



Codes of Practice Update

The Capital Regional District (CRD) Stormwater Quality program promotes and coordinates the management of stormwater quality in 11 municipalities and two electoral areas of the CRD. The authority to undertake this work comes from liquid waste management plans and agreements with local government.

The Stormwater Quality Program works to keep stormwater-carried contaminants out of the municipal systems, watercourses and the nearshore marine environment. Stormwater Quality program staff have prepared a model stormwater bylaw that incorporates all of the proactive tools available to municipal governments to protect storm drains and watercourses. One of the strongest tools are the Codes of Practice. Codes

are a set of rules regulating what can and can't go into the stormwater system, along with a list of controls and monitoring that may be required at each location.

Two codes are now in place and are ready for municipal adoption. Municipalities will adopt these codes on their own schedules. One code applies to automotive and parking lot operations and the other to construction and development activities.



Leaky oil drums

CRD Stormwater Quality Program

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Code of Practice for Automotive and Parking Lot Operations

This code applies to businesses that discharge to the municipal drainage system while involved in the washing or repair of vehicles or the use of parking lots larger than 10 stalls. The concerns for this sector are with automobile fluids leaked during service and storage (parking), spills associated with maintenance of vehicles, accumulated small drops and spills on paved areas, and the wastewater produced when a car is washed.

The following is a summary of the Model Code of Practice for Automotive and Parking Lot Operations.

- Automotive and parking lot operations will not be allowed to discharge the following into the municipal drainage system:
 - contaminated water from storage tanks
 - water from storage containment areas
 - rinse water containing solvent
 - water from interior floor washing (such as cleaning of repair bays)
 - stormwater with contamination exceeding the levels set in the Model Bylaw, Schedule A
- Automotive and parking lot operations are required to:
 - install works or technology to treat contaminants to the levels specified in the Model Bylaw, Schedule A

City of Victoria Government Street Treatment Unit

Submitted by Gary Pleven, City of Victoria Pollution Abatement Officer

Stormwater management has taken on a new meaning for local governments across the country as they strive to comply with strict Federal and Provincial environmental regulations. The City of Victoria is attempting to minimize the negative impact and liability caused by contaminated stormwater by addressing the capture of pollutants at their source.

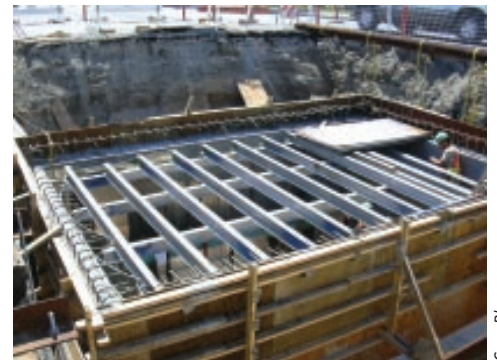
Following the installation of a Stormwater Rehabilitation Unit (SWRU) on Government Street between Pembroke and Princess streets this summer, the City of Victoria is the first city in Canada to treat urban runoff stormwater discharging into a marine environment from a municipally-owned storm sewer.

"This passive system technology supplied by Vortech, Inc. will reduce the amount of sediments, oils and debris being released into the harbour," said Gary Pleven, City of Victoria Pollution Abatement Officer. "Improving surface water quality has been an important goal of the City for many years."

Another corresponding initiative the City of Victoria has undertaken is the replacement of existing catch basins. A catch basin is simply a concrete sump under the roadside curb which catches the water that flows off the street. The water flows into the storm drain, and the sands settle to the bottom of the sump. The automobile is one of the largest contributors to contaminants flowing off our road system in the Capital Region, and the catch basin is the last line of defense before the water reaches the harbour.

Replacing the older style, small sump catch basins with larger ones, and the installation of a trapping hood, will drastically reduce the amount of floatable oils, garbage and chemically contaminated silts flowing off the roads into the harbour. Earlier this year the City replaced 93 roadside catch basins in the Rock Bay area to help address road runoff.

For more information about the City of Victoria Harbour Environmental Protection programs contact Gary Pleven at garyp@city.victoria.bc.ca



Construction of the Treatment Unit on Government Street

Gary Pleven

Codes of Practice

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Code of Practice for Construction and Development Activities

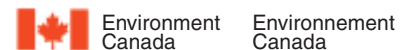
This code applies to businesses that discharge to the municipal drainage system while involved in land development or construction, or the alteration and demolition of buildings.

The following is a summary of the Model Code of Practice for Development and Construction Activities.

- During development and construction work, businesses are required to:
 - contain all contaminated water on site and then remove it or remove the contamination from the water before discharging to the municipal drainage system
 - install works or technology (as required) to treat stormwater contaminants to the levels specified in Schedule A
 - ensure that material such as dirt and rocks are not deposited onto roadways surrounding the construction site

For more information, or to get a copy of the Model Bylaw, Schedule A, contact Dale Green at dgreen@crd.bc.ca

**Codes of Practice
in partnership with:**



Managing Urban Watersheds

Submitted by Jason Lasuik, Community Environmental Coordinator
Burnside Gorge Community Association

Rock Bay is currently recognised as the most polluted bay in the Victoria and Esquimalt harbours. Located southeast of the Bay Street Bridge, Rock Bay is one of many destinations for urban runoff leaving our streets, businesses and backyards. Tainted urban runoff is a predominant source of pollution in Rock Bay as much of the catchment area is covered by impervious or paved surfaces. This, in conjunction with the historical uses of Rock Bay, has resulted in an ecologically degraded bay.

The Rock Bay Contaminant Reduction Project is a major undertaking involving representatives from private, public and non-profit organizations working together to prevent further environmental damage and to promote the restoration of a healthy ecosystem in Rock Bay. Students from the Burnside Community School have been actively involved in addressing their concerns of living in a healthy environment. The students are stencilling fish beside storm drains to remind residents of where the water goes, and conducting presentations of an interactive watershed model to the public and City Council.

To ensure the highest level of community participation in the project, the Burnside Gorge Community Association has begun a Business Pollution Prevention Program and a Residential Watershed Pledge Program.

Best Management Practices are the procedures and guidelines businesses can follow to ensure their operations are efficient, comply with legal requirements, and prevent pollution. The aim is to encourage environmentally conscious business behaviour by illustrating the association between shop practices, and their potential to contribute to the contamination of stormwater.



Burnside Gorge Community Association

Burnside Elementary School students painting fish to mark storm drains

A large residential area of about 5,000 single family dwellings is present in the Rock Bay Watershed. The lifestyles of residents in the area have a large impact on water quality in Rock Bay, which is the reason for the Residential Pledge Program. The aim of the program is to provide opportunities for residents of the Rock Bay watershed to actively improve the water quality of Rock Bay and the Gorge Waterway by changing a few of their daily routines. The pledge program will be launched in January 2004.

Many of the initiatives of the Rock Bay restoration build on what was learned during the award-winning Cecelia Creek Clean-up Project, and incorporate a working committee with representatives from local businesses, government and environmental organizations. At one time, Cecelia Creek was the most polluted urban stream in the Capital

Regional District. Students and citizens of the community combined their efforts with local governments and businesses to significantly reduce the biological and chemical contaminant levels within the creek. The water quality has greatly improved and wildlife is returning to the estuary.

Providing local and scientific knowledge to businesses with Best Management Practices and to residents with a Residential Watershed Pledge program, the Burnside Gorge Community Association hopes to instill a sense of ownership and responsibility for our waterway. With knowledge and awareness of stormwater issues we can create a cleaner, healthier environment for all to enjoy.

For more information and volunteer opportunities please call the Burnside Gorge Community Association at 388-5251.

Green Roofs

By CRD Environmental Education with Angela Evans, District of Saanich

We usually think of stormwater systems, if we think of them at all, as a network of drains, tanks, pipes, and sewers that are buried somewhere deep underneath our feet. But if a promising new technology takes hold, that perception may change. Stormwater management systems would also be found right above our heads, on the roofs of our public and private buildings.



Angela Evans

Green roof technology in place

Green roofs, also called living roofs, are complete roof systems of vegetation, soil, drainage and a waterproof membrane designed to absorb and slowly release rainwater. They come in two varieties. “Extensive” green roofs feature shallow beds in which only hardy alpine plants thrive. They are low weight and low cost. “Intensive” systems are more costly, featuring much more soil and plants with deep roots. Both types provide continuous, uninterrupted layers of protection and drainage. Replacing impervious rooftops with green roofs can significantly reduce the volume and rate of runoff from buildings while improving runoff quality at the same time.

While relatively new to North America, green roofs are an established technology in other countries. In Germany, where 80 municipalities provide incentives for green roof conversions, 13 million square metres of green roofs have been built in the last five years. In Portland, Oregon, green roofs are acknowledged for their role in storing rainwater and keeping the local river safe for salmon. Builders who provide green roofs in downtown Portland are allowed to increase their densities.

Closer to home, an example of green roof technology is the Justice building in Sechelt, British Columbia. Covering the roof top over both the RCMP and the court house of 21,000 square feet, the green roof was installed in the fall of 2002. Positioned to take advantage of full sunlight and prevailing winds, the roof uses landscape materials native to the Sechelt area. All surface water and water from the roof is recycled back into the landscape.

When soils and vegetation are replaced with roads and buildings, less rainfall penetrates the ground, less gets taken up by plants, and more becomes surface runoff. Flooding, erosion and pollution can result.

When rain falls on a forest, it catches on to the leaves, branches and trunks of trees. The precipitation that doesn't evaporate flows into the ground. Very little runs over the top of the forest floor to receiving streams. In a mature forest, about 70 percent of all the rain that falls returns to the ground.

Green roofs control stormwater runoff by imitating these natural processes. They capture and hold precipitation in the plant foliage, absorb water in the root zone, and slow the velocity of direct runoff as it infiltrates through the layers

of vegetated cover. Depending on the intensity of the rain and depth of the soil on the roof, between 15 and 90 percent of runoff can be absorbed, greatly reducing runoff.

In Berlin, studies have shown that green roofs absorb as much as 75 percent of the precipitation that falls on them. What runoff there is occurs over several hours, reducing the risk of sewage overflows and flash floods.

As an added bonus, green roofs can also provide our cities with a welcome touch of beauty. For one thing, green roofs don't have to be “green,” at least not all the time. Many appear red, orange, yellow and all colours in between, as the leaves of various succulent and deciduous plants change colours throughout the year. Flowers also vary in colours, from whites to yellow, pinks, deep reds and purples and blues.

Green roof technology is a sensible, architecturally appealing way to address some of the most urgent ecological issues facing our urban centres today. It may be just a matter of time before our rooftops become a patchwork quilt of living colours accomplishing much of the work now done by our buried pipes and sewers.

Bowker Creek

A lot of folks in the Capital Region are hoping to give a beleaguered urban creek with a long history a new lease on life.

Bowker Creek was once a source of salmon and drinking water that First Nations people could rely on year round. Today, even though over half the creek flows through underground culverts, Cooper's hawks still breed in the creek, and various woodpecker and owl species can be found along its banks.

The creek was named after John Sylvester Bowker, an early Oak Bay settler. His father-in-law, John Tod, gave Bowker some of his farmland bordering the creek as a wedding gift in 1864, back when the stream was known locally as "the Thames."

Starting at the western edge of the University of Victoria, Bowker Creek meanders for eight kilometres through Saanich, Victoria and Oak Bay before emptying into Oak Bay near Glenlyon-Norfolk school. It flows underneath Hillside Shopping Centre and beside

several busy streets. Near Browning Park, Richmond School, Royal Jubilee Hospital, and in Oak Bay the creek is visible and accessible.

For years now, landowners, community associations and the Friends of Bowker Creek have been working to return the creek to a more natural state. They have a vision of Bowker Creek as a healthy stream, supporting native vegetation and wildlife, and providing a community greenway connecting neighbourhoods. In this restored watershed, natural areas and human activities would be managed to minimize runoff and pollution.

Last year, they saw their vision embodied in the Bowker Creek Watershed Management Plan. Development of the plan was coordinated by the CRD's Stormwater Quality program.

The plan outlines four goals for successful watershed management. Individuals, community and special interest groups, institutions, governments and businesses would all take responsibility for actions that affect the watershed. Flows would be

managed to prevent flooding. The plan would improve and expand public areas, natural areas, and biodiversity in the watershed. And all participants would work to achieve and maintain acceptable water quality in the watershed.

This past March, the CRD Board approved the Bowker Creek Watershed Management Plan in principle and referred it to the municipal councils of the City of Victoria, the District of Oak Bay and the District of Saanich for comment and adoption.

Recently, these three municipal councils approved the watershed management plan in principle, and endorsed five key operational recommendations.

Bowker Creek's not there yet, but many of its friends and neighbours can now see a day coming when the coho and chum might return and native plants again line the banks of "the Thames."

For more information on how you can get involved, contact Ian Graeme at the Friends of Bowker Creek Society at 370-1271.

Did you know?

Almost all shellfish beds along First Nations and municipal land on the Saanich Inlet coastline, from Deep Cove to Tod Inlet, are currently closed to recreational harvesting. This shellfishery has long been an important food source for the Tseycum, Pauquachin and Tsartlip First Nations and the larger community on the Saanich Peninsula.

The closures are largely due to bacterial contamination from stormwater discharges. The Capital Regional District (CRD) Stormwater Quality program, funded through Environment Canada and Saanich Peninsula municipalities, has been working since 1999 to identify, reduce and eliminate the sources of these bacterial contaminations.

The Open Saanich Inlet Shellfish Beds Project (OSISB) has reduced the number of stormwater discharges with elevated fecal coliform levels. As a result, marine nearshore fecal coliform levels are now significantly lower than when the program began in 1999. This work will continue in 2004 with marine nearshore and stormwater discharge sampling as well as upstream investigations to identify and reduce and eliminate sources of contamination.



shellfish

Program Partner

CRD Regional Source Control Program

Protecting the sanitary sewer helps protect stormwater quality and watercourses.

The CRD's Regional Source Control program (RSCP) is a pollution prevention program aimed at reducing the amount of chemicals and other contaminants being discharged by local businesses, institutions and households to sanitary sewers.

One common contaminant found in the sanitary sewer is fats, oils and grease (FOG). Although not considered as a pollutant by many, FOG has a significant impact on sanitary sewers and consequently stormwater and watercourse quality. FOG discharged into the sanitary sewer cools and accumulates along sewer pipe walls and starts to restrict the flow or blocks the sewer lines. Blockages can force sewage to spill out of manholes and onto the streets where it can enter the stormwater system or creeks and streams.

Recent work with food services operations on Saltspring Island has reduced the amount of FOG found in sewage lift stations and subsequently the sewer lines. The cooperation between business owners, the local building



Sanitary sewer overflow into creek

North Carolina Department of Natural Resources

inspector and RSCP staff has helped to reduce the chances of overflows and sewer maintenance costs associated with FOG build-up.

For more information of the Regional Source Control program contact Henry Lee by e-mail at hslee@crd.bc.ca

STORMWATERlinks

- City of Victoria
www.city.victoria.bc.ca/cityhall/departments_engwaterengineering.shtml
- District of Saanich
www.gov.saanich.bc.ca/resident/utilities/wastewater.html
- Burnside Gorge Community Association
www.members.shaw.ca/bgca/
- Environment Canada
www.ec.gc.ca
- Georgia Basin Action Plan
www.pyr.ec.gc.ca/georgiabasin/index_e.htm



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