



Making a difference...together

SAANICH PENINSULA WASTEWATER COMMISSION

Notice of Meeting on **Thursday, September 15, 2016 at 8:30 am**

Saanich Peninsula Treatment Plant Meeting Room, 9055 Mainwaring Road, North Saanich, BC

M. Williams (Chair)	P. Wainwright (Vice-Chair)	R. Barnhart	M. Doehnel
C. Graham	M. Lougher-Goodey	C. Stock	M. Thompson
M. Wiesenberger	R. Windsor		

AGENDA

1. Approval of Agenda
2. Adoption of Minutes of July 21, 2016
3. Chair’s Remarks
4. Presentations/Delegations
 - No one has registered to speak
5. Saanich Peninsula Wastewater Treatment – Future Options for Residuals Management (Report #SPWWC 2016-07)
6. Sampling Design and Cost Estimate for Woodwynn Farms Biosolids Impact Study (Report #EPR2016-23)
7. Sidney Lawn Bowling License Agreement (Report #SPWWC 2016-06)
8. Saanich Peninsula Stormwater Quality – 2015 Program Report (Report #EPR2016-24)
9. Saanich Peninsula Stormwater Quality Service Review (Report #EPR2016-26)
10. Saanich Peninsula Treatment Plant Wastewater and Marine Environment Program – 2015 Annual Report (Report #EPRO2016-25)
11. New Business
12. Next Meeting: Thursday, October 20, 2016-Capital and Operating Budgets
13. Adjournment

Distribution:

Staff/Town Halls, etc.

R. Lapham	T. Robbins	P. Robins, Central Saanich
L. Hutcheson	I. Jesney	D. McAllister, Central Saanich
N. Chan	M. McCrank	R. Buchan, North Saanich
A. Orr	D. Robson	P. O’Reilly, North Saanich
J. Poncelet	I. Sander	R. Humble, Sidney
G. Harris	M. Montague	T. Tanton, Sidney
	Commission file	Tsartlip First Nation

To ensure a quorum, advise Margaret at 250.474-9606 if you or your alternate cannot attend.
IWSS-928280410-4809



Making a difference...together

**Minutes of a Meeting of the Saanich Peninsula Wastewater Commission
Held July 21, 2016 in the Saanich Peninsula Treatment Plant Meeting Room,
9055 Mainwaring Road, North Saanich, BC**

PRESENT

COMMISSIONERS: M. Williams, P. Wainwright, R. Barnhart, M. Doehnel, M. Lougher-Goodey (Alternate), M. Weisenberger, R. Windsor, M. Underwood

STAFF: T. Robbins, General Manager, Integrated Water Services; L. Hutcheson, General Manager, Parks and Environmental Services; G. Harris, Senior Manager, Environmental Protection; M. Montague (recorder)

The meeting was called to order at 8:45 am.

1. APPROVAL OF AGENDA

MOVED by Commissioner Windsor and **SECONDED** by Alternate Commissioner Lougher-Goodey,
That the Saanich Peninsula Wastewater Commission approve the agenda.

CARRIED

2. ADOPTION OF MINUTES

MOVED by Commissioner Windsor and **SECONDED** by Commissioner Barnhart,
That the Saanich Peninsula Wastewater Commission adopt the minutes of the May 19, 2016 meeting.

CARRIED

3. CHAIR'S REMARKS

The Chair's remarked as follows:

- He noted that he has been attending the IRM select committee as a non-voting representative for the Saanich Peninsula. The Saanich Peninsula Wastewater Commission's interest is in finding out whether there are any options in the Core Area to manage the biosolids at the SPWWTP. An item has been added to the agenda for the next IRM Select Committee meeting entitled "Future Directions for the IRM Select Committee", a copy of which has been distributed to the Commission for discussion. An update on the IRM Select Committee meeting held July 13, 2016 will be provided under Item 7 on today's agenda.

4. PRESENTATIONS/DELEGATIONS

There were no presentations/delegations.

5. A BYLAW TO WAIVE DEVELOPMENT COST CHARGES FOR AFFORDABLE RENTAL HOUSING AT 9818-9830 FOURTH STREET, SIDNEY, BC

T. Robbins noted that this item was discussed earlier at the SPWC meeting.

MOVED by Commissioner Wainwright and **SECONDED** by Commissioner Barnhart,
That the Saanich Peninsula Water Commission:

1. Recommend to the CRD Board that Bylaw No. 4113, Saanich Peninsula Water And Wastewater Development Cost Charge Waiver Bylaw No. 1, 2016 be introduced, read a first and second time, read a third time, and adopted; and
2. Direct staff to prepare draft amendments to the Saanich Peninsula Water and Wastewater Development Cost Charge Bylaw No. 3208 for the Commissions' review, that would allow for the Commissions to waive the development cost charges payable under the Bylaw for 'not-for-profit rental housing, including supportive living housing' and 'for-profit affordable rental housing' development types.

CARRIED

Commissioner Doehnel **OPPOSED**

6. SAANICH PENINSULA STORMWATER QUALITY 2015 PROGRAM REPORT

G. Harris spoke to the report. It was noted that the report did not contain enough detail. Discussion ensued on the item. It was suggested that this item be discussed more fully during the budget meeting and staff were asked to bring forward a couple of options for expanding this project at that time.

MOVED by Alternate Commissioner Lougher-Goodey and **SECONDED** by Commissioner Weisenberger,
That the Saanich Peninsula Wastewater Commission recommend to the Capital Regional District Board that the Saanich Peninsula Stormwater Quality 2015 Program Report be received for information.

DEFEATED

MOVED by Commissioner Wainwright and **SECONDED** by Alternate Commissioner Lougher-Goodey,
That the Saanich Peninsula Wastewater Commission direct staff to submit a revised report.

CARRIED

MOVED by Commissioner Wainwright and **SECONDED** by Commissioner Windsor,
That the Saanich Peninsula Wastewater Commission direct staff to bring forward options to expand the stormwater program, up to \$50,000, to address concerns raised.

CARRIED

7. INTEGRATED RESOURCE MANAGEMENT SELECT COMMITTEE – BUSINESS ARISING FROM THE JULY 13, 2016 MEETING

L. Hutcheson reported that the item circulated was not a new item. It was originally on the agenda for the last meeting but was not discussed due to time constraints.

MOVED by Commissioner Wainwright and **SECONDED** by Commissioner Windsor,
That the Saanich Peninsula Wastewater Commission receive the report forwarded from the IRM Select Committee for information.

CARRIED

8. **NEW BUSINESS**

There was no new business.

9. **ADJOURNMENT**

MOVED by Commissioner Windsor, **SECONDED** by Alternate Commissioner Lougher-Goodey,
That the Saanich Peninsula Wastewater Commission meeting be adjourned at 9:28 am.

CARRIED

CHAIR

**REPORT TO THE SAANICH PENINSULA WASTEWATER COMMISSION
MEETING OF WEDNESDAY, SEPTEMBER 15, 2016**

**SUBJECT SAANICH PENINSULA WASTEWATER TREATMENT – FUTURE OPTIONS
FOR RESIDUALS MANAGEMENT**

ISSUE

To provide the Saanich Peninsula Wastewater Commission (Commission) an update of potential options under consideration for regional residuals management and seek direction regarding advancing residuals management solutions for the Saanich Peninsula Wastewater Service.

BACKGROUND

In the Fall of 2015, the Commission considered a staff report that provided information on current solutions, contingencies and future options for sludge disposal, biosolids production and use and possible energy production alternatives. This was in response to the Commission's desire to discontinue landfilling raw sludge generated at the treatment plant and implement a long-term, environmentally and financially sound solution to manage the treatment plant residuals. At the time, the most viable long-term solution was considered to be partnering with the Core Area Wastewater Treatment Program's (CAWTP) residuals management solution, which was expected to be in operation by 2023/2024. Since then, there have been two major developments with respect to the future of regional residuals management. The first was the establishment of the CAWTP Project Board to make recommendations respecting the CAWTP direction, and second, CRD Board direction to further consider a regional IRM approach to solid waste and liquid waste residuals management through the establishment of the Integrated Resource Management (IRM) Select Committee. The Commission has been briefed on both of these initiatives.

This report provides an update of potential options under consideration for regional residuals management.

Core Area Wastewater Treatment Program

In a report released September 7, 2016, the CAWTP Project Board is recommending to the CRD Board, a proposal that:

"Responds to the needs of the region by providing tertiary sewage treatment for the Core Area by 2020, with a revised design that is intended to be responsive to the interests of the surrounding community and neighbourhoods. The plan includes a process to develop an integrated resource management solution for the region's waste. It also includes a commitment to advance studies for a wastewater treatment proposal in Colwood."

With respect to residuals management, the specific recommendations are:

- "1. The CRD start a new procurement for a new facility at Hartland landfill using a Design-Build-Finance-Operate (DBFO) model, such facility to be in place to receive residual solids by December 2020; the contract will be performance based, with payment tied to the production of treated biosolids that meet regulatory thresholds for Class A biosolids.

2. The CRD store the Class A biosolids at Hartland on an interim basis, recover and treat leachate and recover biogas.
3. The CRD engage in a comprehensive planning and consultation process to develop a waste policy, including management of its solid and biosolid waste streams as part of an integrated resource management plan. This process would culminate in a submission to the Ministry of Environment of an integrated resource management program by 2020; it may include an amendment to the CRD Solid Waste Management Plan.
4. In parallel the CRD issue a Request for Expressions of Interest (RFEOI) for the processing of waste (including solid waste and biosolids) to determine the level of interest on the part of developers and investors. The RFEOI would specifically request input on the integrated resource management policy and regulations required to support their prospective investment. This will inform the planning process and policy. “

The following, respecting the treatment of residual solids, was also included in the CAWTP Project Board report:

“The Project Board evaluated 21 options for treatment of residual solids. It used the same methodology that it used for the wastewater treatment plant evaluation. The methodology, evaluation worksheets, and results are included in the business case.

The recommendations are as follows:

- a plant at Hartland landfill to treat residual solids to produce, with anaerobic digestion, Class A biosolids which would qualify for beneficial use, as defined by the Ministry of Environment
- the CRD store the Class A biosolids at Hartland landfill on an interim basis in a bio-cell; biogas and leachate will be recovered.

There has been a longstanding interest in the region to move to integrated resource management. This means integrating biosolids, organics and municipal solid waste. However, the CRD does not control the vast majority of its waste. It does control biosolids from the plants it operates, but biosolids represent less than 10 per cent of the total waste stream. In order to have an effective integrated resource management plan, the region must implement policies and bylaws to control the flow and processing of the majority of its waste. The development of these policies will require analysis and extensive consultation with member municipalities, technology providers, existing private sector waste haulers and processors, other stakeholders and the broader public. Therefore, the Project Board recommends an interim storage solution for its treated Class A biosolids, within the requirements of the CRD Solid Waste Management Plan.

The Project Board recommends the CRD undertake a public process, with the participation of the affected municipalities and First Nations, to review its regional waste management policy to determine a long-term option at Hartland that optimizes the opportunity for integrated resource management and beneficial use of the biosolids. This process would culminate in a submission to the Ministry of Environment by 2020 or sooner with a long-term option and may include an amendment to the CRD Solid Waste Management Plan. While this process is underway, CRD would report periodically to the Ministry to keep it apprised of the progress.

The Project Board recommends the CRD issue a Request for Expressions of Interest for the processing of waste (including solid waste, organics and biosolids) to determine the level of interest on the part of developers and investors. The RFEOI would specifically request input on the integrated resource management policy and regulations required to support their prospective investment. This will inform the planning process and policy.”

Integrated Resource Management

At the IRM Select Committee meeting of August 10, 2016, the following motion was carried:

“That the Integrated Resource Management Select Committee recommend to the Capital Regional District Board:

That staff be directed to:

1. Retain the services of a procurement specialist to work with staff to develop a Request for Expressions of Interest (RFEOI) for an Integrated Resource Management (IRM) pilot project and bring an RFEOI document back through the Committee to the Board for approval;
2. Retain the services of an independent IRM specialist to present information to the Board regarding the Sydney, Australia strategic IRM process and to assist with the development of an RFEOI, as outlined above; and
3. Amend the Terms of Reference of the Integrated Resource Management Select Committee as shown in Appendix D as amended.”

The IRM Select Committee will meet again in October. Staff are preparing the information resulting from the resolution above.

Saanich Peninsula Solution

During discussions on the Saanich Peninsula Wastewater Treatment Plant residuals issue at previous Saanich Peninsula Wastewater Commission meetings, the concept of undertaking a pilot scale project on the Saanich Peninsula to process raw sludge from the Saanich Peninsula Wastewater Treatment Plant and other food or green wastes has been raised. The Treatment Plant site has been noted as a potential location for a pilot plant at both the Commission and IRM Select Committee meetings, but there has been no feasibility work completed to date. It should be noted that the Saanich Peninsula Wastewater Service’s \$100,000 budget contribution towards a regional IRM pilot project remains under consideration by the IRM Select Committee.

ALTERNATIVES

Alternative 1

That the Saanich Peninsula Wastewater Commission:

- a. Direct staff to engage in the CAWTP residuals treatment and management planning process with a goal of expressing interest in utilizing the interim biosolids storage facility and ultimate residuals treatment and disposal process for the Saanich Peninsula Wastewater Treatment Plant raw sludge and/or Class A biosolids, and ensuring sufficient capacity allowances are made at the facilities to receive up to approximately 8,000 tonnes of residuals per year (at ultimate build-out of treatment plant). (Subject to CRD Board approval of the CAWTP Project Board recommendations on September 14, 2016);

- b. Continue to support the Saanich Peninsula Wastewater Commission membership on the IRM Select Committee and the Committee's goals and actions.

Alternative 2

That the Saanich Peninsula Wastewater Commission direct staff to bring a report back to the Commission that sets out the concept feasibility, and a terms of reference and budget for staff to develop a Request for Expressions of Interest (RFEOI) to determine the level of private sector interest to undertake a pilot scale project on the Saanich Peninsula to process raw sludge from the Saanich Peninsula Wastewater Treatment Plant and other food/green wastes at a site to be determined, and to consider end product beneficial use.

Alternative 3

That the Saanich Peninsula Wastewater Commission receive the staff report for information and take no further action at this time.

IMPLICATIONS

Alternative 1 - If the interim and long-term residuals management solutions are implemented at the Hartland Landfill, it is expected that disposing of the Saanich Peninsula Wastewater Treatment Plant residuals at the facility would provide a cost effective and environmentally beneficial solution. Having the facility in service by December 2020, is a much more acceptable timeline than originally anticipated. At this time, there has not been any further consideration regarding how residuals would be transported to the landfill facility, or whether raw dewatered sludge would be transported, or whether Class A biosolids would be produced at the Saanich Peninsula Treatment Plant, then transported to the landfill facility for direct deposit in the storage cells.

Until the facility is operational, raw dewatered sludge would continue to be deposited at the Hartland Landfill as controlled waste.

Alternative 2 - There has been no feasibility work completed on this concept to date. A feasibility study would be recommended prior to advancing an RFEOI. Factors to be considered are: 1) siting options; 2) capital and operating costs; 3) sourcing food/green waste inputs; and 4) beneficial use and distribution of end products. The Saanich Peninsula Wastewater Service 2016/2017 budgets and financial plans would need to be amended accordingly to reflect this project.

CONCLUSION

The recently released CAWTP Project Board recommendations provide clarity respecting a potential regional approach to wastewater treatment residuals management, including interim and long-term solutions that could consider a move to integrated resource management. The recommended solutions, which are subject to CRD Board approval on September 14, create a potential residuals disposal and beneficial use opportunity for the Saanich Peninsula Wastewater Service much sooner than originally anticipated.

RECOMMENDATION

That the Saanich Peninsula Wastewater Commission:

- a. Direct staff to engage in the CAWTP residuals treatment and management planning process with a goal of expressing interest in utilizing the interim biosolids storage facility and ultimate residuals treatment and disposal process for the Saanich Peninsula Wastewater Treatment Plant raw sludge and/or Class A biosolids, and ensuring sufficient capacity allowances are made at the facilities to receive up to approximately 8,000 tonnes of residuals per year (at ultimate build-out of treatment plant). (Subject to CRD Board approval of the CAWTP Project Board recommendations on September 14, 2016);
- b. Continue to support the Saanich Peninsula Wastewater Commission membership on the IRM Select Committee and the Committee's goals and actions.

Submitted by:	Ted Robbins, B.Sc., C.Tech. General Manager, Integrated Water Services
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**REPORT TO THE SAANICH PENINSULA WASTEWATER COMMISSION
MEETING OF THURSDAY, SEPTEMBER 15, 2016**

**SUBJECT **SAMPLING DESIGN AND COST ESTIMATE FOR WOODWYNN FARMS
BIOSOLIDS IMPACT STUDY****

ISSUE

To consider a sampling design and cost estimate for a soil sampling study at Woodwynn Farms to investigate the presence of various contaminants of concern associated with historic application of regionally-produced biosolids.

BACKGROUND

At its March 17, 2016 meeting, the Commission directed Capital Regional District (CRD) staff to develop a proposal to investigate residual contamination associated with historic biosolids application on the Saanich Peninsula. The study would provide some information to the Commission on the risks associated with biosolids within the context of the current CRD-wide ban on producing and distributing biosolids from any CRD facilities or lands.

Staff investigated possible options for study locations and examined historic records for available data and information. Although biosolids were distributed and then applied to many properties throughout the region, the best information appears to be associated with Woodwynn Farms located in Central Saanich. Woodwynn Farms applied approximately 3,500,000 litres of biosolids produced from the Central Saanich, Bazan Bay and Sidney treatment plants that operated at that time. The farm applied biosolids to various fields on the property from 1993 to 1999. The current property owners are willing to support the current study provided the research is scientifically rigorous, including sufficient controls, replication, randomization and analyses.

Data and information prior to the land application of biosolids can form a baseline for some contaminants and site conditions. The regulatory focus at the time (and still current today) was on bacterial concentrations, pH, nutrients and some metals. In the 1990s, the scientific community was just starting to focus attention on contaminants of emerging concern (CEC), which include flame retardants, pharmaceuticals, personal care products, perfluoroalkyl substances, disinfectants, pesticides, plasticizers and many other newer classes of chemicals. CEC analyses were not required or completed on the biosolids at that time. In fact, these contaminants are still not included in regulatory guidance today. There have been advances in analytical techniques to detect these contaminants in the environment but there is very little toxicological data and even fewer regulatory benchmarks in the literature. To date, federal and provincial regulators have not included explicit limits on these contaminants within their guidance on biosolid land application.

Although the land application ceased in 1999, the property did not complete its required closure plan until 2009. Since 1999, there have been extensive site activities across the property, including addition of commercial fertilizers, compost, land alteration and crop rotations, which will confound any direct link between the biosolid application in the 1990s and environmental concentrations today.

Despite the limitations of any scientific study to link past biosolids applications with current estimates of risk, staff have designed a study to measure concentrations of some CEC contaminants at Woodwynn Farm. The hypothesis is simply whether or not CEC can be detected at a site that received regionally-produced biosolids.

The sampling design and cost estimate for the proposed study to assess CEC and legacy contaminants resulting from historic Woodwynn Farms biosolids land application can be found in Appendix A. This sampling design has been reviewed and approved by the operators and Board of Woodwynn Farms.

ALTERNATIVES

Alternative 1

That the Saanich Peninsula Wastewater Commission direct CRD staff not to undertake the proposed biosolids assessment study at Woodwynn Farm at this time.

Alternative 2

That the Saanich Peninsula Wastewater Commission direct CRD staff to undertake the proposed biosolids assessment impact study at Woodwynn Farm.

ENVIRONMENTAL IMPLICATIONS

Many of the ~23,000 chemicals on the Domestic Substances List can be found throughout the environment. Land application of biosolids is just one potential source of these contaminants. Very little is known of the toxicological (i.e., dose-response) characteristics of these chemicals, especially the CEC, which are of relatively recent interest.

Potential human health and environmental risks of biosolids are primarily associated with co-mingled contaminants, including CEC and legacy, or well-known and older, substances. The proposed list of analytical parameters for this study is a subset of the list of CEC and legacy substances analyzed by Environment Canada as part of the nation-wide Chemicals Management Plan assessment of contaminants in biosolids.

The study will be able to compare environmental concentrations at Woodwynn Farm against federal research on biosolids management and any available toxicity thresholds. These thresholds exist for most of the legacy contaminants. Thresholds do not exist for many of the newer classes of contaminants and, if they do, are very limited in their application.

Another concern for interpreting results will be the post-application activities on and around the site. Post-1999 activities, including additional farming activities, such as cattle grazing, the addition of other soil amendment products and pesticide use at neighboring farms, will confound the interpretation since all of these activities have the potential to add contaminants to the farm's soils. The current operators of Woodwynn Farms do not have comprehensive records of all activities that have occurred post-1999. Therefore, it will not be possible to attribute any detected contaminants solely to historic biosolids land application.

FINANCIAL IMPLICATIONS

The cost estimate to undertake the proposed study is \$85,000 (exclusive of applicable taxes). A single budget supplementary request will be required.

SOCIAL IMPLICATIONS

The existing CRD Board policy prohibiting land application of biosolids reflects regional environmental and human health concerns associated with emerging and other contaminants. The policy is not consistent with current provincial and federal regulatory guidance, which supports and encourages beneficial use of wastewater-derived solids, including land application, through the definition of acceptable risk and implementation of best practices.

The study would not contravene the current Board policy and only provide information regarding historic land application of biosolids produced by Saanich Peninsula treatment plants.

CONCLUSIONS

The proposed study will be able to detect the presence or absence (to analytical limits) for a subgroup of chemicals, including legacy compounds and those of emerging concern. The study will not be able to quantify the risks associated with these contaminants except where toxicological thresholds exist. The study will also not allow for any clear conclusion regarding the relationship between biosolids application at the site and resulting concentrations because of the limited information on biosolids quality at the time of application in the 1990s, site activities since the biosolids were applied and the length of time that has since passed.

RECOMMENDATION

That the Saanich Peninsula Wastewater Commission direct CRD staff not to undertake the proposed biosolids assessment study at Woodwynn Farms at this time.

Submitted by:	Glenn Harris, Ph.D., R.P.Bio., Senior Manager, Environmental Protection
Concurrence:	Larisa Hutcheson, P.Eng., General Manager, Parks & Environmental Services
Concurrence:	Ted Robbins, B.Sc., C.Tech., General Manager, Integrated Water Service

CL:cam

Attachment:

- Appendix A – Sampling design, Cost Estimate and Maps for the biosolids impact study at Woodwynn Farms

Potential Woodwynn Farms Biosolids Impact Study Sampling Design and Cost Estimate

A semi-quantitative study design is proposed for sampling at Woodwynn Farms (Figure 1). A field that has historically received Saanich Peninsula biosolids (i.e., exposed) will be compared to a reference station that did not receive Saanich Peninsula biosolids. It is hypothesized that contaminant concentrations at the exposed station will be similar to those at the reference station.

According to past records², field 1N (Figure 2) had the most frequent application events (8) from 1993 to 1999. As such, field 1N was chosen as the exposed station for this study. The location of the reference station still needs to be determined, in consultation with the current operators of Woodwynn Farms. Reference field selection will attempt to match as many variables as possible to the exposed field 1N, including slope, aspect, soil type, farming methods, crop, field size and proximity to roads, waterways, structures and animal feeding operations.

Sampling at each station will include collecting triplicate soil samples from each of two depths: 0-30 cm and 30-60 cm (Table 1). These sampling depths are consistent with those detailed in the Organic Matter Recycling Regulations (OMRR) Best Management Practices¹ and those sampled during the 1993 to 1999 land application at Woodwynn Farms². These sampling depths are also consistent with recent scientific studies that have detected migration of CEC downwards through soil 1.5 years post-biosolids application³. Each replicate sample will be comprised of ten random subsamples composited together.

Soil sampling protocols are described by OMRR² and by the Canadian Council of Ministers of the Environment⁴. In short, soil will be sampled and homogenized before decanting into ultra-trace cleaned jars. Rocks and clay particles will be removed before mixing. Soil samples collected from sites in perennial grass or legumes may have a layer of decaying organic matter on top of the soil. If this is the case, the surface layer will be removed before the sample is placed in the collection container, retaining only the fine roots that extend into the soil.

Samples will be collected by staff, in collaboration with the operators of Woodwynn Farms, and dispatched to Maxxam Analytical for metals, nutrients and bacteriology analyses and to AXYS Analytical for high-resolution analyses of CEC and other legacy substances. Hi-resolution methods are required to compare to known human health and environmental toxicity thresholds.

Exposed station results will be compared statistically to reference stations results using ANOVA to determine if there is a significant difference in concentration of contaminants between stations or sampling depths. All detectable results will be compared to known human health and environmental toxicity thresholds as part of an informal risk assessment. Results will be summarized in a short memo report to be presented to the Commission at a later date.

A summary of target contaminants and analysis cost per sample can be found in Table 2. Total study costs (exclusive of applicable taxes) can be found in Table 3.

¹ BC MOE (2008) Land Application Guidelines for the Organic Matter Recycling Regulation and the Soil Amendment Code of Practice. Prepared by Sylvis, New West Minister, BC.

² Liu, A., (2009) Land Application of Biosolids at Woodwynn Farm on the Saanich Peninsula. Waste Management Permit PE-12971 Closure Plan. Prepared by the Capital Regional District, Victoria, BC.

³ Yager, Tracy J.B., Edward T Furlong, Dana W. Kolpin, Chad A. Kinney, Steven D. Zaugg and Mark R. Burkhardt (2014) Dissipation of Contaminates of emerging Concern in Biosolids Applied to Non Irrigated Farmland in Eastern Colorado. Journal of the American Water Resources Association (JAWRA) 50(2):343-357. DOI:10.1111/jawr.12163

⁴ http://www.ccme.ca/files/Resources/csm/pn_1101_e.pdf

Table 1 Sampling Stations and Depths

Station	Sample Depth (cm)
Station 1N – replicate 1	0-30
Station 1N – replicate 2	0-30
Station 1N – replicate 3	0-30
Station 1N – replicate 1	30-60
Station 1N – replicate 2	30-60
Station 1N – replicate 3	30-60
Reference Station – replicate 1	0-30
Reference Station – replicate 2	0-30
Reference Station – replicate 3	0-30
Reference Station – replicate 1	30-60
Reference Station – replicate 2	30-60
Reference Station – replicate 3	30-60

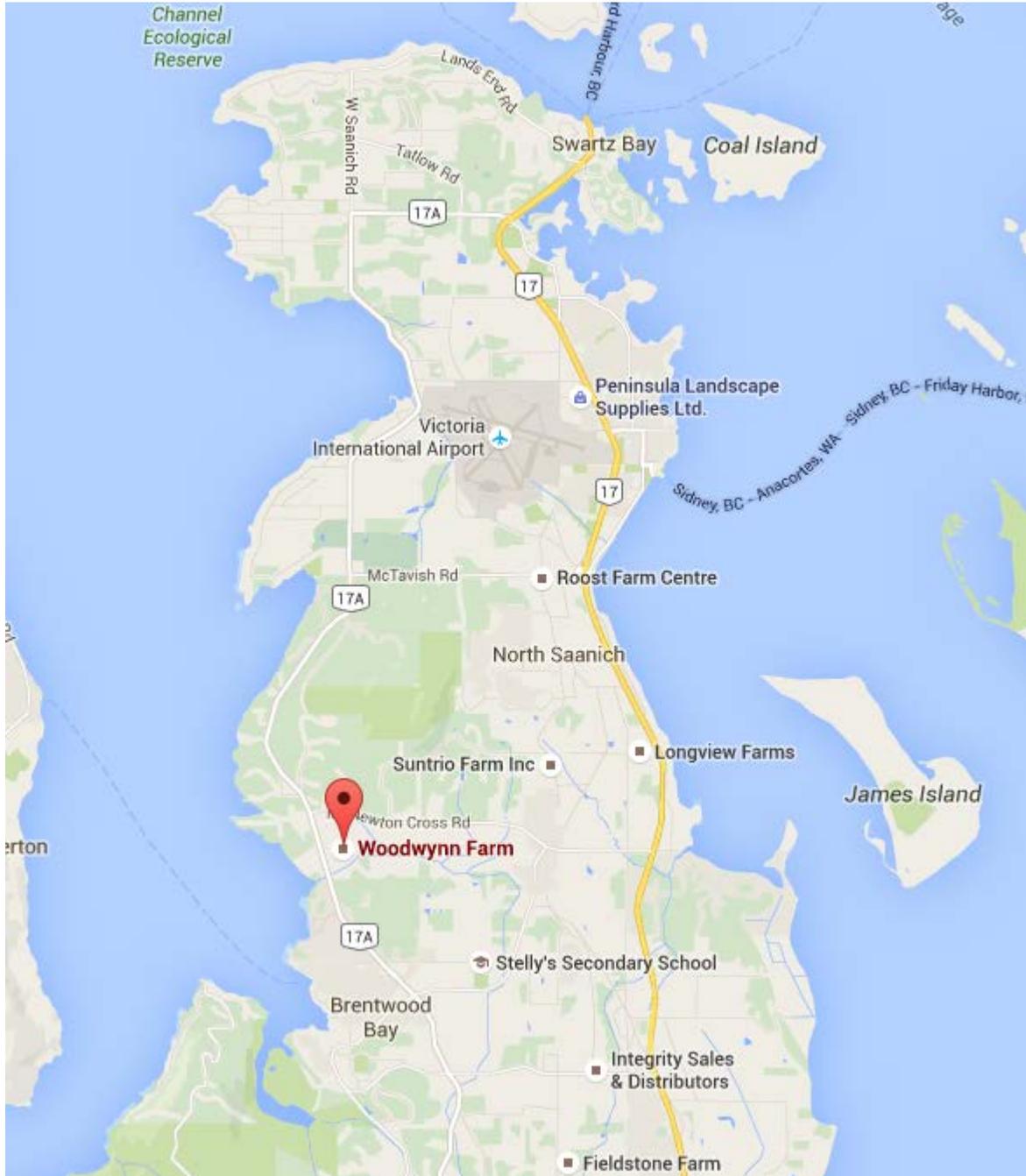
Table 2 Parameter List and Cost Per Sample

Parameter List	Cost Per Sample
Polycyclic aromatic hydrocarbons (PAH)	\$600
Polybrominated diphenyl ethers (PBDE)	\$825
Polychlorinated biphenyls (PCB)	\$825
Nonylphenol and nonylphenol ethoxylates (NP)	\$525
Pharmaceuticals and personal care products (PPCP)	\$2,000
Organochlorine pesticides (OC Pest)	\$775
Dioxins and furans	\$650
Metals	\$45
Bacteria	\$75
Nutrients	\$50
Total Cost Per Sample	\$6,370

Table 3 Total Study Costs (exclusive of applicable taxes)

Item	Cost
12 samples @ \$6,370/sample (Table 2)	\$76,440
Staff sampling costs @ one 7-hr day, two staff persons, \$103/hour/staff	\$1,442
Consumables, equipment and contingency	\$3,513
Staff interpretation and reporting costs @ five 7-hr days, one staff person, \$103/hour/staff	\$3,605
Total Study Cost	\$85,000

Figure 1. Map of Woodwynn Farm Location





**REPORT TO SAANICH PENINSULA WASTEWATER COMMISSION
MEETING OF THURSDAY, SEPTEMBER 15, 2016**

SUBJECT SIDNEY LAWN BOWLING LICENSE AGREEMENT

ISSUE

The agreement between the Capital Regional District (CRD) and the Town of Sidney for the lawn bowling facility expired on July 31st, 2016 and is up for renewal.

BACKGROUND

The CRD owns the land located at 9576 Fifth Street in Sidney BC, *PID 006-057-802 (the "Land")*. On the easterly half of the Land the CRD operates the Sidney Pump Station, under the Saanich Peninsula Wastewater Service, and on the westerly half the Sidney Lawn Bowling Club operates a lawn bowling facility. In 1997, the CRD granted the Town of Sidney a license to allow a sublicense with the Sidney Lawn Bowling Club to operate the facility. The license area was expanded and renewed in 2001 and then subsequently renewed again in 2006, and 2011. The license fee is nominal, and currently set at \$10 for the 5 year term. Operationally, there have been no concerns with the lawn bowling club operating adjacent to the pump station. Please see Appendix A for a draft of the proposed 2016 agreement.

ALTERNATIVES

That the Saanich Peninsula Wastewater Commission recommends:

1. That the CRD renew the license agreement for another 5 years on the same terms between the Town of Sidney and the CRD, to allow the Sidney Lawn Bowling Club to continue operating the lawn bowling facility and that staff negotiate and execute the agreement.
2. That the report be referred back to staff for further review.

IMPLICATIONS

There are no foreseeable implications with the continued use of the westerly half of the Land as a lawn bowling facility. The portion of the Land that the lawn bowling facility occupies is zoned P1, park and conforms to the permitted uses. The infrastructure is existing and the two facilities have operated well side by side for some time now.

CONCLUSION

The CRD and Town of Sidney have had a license agreement to allow the operation of the Sidney Lawn Bowling Club for almost 20 years. The lawn bowling facility is an asset to the community and the continued use does not compromise CRD's operations.

RECOMMENDATION

That the Saanich Peninsula Wastewater Commission recommends that the CRD renew the license agreement for another 5 years on the same terms between the Town of Sidney and the CRD, to allow the Sidney Lawn Bowling Club to continue operating the lawn bowling facility and that staff negotiate and execute the agreement.

Submitted by:	Stephen Henderson, B.Sc., PGDip. Eng., MBA, Manager, Real Estate Services
Concurrence:	Ted Robbins, B.Sc., C.Tech. General Manager, Integrated Water Services
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

JA:ja

Attachments: Appendix A - 2016 License Agreement, Town of Sidney Lawn Bowling
Appendix B - 2015 Orthophoto of the site

APPENDIX A

LICENSE OF OCCUPATION

THIS AGREEMENT is dated for reference the day of , 2016,

BETWEEN:

CAPITAL REGIONAL DISTRICT

625 Fisgard Street
Victoria, BC V8W 2S6

("Licensor")

AND:

TOWN OF SIDNEY

2440 Sidney Ave
Sidney, BC V8L 1Y7

("Licensee")

WHEREAS:

- A. The CRD is the registered owner of an estate in fee simple of ALL AND SINGULAR those certain parcels or tracts of land and premises situate, lying and being in the Capital Regional District, in the Province of British Columbia located at 9576 Fifth Street, Sidney, BC and particularly known and described as:

That part of Lot 8, Section 9, Ranges 3&4 E, North Saanich District, Plan 4179, lying Easterly of a line parallel to and 455.6 Ft perpendicularly distant from and Westerly of the Easterly boundary of the said lot 8 and Northerly of a line parallel to and 200 ft perpendicularly distant from and Southerly of the Northerly boundary of the said lot 8 and except part in plan 1696 RW

PID 006-057-802

(hereinafter call the "Lands")

- B. The Licensee wishes to occupy and use the Lands and the Licensor has agreed to permit it to do so in accordance with the terms and conditions of this Agreement.
- C. To facilitate the continued use of the lawn bowling facility by the Licensee, the Licensor has agreed to permit the use by the Licensee of a portion of the Lands and to grant a License of Occupation for that purpose.

IN CONSIDERATION OF the mutual covenants and agreements in this Agreement, the parties covenant and agree as follows:

1. RIGHT TO OCCUPY

1.1 The Licensor grants unto the Licensee, subject to the performance and observance by the Licensee of the terms, conditions and covenants contained herein and to earlier termination as hereinafter provided, as right by way of license for the Licensee and its servants, agents, workmen, contractors and all other invitees of the Licensee together with machinery, vehicles, equipment and materials, to occupy and use those portions of the Lands of the Licensor shown as Areas #1, #2, #4 and #5 on Schedule "A" attached hereto (the "License Area"), for a period of 5 years only, commencing the 1st day of August, 2016 and ending the 31st day of July 2021.

2. LICENSE FEE

2.1 In consideration of the right to occupy the Licensee will pay the Licensor the sum of Ten (\$10.00) dollars, such payment to be made on or before the 1st day of August, 2016.

3. USE OF THE LICENSE AREA

3.1 The Licensee may use the Areas #1 and #2 only for the purpose of constructing, installing, operating, maintaining and repairing a lawn bowling facility, including a clubhouse and bowling greens and may only use Area #5 for the purpose of shared access with the Licensor and must not use the License Area for any other purposes without prior written consent of the Licensor.

3.2 The Licensee may sublet the License Area or a portion thereof to the Sidney Lawn Bowlers Association. The Licensee may not otherwise sublet the License Area without prior written consent of the Licensor.

3.3 The Licensee may sublet License Area #4 or a portion thereof provided the Licensee obtains the prior written consent of the Licensor. Such consent shall not be unreasonably withheld.

3.4 Notwithstanding that the Licensor consents to subletting the Lands, the Licensee shall remain liable for the performance of all terms, covenants and conditions herein undertaken by the Licensee. Any assignment, subletting, encumbering or shared possession consented to by the Licensor shall not constitute a waiver of the necessity for consent to any subsequent assignment, subletting, encumbering or shared possession.

3.5 The Licensee will not make any additions, alterations or improvements to the License Area without the prior written consent of the Licensor and will carry out all work in a proper and workmanlike manner so as to as little injury to the Lands as possible.

3.6 The Licensee will not store nor will it allow any other person to store superfluous equipment on the License Area and will not store additional equipment required for the Licensee's operation on the License Area without the prior written consent of the Licensor.

3.7 The Licensee may construct or install and maintain a 3.0 metre wide gate in the fence on the northerly boundary of the License Area to permit ingress to and egress from the License Area from the adjacent property owned by the Licensee.

- 3.8 The Licensee will maintain and leave the License Area in a clean and orderly appearance at all times.
- 3.9 The Licensee will comply promptly at its expense with all laws, orders, regulations, requirements and recommendations of all associations of insurance underwriters or agents which apply to the Licensee or to the manner of use of the Lands of the Licensor.
- 3.10 The Licensee will compensate the Licensor for any and all damage done to the buildings, plants, tile drain, fences, timber, culverts, lanes and other improvements and to any equipment or other chattels on the Lands of the Licensor by reason of the exercise or purported exercise of the rights granted herein.
- 3.11 The Licensee will not place any signage at the access to the License Area or along 5th Street in front of the Lands of the Licensor without prior approval by the Licensor.
- 3.12 The Licensee will at the expiration or sooner determination of the term of this License peaceably surrender and yield up to the Licensor the License Area, and further, the Licensee will remove all buildings, structures or improvements from the License Area and will restore the License Area as near as is reasonably possible to its original condition.
- 3.13 The Licensee will pay all taxes, rates, duties and assessments whatsoever, whether Federal, Provincial, Municipal or otherwise charged upon the Licensee or the Licensor as a result of the Licensee's occupation or use of the Lands.
- 3.14 The Licensee will pay all utilities, including but not limited to water, electricity and sewer associated with the Licensee's occupation or use of the Lands.
- 3.14 That, unless the Licensee upon notice from the Licensor removes them, all buildings, structures or improvements constructed on the License Area by the Licensee, save and except from moveable business fixture of the Licensee shall, at the termination of this Agreement, become the sole property of the Licensor at no cost to the Licensor.
- 3.15 The Licensee will not store or permit to be stored on or in the Land anything that is dangerous, hazardous, inflammable or explosive nature or anything that would have the effect of increasing insurance costs or leading to the cancellation of any insurance with respect to the Land.
- 3.16 The Licensee shall not in the use of the Land as herein contemplated nor in any other manner carry on or perform or suffer or permit to be carried on or performed or suffered any practice, act or activity which may reasonably be considered to be a nuisances or menace.
- 3.17 The Licensee will post and keep posted on the License Area in two (2) conspicuous locations a notice stating that the Licensor is not responsible for the improvements or the cost of services or materials for the improvements

4. LIENS

4.1 The Licensee will not suffer or permit any lien under the *Builders' Lien Act* or like statute to be registered against title to the Licence Area by reason of labour, services or materials supplied or claimed to have been supplied to the Licensee. If any such lien is registered, the Licensee will procure registration of its discharge immediately after the lien has come to the notice of the Licensee. The Licensor may, but will not be obliged to, discharge any such lien at any time if, in the Licensor's judgment, the Licence Area becomes liable to any forfeiture or sale or its otherwise in jeopardy and any amount paid by the Licensor in so doing, together with all reasonable costs and expenses of the Licensor, will be reimbursed to the Licensor by the Licensee immediately on demand.

5. ENVIRONMENTAL RESPONSIBILITY

- (a) The Licensee will comply with all applicable environmental laws and will assume any environmental liabilities and perform any environmental obligations that result from the contravention of any environmental laws from the Licensee, its employees, agents or contractors, including the cost of complying with any remediation order and any liability for clean-up of any pollutant on, under or emanating from the Licence Area resulting from any release of such pollutant arising from the Licensee's acts or omissions under this Agreement.
- (b) The Licensee will use the Licence Area in a manner to prevent the occurrence of any adverse events and minimize potential hazards that may affect the Licensor and its contractors, invitees, licensees, employees, agents and servants, the public and the environment; and in connection with any occurrence the Licensee will implement effective control measures and immediately notify the Licensor and all concerned parties.
- (c) Except as expressly authorized by the Licensor and in compliance with all applicable laws, the Licensee will not release, deposit, store or transport any pollutant, explosive or waste within the Licence Area and will not permit any person under its direction or control to do so.
- (d) The Licensee will immediately notify the Licensor of any potential contravention of environmental, health or safety laws relating to its operations within the Licence Area and upon inspection or investigation by governmental authority. The Licensee will, at its expense, comply with all reasonable directions of the Licensor with respect to environmental risks in its use and occupation of the Licence Area.

6. ASSUMPTION OF RISK AND LIABILITY BY THE LICENSEE

- (a) The Licensor has made no representations or given any warranties, express or implied, with respect to the Licence Area and the Licensor disclaims any implied representations, warranties or conditions relating to the quality or condition of the Licence Area.
- (b) The Licensee shall release, indemnify and hold harmless the Licensor and its elected and appointed officers, servants, agents, employees, or contractors, from and against all losses, claims, demands, payments, suits, actions, damages, judgments and expenses, including legal fees, of every nature and description brought or recovered against or incurred by the Licensor and its elected and appointed officers, servants, agents and

employees, arising out of or related to the Licensee's breach of this Agreement, or the granting of this Licence or the use of the Licence Area by the Licensee, its employees, agents, contractors, servants or invitees. Furthermore, the Licensee hereby releases and agrees to indemnify and hold the Licensor and its directors, officers, employees, agents and contractors harmless from any costs, expenses, claims, responsibility and liability, whether arising in tort (including negligence), contract or otherwise in respect of loss, damage or personal injury or death arising from, attributable to, or caused by the:

- (i) Condition of the buildings or any other part of the Licence Area, or
 - (ii) Activities on the Licence Area by the Licensee or its employees, agents, contractors or permitted assigns.
- (c) The Licensee assumes all risk of damage to the property of, or injury to the Licensee and the Licensee's contractors, invitees, licensees, employees, agents and servants in connection with the exercise of the privileges under this Agreement.
- (d) The Licensee will immediately pay for all damage resulting directly or indirectly from any act or omission of the Licensee, whether negligent or otherwise, and will immediately reimburse the Licensor for all expenses including, but not limited to, expenses incurred for fighting fires, resulting directly from the licensee's acts or omissions under this Agreement whether or not negligent.
- (e) The Licensee will indemnify and save harmless the Licensor against all claims or liabilities asserted by third persons resulting directly or indirectly from the Licensee's acts or omissions.
- (f) The Licensee will immediately comply with Licensor's rules and directions relating to the use and occupation of the Licence Area.

The Licensee will not interfere with the Licensor's operations in the Licence Area.

7. INSURANCE

The Licensee shall, at its own expense, provide and maintain during the term of this Agreement the following insurance in a form acceptable to the Licensor with a company duly registered and authorized to conduct insurance business in the Province of British Columbia:

- (a) Commercial General Liability Insurance
- i) The Licensee shall purchase Commercial General Liability Insurance covering losses to a third party for bodily injury or death, property damage, and unlicensed vehicle and attached equipment operations, and
 - ii) this insurance shall be in an amount not less than FIVE MILLION (\$5,000,000.00) on an occurrence basis, and
 - iii) the Licensor shall be named as an additional insured, and

- iv) this policy shall contain the separation of insureds, cross liability clause in the condition of the policy, and
- v) all such policies shall provide that no cancellation or material alteration in the policy shall become effective until 30 days after written notice of such cancellation, or alteration has been given to the Licensor, and
- vi) the Licensee shall provide the Licensor with a certificate or certificates of insurance as evidence that such insurance is in force including evidence of any insurance renewal. Every certificate, or certificates of insurance shall include, certification by the insurance agent or the insurer that the certificate of insurance specifically conforms to all of the provisions required herein.

The Licensee shall maintain Third Party Legal Liability Insurance in an amount not less than TWO MILLION (\$2,000,000) per occurrence in respect of all vehicles owned and / or operated by The Licensee in connection with this agreement.

Maintenance of such insurance and the performance by the Licensee of its obligations shall not relieve the Licensee of liability under the indemnity provisions set forth in this Agreement.

8. TERMINATION AND SUSPENSION.

- (a) If the Licensee defaults on its obligations under this Agreement, all privileges terminate 30 days after Licensor gives notice of default to the Licensee, if the default is not remedied within such time. The Licensor's termination of this Agreement will not prejudice the Licensor's right to collect damages on account of the Licensee's breach.
- (b) Any failure to exercise the Licensor's right to terminate this Agreement in case of default does not constitute a waiver of the Licensee's obligations to perform strictly in accordance with the terms of this Agreement. Any such right to terminate remains in effect and may be exercised as long as the default continues.
- (c) Upon termination or earlier expiry of this Agreement, the Licensee will remove its equipment and supplies, and any improvements made by it which the Licensor requires it to remove or the parties have agreed the Licensee may remove on the termination or expiry of this Agreement, within 30 days following written notice from the Licensor to do so and if not removed within this period, the Licensor may, at its option and without liability to the Licensee for loss, damage or compensation, take, keep or use the Licensee's machinery, equipment, supplies or any buildings, structures or improvements as its own property.
- (d) Early termination of this license can occur if 90 days' written notice is provided by either party.

9. NON-ASSIGNMENT

Neither this Agreement nor the privileges in it may be assigned by the Licensee, in whole or in part by operation of law or otherwise, without the prior written consent of the Licensor, which consent may be arbitrarily withheld. The Licensee will not sub-licence the Licence Area or permit any persons to enter the Licence Area unless they are authorized to do so.

10. NO SPECIAL DAMAGES

Neither party will be liable to the other for any consequential or indirect damages.

11. NOTICES

All notices required under this Agreement will be delivered by hand to the party for which it is intended, sent by email, fax or sent by prepaid courier directed to such party at its address or fax number set out in this Agreement, or at such other address or fax number as either party may stipulate by written notice to the other. Any notice delivered by hand or prepaid courier will be deemed to be received on the date of actual delivery thereof.

12. BINDING EFFECT

This Agreement will enure to the benefit of, and will be binding upon, the respective successors and permitted assigns of the parties.

13. GOVERNING LAW

This Agreement will be construed, interpreted and enforced in accordance with, and the respective rights and obligations of the parties will be governed by, the laws of the Province of British Columbia and the federal laws of Canada where applicable and the parties hereby attorn to the exclusive jurisdiction of the courts of the Province of British Columbia.

14. COUNTERPARTS

This Agreement may be executed in any number of counterparts and each counterpart, when executed and delivered (whether by email fax or otherwise), will be deemed to be an original and all of which taken together will be deemed to constitute one and the same instrument.

IN WITENSS WHEREOF the parties hereto have executed this Agreement as of the date first before written.

SIGNED on behalf of the **CAPITAL REGIONAL DISTRICT**
by its authorized signatory this ____ day of _____, 2016:

Authorized Signatory

Print name:

Authorized Signatory

Print name:

SIGNED on behalf of **TOWN OF SIDNEY**
by its authorized signatory(ies) this _____ day of _____, 2016:

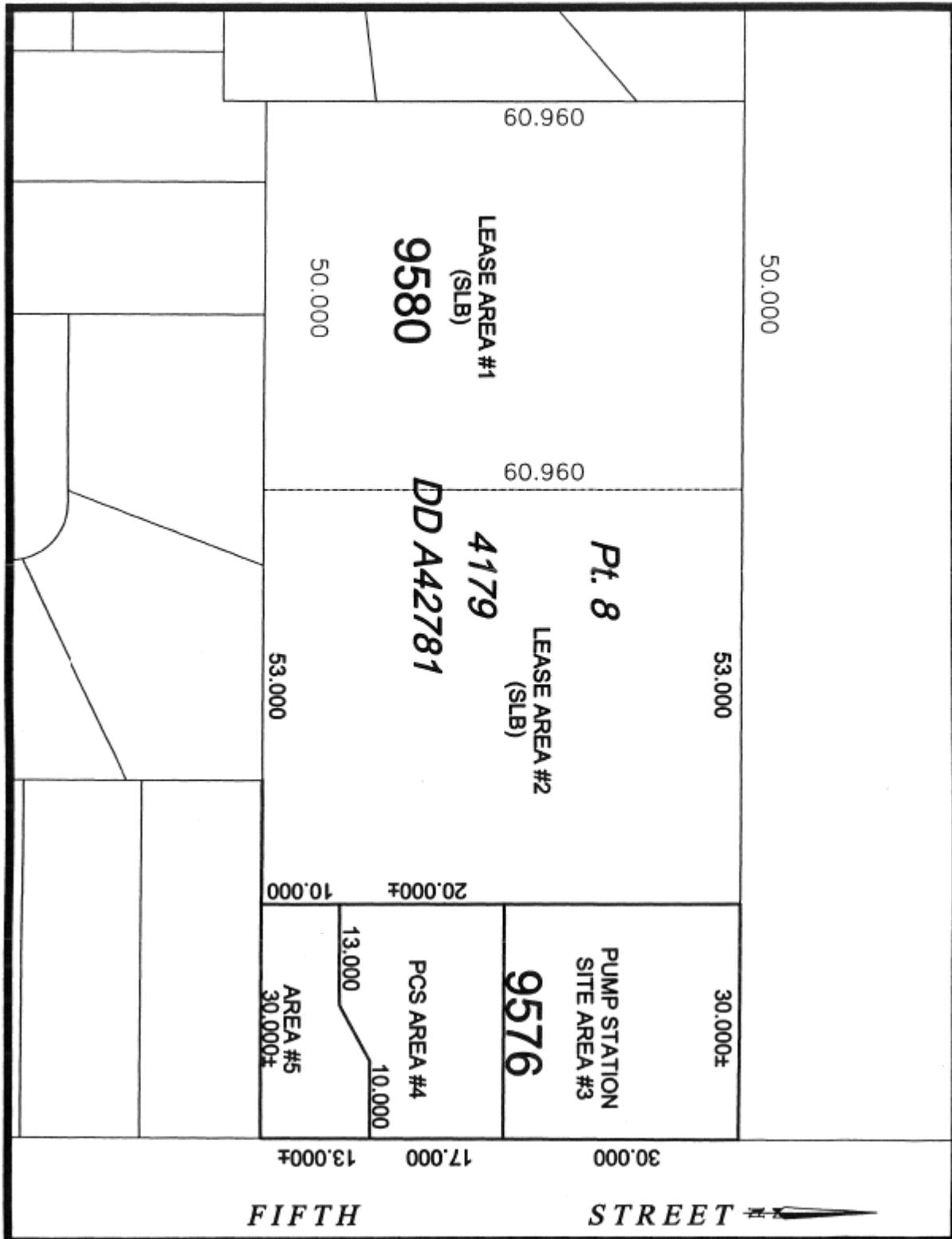
Authorized Signatory

Print name:

Authorized Signatory

Print name:

SCHEDULE "A"



APPENDIX B





**REPORT TO SAANICH PENINSULA WASTEWATER COMMISSION
MEETING OF THURSDAY, SEPTEMBER 15, 2016**

SUBJECT SAANICH PENINSULA STORMWATER QUALITY – 2015 PROGRAM REPORT

ISSUE

To present the revised Saanich Peninsula Stormwater Quality 2015 Program Report.

BACKGROUND

The Capital Regional District (CRD) delivers the stormwater monitoring program as a commitment under the Saanich Peninsula Liquid Waste Management Plan (LWMP). Staff undertake the work in cooperation and consultation with the participating municipalities of the District of Central Saanich, the District of North Saanich and the Town of Sidney, local First Nations and other stakeholders.

Reporting is not an LWMP requirement. Staff report to the Commission annually and to municipal staff on an ongoing basis. Data collected by the CRD is consolidated annually to summarize investigations, findings and related projects from the past year. In consultation with municipal staff, the CRD uses this information to identify actions for the next year. In addition, detailed data is provided to municipal engineering departments and First Nations to help them plan for remedial action, where needed, and to support environmental protection efforts.

At its July 21 meeting, the Commission directed staff to revise the report and resubmit. The revised summary of 2015 program activities is attached as Appendix A.

ALTERNATIVES

Alternative 1

That the Saanich Peninsula Wastewater Commission recommend to the Capital Regional District Board that the Saanich Peninsula Stormwater Quality 2015 Program Report be received for information.

Alternative 2

That the Saanich Peninsula Wastewater Commission direct staff to submit a revised report.

ENVIRONMENTAL IMPLICATIONS

The objective of the program is to meet LWMP commitments for stormwater management and support the provincial goal to reduce the release of contaminants to the environment. The program monitors stormwater discharges along the foreshore of the Saanich Peninsula, identifies high-rated discharges and conducts investigations to support municipalities and First Nations in managing their stormwater sewer infrastructure.

The program's 2015 data shows that 8 of 73 monitored discharges were rated high for public health concern, the lowest level for many years (ranging between 11 and 16 for the last 10 years). A special project over the winter of 2015-2016 showed that bacterial levels at the shoreline can exceed primary recreational use guidelines after periods of heavy rainfall. More investigation will be done to identify the sources of this contamination.

FINANCIAL IMPLICATIONS

This program is funded from the Saanich Peninsula Stormwater Quality Program annual budget. The 2015 budget was \$64,010 and the reporting task is included within the core budget.

CONCLUSIONS

In 2015, staff met its commitments to monitor stormwater quality across the Peninsula and investigate upstream sources of contamination, working with municipal staff to address chronic point sources across the Peninsula.

RECOMMENDATION

That the Saanich Peninsula Wastewater Commission recommend to the Capital Regional District Board:

That the Saanich Peninsula Stormwater Quality 2015 Program Report be received for information.

Submitted by:	Glenn Harris, Ph.D., R.P.Bio., Senior Manager, Environmental Protection
Concurrence:	Larisa Hutcheson, P.Eng., General Manager, Parks & Environmental Services
Concurrence:	Ted Robbins, B.Sc., C.Tech., General Manager, Integrated Water Service
Concurrence	Robert Lapham, MCIP, RPP, Chief Administrative Officer

DG:cam

Attachment:

- Appendix A – Saanich Peninsula Stormwater Quality 2015 Program Report

Saanich Peninsula Stormwater Quality

2015 Program Report

INTRODUCTION

The Capital Regional District's (CRD), Integrated Watershed Management Program (IWMP), in cooperation with municipalities, First Nations and community groups, works to identify and reduce contamination in stormwater, creeks and the ocean. This is accomplished through monitoring, assessment, collaboration and education. The work is done to meet Liquid Waste Management Plan (LWMP) commitments, address public concerns, monitor watershed health and prioritize areas of concern for our municipal partners and others.

To accomplish this, CRD staff monitor stormwater and creeks to identify contamination and impacts from stormwater due to various land use practices through bacterial and chemical sampling. The program assesses approximately 300 stormwater discharges and creeks on the Saanich Peninsula and assigns priority ratings for mitigative action to be undertaken by the appropriate jurisdiction(s). Recently, the program added *E.coli* and enterococci as monitoring parameters, to align the program with provincial and federal programs and use the best indicators for health risk from recreational water contact.

In fall of 2015 until spring of 2016, program staff worked with the Island Health Authority to measure impacts from stormwater discharges on high-use public beaches during the rainy season. This work resulted in preliminary data on bacterial levels in the marine water adjacent to stormwater discharges previously assigned a high public health concern rating.

This report summarizes the results of work completed by the program in 2015. Water and sediment quality data, including details about how the discharges were rated for public health and environmental concern and sampling locations, are available on the CRD website (<https://www.crd.bc.ca/about/document-library/Documents/annual-reports/environmental-protection/integrated-watershed-management>).

Regulatory Background

The CRD created the service to meet commitments in the Saanich Peninsula Liquid Waste Management Plan (SPLWMP, CRD, 1996). The CRD commitments regarding stormwater quality and management are to:

1. *plan, promote and co-ordinate a program for management of stormwater quality and surface water resources in cooperation with the participating municipalities, communities and local governments to:*
 - a. *limit the impacts of stormwater runoff on the environment and public health and well being*
 - b. *protect freshwater and near-shore marine ecosystems and resources*
2. *promote education about water quality issues and to develop educational material*

Municipalities have authority over stormwater under the *Community Charter*. In the LWMP, the participating municipalities make the following commitments:

1. *to act on priorities within their jurisdiction to protect stormwater quality, the physical environment and aquatic habitat, and to reduce the levels of contaminants in stormwater discharges to accepted government standards in watercourses and near-shore marine areas*
2. *to use resources available to municipal governments to achieve these reductions*
3. *to amend bylaws, as necessary, to ensure that new development takes place in accordance with appropriate best management practices*

PUBLIC HEALTH

Public Health Concern Ratings

The program prioritizes stormwater discharges annually to meet LWMP commitments and to help guide jurisdictions in directing limited funds to where they will have the greatest benefit. The program evaluated 73 stormwater discharges for public health concerns in 2015 and **identified 8 high ratings for public health concern** (Table A). Fifteen were assigned a moderate public health concern rating.

During the year, staff collect a water sample for laboratory analysis of *E.coli* (fecal coliform bacteria were also sampled in 2015 as the program transitions to only *E.coli*) from each discharge in both the wet and dry seasons. Observations are made about the discharge flow, weather, animal presence, etc. Staff then assign a public health rating based on the level of bacterial contamination and the potential for public contact. To determine the public health concern rating, a fecal coliform rating and public shoreline use rating are calculated. The sum of these ratings determines the public health concern rating. Details on the CRD rating system (Drinnan, 1997a) can be found by contacting the CRD IWMP.

A selection of the roughly 300 discharges are assessed each year, including discharges assigned a high and moderate public health concern rating in the previous year, as well as a selection of the low-rated discharges to monitor for change. An attempt is made to sample each of the discharges every 5 years.

Ratings over Time

The number of high-rated discharges decreased to 8 in 2015 likely due to fluctuations in bacterial levels, but also due to additional monitoring efforts and actions by municipal staff (Table A).

Five of the current high-rated discharges have been of concern for a number of years. These sources are challenging to find, difficult or costly to repair, or the result of agricultural practices. In 2015, CRD staff found 2 sources in these discharges and will continue to make source identification a priority in 2016.

Table A. Number of Discharges Rated High for Public Health Concern over Time

Jurisdiction	Number of Discharges Rated High										
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Central Saanich	2	0	1	1	1	1	2	2	1	1	1
North Saanich	10	7	2	5	5	6	4	4	4	3	3
Sidney	3	4	6	5	5	4	5	4	5	6	3
Pauquachin First Nation	0	0	0	0	0	0	0	0	0	0	0
Tsartlip First Nation	0	0	0	0	0	0	0	1	1	0	0
Tsawout First Nation	0	1	1	0	1	0	0	1	0	0	0
Tseycum First Nation	1	0	1	1	1	1	1	1	1	1	1
Total	16	12	11	12	13	12	12	13	12	11	8

High-use Beach Marine Wet Season Sampling

Staff have been improving receiving environment monitoring to measure the impact of stormwater on the marine environment. In 2015, staff worked with the Island Health Authority to conduct a study of stormwater impacts on public beaches during the wet season. Samples were collected every 2 weeks from October 2015 to February 2016 on high-use beaches adjacent to stormwater discharges of high public health concern.

Marine bacterial levels indicate a number of high-use public beaches on the Saanich Peninsula have conditions that exceed Health Canada guidelines for recreational use during and after winter rainfall events (Table B). Further analysis identified bacteria from humans, dogs and ruminant animals in the marine water of all the beaches assessed.

Staff are working with the Island Health Authority to develop public education and notification strategies. In 2016, staff will complete additional sampling to determine the sources of contamination and observe how rainfall levels influence the data.

Table B. Saanich Peninsula High-use Beach Bacterial Results

Sampling Location		Enterococcus (CFU/100 mL)		Bacteria Source Tracking Results
		Geomean	Median	
Guidelines		35 (Recreation)	4 (Shellfish)	
Saanichton Bay	416-M	29	16	Not sampled - tide too high for safe access
Bazan Bay, Tulista Park	446-M	15	7	Not analyzed - bacteria count too low
	447-M	58	202	human, ruminant animal, dog
Robert's Bay	3005-M	42	20	human, ruminant animal, dog
	3006-M	63	40	ruminant animal, dog
Deep Cove	3078A-M	32	15	human, ruminant animal, dog
	3079-M	48	30	human, ruminant animal, pig, horse, dog
Coal Point	3087-M	96	41	human, ruminant animal, dog
Patricia Bay	3114-M	17	13	human, ruminant animal, dog
Coles Bay	3118-M	83	39	human, ruminant animal, dog
	3120-M	49	19	human, ruminant animal, dog
Brentwood Bay	3142-M	116	125	human, ruminant animal, dog

Notes:

Samples were collected in the marine environment in front of stormwater discharges.

Sampling occurred every 2 weeks between October 14, 2015 to Feb 15, 2016 (10 samples).

The guidelines include Health Canada's recreational guideline for primary contact (geomean of 35 CFU/100 mL) and the BC MOE shellfish harvesting guideline (median of 4 CFU/100 mL).

Shading indicates the enterococci count is greater than the associated guideline.

The shellfish harvesting guideline is based on a median of at least 5 samples collected in 30 days; the median reported here was based on 10 samples collected in 4 months.

Bacterial Source Investigations

In 2015, CRD and municipal staff continued to identify bacterial sources in stormwater discharges that have been high-rated for a number of years. Staff investigated the catchment areas of 3 high-rated discharges and Tetayut Creek during 15 sampling events.

Program staff narrowed down the source of fecal coliform contamination in 1 discharge in Sidney (450) and Sidney is working to refine the source location. A sample collected in Tetayut Creek at Jovi Road had fecal bacteria from humans and ruminant animals (e.g., deer and cattle) while an upstream sample at Cooperidge Park had no bacteria from a human source, but bacteria from ruminant animals, dogs and gulls were present. Finding the source is challenging in the remaining discharges due to multiple sources (humans and animals), fluctuating levels of bacteria and intermittent flow. Work will continue in 2016.

ENVIRONMENTAL CONCERN

Watercourses

The CRD continued to monitor water quality in Hagen, Reay, Tetayut, Tatlow, Tén Tén, Tod and Tseycum creeks in 2015 to provide information about creek and watershed health. Staff focused efforts on Tetayut Creek Watershed, including intensive water quality sampling and benthic invertebrate analysis.

CRD data shows that water quality in Saanich Peninsula creeks appears to have remained consistent over the past 5 years and was assessed as good in Tod Creek only. Tod Creek had no exceedances of guidelines with the exception of phosphorus, which is elevated in all CRD streams. The remaining streams have exceedances of fecal coliforms, turbidity, phosphorus or metals (only monitored in some streams). Elevated levels of these parameters are likely the result of higher levels of human settlement, spills or agricultural practices.

Water quality data in Tetayut Creek indicated that the levels of nutrients (nitrite and phosphorus), bacteria (fecal coliform and *E.coli*), and metals (aluminum, cadmium, chromium, copper, iron and zinc) are a concern in the creek, particularly upstream near Cooperidge Park.

In 2016, staff will work with municipal staff to locate sources of fecal coliform contamination. As part of the overall stormwater education initiative on the Peninsula, staff will also educate property owners about methods to reduce the amount of sediment and phosphorus leaving their properties and ultimately ending up in the creeks.

Stormwater Discharge and Stream Sediment Sampling

The program evaluates sediment from within stormwater discharges (pipes, ditches and streams) for potential environmental impact due to contaminant levels (metals and hydrocarbons). Contaminant levels are compared to sediment quality guidelines for protection of marine or freshwater aquatic life (where appropriate).

The program assigns contaminant ratings to the stormwater discharges from sediment samples taken at the point of discharge into the marine environment. The ratings are determined by comparing the concentration of each contaminant (8 metals and polycyclic aromatic hydrocarbons) with guidelines which are protective of marine life. For each discharge, the ratios of each sediment contaminant concentration compared to the guideline are then added to account for potential effects caused by combining the contaminants.

In 2015, the CRD assigned a high contaminant rating to 2 of the 8 discharges assessed. In Reay Creek (discharge 441), metals and polycyclic aromatic hydrocarbons measurements are at levels that may adversely affect aquatic life. The Reay Creek Technical Working Group was formed by the Town of Sidney in 2015 to address concerns about contamination in the creek. The CRD participates on the technical working group, which is exploring remediation options for part of the creek and Reay Pond.

Discharge 3138 carries flows from Tsartlip land and is a concern due to elevated zinc concentrations. Tsartlip replaced some aged corrugated pipes in 2014 and staff will resample this discharge in 2016.

Three other stormwater discharges have been of concern for a number of years based on sediment contamination. CRD staff have narrowed down the contaminant sources to within a few blocks for 2 of the discharges and Sidney has removed contaminated sediment from the catchments. Staff will resample in 2016 to determine whether the sources have been removed.

Quality Assurance

The 2015 data were acceptable for the purpose of the program. For bacterial analysis, the quality assurance program includes yearly establishment of a precision criterion based on a range of Saanich Peninsula stormwater sample triplicates. The program also includes blanks and replicate samples (field splits) for 10% of the discharge and marine surface water samples collected. None of the field splits exceeded the precision criterion during the wet season, while 1 pair of field splits exceeded the precision criterion in the dry season. The 2015 criterion was very low and data are acceptable if only 1 out of every 20 pairs of duplicates exceeds the criterion.

Quality assurance for sediment analysis included field duplicates, laboratory triplicates and Standard Reference Materials (SRM). Precision and accuracy of the laboratory analysis were estimated from the results of these replicate and SRM samples. A detailed discussion on the quality assurance program is provided in the supplementary data report found on the CRD website.

Saanich Peninsula Stormwater Source Control Service

The CRD established the Saanich Peninsula Stormwater Source Control Service in 2014 (Bylaw No. 3906). Staff refined the companion regulatory bylaw, started developing inspection protocols and performed trial inspections with several Peninsula businesses in 2014 and 2015, in order to evaluate the application of the regulations. Staff collected baseline data in 2 creeks that drain industrial areas, in order to assess change after the bylaw has been in place for a few years.

Sediment sampling continues to identify metal and hydrocarbon contamination from parking lots, roads, spills and business waste. It is anticipated that the sediment sampling program may be able to measure the success of the newly-created stormwater source control program. The CRD will be working with municipalities and stakeholders to finalize the regulatory bylaw for the stormwater source control program in 2016.

Education and Keyline Design Workshops

CRD data indicates that agricultural practices are one of the sources of contamination in stormwater and creeks on the Saanich Peninsula. The CRD sponsored and hosted 2 Keyline Design workshops in 2015 to address concerns about agricultural runoff into watercourses and the ocean. The project worked with local farmers to increase awareness and develop the skills to implement improved rainwater management on their properties. More workshops are planned for 2016 in response to positive feedback and requests.

Outlook for 2016

In 2016, CRD staff will focus resources and efforts on identifying and reducing existing contaminant sources. Staff will also continue to monitor water and sediment quality of stormwater discharges and the receiving environment for protection of public health and the environment. In cooperation with the Island Health Authority, the CRD will continue to develop public education and notification strategies on winter beach conditions. In addition, staff will conduct further sampling to determine the sources and fluctuations of bacterial contamination in marine water through various rainfall levels.

REFERENCES

CRD, 1996. Saanich Peninsula Liquid Waste Management Plan.

Drinnan, R.W., 1997a. Stormwater Discharge Rating System for the Capital Regional District. Prepared for the Capital Regional District, Engineering department.

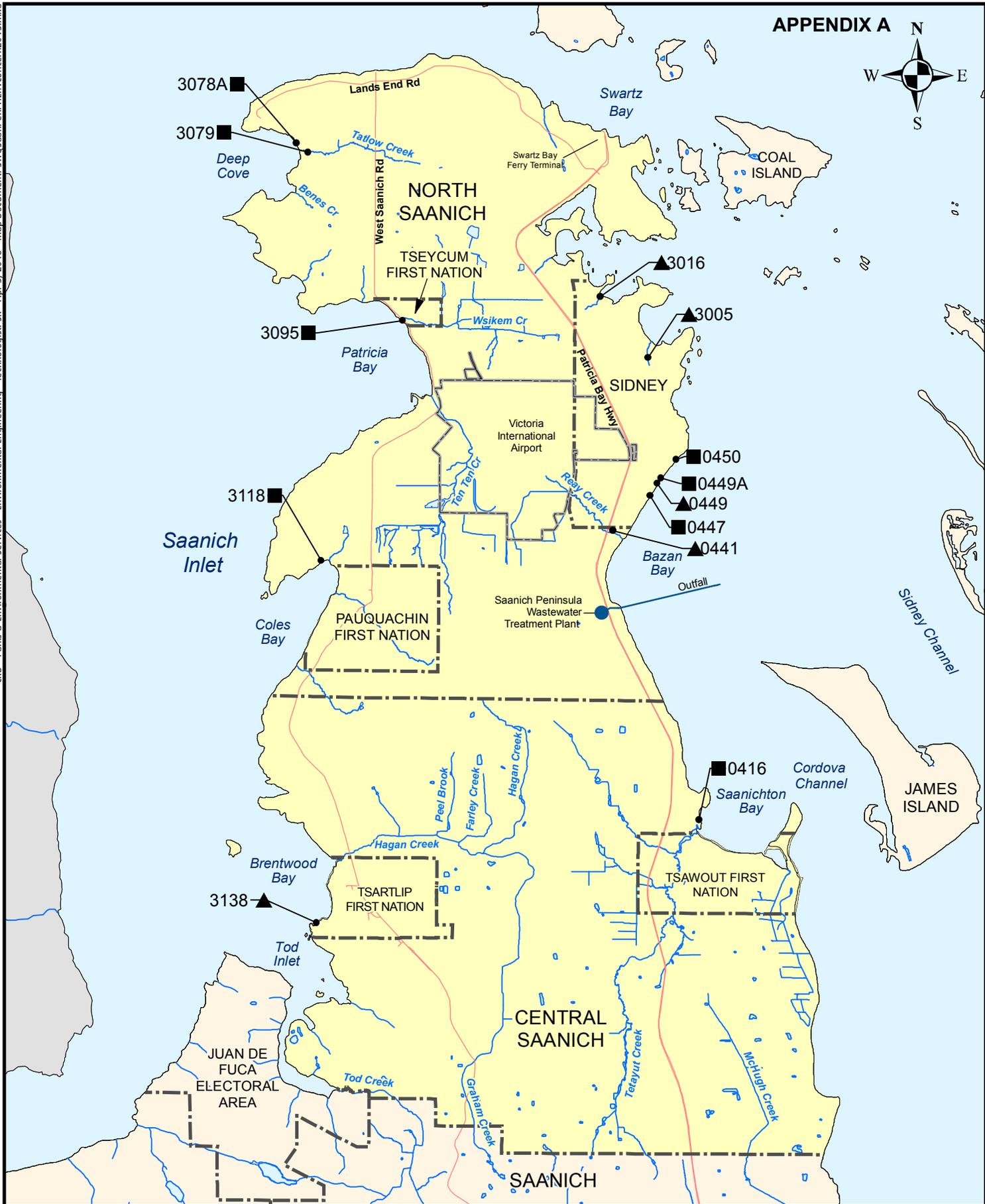


Figure A- Saanich Peninsula - Stormwater Discharges Rated High for Public Health or Environmental Concern

0 0.5 1 2 Kilometres

Projection: UTM ZONE 10N NAD 83

- High Public Health Concern Rating in 2015
- ▲ High Environmental Concern Rating in 2015 or previous years (and recommended for corrective action)
- Sewage Treatment and Outfall
- ~ Significant Ditches, Streams & Rivers
- Municipal and First Nations Boundary
- Major Roads
- Stormwater Monitoring Area

Important This map is for general information purposes only. The Capital Regional District (CRD) makes no representations or warranties regarding the accuracy or completeness of this map or the suitability of the map for any purpose. **This map is not for navigation.** The CRD will not be liable for any damage, loss or injury resulting from the use of the map or information on the map and the map may be changed by the CRD at any time.

**REPORT TO SAANICH PENINSULA WASTEWATER COMMISSION
MEETING OF THURSDAY, SEPTEMBER 15, 2016**

SUBJECT SAANICH PENINSULA STORMWATER QUALITY SERVICE REVIEW

ISSUE

At its July 21, 2016 meeting, the Saanich Peninsula Wastewater Commission (SPWWC) directed staff to identify potential improvements to the Stormwater Quality Service up to a maximum budget increase of \$50,000 per year.

BACKGROUND

The objective of the program is to meet Liquid Waste Management Plan (LWMP) commitments for stormwater management and support the provincial goal to reduce the release of contaminants to the environment. The program monitors stormwater discharges along the foreshore of the Saanich Peninsula, identifies high-rated discharges, and conducts investigations to support municipalities and First Nations in managing their stormwater sewer infrastructure.

The program consists of two main components under the current LWMP: a stormwater quality program created in 1997; and a stormwater source control bylaw program active since 2014 (with a regulatory bylaw coming at the end of 2016).

On the Peninsula, the number of stormwater discharges of concern due to contaminant levels has remained relatively static for the past 10 years. For example, over the period of 2006-2015, ratings for public health concern (bacteria) annually average 3.9% of approximately 300 stormwater discharges. This compares favourably to the Core Area (6.8% of about 550 discharges averaged over 10 years) although the issues of concern differ. The Core is expected to see more issues related to population, impervious surfaces and older infrastructure and much less due to septic and agriculture.

Investigations have yielded some success in identifying sources so that local governments or property owners can take remedial action but the overall level of concern on the Peninsula is relatively constant. Some sources of these concerns have been difficult to locate and, in other cases, new contaminant sources appear. In addition, a new issue, related to high shoreline bacterial levels following winter storms, has come to program staff's attention and is currently under assessment in a second phase of work planned for the winter of 2016/2017.

ALTERNATIVES

Alternative 1

That the Saanich Peninsula Wastewater Commission direct staff to bring forward continuous supplementaries totaling \$40,000 for items listed in Appendix A for consideration in the 2017 budget deliberation.

Alternative 2

That the Saanich Peninsula Wastewater Commission direct staff to continue the Stormwater Quality Service without any supplemental service requests.

ENVIRONMENTAL IMPLICATIONS

The current program has been successful at identifying some sources of contamination; however, others have proven to be difficult to locate. More effort is needed to fully investigate persistent sources and provide early detection of new sources.

The 4 main sources of stormwater contamination and their associated actions are summarized in the following table.

Table 1. Contamination sources and associated remedial action

Type	Primary Issue	CRD action	Lead for remedial action
Human (infrastructure-related)	Bacteria	Forensic source location, education	Local government (repairs and upgrades)
Human (onsite septic systems)	Bacteria	Forensic source location, education	Homeowner
Business (poor business practices)	Metals, hydrocarbons, other	Forensic source location, education	Upcoming CRD Stormwater Source Control Bylaw
Agriculture (manure runoff, fertilizer)	Bacteria, nutrients	Education, engagement	CRD Stormwater Quality Program, agriculture sector
Climate change (weather)	Increased peak flow and contaminant loadings	Provide adaptation strategies for effects of increased winter flows and intense rain events.	Local governments and property owners

A watershed-scale approach is needed to address these multiple stressors on the environment. There is no single solution, therefore, combined approaches of regulatory, non-regulatory and voluntary tools using scientific assessment and adaptive management are required.

Staff can also leverage the work of other groups. Non-government organizations such as fishery, watershed and creek stewardship groups are already active on the Peninsula. These groups have current and historic knowledge that was previously under utilized. In addition, staff can look for synergies with the CRD Draft Food and Agriculture Strategy related to environmental protection.

Staff have identified four actions to enhance the program which are listed in Table 2 (Appendix A) and have ranked the options for program enhancement by expected level of effectiveness to reduce contaminant releases to the environment.

The CRD Onsite Wastewater Management Program could be used to strengthen environmental protection activities around septic contamination. Staff can bring further information on this service back to committee if required.

FINANCIAL IMPLICATIONS

The current budget direction from the CRD Board includes no service level increases for 2017; any supplemental request for funding will require CRD Board approval. The proposed 2017 program budgets are \$76,800 for the Saanich Peninsula Stormwater Quality Program (SQP) and \$34,400 for the Saanich Peninsula Stormwater Source Control Service (SPSC). The supplemental funding would add \$40,000 between these 2 budgets. This work will be completed with current staff levels and the use of external contractors, as necessary.

Staff recommend annual progress updates to the SPWWC and an evaluation of the enhanced program in 2020.

CONCLUSIONS

The number of discharges rated high for human health concern and the number of discharges rated high for chemical concern have remained relatively constant over the past 10 years on the Saanich Peninsula. A number of options are presented in this report that have the potential to either provide local government with information to resolve issues or to encourage behavior change for residents and businesses. These actions are intended to reduce contaminant release to the environment due to stormwater and to maintain that improvement.

RECOMMENDATION

That the Saanich Peninsula Wastewater Commission direct staff to bring forward continuous supplementaries totaling \$40,000 for items listed in Appendix A for consideration in the 2017 budget deliberation.

Submitted by:	Dale Green, B.Sc., P.Chem., Acting Senior Manager, Environmental Protection
Concurrence:	Larisa Hutcheson, P.Eng., General Manager, Parks & Environmental Services
Concurrence:	Ted Robbins, B.Sc., C.Tech., General Manager, Integrated Water Services

DG:cam

Attachment:

- Appendix A: Potential Actions to Enhance Current Saanich Peninsula Stormwater Quality Program

**Saanich Peninsula Stormwater Quality Program
Service Review September 2016**

Table 2. Potential Actions to Enhance Current Saanich Peninsula Stormwater Quality Program

Item	Description	Estimated cost
A	Improve investigative efforts to identify sources of contamination and collect more bacterial source tracking samples	\$15,000
B	Enhance the Stormwater Source Control service to increase the number of business sectors, inspections and communication opportunities	\$10,000
C	Increase administrative oversight, intergovernmental cooperation, coordination and engagement with stewardship groups, and undertake special projects and data analysis	\$10,000
D	Enhance agriculture outreach and, in cooperation with the sector, promote alternative solutions and best management practices for water, nutrient and manure management	\$5,000

A. Improve investigative efforts to identify sources of contamination and collect more bacterial source tracking samples

More sampling days would provide more information to investigate infrequent sources and discharges with multiple sources. Bacterial source tracking analysis is expensive (approximately \$300 each) but provides useful information about the species responsible for bacterial contamination, which can shorten overall investigation time.

B. Enhance the Stormwater Source Control service to increase the number of business sectors, inspections and communication opportunities

Starting in 2017, the annual budget allocated for business inspections and follow up is about \$15,000. Additional funds would allow for more site visits, enabling staff to proactively address contaminant release, expand focus to multiple business sectors during the year and develop updated regulations as needed.

C. Increase administrative oversight, intergovernmental cooperation, coordination and engagement with stewardship groups and undertake special projects and data analysis

As the program collects more data and gains access to external sources of data, additional staff time would be required to interpret data, compare against trends, summarize findings, rank and prioritize watersheds for early detection of future issues and potential actions. Some additional time would also be required to hire and supervise contractors, liaise with senior government on issues of common interest, such as watercourses and shorelines and engage with stewardship groups.

D. Enhance agriculture outreach and, in cooperation with the sector, promote alternative solutions and best management practices for water, nutrient and manure management

Over the past few years, promotion of *Keyline Design* – a technique to use land contours to slow runoff and retain bacteria and nutrients – has been well received on the Peninsula. More effort could be undertaken to engage with the agriculture sector and understand what other techniques would be beneficial and if there is interest in CRD facilitation of learning sessions.

**REPORT TO SAANICH PENINSULA WASTEWATER COMMISSION
MEETING OF THURSDAY, SEPTEMBER 15, 2016**

SUBJECT **SAANICH PENINSULA TREATMENT PLANT WASTEWATER AND MARINE ENVIRONMENT PROGRAM - 2015 ANNUAL REPORT**

ISSUE

To present the Saanich Peninsula Treatment Plant (SPTP) Wastewater and Marine Environment Program 2015 Annual Report.

BACKGROUND

The Capital Regional District (CRD) has been operating the SPTP since February 2000. The treatment plant serves North Saanich, Central Saanich and the Town of Sidney, as well as the Victoria International Airport, the Institute of Ocean Sciences and the Tseycum and Pauquachin First Nations communities. It is a conventional secondary level wastewater treatment plant that has periodically produced Class A biosolids. The treatment plant discharges undisinfectated secondary effluent into the marine receiving environment (Bazan Bay) through an outfall located approximately 1,580 m from the shoreline at a depth of 30 m.

The Saanich Peninsula Liquid Waste Management Plan contains a commitment to carry out a monitoring program for the treatment plant and report to the BC Ministry of Environment (MOE). CRD staff developed the program in consultation with the Marine Monitoring Advisory Group (MMAG), with input by MOE and originally implemented it in 2004. In addition, the SPTP must meet the federal wastewater reporting and monitoring requirements that came into effect January 1, 2013. In 2015, the program consisted of the following components:

- daily, weekly and monthly analysis of wastewater for provincial and federal compliance monitoring and treatment plant performance parameters, and quarterly analysis for priority substances
- quarterly (acute) and annual (chronic) effluent toxicity testing
- monthly analysis of sludge for fecal coliforms and metals to inform the Regional Source Control Program (RSCP)
- a surface monitoring program, consisting of 5 sampling days within a 30-day period, collected semi-annually (summer and winter). Sampling locations consisted of a series of outfall and initial dilution zone sites, with samples analyzed for nutrients, bacteriology and an extended set of parameters on 1 day of each 5-day set

The executive summary of the draft report, Saanich Peninsula Treatment Plant Wastewater and Marine Environment Program 2015 Annual Report, is attached as Appendix A. The full draft report is available upon request.

ALTERNATIVES

Alternative 1

That the Saanich Peninsula Wastewater Commission (SPWWC) recommend to the Capital Regional District Board: That the Saanich Peninsula Treatment Plant Wastewater and Marine Environment Program 2015 Annual Report be approved and forwarded to the BC Ministry of Environment.

Alternative 2

That the Saanich Peninsula Wastewater Commission direct staff to submit a revised report.

ENVIRONMENTAL IMPLICATIONS

The 2015 results indicate that the SPTP operated as expected for a conventional secondary treatment plant of its type, and that the effluent quality was below all applicable provincial and federal regulatory limits. Impacts to the marine environment were minimal, with the majority of contaminants in the waters around the outfall having concentrations well below water quality guidelines set to protect both human health (i.e., recreation and shellfish harvesting) and marine life. Nutrient monitoring in the ocean also indicated no impacts from the outfall.

A few metal concentrations exceeded water quality guidelines in the ocean around the outfall, but limited background (ambient) data exists for comparison, so risk conclusions cannot yet be drawn. Further risk assessment will occur as more data are collected in the future.

The area around the outfall is closed to shellfish harvesting; a standard practice around all municipal wastewater outfalls in the province. The Canadian Shellfish Sanitation Program increased the size of the closure in December 2015, due to factors mostly irrelevant of the SPTP, including high levels of recreational boating and marinas in the area, the potential for municipal wastewater infrastructure to malfunction and discharge to the ocean or creeks/ditches that drain to the ocean, and the potential for private septic pumps to fail and discharge into the ocean.

The SPWWC previously delegated Technical Water Quality Review Panel authority to the MMAG to review the need for disinfection. The Panel's review is informally on hold while parallel discussions are taking place with Peninsula First Nations. The intent of these discussions is to identify and prioritize currently closed shellfish harvesting areas that have the greatest potential for remediation and reopening. These discussions may or may not identify the areas around the SPTP outfall as a priority. Ultimately, due to the complex rationale behind the closure around the SPTP outfall, staff do not yet know whether disinfection will result in a smaller area remaining closed to shellfish harvesting.

The SPTP did not produce any biosolids in 2015. All sludge generated at the facility was disposed of at Hartland landfill. The CRD monitored the sludge in 2015 to inform the RSCP and all regulated parameters were far below Class A biosolids limits.

FINANCIAL IMPLICATIONS

The routine components of the 2015 program are included in the SPTP annual operating budget. Sludge monitoring budgets have been reduced from approximately \$19,000 to \$7,000 per year for 2016-2019 as monitoring requirements are much less comprehensive than the previous biosolids (PenGrow) monitoring requirements.

CONCLUSIONS

The SPTP effluent quality achieved all operating objectives and met provincial and federal regulatory requirements in 2015. Effluent monitoring indicated low potential for negative effects on the marine receiving environment from the discharge. Surface water monitoring also indicated low potential for health effects from recreation activities or shellfish harvesting, and low potential for impacts on marine life. Nutrient concentrations showed no effect from the discharge and were within expected ranges. The implications of the few water quality guideline exceedences for metal concentrations observed in the ocean will be determined after additional surface water data is collected, particularly for areas farther away from the outfall. Sludge monitoring also indicated low environmental risk if the product was beneficially reused.

RECOMMENDATIONS

That the Saanich Peninsula Wastewater Commission recommend to the Capital Regional District Board that the Saanich Peninsula Treatment Plant Wastewater and Marine Environment Program 2015 Annual Report be approved and forwarded to the BC Ministry of Environment.

Submitted by:	Glenn Harris, Ph.D., R.P.Bio., Senior Manager, Environmental Protection
Concurrence:	Larisa Hutcheson, P.Eng., General Manager, Parks & Environmental Services
Concurrence:	Ted Robbins, B.Sc., C.Tech., General Manager, Integrated Water Service
Concurrence	Robert Lapham, MCIP, RPP, Chief Administrative Officer

CL:cam

Attachment:

- Appendix A – Executive Summary of draft Saanich Peninsula Treatment Plant Wastewater and Marine Environment Program 2015 Annual Report

**SAANICH PENINSULA TREATMENT PLANT
WASTEWATER AND MARINE ENVIRONMENT PROGRAM
2015 ANNUAL REPORT**

EXECUTIVE SUMMARY

The Capital Regional District (CRD) has been operating the Saanich Peninsula Treatment Plant (SPTP) since February 2000. The treatment plant serves North Saanich, Central Saanich and the Town of Sidney, as well as the Victoria International Airport, the Institute of Ocean Sciences and the Tseycum and Pauquachin First Nations communities. It is a conventional secondary level wastewater treatment plant which has periodically produced Class A biosolids. The treatment plant discharges undisinfected secondary effluent into the marine receiving environment (Bazan Bay) through an outfall located approximately 1,580 m from the shoreline at a depth of 30 m. The CRD undertakes monitoring to meet provincial and federal regulatory requirements, as well as to assess the impacts of the outfall on the marine environment. This monitoring is stipulated by the British Columbia Ministry of Environment (MoE) through the Municipal Wastewater Regulation under the *Environmental Management Act* and the Federal Wastewater Systems Effluent Regulations under the *Fisheries Act*.

As part of the Saanich Peninsula Liquid Waste Management Plan (LWMP), the CRD committed to develop a long-term monitoring program. CRD Parks & Environmental Services staff reviewed the pre-discharge monitoring data (1998 to 2000), in conjunction with the post-discharge monitoring results (2000 to 2003), and developed the long-term monitoring program in consultation with the Marine Monitoring Advisory Group. This program has been in place since 2004. In collaboration with BC MoE, the CRD conducted a more recent review of the program, in 2011 and 2012, to determine whether revisions were necessary to satisfy changing regulatory monitoring expectations. Some minor changes were made and implemented in January 2013.

The 2015 Wastewater and Marine Environment Program consisted of the following components:

- daily, weekly and monthly analysis of wastewater for federal and provincial compliance monitoring and treatment plant performance parameters, and quarterly analysis for priority substances
- quarterly toxicity testing
- monthly analysis of sludge for fecal coliforms and metals
- a biannual surface monitoring program, consisting of 5 sampling days within a 30-day period, once each in summer and winter.

WASTEWATER MONITORING

Compliance Monitoring and Treatment Plant Performance

The CRD conducted wastewater monitoring on a regular basis to profile the chemical and physical constituents of influent and effluent, determine concentrations relative to provincial and federal regulatory limits, and assess treatment plant performance. Parameters monitored for regulatory compliance were below the applicable effluent regulatory limits. Influent and effluent quality was within expected ranges and met all treatment plant operating objectives.

Priority Substances

In addition to the compliance and treatment plant performance monitoring, over 500 substances were analyzed in the SPTP influent and effluent on a quarterly basis. These substances were monitored to more comprehensively assess potential risks of the wastewater discharge to organisms living in the marine environment around the outfall. More than half of the substances (~52%) were below chosen analytical detection limits in 2015.

Substances that were detected above analytical detection limits in 50% or more of samples included most of the conventional variables, metals (both total and dissolved), some organics, and high resolution parameters. Most frequently detected substances were below BC and Canadian Water Quality Guidelines (WQG), even in undiluted effluent. Only pH, WAD cyanide, copper, zinc and bacteria exceeded guidelines in undiluted effluent.

Water Quality Guidelines must be met outside of the initial dilution zone (IDZ) (i.e., an area with a radius of approximately 100 m around the outfall), so in order to predict levels at the edge of the IDZ, estimated minimum initial dilution factors were applied to all substance concentrations. All substances were predicted to be below WQG after the application of this dilution factor, including those substances that were above guidelines in undiluted effluent, with the exception of bacterial indicators. As a result, it is not likely that significant effects on aquatic life will occur from the substances being discharged. Surface water monitoring was undertaken to assess the human health and shellfish impacts of the effluent bacteriological exceedances.

Toxicity Testing

In 2015, no mortality was observed for any of the test species during the acute or chronic toxicity testing conducted using SPTP effluent. No impact was observed on growth or reproductive endpoints.

BIOSOLIDS MONITORING

No biosolids were produced at the SPTP in 2015. All sludge generated at the facility was disposed of at the Hartland Landfill. The CRD monitored the sludge in 2015 to inform the CRD's Regional Source Control Program, and all regulated parameters were far below Class A biosolids limits.

SURFACE WATER MONITORING

Bacteriology

Surface water fecal coliform and enterococci concentrations were low at all outfall and reference stations, with geometric means of 4 CFU/100 mL or less, well below BC and Health Canada recreational and shellfish guidelines. There were no elevated geometric mean fecal coliform or enterococci concentrations observed at any station on any sampling date, and only 2 samples that exceeded the Health Canada enterococci single sample guideline of 70 CFU/100 mL.

Overall, results indicate that adverse health effects from recreational primary contact activities and shellfish harvesting are not expected. However, an area of approximately 17.65 km² around the outfall is closed for shellfish harvesting as standard Fisheries and Oceans Canada procedure near industrial and sanitary wastewater outfalls. Shellfish closures have a minimum radius around an outfall of 300 m, but closure areas are usually larger near bigger urban centres, such as for the SPTP outfall, where there are other potential sources of bacterial contamination (e.g., stormwater discharges, marinas, septic systems, sewage pumps) in addition to the wastewater outfall.

A review is currently underway to assess the need for disinfection at the SPTP; results of this review are expected sometime in 2016 or 2017. Results of a 2014-2015 bacterial source tracking exercise, that confirmed the presence of human derived bacteria in Bazan Bay, will be used to inform this review.

Extended Monitoring

A small number of WQG exceedances were observed for metals in the water column surrounding the SPTP outfall. These exceedances were not expected based on the environmental concentrations predicted using the observed wastewater metal concentrations and the minimum initial dilution factors described above. The exceedances were observed at the edge of the IDZ near the seafloor, for cadmium (1 station) and iron (4 stations). Iron also exceeded guidelines in 2013 and 2014. As 2015 was only the third year of water column monitoring for metals, the frequency of exceedances was low, and the monitoring program is lacking comparable reference station data, conclusions cannot yet be drawn about the environmental significance

of the exceedances. The CRD will continue to monitor metals in waters around the outfall and will assess environmental significance once more data has been collected, including adding metals analyses at the reference station.

Nutrients

There were no consistent (qualitative) differences in nutrient concentrations in 2015 between the station immediately above the outfall terminus and the station monitored as a reference. Results were within the ranges measured in previous years and those of the pre- and post-discharge assessment programs. As was observed in previous monitoring years, high variability, both spatially and temporally, was evident in the data. Fluctuations in nutrient concentrations are attributed to natural variation in the monitoring areas. Overall, there was no evidence of an effect on nutrient concentrations in the receiving environment from the SPTP discharge.

SEAFLOOR

Seafloor monitoring (i.e., benthic, community structure and sediment chemistry) is conducted every 4 years. The previous event was in 2012, with the next due in 2016.

OVERALL ASSESSMENT

Based on tests used to monitor effluent quality and surface water in 2015, no significant adverse effects from the SPTP discharge on the receiving environment are expected. Results were similar to previous years. Influent and effluent quality was within expected ranges and met all regulatory limits and operating certificate compliance requirements on all sampling dates. All substances – with the exception of bacterial indicators – for which there are BC or Canadian WQG met these guidelines when the estimated minimum initial environmental dilution of the effluent was factored in, indicating that the predicted levels of substances in the environment were not likely to be at concentrations of concern to aquatic life. Surface water fecal coliform and enterococci data indicated that adverse health effects on recreational activities or shellfish consumers were low or not expected. A small number of metal concentrations exceeded WQG in the water column at the edge of the IDZ; as more data is collected in future years, the environmental significance of these infrequent exceedances will be better known. Surface water nutrient concentrations were within ranges measured in previous monitoring programs and showed no detectable effect from the discharge. The presence of human-derived bacteria in Bazan Bay was confirmed in 2014-2015 through the Technical Water Quality Review Panel-requested bacterial source tracking exercise; this information will be used as part of the assessment to determine the need for disinfection at the SPTP. Finally, the infrequent exceedances of metal WQG near the outfall will be assessed for environmental significance as additional data is collected, particularly from the reference station.