

STORMWATER QUALITY ANNUAL REPORT SAANICH PENINSULA – 2007

EXECUTIVE SUMMARY

INTRODUCTION

The Capital Regional District (CRD) Stormwater, Harbours and Watersheds program (SHWP) works to promote and coordinate the management of stormwater quality and surface water resources on the Saanich Peninsula. This program is a component of the Saanich Peninsula Liquid Waste Management Plan (LWMP) and is undertaken in cooperation and consultation with the participating municipalities: District of Central Saanich, District of North Saanich and Town of Sidney and other Saanich Peninsula communities and local governments.

This 2007 annual report covers four main areas of activity:

1. Stormwater Discharge Survey
2. Upstream Investigations
3. Major Watercourse Monitoring
4. Special Projects

Stormwater discharge surveys are carried out along the entire coastline of the Saanich Peninsula. This monitoring identifies the level of public health and environmental concern associated with stormwater discharges and strives to protect freshwater and nearshore marine ecosystems and resources. Upstream investigations are undertaken to identify the sources of contaminants in stormwater. SHWP staff are also involved in a number of special projects to improve stormwater quality on the Peninsula.

RESULTS AND DISCUSSION

1. Stormwater Discharge Survey

The study area covers the marine coastline from the Saanich/Central Saanich border on the east coast to the Central Saanich/Juan de Fuca electoral area border on the west coast of the Peninsula (Figure A).

Public Health – Fecal Coliforms

In 2007, 97 stormwater discharges were evaluated for public health concerns. This was done by sampling each discharge for fecal coliform bacteria during the winter and summer, where flows allowed, and then rating each discharge as high, moderate or low using the SHWP rating system. The rating of discharges allows the jurisdictions involved to better manage limited funds and undertake remedial measures where they will have the greatest benefit. The prioritization of discharges rated high is done in consultation with the jurisdictions involved.

Of the 97 discharges assessed, 11 were rated high for public health concern (Figure A). Twenty-nine discharges were rated with a moderate level of public health concern and 57 were rated low. Table A provides the jurisdictional distribution of the discharges rated high for public health concern in 2007. Table B gives the number of historical high ratings for these discharges.

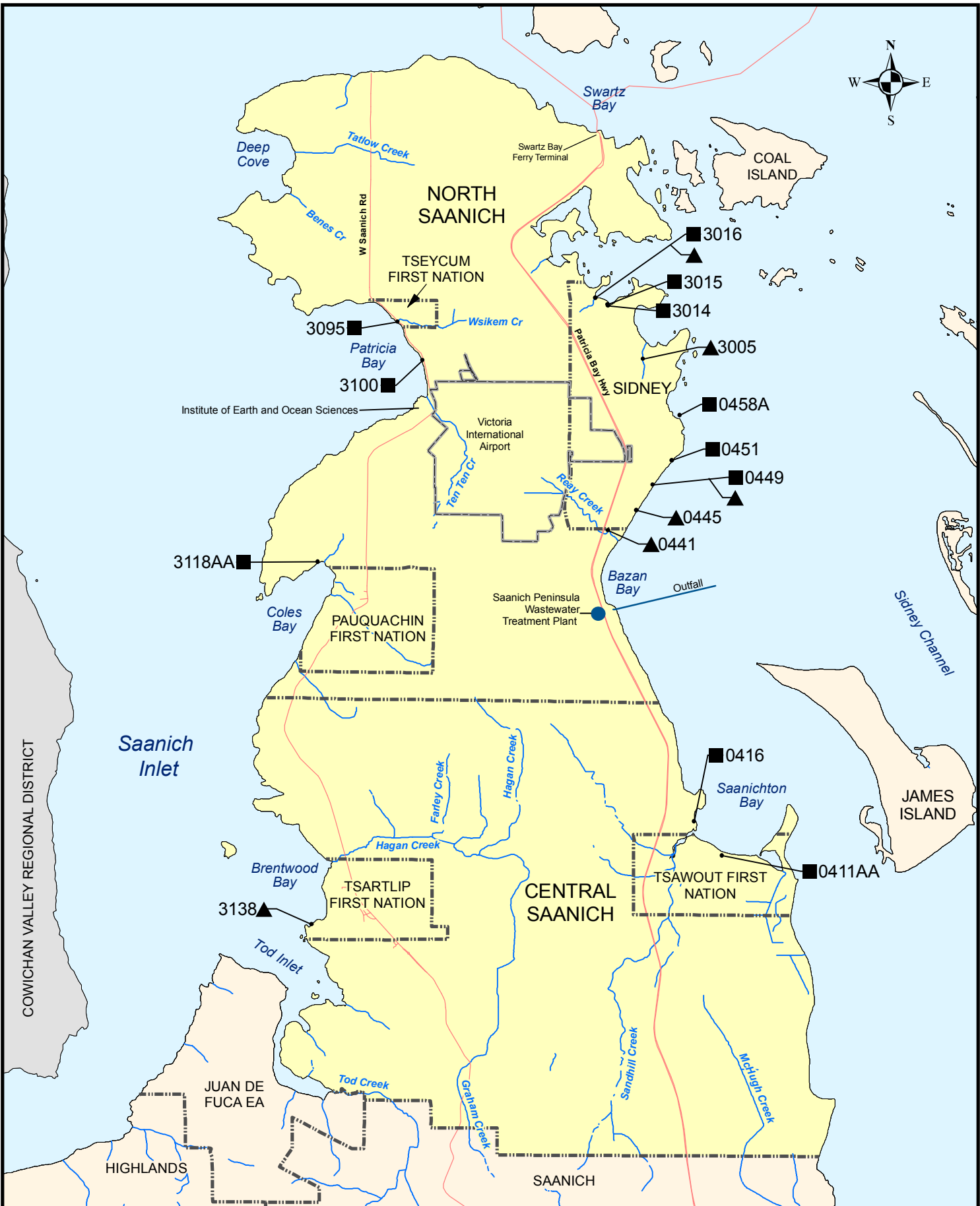
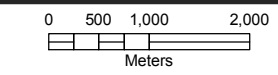


Figure A Saanich Peninsula - 2007 Stormwater Discharges Requiring Action for Public Health and/or Environmental Concerns

<ul style="list-style-type: none"> ■ Discharges Requiring Action ▲ High Public Health Rating ▲ High Environmental Rating and Recommended for Action ● Sewage Treatment and Outfall ~ Streams 	<ul style="list-style-type: none"> --- Municipal and First Nations Boundary — Major Roads — Victoria International Airport ■ Stormwater Monitoring Area
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UTM Zone10N
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The number of discharges rated with a high level of public health concern decreased from 12 in 2006 to 11 in 2007, continuing the downward trend started in 2005 (Table A). Although there are small increases in high-rated discharges in Central Saanich, Sidney and Tseycum First Nation, this decrease in the overall total is the result of a drop in the number of high-rated discharges in North Saanich. Five discharges rated high in 2006 (3021A, 3080B, 3084, 3087, 3100A) are within new sewer service areas and it appears that work by municipal staff in those areas has removed sources of contamination. Sidney had an increase of two high ratings. It should be noted that three of the high rated discharges are in the same area at the west end of All Bay (3014, 3015 and 3016). It is anticipated that working with the Town of Sidney on a concentrated investigation in this area will address these discharges in 2008.

Monitoring will continue in 2008 and SHWP staff will continue to monitor all discharges rated high or moderate and undertake upstream investigations to identify sources of contamination.

Table A. Discharges with a High Level of Public Health Concern 1998 to 2007 by Jurisdiction

Jurisdiction	Number of Discharges Rated High										2007 Discharge Numbers
	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	
Central Saanich	3	3	1	0	2	1	3	2	0	1	416
Tsawout First Nation	1	0	0	0	0	1	0	0	1	1	411AA
North Saanich	13	9	6	5	4	4	10	10	7	2	3118AA, 3100
Sidney	13	9	7	3	1	4	1	3	4	6	449, 451, 458A, 3014, 3015, 3016
Tseycum First Nation	0	0	0	0	0	0	0	1	0	1	3095
Pauquachin First Nation	0	0	0	0	0	0	0	0	0	0	-
Tsartlip First Nation	0	0	0	0	0	1	0	0	0	0	-
Total	30	21	14	8	7	11	14	16	12	11	

Table B. Discharges with a High Level of Public Health Concern

Discharge	Jurisdiction	Number of past high ratings 1998 - 2006
416	Central Saanich	4
411AA	Tsawout	0
3100	North Saanich	1
3118AA	North Saanich	1
449	Sidney	4
451	Sidney	1
458A	Sidney	8
3014	Sidney	2
3015	Sidney	1
3016	Sidney	0
3095	Tseycum	0

Environment – Discharge Sampling for Chemical Contaminants

Stormwater discharges were evaluated for environmental concerns according to the level of metals and organic contaminants identified in each flow. Discharges with high chemical contaminant levels were then prioritized for action based on several environmental factors, which include habitat sensitivity, discharge flow rate and flushing characteristics of the marine receiving environment. All discharges with consistently high contaminant ratings require some type of action, beginning with a detailed investigation to locate the source of the contaminants. Prioritization of discharges rated high is undertaken in consultation with the jurisdictions involved.

Environmental concern is assessed using all chemical contaminant data collected from stormwater discharges since 1998. All chemical contaminant data were considered because sampling is discontinued at discharges consistently rated high for three years until some form of remedial action is implemented. This allows limited funds to be reallocated for sampling other discharges. However, it is necessary to continue to report the need for action in each annual report.

In 2007, sediment samples were collected from 14 stormwater discharges located along the Saanich Peninsula coastline. The sediments were collected from environmentally sensitive or heavily settled areas where there is a greater risk of pollution and analyzed for polycyclic aromatic hydrocarbons (PAHs) and eight metals. Five of the 14 stormwater discharges received a high contaminant rating. Three discharges received a moderate contaminant rating and six were rated low.

Table C. Discharges with a High Level of Chemical Contaminant Concern in 2007

Discharge	Location/Jurisdiction	Number of past high ratings 1998 - 2006
441	Reay Creek - North Saanich	3
445	Frost Avenue - Sidney	6
3005	Fifth Street - Sidney	2
3138	Tsartlip boat launch - Tsartlip	5
3153	Brentwood Bay - Central Saanich	1

Six discharges (441, 445, 449, 3005, 3016 and 3138) are recommended for mitigative action in 2008 based on the 2007 results and also the results over the past three years. Figure A in the executive summary shows the location of these discharges. Over the past three years, the number of discharges recommended for action has been increasing: four in 2005, five in 2006 and six in 2007.

While upstream investigations have sometimes helped narrow down the source of contamination, it has become clear that this approach has not been successful at locating and eliminating sources of contamination in stormwater sediments. In a 2006 review of the stormwater component of the LWMP prepared by Downstream Environmental Consulting Ltd., the lack of effective initiatives to reduce contaminants in stormwater was identified as “the most significant program component requiring attention and improvement.”

As a result, in 2007 SHWP proposed the creation of a CRD-led stormwater source control program. This is a method of reducing contaminant inputs to the stormwater system by working with businesses to reduce or eliminate their contaminant discharge to stormwater. This requires staff to work cooperatively with businesses through a balanced approach of education and enforcement.

A detailed outline of a stormwater program was received by the Saanich Peninsula Wastewater Commission (SPWWC) in February 2008 and staff were directed to present the concept to the three Peninsula municipal councils for their consideration. After obtaining municipal approval to proceed, SHWP will work to get the necessary authority from the Province of British Columbia to set up a CRD-led stormwater source control program on the Peninsula. This program could be developed in 2009 and be fully operational in 2010.

2. Upstream Investigations

Fecal Coliform

Upstream investigations to identify contaminant sources were undertaken by SHWP and municipal staff in the catchment area of six stormwater discharges. Sources of contamination were found in two catchments; municipal staff and Vancouver Island Health Authority (VIHA) are working to address the contamination. The area of contamination was narrowed down in one catchment area and was inconclusive in three others. SHWP staff will continue to work with the jurisdictions involved to reduce fecal coliform contamination in stormwater by assisting in the identification of locations for remedial measures to be implemented by municipalities or property owners.

Chemical Contaminants

In 2007, 19 upstream sediment samples were collected from six stormwater catchment areas. Seven of the 19 samples were collected from Tetayut/Sandhill Creek to investigate upstream contaminant levels previously identified. The Tetayut/Sandhill Creek results from 2007 have helped narrow down the source

of contamination to an area of 6800-block Central Saanich Road and further monitoring is required in 2008 to positively identify the source.

Nine samples were collected from upstream stations in Reay Creek to monitor for change in contaminant levels along this watercourse over time. Monitoring data indicate that in 2007 no significant change from past high contaminant levels was observed and levels of cadmium remain high in this creek. As a result, SHWP staff will continue to work cooperatively with the Victoria Airport Authority (VAA) and other applicable groups to identify and reduce or eliminate sources of contamination. In 2007, VAA removed an area of contaminated soil and continued to pursue an aggressive program of monitoring, source control and best management practices to eliminate this contamination. It is hoped that improvement will be seen in 2008.

Investigations will continue in four other catchments (445, 3016, 3138 and 3154), as results in 2007 were inconclusive. Discharge 3154 (Tod Creek) was rated high in 2006 and investigated in 2007; however, contaminant levels seem to be quite variable and were not confirmed in 2007. This location will be resampled in 2008.

3. Major Watercourse Monitoring

In 2007, water quality monitoring was undertaken in eight creeks on the Saanich Peninsula (Hagen, Reay, Tetayut/Sandhill, Tatlow, Ten Ten, Tod, Tsawout and Tseycum) as part of a program to monitor the Peninsula creeks for change, impacts from activities in the creeks and contamination from areas that drain to the creeks. Reay and Tod Creek had the fewest exceedences of the water quality guidelines, while Tetayut/Sandhill, Ten Ten, Tsawout and Tseycum creeks had the most exceedences. The most common parameters of concern were fecal coliform bacteria, turbidity and phosphorous.

Elevated levels of these parameters are likely the result of higher levels of human settlement or agricultural practices. In 2008, SHWP will work with municipal staff to locate sources of fecal coliform contamination. As part of the overall stormwater education initiative on the Peninsula, SHWP will also educate property owners about methods to reduce the amount of sediment and phosphorous leaving their properties and ultimately ending up in the creeks.

4. Special Projects

In 2007, SHWP was involved with a number of special projects to improve stormwater quality on the Peninsula.

Model Storm Sewer and Watercourse Bylaw

SHWP has prepared an updated bylaw for the protection of storm drains and watercourses, incorporating all of the tools available to municipal government under the *Local Government Act* and the *Community Charter*. This bylaw is designed to allow the incorporation of regulatory codes of practice (COP) to prevent the contamination of stormwater by various business sectors.

SHWP staff, in partnership with Environment Canada and the Georgia Basin Action Plan and working with stakeholder groups, has completed six COP (automotive and parking lot operations, construction and development activities, recreation facilities, streets and roads, recycling operations and outdoor storage operations) and two sector-specific best management practices (BMP), *Painting without Pollution* and *Power Washing without Pollution*.

These documents and bylaw form a component of a stormwater source control program to reduce contaminant inputs to the stormwater system by working with businesses to reduce or eliminate their contaminant discharge to stormwater. In 2007, SHWP staff began investigating options to create a stormwater source control program on the Peninsula with the cooperation of the municipalities. Work will continue on this initiative in 2008 with the goals of protecting the environment and reducing the number of discharges rated high for environmental concern.

Natural Areas Atlas

The Natural Areas Atlas is a comprehensive, web-based information tool about natural areas in the CRD. It is meant for use by anyone interested or involved in land-use planning or stewardship in the region. The goal of the atlas is to promote and aid in well-informed land-use decision making. This will, in turn, have positive, long-term effects on the protection and restoration of terrestrial and aquatic habitat and other natural areas.

Layers of the atlas were updated in 2007 as new data became available. The CRD also continued to refine an updated viewer with performance enhancements, new tools and improved functionality. High-resolution orthophotos were taken in 2007 and, after processing, will be available to the public in early 2008.

Action Plans to Reduce the Number of Discharges Rated High for Public Health Concern

SHWP worked to develop informal action plans with the three Peninsula municipalities to attempt to reduce the number of stormwater discharges rated high for public health concern. This planning process identified opportunities for SHWP and the municipalities to work together on targeted efforts to identify and remediate sources of contamination. Program staff will continue to work with municipal staff on these plans in 2008. In Central Saanich and North Saanich, the goals will be to keep the number of high-rated discharges low, while in Sidney, a plan will be developed to resolve the contamination in three discharges draining to the west side of All Bay.

Source Control

SHWP was directed by the Saanich Peninsula Wastewater Commission (SPWWC) to “prepare options for stormwater source control bylaw development, adoption, enforcement and promotion.” Staff have defined the scope, identified the costs associated with such a program and reported on this to the SPWWC in the fall of 2007.

In February 2008, the SPWWC received more detailed information on a stormwater source control program and SHWP was then directed to proceed with the option of a CRD-led stormwater source control program on the Saanich Peninsula. The next steps are to present the concept to the three municipal councils. Once the councils agree to the proposal, CRD staff will seek the required authority through the province and initiate a source control program.

Increase communication between CRD and municipal planning staff

SHWP staff worked cooperatively with municipal planning staff to discuss the options for a Peninsula-wide stormwater source control program. Staff also discussed the renaming of Tetayut/Sandhill Creek with the District of Central Saanich and have invited planning staff from the three Peninsula municipalities to training sessions and watershed management planning sessions.

Review chemical contaminants sampling

SHWP staff have begun to evaluate the effectiveness of the current chemical sampling program and are investigating new methods of obtaining samples and interpreting the results. A revised sampling protocol will help support stormwater source control activities by providing more useful contaminant information.

Tailor model bylaw to Saanich Peninsula needs

The CRD Model Storm Sewer and Watercourse Bylaw was modified to meet the needs of the Saanich Peninsula, in response to the comments by municipal engineers during the program review. Some sections that were not applicable were removed and the bylaw was made more concise while continuing to provide effective tools for environmental protection.

Hold a workshop for municipal staff

In 2007, SHWP hosted a bio-infiltration workshop for municipal staff. This well-attended workshop provided information on low-impact development options for onsite retention of rainwater. More workshops are planned in 2008 (for example, a session on sediment control and soil erosion).

RECOMMENDATIONS

Stormwater Discharge Surveys

1. That sampling be continued by Stormwater, Harbours and Watersheds program staff at all discharges with a high or moderate level of public health concern, and at selected low rated discharges, to confirm contaminant levels.
2. That annual sampling be discontinued at the discharges rated low for public health concern but that they be sampled at least once every five years as part of a long-term strategy to monitor for future changes.
3. That sediment sampling and analysis be continued at high rated discharges to confirm chemical contaminant levels as required.
4. That sediment sampling and analysis be discontinued at discharges where low chemical contaminant levels have been confirmed.
5. That Stormwater, Harbours and Watersheds program staff continue to evaluate the effectiveness of the current sediment sampling program and make changes as required to protect watercourses and the nearshore marine environment.

Upstream Investigations

1. That Stormwater, Harbours and Watersheds program staff work with the jurisdictions involved to investigate and eliminate the sources of high fecal coliform concentrations for those discharges rated high for public health concern.
2. That Stormwater, Harbours and Watersheds program staff works with the jurisdictions involved to determine the sources of contamination for the discharges with a confirmed rating of high environmental concern.

Special Projects

1. That the Stormwater, Harbours and Watersheds program continues to undertake special projects as necessary to improve stormwater quality on the Peninsula.

General

The following are also recommended:

1. That Stormwater, Harbours and Watersheds program staff, in cooperation with the Ministry of Environment, Environment Canada and community groups, develop and promote education and best management practices for the protection of stormwater quality.
2. That, where appropriate, municipalities and First Nations investigate spills and other incidents that may lead to the contamination of storm drains, watercourses and the marine environment, and that these incidents be reported to the Provincial Emergency Program.