



CAPITAL
REGIONAL
DISTRICT

Environmental Services



Stormwater, Harbours, and Watersheds

news

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Roses and Rainwater

— Inspiration in urban stormwater management from Portland, Oregon

Submitted by *Angela Evans, MCIP,*
Local Solutions Consulting Services

What can we expect to see in on-site stormwater management in the region over the next few years? If Portland, Oregon is any example, I anticipate some very exciting designs – ones which meld art with engineering, traffic calming with landscaping, and street resurfacing with naturescaping. This new approach holds great promise for enhancing

the quality of public and private spaces in both urban and suburban environments.

Last May, I attended a natural building symposium in Portland, giving me the perfect opportunity to pedal along the city’s Stormwater Cycling Tour route. On it, I saw over 30 inspiring stormwater management



University of Portland — roofwater runs into splash boxes, through block runnels and planter beds, then into underground storage for re-use.

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“
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techniques: rain gardens, water gardens, green roofs, planter beds, stone runnels, sculptures, and rainwater reuse systems.

Located on the Willamette and Columbia Rivers, the “City of Roses” has 539,000 residents — about one and a half times the population of the Capital Region — and a metro area of close to two million. When you consider the public resources available to such a large population, the problem of a combined storm and sanitary sewer system, and the fact that salmon have been declared an endangered species statewide, you can see why stormwater gets a lot of attention.

Despite our differences, Portland’s rainfall pattern is very similar to our own, with summer droughts and winter rains. With an average annual rainfall of 922 mm compared with our 665 mm, Portland’s stormwater management techniques can provide useful models for municipalities within the CRD.

Most exciting about the city’s stormwater management systems is the range of land uses, building types, and project sizes they encompass. Many projects are retrofits of existing streets, landscapes, and buildings; others have been applied to completely new projects. A variety of buildings are represented: public schools, a college and a university, grocery stores, commercial strip



Da Vinci Arts School — former tennis court transformed into an outdoor classroom, natural habitat and rainwater detention pond.



New Seasons Market — roofwater pours over the scrap metal ‘shopper’ into the raingarden below, turning her umbrella.

malls, a church, condominiums, a hostel, and office buildings.

Common to all these projects is visibility; stormwater management has been incorporated as a prominent design feature. When it rains, people can see the systems in action. Stormwater isn’t whisked off-site and taken by pipe to some mysterious place. Rather, it moves over things, pools up, makes noise – and even powers a sculptural umbrella!

For those with an interest in stormwater management, Portland’s Stormwater Cycling Tour is a must. If you’re unable to take the tour in person, visit the City of Portland’s excellent website at www.portlandonline.com/bes/index/cfm?c=34598 ■



Buckman Heights Apartments — courtyard raingardens infiltrate runoff from downspouts and walkways.

When stormwater enters a catch basin

by **Alan Gibson**,
CRD Environmental Science Officer

In the last issue we asked, “What does a catch basin catch?” In this issue, we look at what is being done to ensure that the stormwater that enters a catch basin is of a quality that minimizes any negative effect on human health and the environment.

After stormwater enters a catch basin, it flows through a series of pipes and ditches, eventually discharging into streams and creeks and out along the ocean coastline. You may be surprised to discover where your stormwater is discharged; some locations might be within a block of your home.

The CRD Stormwater, Harbours and Watersheds Program (SHWP) monitors stormwater discharge by acquiring approximately 425 stormwater discharge samples twice per year, to determine whether the stormwater will impact human health and the environment. The number of discharges sampled per year represents approximately one third of the discharge locations monitored within the region. Since 1991, more than 1,100 locations have been sampled. Samples are analysed for biological parameters (fecal coliforms, which indicate sewage), and for chemicals, such as metals and hydrocarbons.

When we discover a stormwater discharge location that has high biological or chemical levels, we contact the municipality to help track down the source. Contaminants can originate from a number of sources: sewer

lines that are connected to storm lines, aging sewage infrastructure, vehicles, homes, or businesses. To locate the specific source, we gather additional samples and conduct dye testing and smoke testing. Once the source is located, the problem is repaired. Then more sampling is carried out to ensure that biological and chemical levels have returned to normal.

To view the results of the CRD’s discharge sampling, contact the Stormwater, Harbours and Watersheds Program at 360-3256, or visit our interactive atlases online (www.naturalareasatlas.ca and harboursatlas.ca). By clicking on “Stormwater Sampling Locations,” you will find information on each discharge location: the outfall outlet number, its location, the municipality, its flow rate, and its sampling parameter.

Sampling stormwater discharge locations helps keep our waterways open to the public while protecting fish and fish habitat. You can help; if you notice anything unusual in a creek, in a river, or along the ocean coastline that seems to have originated from a stormwater discharge location, please alert the CRD (360-3256), your municipality, or the Provincial Emergency Program (1-800-663-3456) ■



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SHWP

Sampling stormwater discharge locations helps keep our waterways open to the public while protecting fish and fish habitat.

Victoria Airport showcases green parking

by **Leanne Shapka**
Environmental &
Property Management
Officer
Victoria Airport
Authority

If you've driven by or visited the airport recently, you've likely noticed that change is underway. In fact, by the end of this year, the Victoria Airport Authority will have a very special project to showcase: the innovative environmental designs incorporated into their new parking lot expansion. The expanded lot will use rainwater management and landscaping techniques to maximize environmental protection, mini-

mize rainwater runoff, and provide beautiful aesthetics for travelers to the City of Gardens.

The new "green" parking lot will ensure that runoff from the lot's impervious surface is directed into vegetated catchment areas, where it will be held and naturally treated before being discharged into local waters.

Murdoch Landscape Planning and Design Ltd.



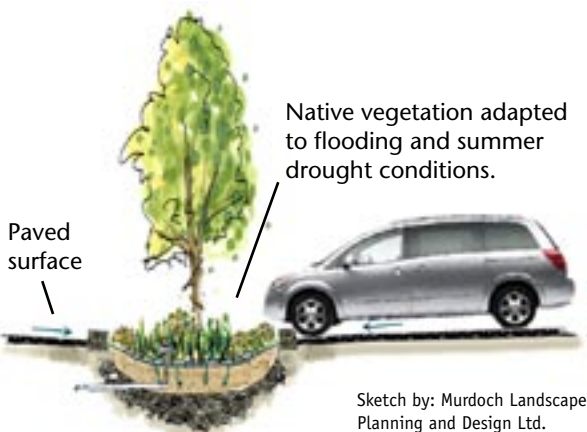
The new parking lot, once completed. The dark grey sections show the expansion parking lot, roads, and driveways. Light green indicate rain gardens, vegetated swales, landscaped berms, and bioretention ponds. Light blue arrows show where the runoff will be directed. The single light-blue dotted line is the storm sewer.



The Victoria Airport Authority strives to provide aesthetically appealing visuals for patrons to enjoy.

The unique design uses rain gardens, vegetated swales, bioretention ponds, and landscaped berms of native plants that are able to withstand winter flooding and summer drought. Each of these components will help to slow the flow of rainwater. In turn, the slower flow will enable the new vegetation to filter and treat the runoff before it enters our waterways.

The new vegetated areas, in fact, will serve multiple purposes. In addition to slowing the flow and filtering runoff, they will remove sediment, oil, and other pollutants and recharge local groundwater. This will improve overall water quality and protect the receiving marine environment. Most obvious to airport users, though, will be the lot's new found beauty. The project's visual appeal along with the environmental benefits it will bring will transform the area from an ordinary parking lot into an airport showpiece ■



Sketch by: Murdoch Landscape Planning and Design Ltd.

Environmental initiatives are implemented into new developments at the airport.

Water in the City

— best management practices for water and watersheds

by **Judith Cullington**, *Water in the City* coordinator, and **Scott Murdoch**, *landscape architect (MBCSLA, RPBio)*

Many communities face the daunting task of restoring watersheds and streams that have been affected by human development. But where and how to begin? Which areas should become priorities?

These were the challenges in dealing with the Mount Douglas Creek watershed in Saanich. Armed with a long-term goal of rehabilitating Douglas Creek to a salmon-bearing stream, the Friends of Mount Douglas Park Society funded and spearheaded a project to implement and monitor a demonstration stormwater retrofit.

To begin, Murdoch Landscape Planning and Design was called on to develop a landscape-based planning tool in order to assess the watershed's health. The resulting information showed that the impervious surfaces that covered more than 30 percent of the watershed were preventing it from functioning properly.

A more detailed analysis of the health of the sub-basins was then determined by assessing three key factors: effective impervi-

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The designs
mimic the
natural
water
processes of
the area. . .



WATER IN THE CITY CONFERENCE

September 17 - 20, 2006
Victoria, British Columbia



Conference:

Water in the City

The approach taken at Mount Douglas Creek is one of many that will be presented at the Water in the City conference. Sponsored by the CRD, Water in the City will be held September 17-20, 2006 in Victoria.

The conference will look at all aspects of water in urban areas: stormwater, drinking water, conservation, re-use, wastewater management, and healthy watersheds. It will present leading-edge technologies and provide invaluable practical information for community decision-makers and developers. In addition, field trips will offer hands-on opportunities to see new approaches in action. The conference will also feature a trade show and stewardship fair, both open to the public.

For more information, visit www.WaterintheCityVictoria.ca or e-mail info@waterinthecityvictoria.ca.



Stormwater management does not equal ponds!
Most city landscapes can be designed to manage stormwater runoff.

ous area (EIA), channel density (the amount of channel and drainage infrastructure per square kilometre of land), and potential annual pollution loads. Both EIA and channel density are linked to land use; they affect stream discharge, peak flows, and flood frequencies. Potential annual pollution load is related to water quality. All three variables help to determine the ecological status of a watershed and its ability to support fish populations.

This detailed analysis found that problems were not distributed evenly across the watershed. But by assessing the land use patterns and the associated infrastructure, the team was able to identify specific problem areas. In doing so, they developed measures to address the real problems — specifically impervious area and channel connectivity — rather than simply the symptoms.

The next step will be to implement best management practices (BMPs) to manage stormwater run off in ways that create healthier streams and make neighbourhoods more liveable. To date, draft BMP designs have been completed for three retrofit sites in the watershed. The designs mimic the natural water processes of the area and maximize social and economic benefits.

Road runoff is directed into the stormwater traffic bulge. These planters function to reduce pollution loads, calm traffic and 'green' neighbourhoods.



Retrofit options include trees, rain gardens, stormwater traffic bulges, and vegetated swales. Now funding must be secured to implement these ideas, initiate public participation, and begin the recovery process for Mount Douglas Creek.

This approach to stormwater planning can simplify and demystify complicated watershed problems. And while the goal may simply be stormwater management, the outcome will mean better habitat for local fish populations and more liveable communities for residents. In fact, multi-functional stormwater facilities can enhance neighbourhood aesthetics, narrow roads, and calm traffic — all while effectively managing stormwater run off ■



STEWARDSHIP FAIR

INVITATION TO PARTICIPATE

Victoria, September 17th, 2006

A "Stewardship Fair", sponsored by the Capital Regional District Stormwater, Harbours and Watersheds Program, is being held in conjunction with the Water in the City conference. This Fair is an opportunity for local, non-profit organizations to showcase their initiatives that relate to education, community outreach and stewardship of water and watersheds.

Booth space is FREE for qualifying organizations. Space is limited, and we recommend getting your application in as soon as possible. Preference will be given to organizations that are local, community-based and

not-for-profit; that are engaged in education, outreach and stewardship related to water in some way.

Please contact the Stewardship Fair Coordinator: Sairah (250) 592-5181
tradeshow@waterinthecityvictoria.ca



CONGRATULATIONS!!



to BETH MITCHELL of Colwood, who was the runner up in the Earth Day Canada "2006 Hometown Hero Award"! Beth is our "volunteer extraordinaire" on the Esquimalt Lagoon Stewardship Initiative (ELSI) and the local community group, Esquimalt Lagoon Enhancement Association (ELEA). The annual award chooses one winner across Canada in their search for "hometown heroes". The award recognises those "hometown heroes" whose passion for the environment has resulted in healthier communities today, and provides a greener future for tomorrow. www.earthday.ca

THANK YOU, BETH for all your time, energy and efforts towards stewardship of Esquimalt Lagoon! You are appreciated!



FREE PUBLIC LECTURE

Maude Barlow, Council of Canadians

The Looming Global Water Crisis: Enshrining Waters as Human Right, Not a Corporate Commodity

Saturday, September 16, 7-9 p.m.

University of Victoria

Call Kate: 250-472-7644



LINKS

- ▶ CRD Environmental Services
www.crd.bc.ca/es
- ▶ Harbours Atlas
www.harboursatlas.ca
- ▶ Natural Areas Atlas
www.naturalareasatlas.ca
- ▶ Bowker Creek
www.bowkercreek.org
- ▶ City of Victoria
www.city.victoria.bc.ca
- ▶ Esquimalt Gorge Creek Restoration
www.esquimalt.ca/projects/gorge_park_creek.htm
- ▶ Victoria and Esquimalt Harbours Environmental Action Program (VEHEAP)
www.crd.bc.ca/watersheds/veheap
- ▶ Georgia Basin Action Plan
www.pyr.ec.gc.ca/georgiabasin/index_e.htm
- ▶ Environment Canada
www.ec.gc.ca

Contact the Editor

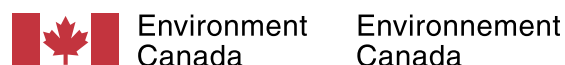
If you have any questions or comments or would like to contribute material to this newsletter, please contact the Editor at either stormwater@crd.bc.ca OR 360-3256.



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