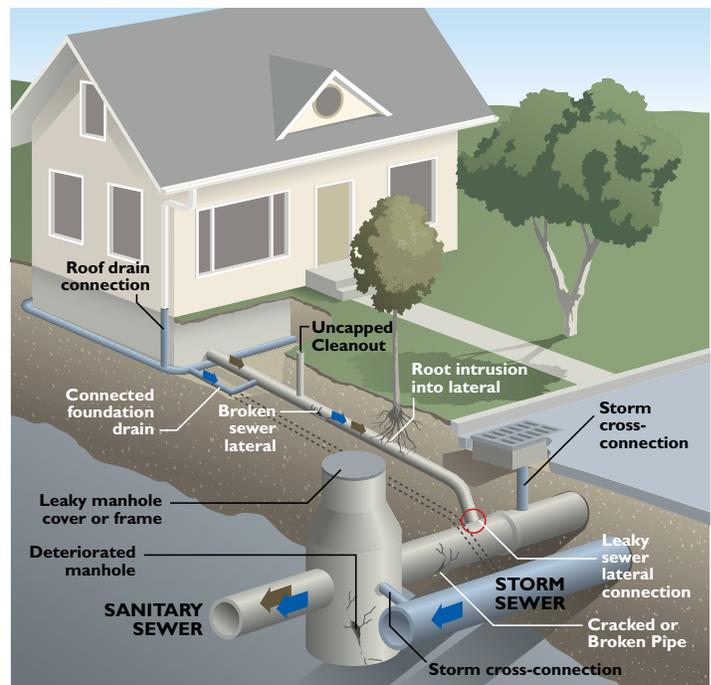
- ensuring an annual Code of Practice inspection frequency for the Food Service and Kitchen Cleaning sectors (>1300 regulated businesses) to ensure grease trap requirements are being met and that conveyance system grease blockages are avoided. Two grease blockages in municipal sewers were investigated in 2016 and 7 tickets were issued to non-compliant Food Services and Kitchen Cleaning operations.
- investigating sources of obstructive waste (medical sharps) discovered at a municipal pump station that had the potential to significantly harm sewage operations staff during maintenance activities.
- 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.

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 and to optimize treatment capacity requirements for the future McLoughlin Point treatment plant. The 2016 budget for this work was approximately \$390,000.

Significant activities included:

- completion of a 5-year update to the I&I Management Plan, which contains a systematic and comprehensive approach for classifying, identifying and reducing I&I for 108 catchments in the core area and provides more specific requirements for identification and reduction of private property inputs into the system.
- flow monitoring at 100 locations in the core area to update I&I rates and evaluate I&I Management Plan performance.
- evaluating core area municipalities' existing sewer bylaws in comparison to a sample model bylaw so that municipalities can use the recommendations from the evaluation to either strengthen their existing bylaws or adopt a stand-alone private property I&I bylaw.
- participating at 14 public events to provide private property owners with information related to I&I, cross-connections and sewage back-ups.



The Stormwater Quality Program

The Stormwater Quality Program (Stormwater) plans, promotes and coordinates the management of stormwater quality in consultation with the municipalities and First Nations. The 2016 budget for the program was approximately \$675,000. The program helps assess the operation of municipal stormwater infrastructure and its impacts to the environment, both freshwater and marine.

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.
- participating at numerous outreach events to provide private property owners with information regarding stormwater management.
- completing a Green Stormwater Infrastructure Design Guidelines document to promote efforts to reduce stormwater input into the conveyance system.



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 2016 budget for the program was approximately \$217,000.

Significant activities included:

- ongoing administration and application of the Onsite Sewage System Maintenance Bylaw (Bylaw No. 3479) in the municipalities that have onsite treatment systems within the Core Area (Colwood, Langford, Saanich and View Royal) to regulate pump-out and maintenance frequency of onsite systems.
- extending the 2015 Maintenance Assessment Pilot to an additional 50 sites to further evaluate the use of site-specific assessments to guide pump-out frequency (as opposed to the use of a prescribed and regulated pump-out frequency), as well as identify any maintenance requirements.
- participating at numerous outreach events and Septic Savvy workshops to educate owners about the proper care and maintenance of their onsite systems.





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

Significant activities included:

- undertaking targeted Code of Practice inspections for various sectors, including Automotive, Dry Cleaning, Dental, Photographic Imaging and Printing, to ensure onsite waste management systems are functioning efficiently. The Automotive and Dry Cleaning sectors were prioritized, as these sectors generate the contaminants that are most commonly measured in Macaulay and Clover points sewage at concentrations that could cause environmental effects.
- undertaking semi-annual inspections of the 40 active Industrial, Commercial and Institutional (ICI) permits and annual inspections of the 112 active ICI authorizations, to ensure onsite waste management systems are in place.
- reviewing the Fermentation and Wet-Cutting sectors to determine whether industry shifts in practice (e.g., increased distilling activities and cutting of products with new chemical compositions, respectively) warrant additional Code of Practice direction or regulation.
- delivering the Clean Water Begins at Home 2.0 outreach program, in collaboration with the Septic program that educates regional residents on managing activities around the home that can introduce contaminants into the sewer and onsite systems.
- promoting the BC Medication Return Program in collaboration with Island Health and the Health Products Stewardship Association.
- developing a new video series that reinforces source control practices.



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-connections and municipal infrastructure relining and replacement projects. As a result, bacterial levels have been reduced on 1 of Oak Bay's popular swimming beaches and the number of high-risk stormwater discharges continues to decline.
- completing a Green Stormwater Infrastructure Guidelines document and Watershed-wise Business Best Management Practices brochure to promote contaminant reduction into watersheds, and ultimately the stormwater infrastructure and marine environment.
- continuing the Ollie the Otter Watershed Warden Badge program 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 Program objectives are to ensure non-domestic trucked liquid waste is handled and disposed of in an appropriate and responsible manner, and to prevent adverse impacts to human health and the environment. The 2016 budget for this program was \$56,000.

Significant activities included:

- undertaking a characterization study of the chemical composition of trucked liquid waste from various sources to inform the region's primary trucked liquid waste treatment contractor and allow them to refine their treatment processes to improve efficiency and reduce odour and corrosion-related contaminants to municipal sewage infrastructure.
- delivering new and concise outreach material targeting catch basin maintenance to reduce contaminant loading to the stormwater system.
- continuing outreach to trucked liquid waste generators and haulers to provide information about proper management and disposal of wastes, technical reports and tools for waste haulers, as well as a service provider directory.

The Harbours Environmental Action Program

The Harbours Environmental Action Program (Harbours) coordinates environmental protection and improvement efforts in Victoria and Esquimalt harbours, Portage Inlet, the Gorge Waterway and Esquimalt Lagoon. Program goals are to advocate environmental protection, decrease contaminant inputs, protect and enhance habitat quality, set environmental quality objectives, achieve environmentally protective land uses and monitor environmental quality. These commitments are collaboratively implemented with community groups, municipal partners, First Nations and other agencies through environmental projects and multi-stakeholder harbour initiatives. The 2016 budget for this work was approximately \$319,000.

Significant activities included:

- initiating and coordinating inter-municipal discussions on a consistent approach to deal with abandoned, derelict and anchored boats in the region. These vessels have great potential to leak contaminants that pose risk to human and environmental health. As part of the discussions, Harbours is leading a coordinated application for federal funding through the Abandoned Boats Program to off-set costs associated with removing abandoned and derelict vessels.
- 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 2016 budget for this work was approximately \$1.1 million (included in the \$4.2 million core area sewer system operating budget).

Significant activities included:

- undertaking wastewater and surface water monitoring to meet regulatory requirements, assess risks to human health and confirm proper operation of the outfall diffusers. Beyond routine requirements, staff also collected a small set of zooplankton samples to determine whether the outfalls are impacting these biological communities. Wet weather overflow events were also monitored.
- completing an assessment of the impacts of the outfalls on dissolved oxygen and ocean acidification in collaboration with Ocean Networks Canada, the University of Victoria, and Fisheries and Oceans Canada. The assessment confirmed that the outfalls are having relatively little impact to dissolved oxygen and ocean acidification, with the most predominant impacts being driven by estuarine circulation and the resultant draw of deep Pacific water into the Salish Sea.
- participating in Vancouver Island University and Vancouver Aquarium projects that are working to assess microplastics in the ocean waters and sea life of the Salish Sea. The CRD provided sewage, marine sediment and Clover Point horse mussels to the researchers so they can develop analytical methodologies that determine both quantity and type of plastics, the first step in assessing the risk of these emerging contaminants of concern.
- completing a detailed statistical trend assessment of the 1990-2015 sewage data to determine temporal trends in loadings and concentrations of various contaminants. This information will be used to assess risks to the environment of any contaminants experiencing increasing trends, as well as to assess the success of Source Control program initiatives in reducing contaminants into the system.

Stormwater

One of the main objectives of the Stormwater program is to assess risks from stormwater discharges to human health and the marine environment.

Significant activities included:

- monitoring stormwater discharges for environmental concern based on the level of metals and organic contaminants measured in sediment from within the stormwater collection system. Staff compare sediment contaminant levels to freshwater and marine sediment quality guidelines to identify contamination issues and assess risk.
- undertaking a second year of monitoring stormwater discharges at high-use beaches to determine risk to human health. This monitoring was driven by the observed significant increase in recreational activities in local marine waters, even in the winter. Information was shared with Island Health, to determine whether beach closures were warranted, and with the municipalities to investigate potential mitigation and remediation measures.
- monitoring the health of core area creeks using water quality parameters, including the assessment of invertebrate animals living in the creek sediment. Overall, creek water quality was similar to previous years: poor in Bowker and Cecelia; moderate in Bee, Colquitz, Colwood, Craigflower, Hospital, Noble, Selleck, and Douglas; and good in Goldstream and Millstream.





Source Control

The Source Control program undertakes monitoring to determine risks of the various contaminant sources into the sewage system. Some of the monitoring must be undertaken by the businesses holding Source Control authorizations and permits, while other monitoring is undertaken by the program itself.

Significant activities included:

- contributing key manhole samples to the Vancouver Island University and Vancouver Aquarium microplastic projects. The results will be used to determine whether sections of the conveyance system that receive sewage from different types of activities (e.g., predominantly residential versus commercial or industrial) generate different types and quantities of microplastics.

Harbours

The Harbours program also assesses where sewage and other adverse impacts are occurring in the harbours and works with municipalities and stakeholders to eliminate risks. Much of this monitoring effort is undertaken in conjunction with the stormwater program.

Corrosion

The Corrosion program undertakes routine monitoring from approximately May through September each year. The objective of the 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 5 in 2016–2017.

The 2016 budget for this program was approximately \$83,000.

Significant activities included:

- planning and implementation of corrosion and odour control tests to assess control efficacy and identify options to improve mitigation
- preliminary planning for pre-construction baseline odour studies at McLoughlin Point and Hartland Landfill in anticipation of the construction of the tertiary treatment plant and residuals treatment facility, respectively.



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 undertaken in that calendar year, including monitoring and regulatory efforts as well as any new initiatives and emerging contaminants that may be targeted in the future. These 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 5 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. A report summarizing I&I and overflow reduction efforts undertaken by the stakeholder municipalities and the CRD is also generated approximately every 1.5 years.

The CRD also regularly produces reports specifically for internal and external stakeholders.

These include:

- 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.

Other forms of reporting are more informal and include:

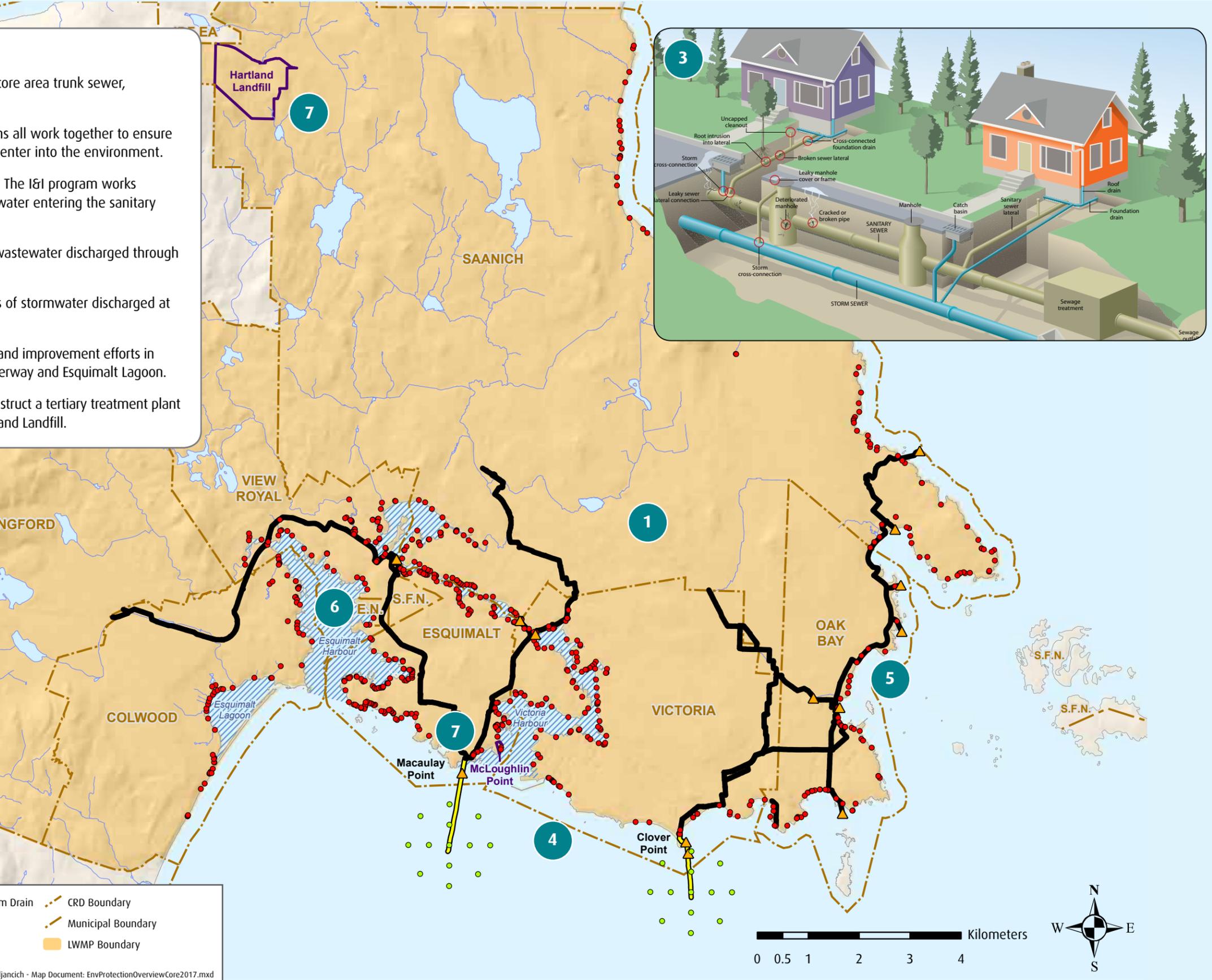
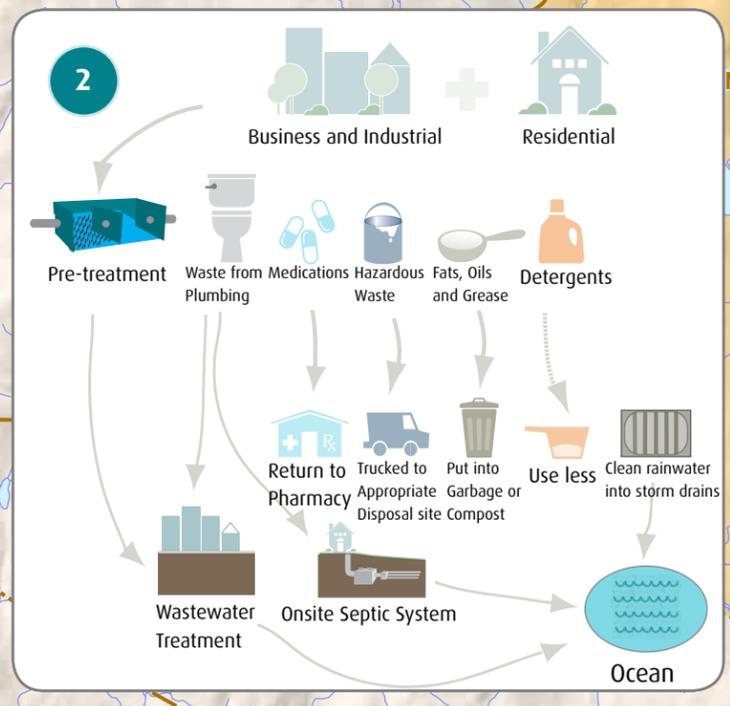
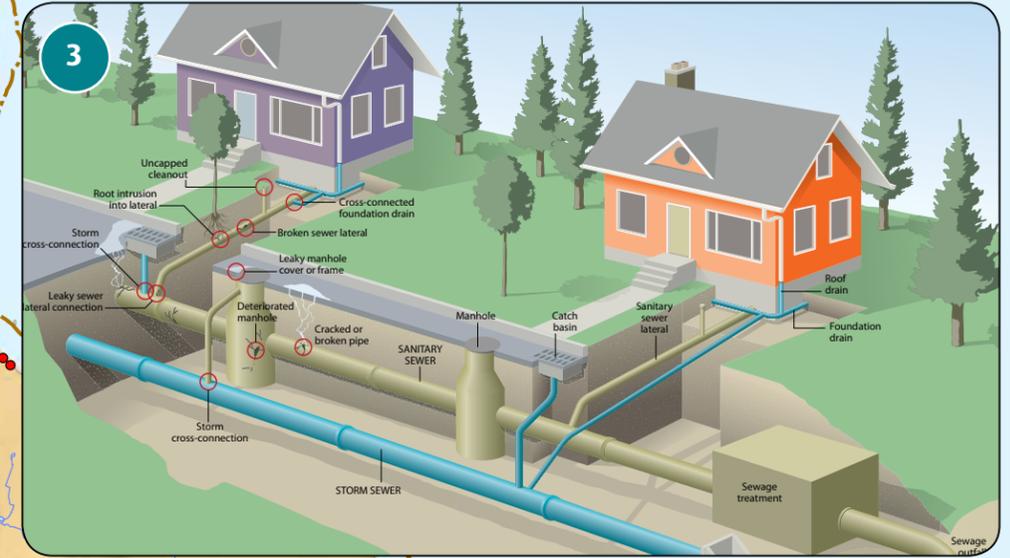
- participating in various multi-stakeholder initiatives such as the Department of National Defence's Esquimalt Harbour Advisory Committee (Harbours program) and a new Community Integrated Watershed Management group (Stormwater program). These initiatives provide a forum for sharing information between 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 about numerous Plan programs.

Emergency notifications:

- 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.

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 Sampling Station	Trunk Sewer	Stream/Ditch/Significant Storm Drain	CRD Boundary
Outfall Sampling Station	Sewer Outfall	Lake	Municipal Boundary
Sewer Overflow Discharge Point			LWMP Boundary
Harbour Area			

CRD - Parks & Environmental Services - Environmental Engineering - Oct 06, 2017 - Technologist: sruljancich - Map Document: EnvProtectionOverviewCore2017.mxd

