Making a difference...together

Saanich Peninsula Stormwater Quality Program

2022 Annual Report

Capital Regional District | Parks & Environmental Services, Environmental Protection

Including the jurisdictions of

District of Central Saanich
District of North Saanich
Town of Sidney
Pauquachin First Nation
Tsartlip First Nation
Tsawout First Nation
Tseycum First Nation

Prepared By
Stormwater Quality Program

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August 2023

SAANICH PENINSULA STORMWATER QUALITY PROGRAM
2022 ANNUAL REPORT

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

SAANICH PENINSULA STORMWATER QUALITY PROGRAM
2022 ANNUAL REPORT

1.0 INTRODUCTION

The Capital Regional District (CRD) Stormwater Monitoring Program works to identify and reduce contamination from the land into stormwater and surface water (creeks and the ocean). CRD staff, in cooperation with municipalities and First Nations, accomplish this through environmental monitoring, assessment, collaboration and education. This work meets commitments in the Saanich Peninsula Liquid Waste Management Plan (LWMP; CRD, 1996), described below.

CRD staff monitor stormwater discharges and creeks to identify contamination and impacts from stormwater due to various land use practices. Staff assess approximately 300 stormwater discharges on the Saanich Peninsula and assign priority ratings for mitigative action by the appropriate jurisdiction. When contamination is found, CRD staff conduct investigations and work with municipal staff and First Nations to identify the source(s).

This report summarizes the results of work completed in 2022 (2023 data was considered when available). Data, sampling locations and details about the CRD stormwater discharge rating methods for public health and environmental concern are available in appendices A through G.

Regulatory Background

The CRD created the stormwater quality monitoring service to meet commitments in the Saanich Peninsula LWMP. 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 and First Nations own the stormwater infrastructure and have authority over stormwater under the *Community Charter*[*]. In the LWMP, participants 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*

2.0 STORMWATER DISCHARGE EVALUATIONS - PUBLIC HEALTH

Public Health Concern Ratings

Staff prioritize stormwater discharges annually to meet LWMP commitments and support local governments in directing funds where they will have the greatest benefit. Discharges are prioritized through public health concern ratings, based on the concentration of bacteria in the discharge and the potential for public contact.

[*] https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/03026_00

Each year, CRD staff sample a selection of stormwater discharges in the wet and dry seasons and analyze them for *E. coli*, an indicator of sewage or animal waste. An *E. coli* count greater than 200 colony forming units (CFU)/100mL indicates a source of sewage or animal waste with the potential to cause adverse effects to members of the public engaging in recreational activities in the vicinity. The CRD assigns discharges a high public health concern rating if the average *E. coli* counts (geomean) are over 200 CFU/100 mL on a shoreline used by the public for swimming or diving, or greater than 5,000 CFU/100 mL on a shoreline used by the public for small boating (e.g., kayaking or paddle-boarding). A summary of the CRD rating system is in Appendix G.

In 2022, staff assessed 90 stormwater discharges, of which 26 discharges had one or more *E. coli* counts greater than 200 CFU/100 mL. However, many of these discharges have low flows or are located where there is little risk of public contact. Considering the likelihood for contact, CRD staff assigned the following public health concern ratings:

- 59 low ratings;
- 26 moderate ratings; and
- 5 high ratings (Table A, Figure A).

These ratings and the associated bacterial data are listed in appendices B and C. Quality assurance and control data are in Appendix D.

CRD source investigations indicate that malfunctioning on-site sewage treatment systems or agricultural practices are the sources of bacteria leading to high ratings (Table A) in three North Saanich discharges and in Tseycum Creek. Sources in Sidney are due to sewer cross-connections, illegal dumping and aging infrastructure. The recent repair of a cross-connection has reduced the number of high-rated discharges in Sidney. CRD staff are working with the municipalities and the Island Health Authority (IHA) to mitigate these identified sources.

Ratings over Time

Overall, the high-rated discharges appear to be in a decreasing trend on the Saanich Peninsula. The number of high-rated discharges remained the same in 2022, as staff removed two of the previously high-rated discharges from the list and added two new discharges (Table A).

Staff assigned a lower rating to one discharge that had been high-rated for more than six years. This discharge in Coles Bay (3118) now has lower bacterial levels, due to continued effort from CRD and IHA staff that resulted in on-site treatment system repairs in the catchment.

Four of the high-rated discharges have been of concern for several years. These contaminant sources are challenging to find, difficult to repair, or are the result of agricultural practices.

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

Jurisdiction	Number of Discharges Rated High											
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Central Saanich	2	2	1	1	1	0	0	1	2	1	0	1
North Saanich	4	4	4	3	3	3	4	4	4	3	3	2
Sidney	5	4	5	6	3	2	1	2	2	2	2	1
Pauquachin First Nation	0	0	0	0	0	0	0	0	0	0	0	0
Tsartlip First Nation	0	1	1	0	0	0	0	0	0	0	0	0
Tsawout First Nation	0	1	0	0	0	0	0	0	0	0	0	0
Tseycum First Nation	1	1	1	1	1	1	1	1	1	1	1	1
Total	**12**	**13**	**12**	**11**	**8**	**6**	**6**	**8**	**9**	**7**	**6**	**5**

Bacterial Source Investigations

CRD, municipal, First Nation and IHA staff continue to work together to identify bacterial sources in stormwater discharges of concern so they can be addressed by the appropriate jurisdiction. The sources of contamination include malfunctioning on-site sewage treatment systems, agricultural practices, aging stormwater and sewage infrastructure, sewage-stormwater cross connections, and wild and domestic animals.

In 2022, CRD staff investigated the catchment areas of five stormwater discharges on the Saanich Peninsula (see Table B for locations). These investigations resulted in the following:

- elimination of a source in Sidney (Sidney staff found and repaired a second cross-connection in discharge 450 and CRD staff have confirmed lower counts in that discharge);
- resolution for a reported spill which turned out to be natural iron-reducing bacteria;
- suspension of an ongoing investigation due to lack of flows and lower bacterial counts; and
- ongoing investigations in two catchments where multiple sources exist.

In addition, a bacterial source from an onsite sewage treatment system was identified in Deep Cove, and information was passed to Island Health who have contacted the owners of the residences. Sidney staff identified and repaired a cross-connection in the Mermaid Creek catchment.

Finally, CRD staff continue to narrow down the sources of bacteria in the other catchments using upstream sampling for parameters such as bacteria, caffeine and genetic analysis (to determine if the origin of the bacteria is animal or human). Staff will continue investigations in many of these stormwater catchments, and others that are a concern, in 2023.

Table B Status of 2022 Source Investigations

Stormwater Discharge #	Location/ Jurisdiction	Status	Next Steps
447	Sidney	Ongoing; multiple sources exist.	CRD to continue investigation.
450	Sidney	Source found and repaired.	CRD to confirm lower bacterial counts.
3016	Sidney	Inconclusive; one source is known but difficult to repair.	CRD to continue investigations.
3079	Tatlow Creek, North Saanich	Complete; Spill complaint investigated but found to be natural iron-reducing bacteria.	CRD to continue monitoring.
3145	Brentwood Bay, Central Saanich	Inconclusive; narrowed down to a couple blocks; but counts are lower and discharge dry in summer.	CRD to continue investigation if counts increase.

Coles Bay

CRD staff continue to work with Island Health, North Saanich and Pauquachin First Nation to find and eliminate sources of bacteria in stormwater going into the bay. Two sources have been identified and mitigated in recent years and bacterial counts have decreased in both. However, other sources from malfunctioning onsite sewage treatment systems remain.

3.0 STORMWATER DISCHARGE AND WATERCOURSE EVALUATIONS – CHEMICAL CONTAMINANTS

The CRD assesses environmental concern in water and sediment from stormwater, pipes, ditches and streams, based on their potential to impact the marine receiving environment. Staff also assess watercourse health in seven freshwater streams through water quality and benthic invertebrate sampling. When contamination is found, the results are passed onto the appropriate jurisdiction and the CRD works in partnership to find and eliminate the source.

Chemical Contaminant Sampling

Sediment

The program evaluates sediment from within stormwater discharges (pipes, ditches and streams) for potential environmental impact due to contaminant levels. Sediment data and ratings are in Appendix E.

CRD staff assign contaminant ratings to stormwater discharges from sediment samples taken at the point of discharge into the marine environment. Ratings are determined by comparing the concentration of each contaminant [eight metals and high and low molecular weight polycyclic aromatic hydrocarbons (PAH)] to sediment quality guidelines protective of marine life. Methods are described in Appendix G.

2022 Monitoring Results

Staff collected three sediment samples on the Saanich Peninsula at the point of discharge (to measure potential contamination to the marine receiving environment).

All three discharges were assigned low contaminant ratings. A sediment sample collected from the mouth of Tod Creek had elevated mercury resulting in an initial high rating. As elevated mercury had never been measured in that location before (from 16 previous samples), staff collected three more samples to confirm the results. All three samples had low levels of mercury and other metals; therefore, the presence of elevated mercury in one sample in 2022 indicates that there was either concentrated contamination in a small area, or that there was a laboratory error with the results. CRD staff will continue to monitor metals in sediment from this site but have downgraded the rating to low.

Discharges Requiring Corrective Action

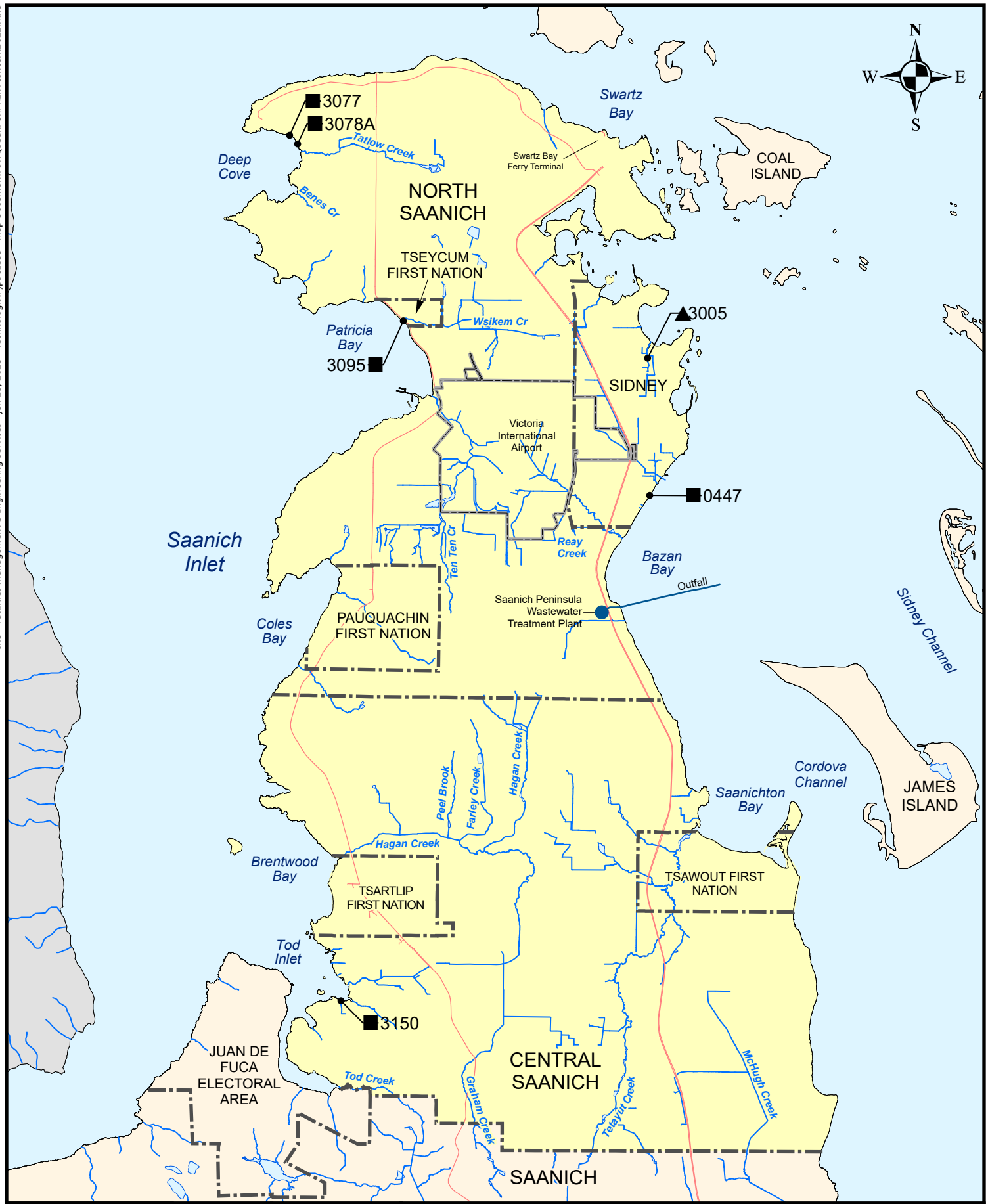
Remedial work resulted in decreased contamination in two of the three discharges that have been a concern for many years, allowing removal from the list of discharges requiring corrective action. The data indicates lower levels of contaminants in discharges 441 (Reay Creek) and 3138 (Tsartlip Boat Launch).

Only one discharge remains on the list of discharges requiring corrective action based on confirmation of contaminants of concern for consecutive years: Mermaid Creek (discharge 3005). Discharge 3005 has been of concern since 2005 due to elevated metals and PAHs. CRD staff conducted numerous source investigations, however sediment is difficult to find within the infrastructure. Staff has been monitoring water quality (i.e., aqueous metals) in recent years instead of sediment.

Previous data has indicated that copper, iron and zinc can be elevated in stormwater within the catchment, of 3005 however, copper was the only contaminant elevated above water quality guidelines for protection of aquatic life in 2021 and 2022. While copper is elevated above marine aquatic life guidelines in more than 75% of all stormwater discharges assessed in the Saanich Peninsula, some of the highest concentrations were measured upstream in the Mermaid Creek catchment.

While bacterial levels have remained fairly low, Sidney staff found and repaired a cross-connection in the catchment in early 2023. Staff will continue sampling the catchment and will remove this discharge from the action-list if additional samples have low contaminant concentrations.

Locations of these discharges are shown in Figure A and Appendix A.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Deep Cove
Benes Cr
Swartz Bay
Swartz Bay Ferry Terminal
COAL ISLAND
NORTH SAANICH
TSEYCUM FIRST NATION
Wsikem Cr
Patricia Bay
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3005
SIDNEY
Victoria International Airport
0447
Saanich Inlet
Ten Ten Cr
Reay Creek
Bazan Bay
Outfall
Saanich Peninsula Wastewater Treatment Plant
Sidney Channel
Coles Bay
PAUQUACHIN FIRST NATION
Peel Brook
Farley Creek
Hagan Creek
Cordova Channel
Saanichton Bay
JAMES ISLAND
Hagan Creek
Brentwood Bay
TSARTLIP FIRST NATION
TSAWOUT FIRST NATION
Tod Inlet
3150
JUAN DE FUCA ELECTORAL AREA
CENTRAL SAANICH
Tod Creek
Graham Creek
Tetayut Creek
McHugh Creek
SAANICH
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Kilometres
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Figure A- Saanich Peninsula - Stormwater Discharges Rated High for Public Health or Environmental Concern
High Public Health Concern Rating in 2022
High Environmental Concern Rating in 2022 or previous years (and recommended for corrective action)
Sewage Treatment and Outfall
Significant Ditches, Streams, Rivers, and Storm Drains
Municipal and First Nations Boundary
Major Roads
Stormwater Monitoring Area

Watercourses

Staff continued to monitor Hagan/Graham, ḰEL,SET (Reay), Tetayut, Tatlow (Chalet), ȾEN̲TEN, Tod and Tseycum creeks in 2022, to provide information about creek and watershed health. Each year, staff collect water quality data twice at the discharge of each creek providing a snapshot of creek health in the wet and dry seasons. Approximately every second year, staff conduct more comprehensive monitoring throughout one of the watersheds. This comprehensive monitoring includes more locations within the watershed, additional water quality parameters and collection of benthic invertebrates. In 2022, the Reay Creek watershed and the discharge of an unnamed creek that flows into Coles Bay from Pauquachin First Nation were sampled in this way. These data are presented in Appendix F.

Based on the CRD monitoring data, the parameters of most concern in Saanich Peninsula creeks are *E. coli*, phosphorus and turbidity, with some creeks also experiencing low dissolved oxygen and elevated metals. Poor water quality is likely the result of development, business waste (historical and ongoing), agricultural practices and malfunctioning on-site sewage treatment systems.

Reay Creek Watershed

CRD staff have been sampling Reay Creek since 1998, however 2022 was the first time staff intensively monitored the water quality using a 5-in-30 procedure and collected benthic invertebrate community data. Staff collected samples 5 times in 30 days for two locations (at Frost Avenue and at the mouth of the creek) in both the summer and fall. Samples were analyzed for metals, nutrients, bacteria and physical parameters. Benthic invertebrates were collected in riffle habitat near Frost Avenue.

Reay Creek Pond was designated a Class 1 contaminated site by Transport Canada (TC) in 2016, due to elevated cadmium, chromium, lead and zinc. TC removed contaminated sediment in the creek and pond on Victoria Airport Authority lands in 2019 and 2020. The 2022 water quality data indicated that the creek's water quality is moderate and may have improved since 2020, however, some metal contamination remains, and the benthic invertebrate community is still impacted.

CRD data indicate that there are still stressors to aquatic life in Reay Creek. Levels of aluminum, copper, *E.coli*, phosphorus, temperature, and turbidity were elevated above BC water quality guidelines for protection of aquatic life. However, with the exceptions of phosphorus and turbidity, concentrations were not as high as those measured in previous years. Concentrations of chromium were also lower than previously measured. More details about the parameters that exceeded guidelines are as follows:

- Aluminum was elevated during one of the ten sampling events and all concentrations were lower than three previous sampling events in 2020 and 2021.

- Copper was elevated in both locations and both seasons, with higher concentrations in the fall, however results were lower than in previous years. Copper exceedances are observed in most CRD creeks.

- *E. coli* was elevated only at the creek mouth during summer (three out of five measurements). *E. coli* has been intermittently elevated at this location in the past.

- Phosphorus exceeded the Vancouver Island Objectives. These objectives are exceeded in nearly all CRD creeks and wherever there is significant human presence within a watershed. Results appear similar to previous years.

- Elevated temperature measured in the summer has potential to cause adverse effects to juvenile Coho (the most sensitive species in the creek). However, the results were only measured once per week. For direct comparison to the guideline, the temperature needs to be collected continuously to determine average weekly values.

- Average turbidity was elevated compared to guideline; however, concentrations were lower than when measured in 2020 and total suspended solids, a similar indicator, were not elevated.

CRD staff also collected sediment samples in three locations in Reay Creek in 2021 (just downstream of Norseman, at Frost Avenue and at the mouth of the creek). Measurements of cadmium and zinc were elevated above the Canadian Council of Ministers of the Environment (CCME) interim sediment quality guidelines (ISQG) for protection of freshwater aquatic life at all three locations. In addition, arsenic and chromium measurements were elevated at the top of the creek (just downstream of Norseman Road).

Furthermore, the 2022 benthic invertebrate community data indicated a low abundance of sensitive species and a high abundance of pollution tolerant species. The Hilsenhoff Biotic Index was 5.78, indicating that substantial organic pollution may be affecting the invertebrate population.

In 2023, CRD staff will continue to monitor Saanich Peninsula creeks and work with First Nations, municipal staff and members of the public to locate sources of bacterial, physical and chemical contamination.

Unnamed Creek from Pauquachin First Nation

In 2022, CRD staff and Pauquachin First Nation staff and community members conducted sampling in an unnamed stream that enters Coles Bay from Pauquachin First Nation land. The water quality results were good relative to many CRD urban streams. Staff collected samples 5 times in 30 days in both the summer and fall. Samples were analyzed for metals, nutrients, bacteria and physical parameters.

The three parameters that exceeded BC water quality guidelines/objectives were total phosphorus, temperature, and turbidity. More details on the parameters of concern are as follows:

- All summer measurements of phosphorus exceeded the Vancouver Island Objectives. These objectives can only be achieved in pristine conditions and any significant human presence in the watershed will result in exceedance of these objectives. Recent land clearing may be releasing phosphorus into the watershed.

- None of the samples exceeded the acute guideline for turbidity but the chronic guideline was exceeded in both the summer and fall. In the summer, this may be due to algae and in the fall, it was more likely due to erosion from land clearing practices and rainfall. Turbidity is commonly exceeded in urban creeks in the region. Total suspended solids, a similar indicator, were not elevated.

- Finally**,** a couple of temperature measurements in August were marginally above 17 degrees Celsius (17.7 and 17.3 degrees Celsius), which is the weekly average temperature guideline to protect Coho. Since we only take one measurement per week, this guideline is not fully applicable, however, it is likely that the guideline was exceeded. For perspective, most urban creeks have temperature exceedances in August.

Quality Assurance

The 2022 data met quality assurance/quality control requirements for the program. For bacterial analysis, quality assurance includes annual establishment of a precision criterion based on a range of Saanich Peninsula stormwater sample triplicates. Staff collect blanks and field-splits for 10% of the discharge and marine surface water samples collected.

Quality assurance for sediment analysis included field duplicates, laboratory triplicates and standard reference materials. Precision and accuracy of the laboratory analysis were estimated from the results of these replicate and standard reference materials samples. A detailed discussion on the quality assurance program is provided in Appendix D.

4.0 RELATED CRD SERVICES

Saanich Peninsula Stormwater Source Control Service

The CRD established the Saanich Peninsula Stormwater Source Control Service in 2014, with the goal to prevent the release of contamination into the municipal drainage system through education and guidance, maintenance of catch basins, appropriate business practices, and the proper disposal of waste. Since then, staff have focused on creating a regulatory bylaw and its supporting framework. Regulatory bylaws (*Bylaw No. 4168* and amending *Bylaw No. 4229*) that set out the requirements for discharges to the municipal drainage system were finalized in December 2019. The CRD worked with municipalities, stakeholders and dischargers to implement the bylaw in 2019, and expanded implementation strategies in 2020.

Bylaw 4168 Inspections

In 2022, the CRD conducted 279 in-person inspections to provide education on stormwater source control and solutions for managing business waste on-site to prevent contamination of the stormwater system and the downstream freshwater or marine receiving environment. Inspections took place at 192 parking lot operations, 49 outdoor storage operations, and 38 general inspections.

In addition, staff have collected baseline data in three creeks that drain industrial areas, and sediment sampling continues to identify metal and PAH contamination from parking lots, roads, spills and business waste. Staff anticipate that the environmental monitoring program's sampling results will be used to assess the performance of the stormwater source control program over the coming years.

SAANICH PENINSULA HARBOURS AND WATER MONITORING AND COORDINATION SERVICE

In 2020, a new CRD service was established at the request of the Saanich Peninsula municipalities for the purpose of coordinating and implementing harbours, waterbodies and watercourses environmental protection and improvement initiatives on and surrounding the Saanich Peninsula.

The service includes:

- monitoring, mapping, reporting and public education on issues relating to the marine and shore area environments;
- coordination and collaboration with public authorities and other persons on issues relating to the marine and shore area environments; and
- implementing programs related to rehabilitation and improvement of the marine and shore area environments.

CRD staff are meeting with municipalities and engaging First Nations to determine next steps.

5.0 2023 PROGRAM

In 2023, CRD staff will continue to work with municipal partners, First Nations and the community to achieve LWMP goals to identify stormwater discharges of public health and environmental concern. CRD staff will continue to work with its partners to identify and reduce bacteria and contaminant concentrations in stormwater discharges, creeks and the marine receiving environment.

6.0 REFERENCES

CRD, 2011. Saanich Peninsula Liquid Waste Management Plan.

APPENDIX A

LOCATION OF STORMWATER DISCHARGES
2022

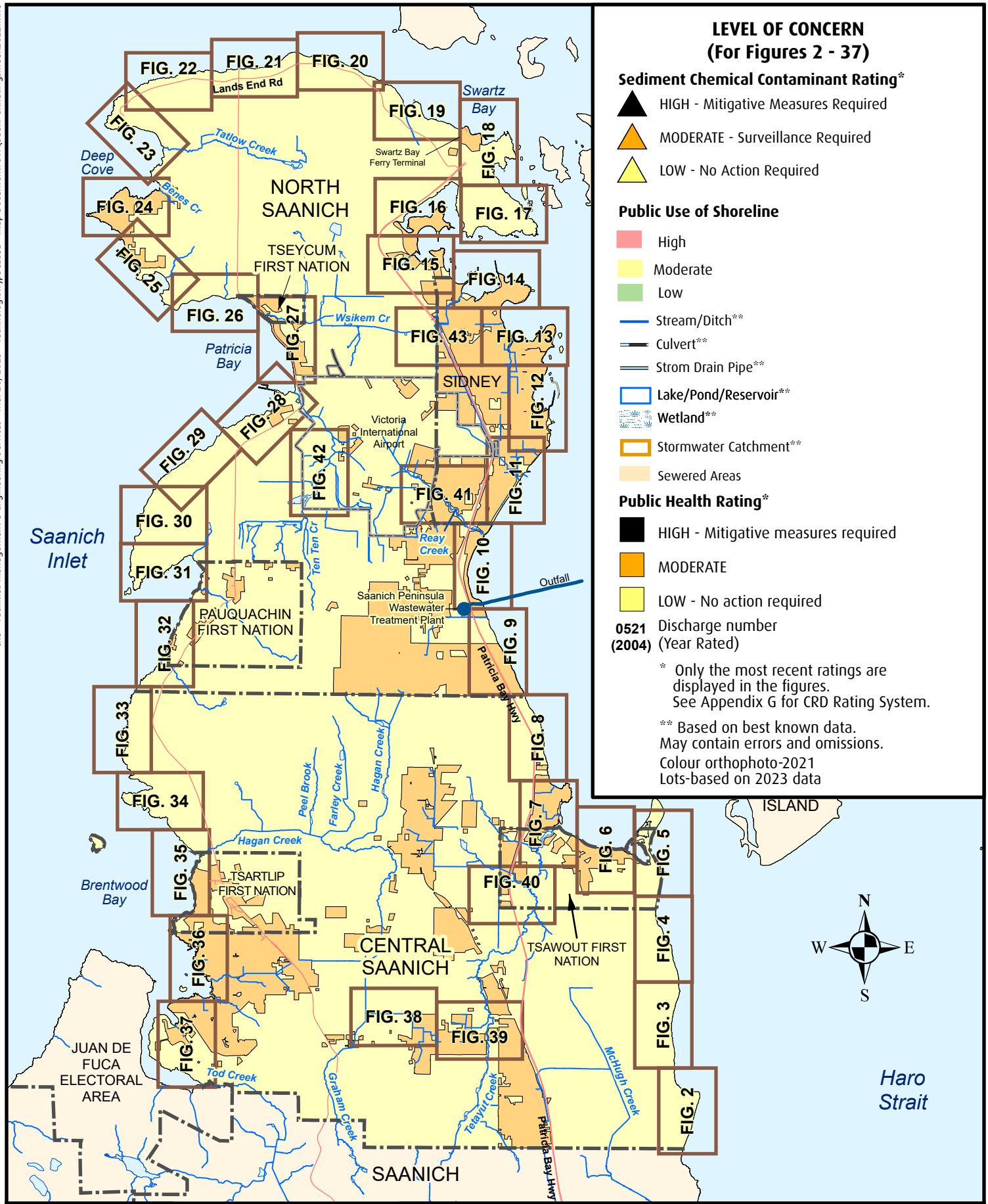

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Figure 1
Key Index for Figures 2 - 37 and Legend

Sewage Treatment Facility & Outfall
Significant Ditches, Streams & Storm Drains
Municipal and First Nations Boundary
Major Roads
FIG. 25 Map Tile with Figure Number
Sewered Areas

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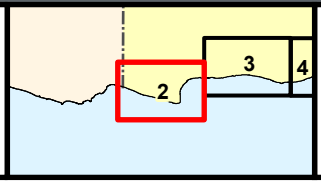

Figure 2
Saanich Peninsula 2022 Stormwater Discharge Location and Level of Concern

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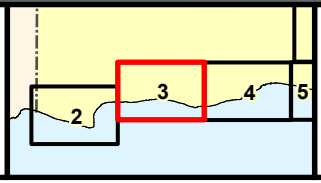

Figure 3
Saanich Peninsula 2022 Stormwater Discharge Location and Level of Concern

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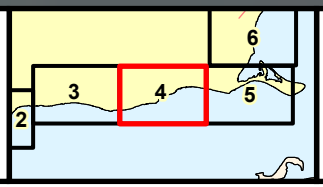

Figure 4

Saanich Peninsula 2022
Stormwater Discharge Location
and Level of Concern

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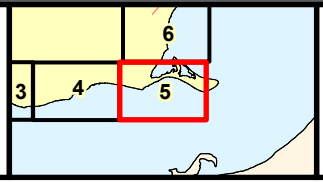
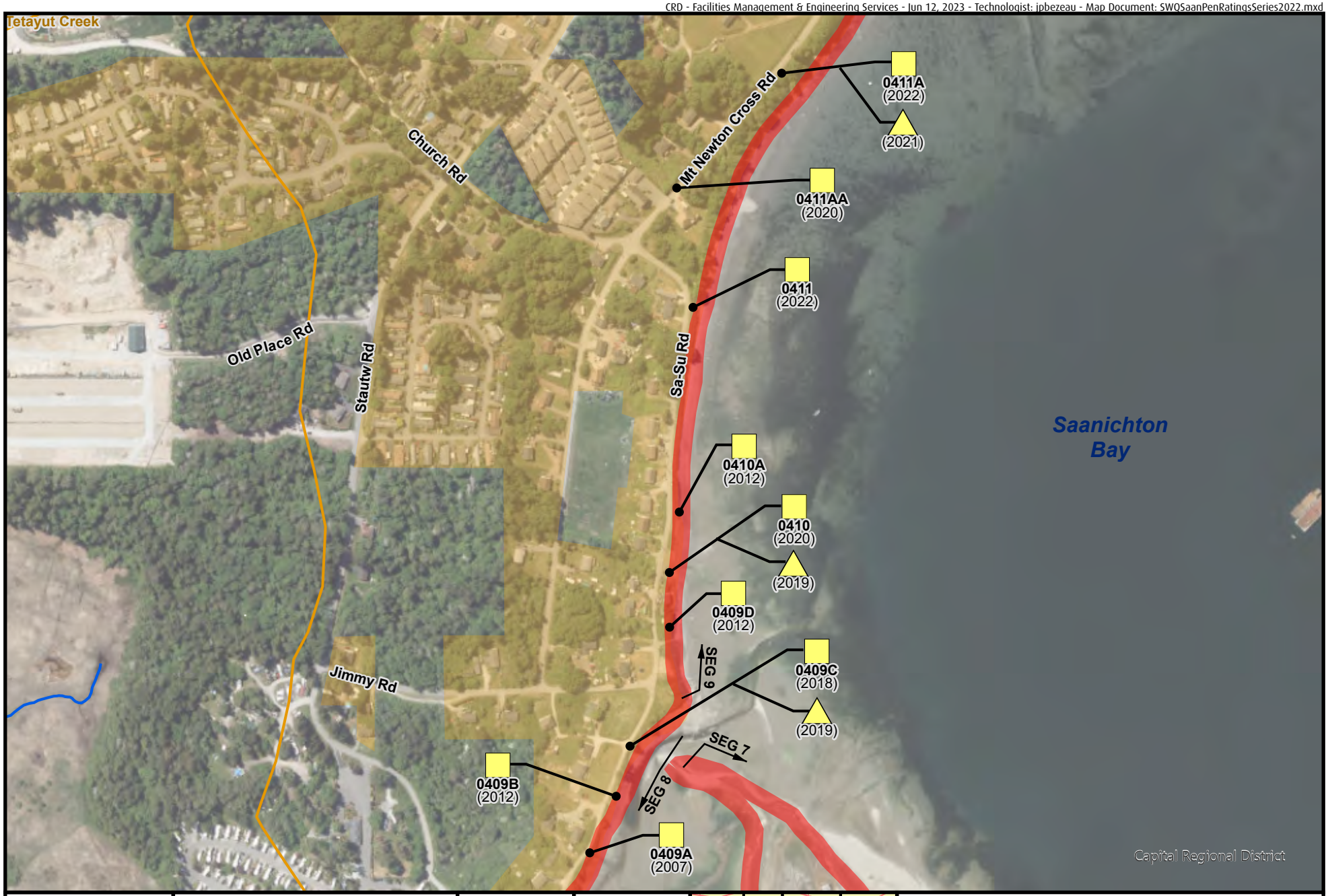


Figure 5
Saanich Peninsula 2022 Stormwater Discharge Location and Level of Concern



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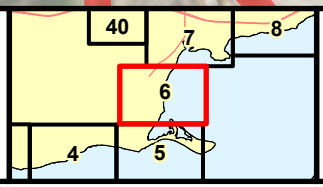
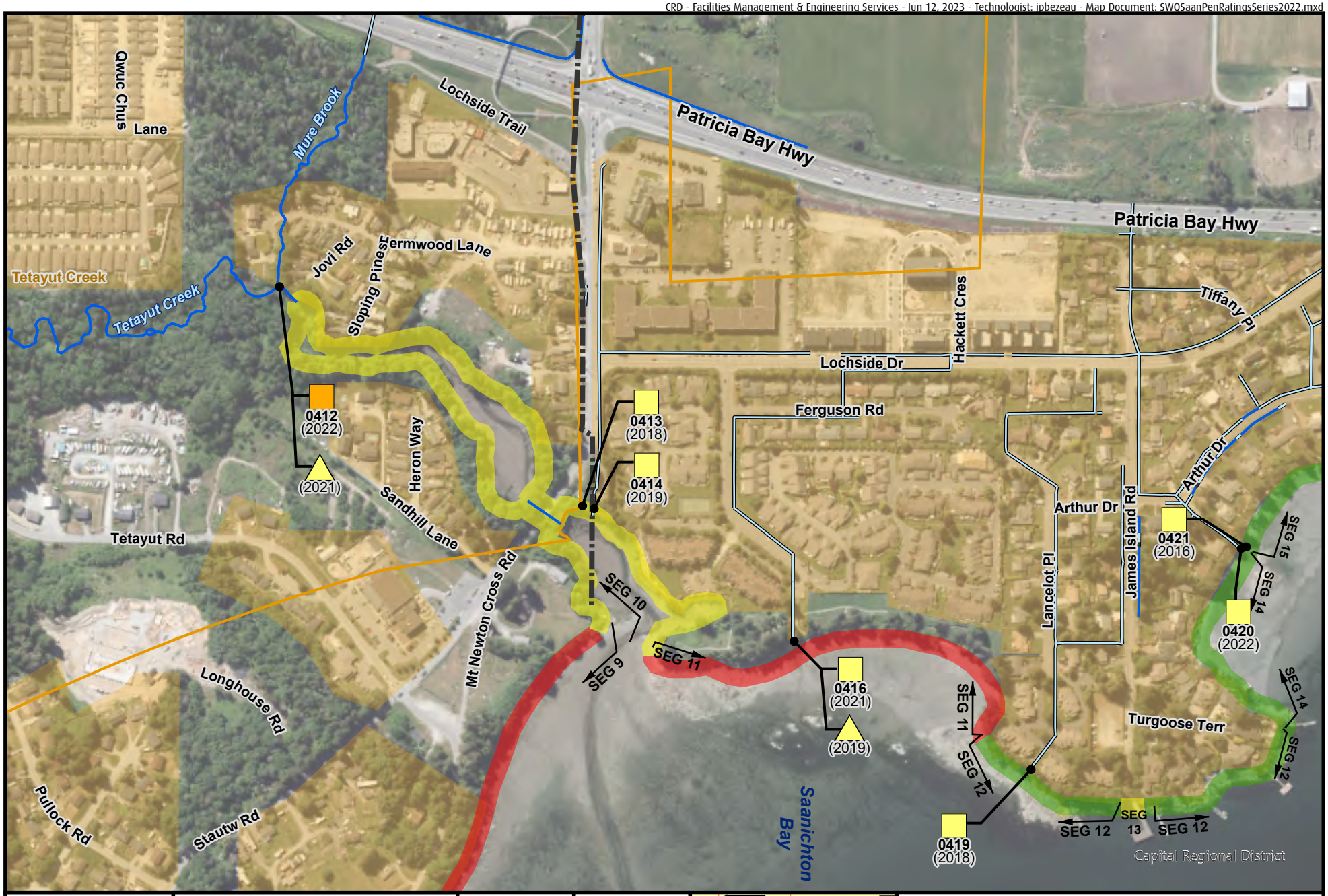


Figure 6
Saanich Peninsula 2022 Stormwater Discharge Location and Level of Concern



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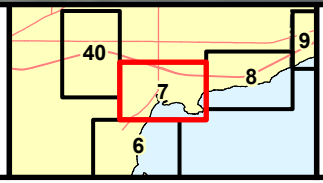

Figure 7

Saanich Peninsula 2022 Stormwater Discharge Location and Level of Concern

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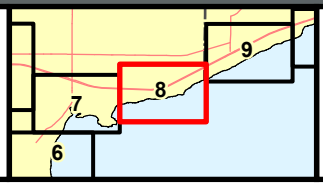

Figure 8

Saanich Peninsula 2022 Stormwater Discharge Location and Level of Concern

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W S N E

For Key Index and Legend See Figure 1

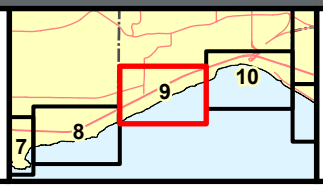


Figure 9
Saanich Peninsula 2022 Stormwater Discharge Location and Level of Concern

Making a difference...together

Metres

0 25 50 100 150

Projection: UTM ZONE 10N NAD 83

For Key Index and Legend See Figure 1

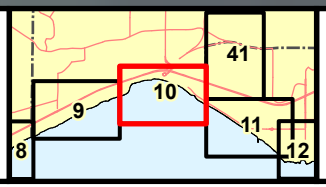


Figure 10

Saanich Peninsula 2022 Stormwater Discharge Location and Level of Concern

Making a difference...together

Metres

0 25 50 100 150

Projection: UTM ZONE 10N NAD 83

W S E N

For Key Index and Legend See Figure 1

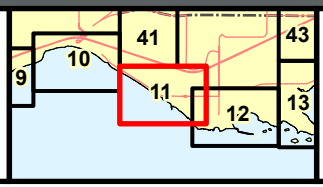


Figure 11

Saanich Peninsula 2022
Stormwater Discharge Location
and Level of Concern

Making a difference...together

Metres
0 25 50 100 150
Projection: UTM ZONE 10N NAD 83

For Key Index and Legend See Figure 1

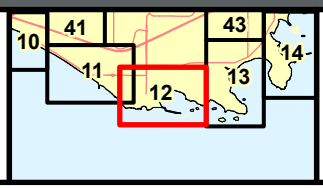


Figure 12
Saanich Peninsula 2022 Stormwater Discharge Location and Level of Concern

Making a difference...together

Metres
0 25 50 100 150
Projection: UTM ZONE 10N NAD 83

N
W E
S

For Key Index and Legend See Figure 1

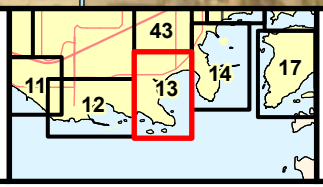
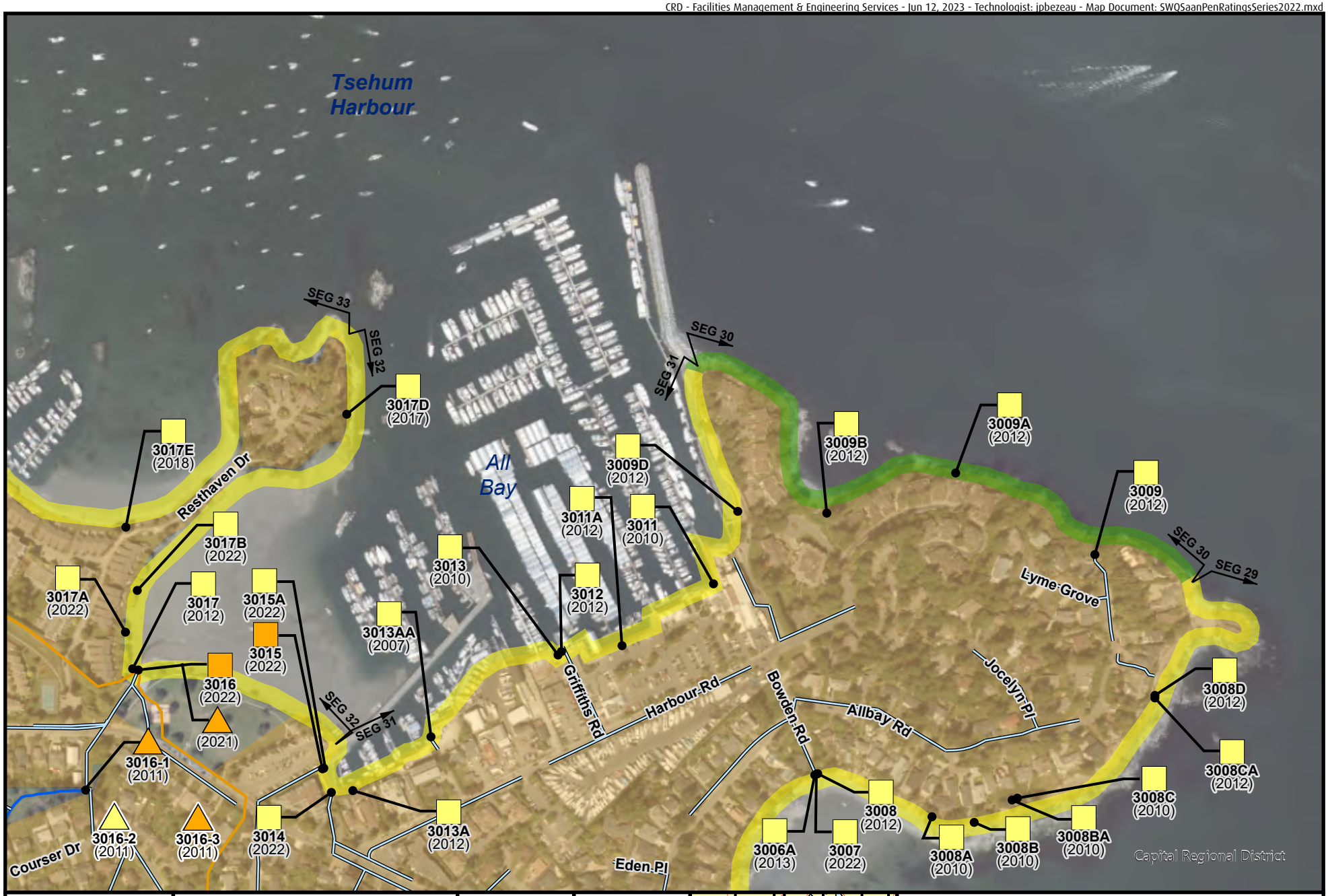


Figure 13
Saanich Peninsula 2022 Stormwater Discharge Location and Level of Concern



Making a difference...together

Metres

0 25 50 100 150

Projection: UTM ZONE 10N NAD 83

N W E S

For Key Index and Legend See Figure 1

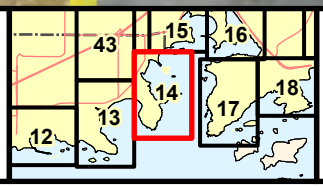
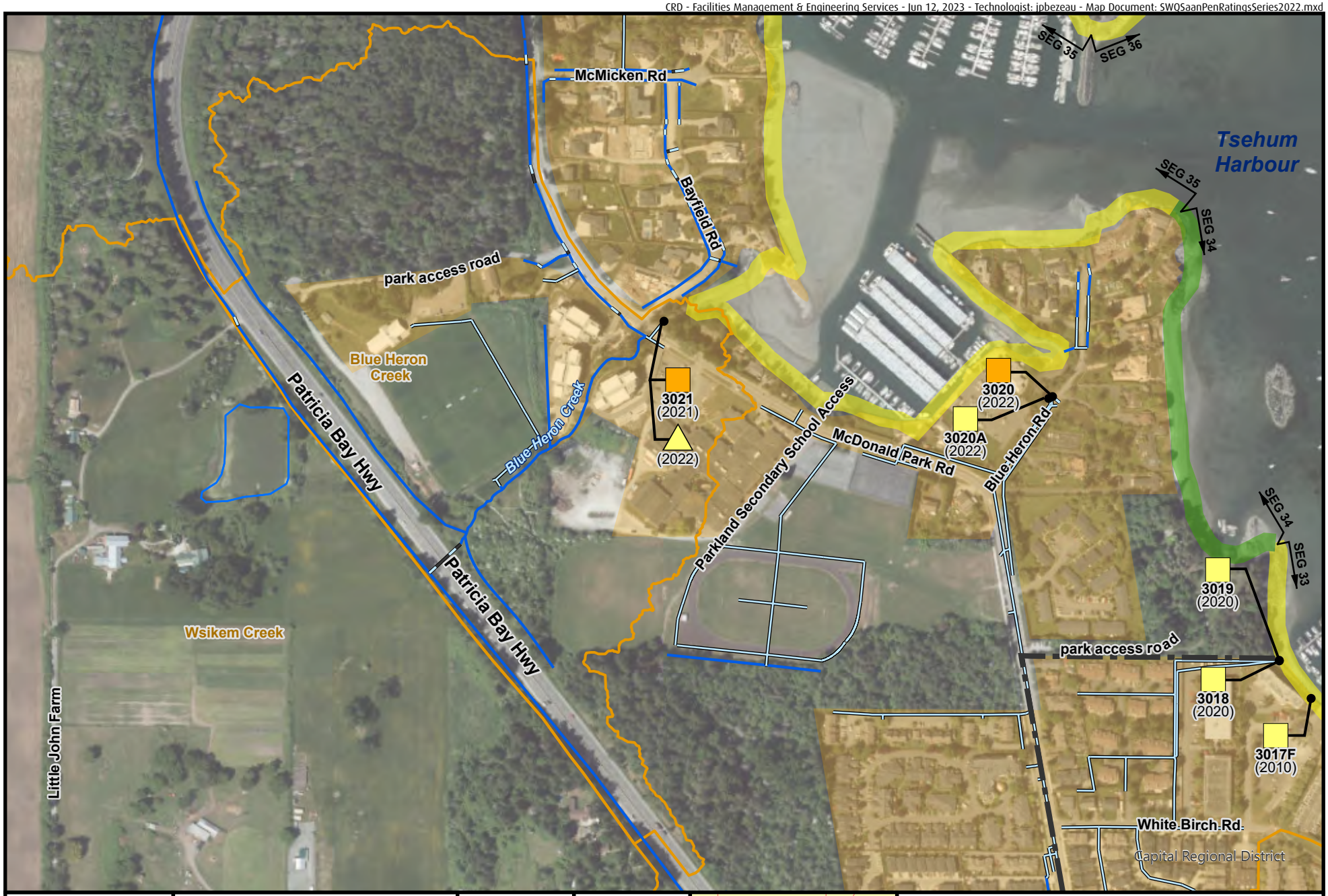


Figure 14

Saanich Peninsula 2022 Stormwater Discharge Location and Level of Concern



Making a difference...together

0 25 50 100 150 Metres

Projection: UTM ZONE 10N NAD 83

N W E S

For Key Index and Legend See Figure 1

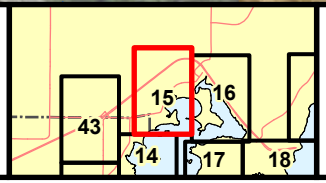


Figure 15

Saanich Peninsula 2022
Stormwater Discharge Location
and Level of Concern

Making a difference...together

Metres

0 25 50 100 150

Projection: UTM ZONE 10N NAD 83

N W E S

For Key Index and Legend See Figure 1

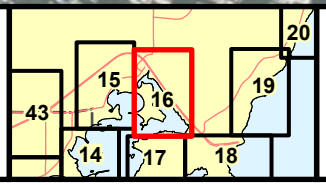


Figure 16

Saanich Peninsula 2022 Stormwater Discharge Location and Level of Concern

Making a difference...together

Metres

0 25 50 100 150

Projection: UTM ZONE 10N NAD 83

N W E S

For Key Index and Legend See Figure 1

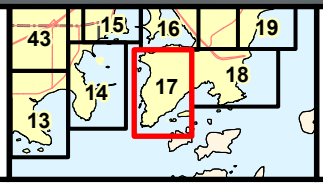


Figure 17

Saanich Peninsula 2022
Stormwater Discharge Location
and Level of Concern

Making a difference...together

0 25 50 100 150 Metres

Projection: UTM ZONE 10N NAD 83

W S N E

For Key Index and Legend See Figure 1

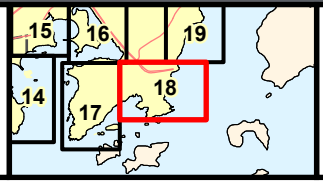
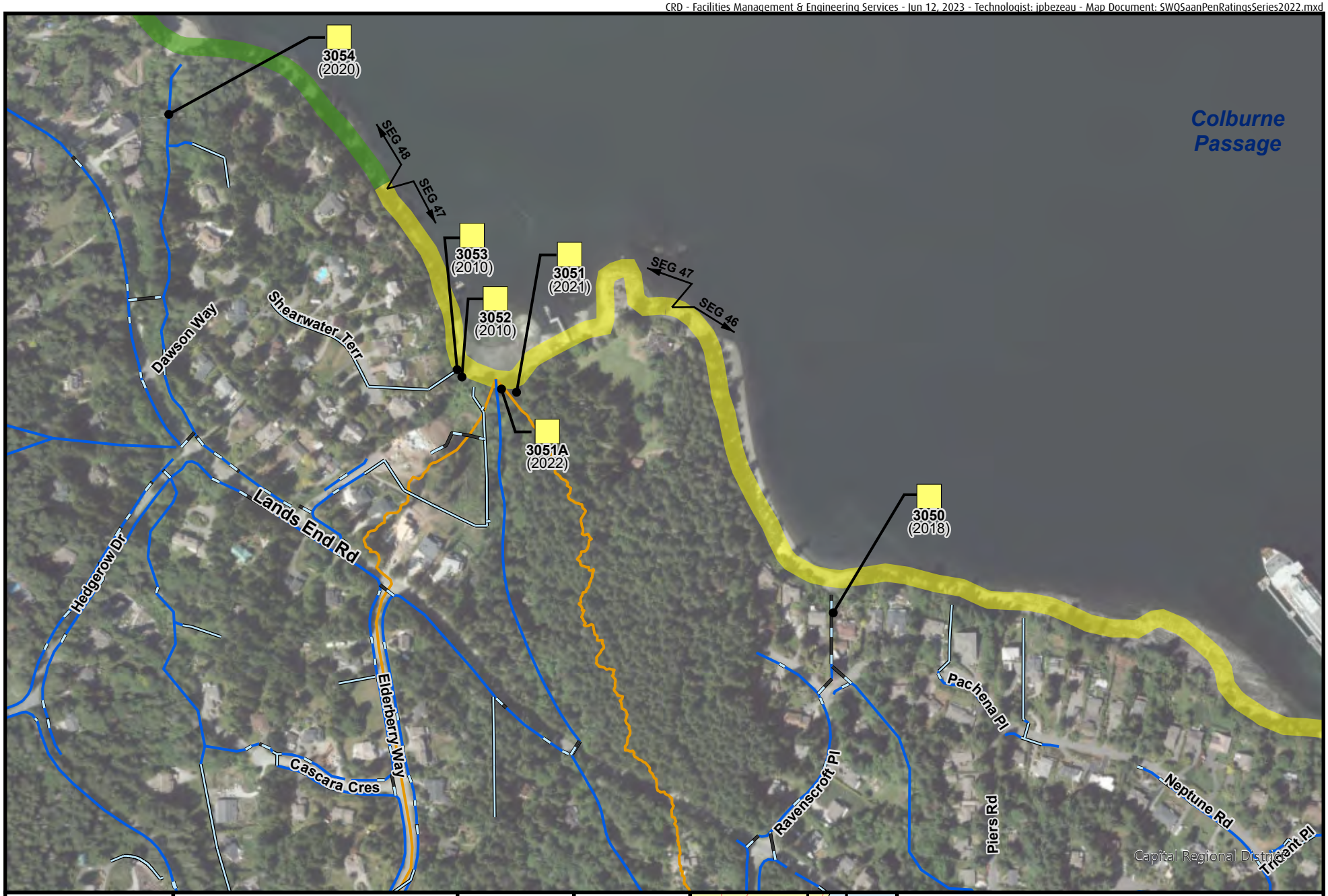


Figure 18

Saanich Peninsula 2022
Stormwater Discharge Location
and Level of Concern



Making a difference...together

0 25 50 100 150 Metres

Projection: UTM ZONE 10N NAD 83

N W E S

For Key Index and Legend See Figure 1

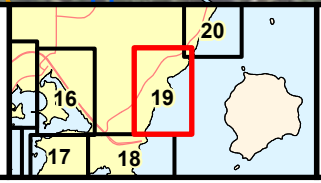
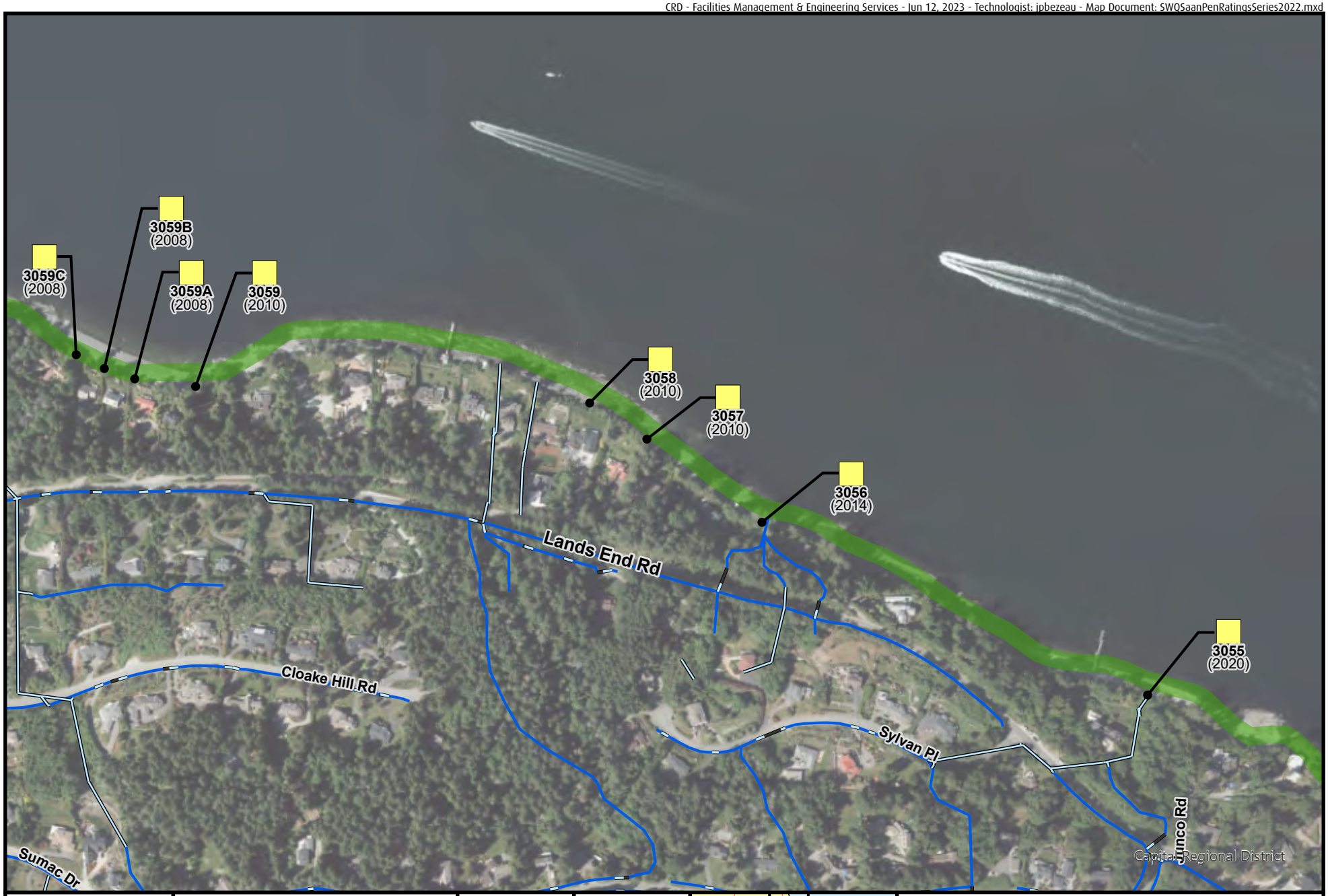


Figure 19

Saanich Peninsula 2022 Stormwater Discharge Location and Level of Concern



Making a difference...together

0 25 50 100 150 Metres

Projection: UTM ZONE 10N NAD 83

N W E S

For Key Index and Legend See Figure 1

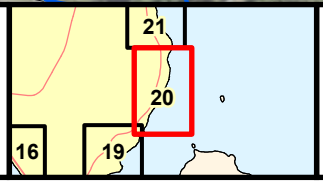
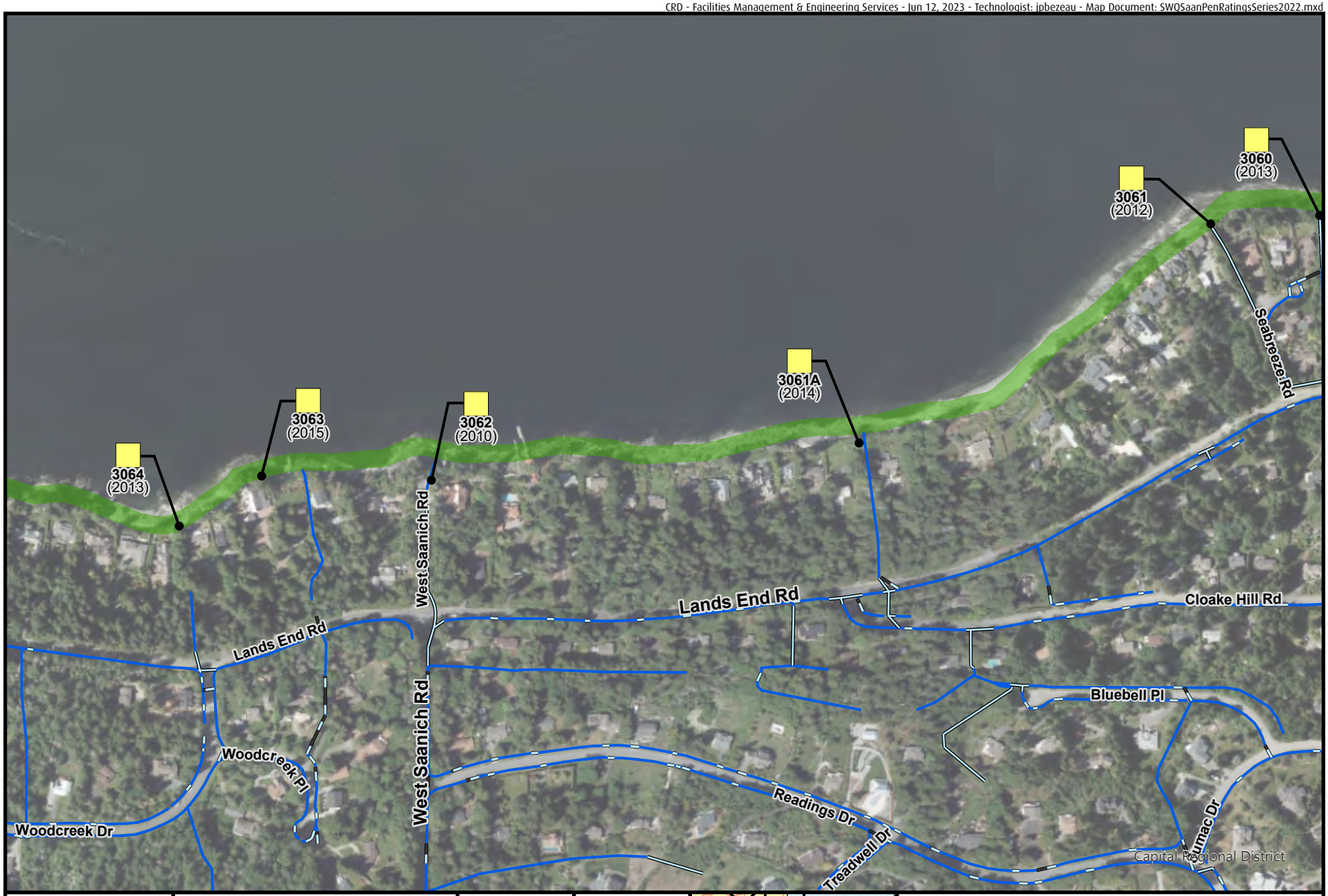


Figure 20

Saanich Peninsula 2022 Stormwater Discharge Location and Level of Concern



Making a difference...together

0 25 50 100 150 Metres

Projection: UTM ZONE 10N NAD 83

N W E S

For Key Index and Legend See Figure 1

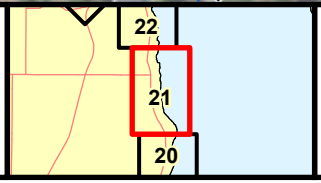
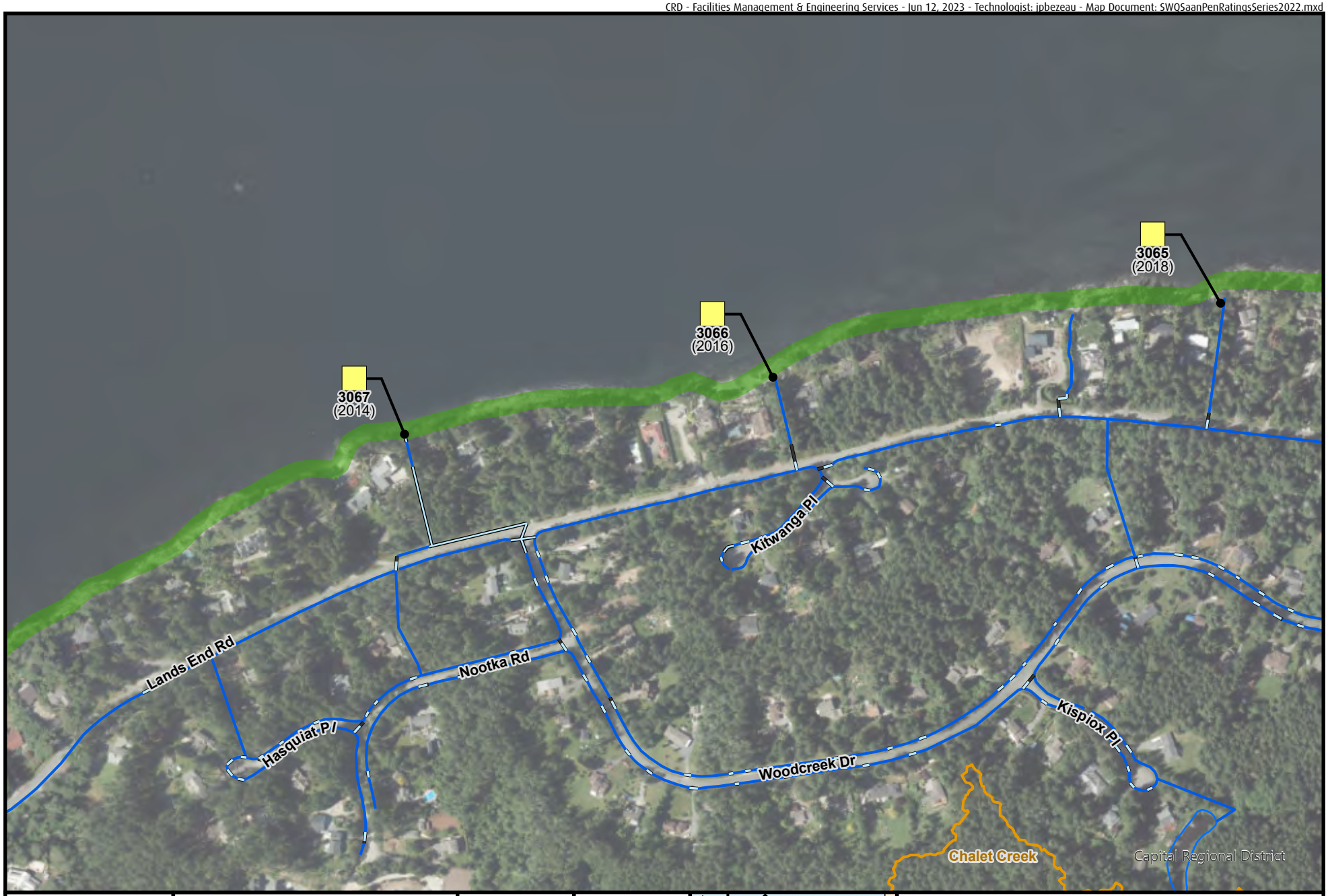


Figure 21

Saanich Peninsula 2022 Stormwater Discharge Location and Level of Concern



Making a difference...together

Metres

0 25 50 100 150

Projection: UTM ZONE 10N NAD 83

N W E S

For Key Index and Legend See Figure 1

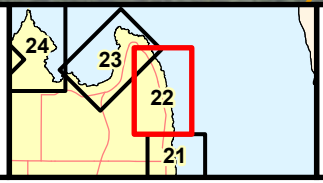


Figure 22

Saanich Peninsula 2022 Stormwater Discharge Location and Level of Concern

Making a difference...together

0 25 50 100 150 Metres

Projection: UTM ZONE 10N NAD 83

For Key Index and Legend See Figure 1

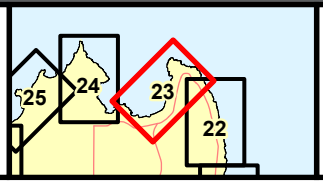
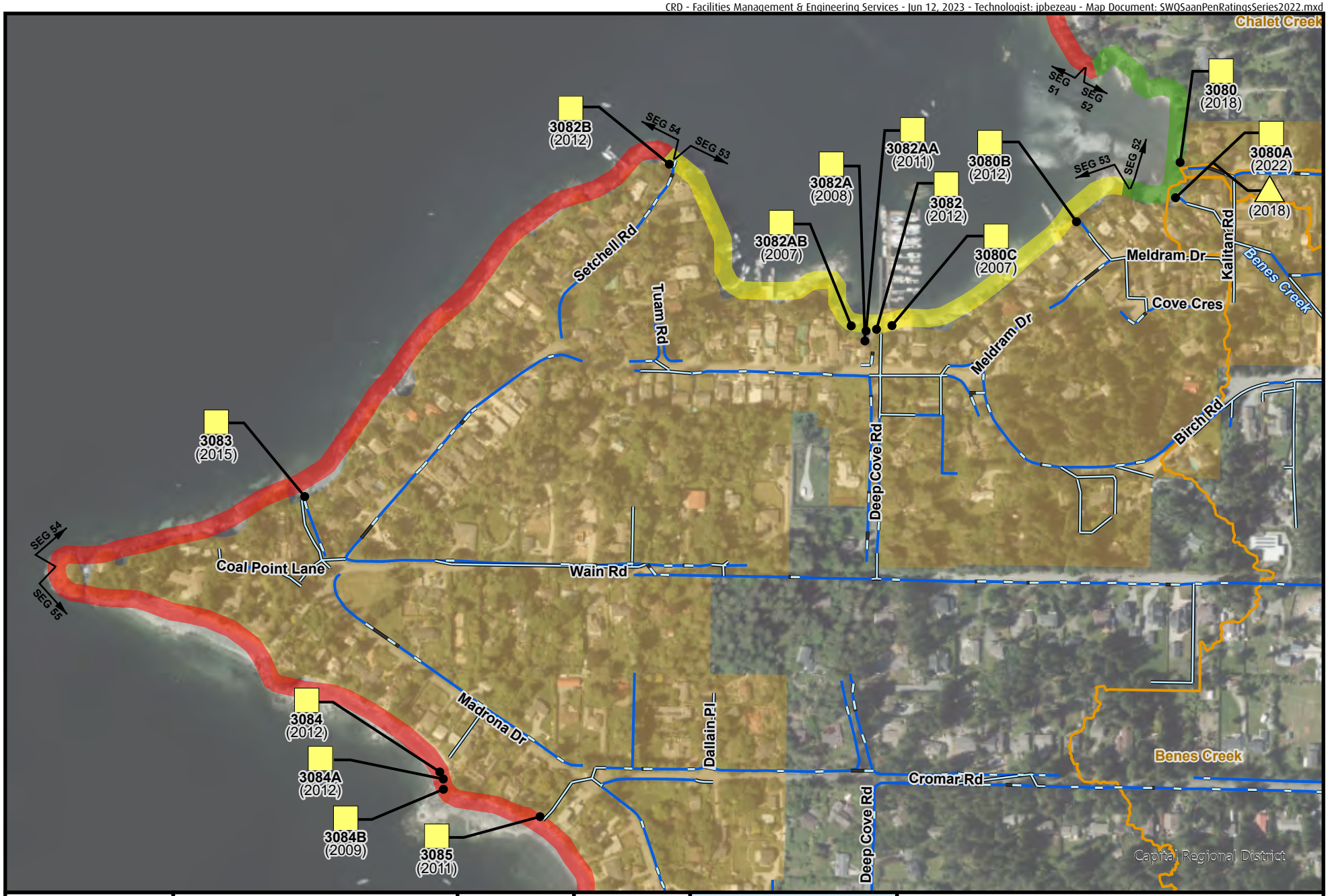


Figure 23
Saanich Peninsula 2022 Stormwater Discharge Location and Level of Concern



Making a difference...together

0 25 50 100 150 Metres

Projection: UTM ZONE 10N NAD 83

N W E S

For Key Index and Legend See Figure 1

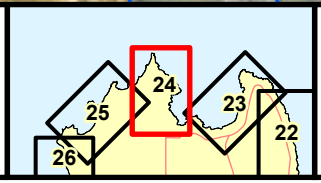


Figure 24
Saanich Peninsula 2022 Stormwater Discharge Location and Level of Concern

Making a difference...together

Metres

0 25 50 100 150

Projection: UTM ZONE 10N NAD 83

N E S W

For Key Index and Legend See Figure 1

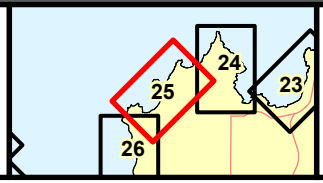


Figure 25

Saanich Peninsula 2022 Stormwater Discharge Location and Level of Concern

Making a difference...together

0 25 50 100 150 Metres

Projection: UTM ZONE 10N NAD 83

N W E S

For Key Index and Legend See Figure 1

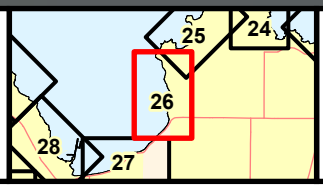
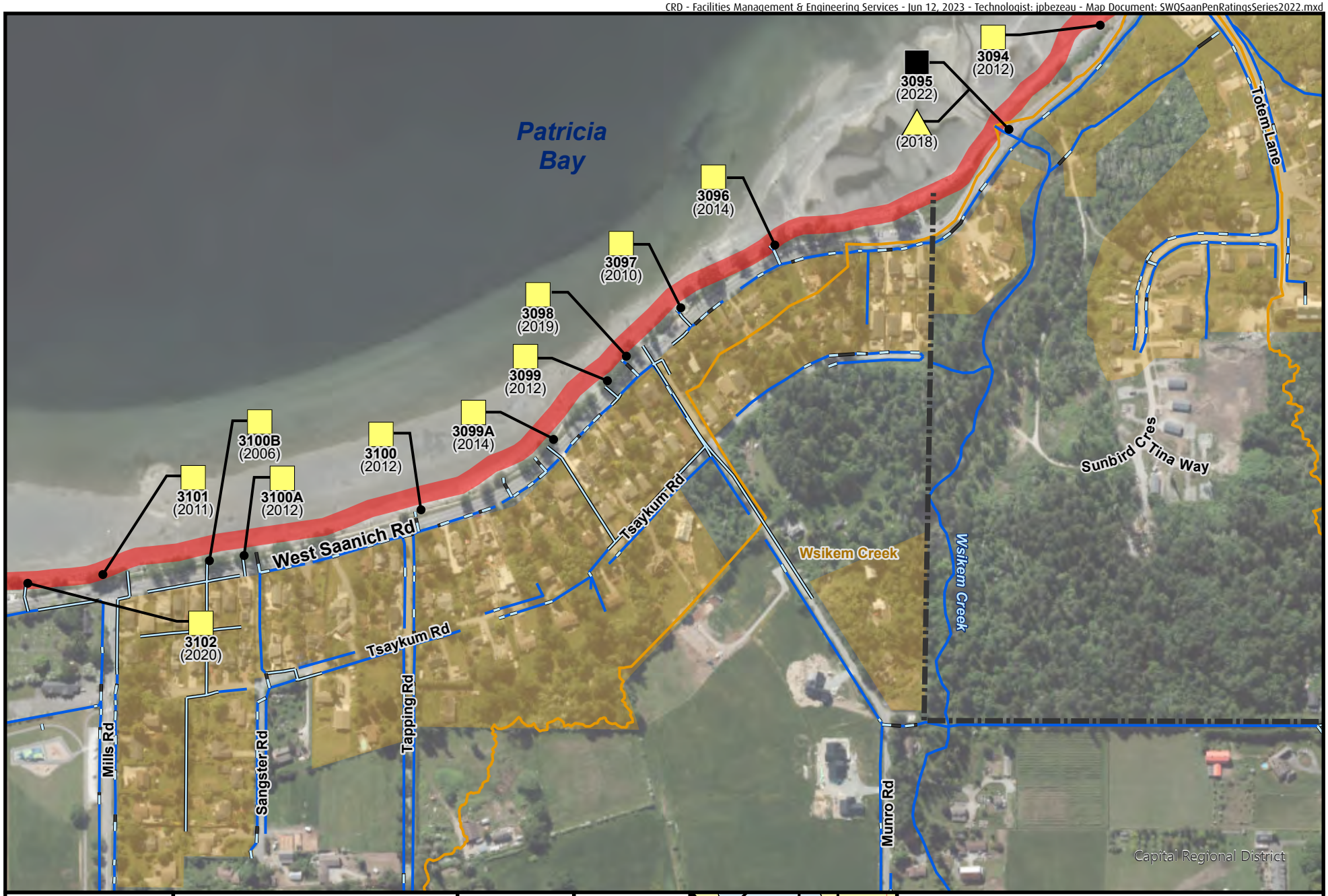


Figure 26

Saanich Peninsula 2022
Stormwater Discharge Location
and Level of Concern



Making a difference...together

Metres
0 25 50 100 150
Projection: UTM ZONE 10N NAD 83

W S E N

For Key Index and Legend See Figure 1

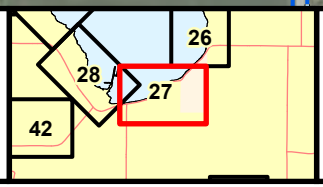


Figure 27
Saanich Peninsula 2022 Stormwater Discharge Location and Level of Concern

Making a difference...together

Metres

0 25 50 100 150

Projection: UTM ZONE 10N NAD 83

For Key Index and Legend See Figure 1

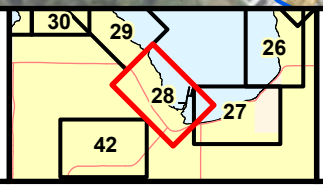


Figure 28

Saanich Peninsula 2022
Stormwater Discharge Location
and Level of Concern

Making a difference...together

Metres
0 25 50 100 150
Projection: UTM ZONE 10N NAD 83

For Key Index and Legend See Figure 1

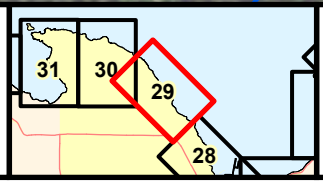


Figure 29
Saanich Peninsula 2022 Stormwater Discharge Location and Level of Concern

Making a difference...together

0 25 50 100 150 Metres

Projection: UTM ZONE 10N NAD 83

N W E S

For Key Index and Legend See Figure 1

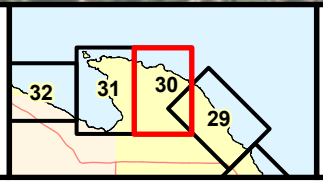
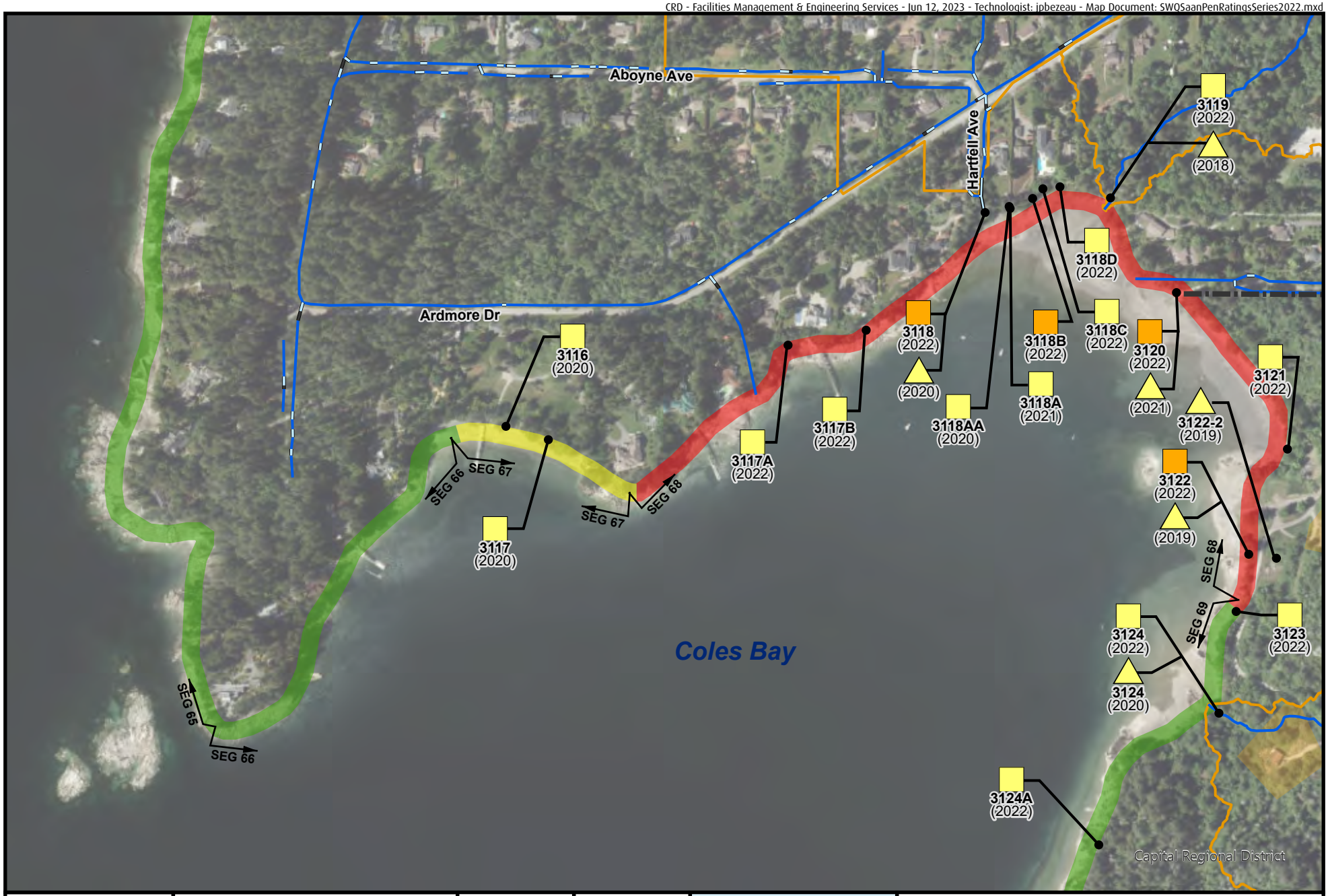


Figure 30

Saanich Peninsula 2022 Stormwater Discharge Location and Level of Concern



Making a difference...together

Metres
0 25 50 100 150
Projection: UTM ZONE 10N NAD 83

N
W E
S

For Key Index and Legend See Figure 1

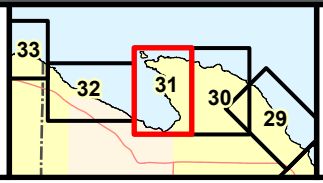


Figure 31
Saanich Peninsula 2022 Stormwater Discharge Location and Level of Concern

Making a difference...together

0 25 50 100 150 Metres

Projection: UTM ZONE 10N NAD 83

W S E N

For Key Index and Legend See Figure 1

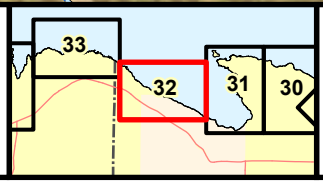
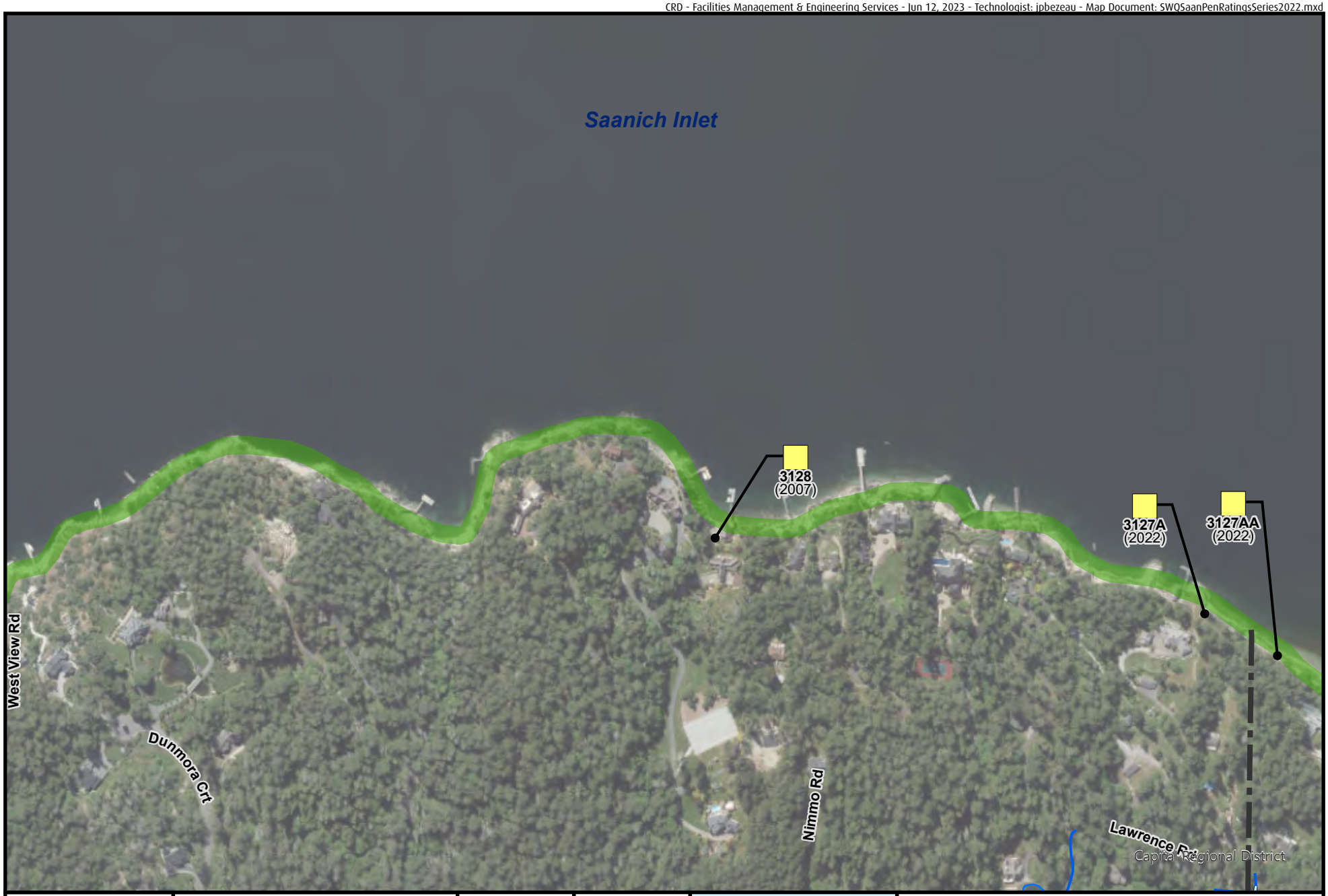


Figure 32

Saanich Peninsula 2022
Stormwater Discharge Location
and Level of Concern



Making a difference...together

0 25 50 100 150 Metres

Projection: UTM ZONE 10N NAD 83

For Key Index and Legend See Figure 1

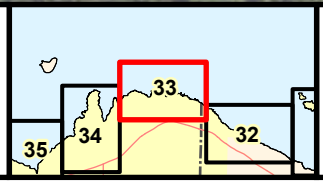


Figure 33

Saanich Peninsula 2022
Stormwater Discharge Location
and Level of Concern

Making a difference...together

0 25 50 100 150 Metres

Projection: UTM ZONE 10N NAD 83

N W E S

For Key Index and Legend See Figure 1

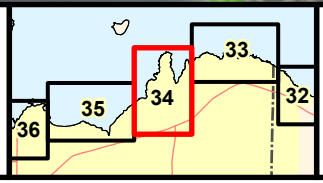
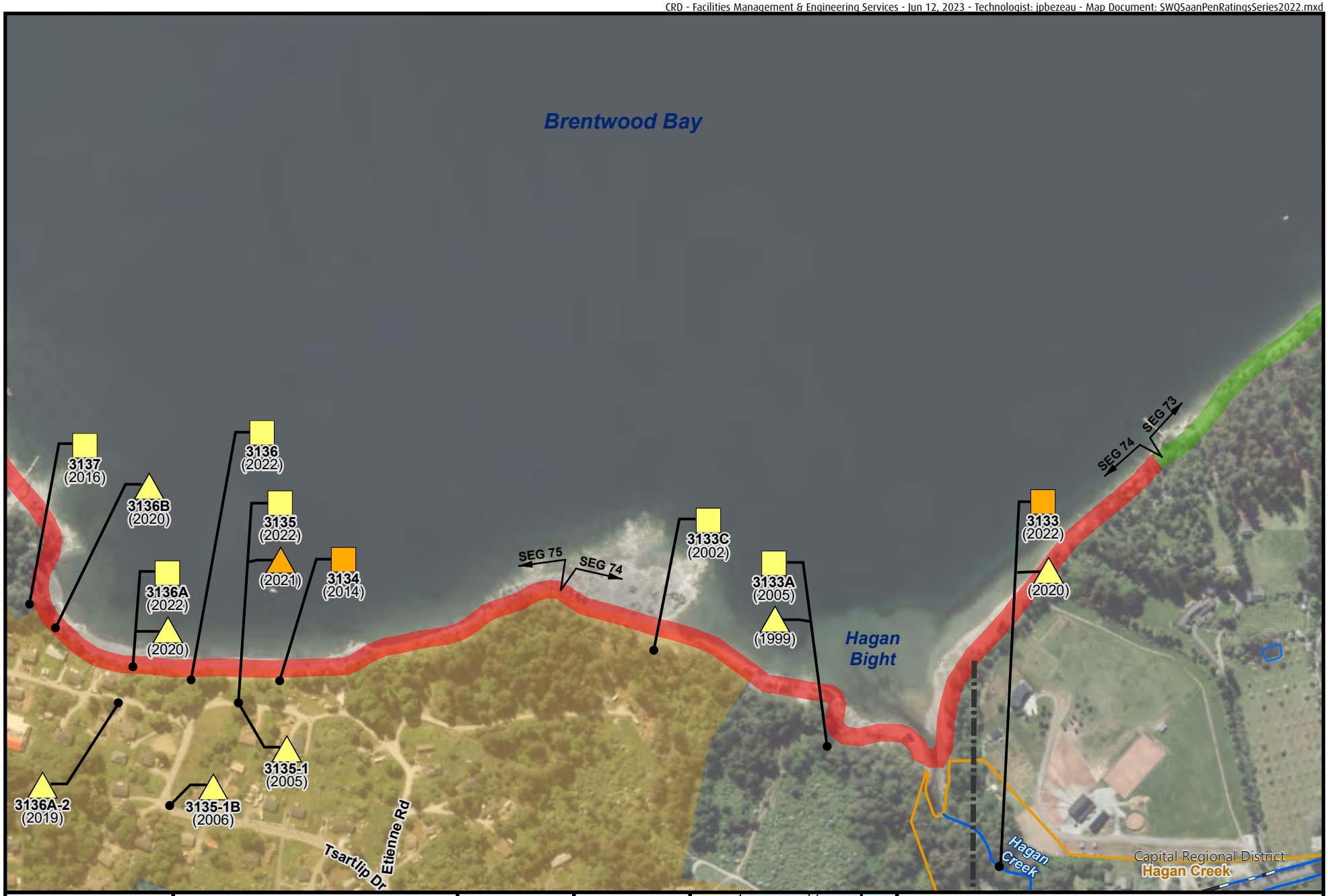


Figure 34
Saanich Peninsula 2022 Stormwater Discharge Location and Level of Concern



Making a difference...together

Metres
0 25 50 100 150
Projection: UTM ZONE 10N NAD 83

W S E N

For Key Index and Legend See Figure 1

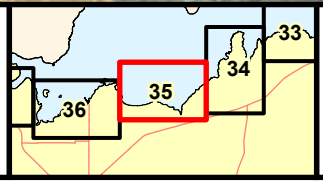
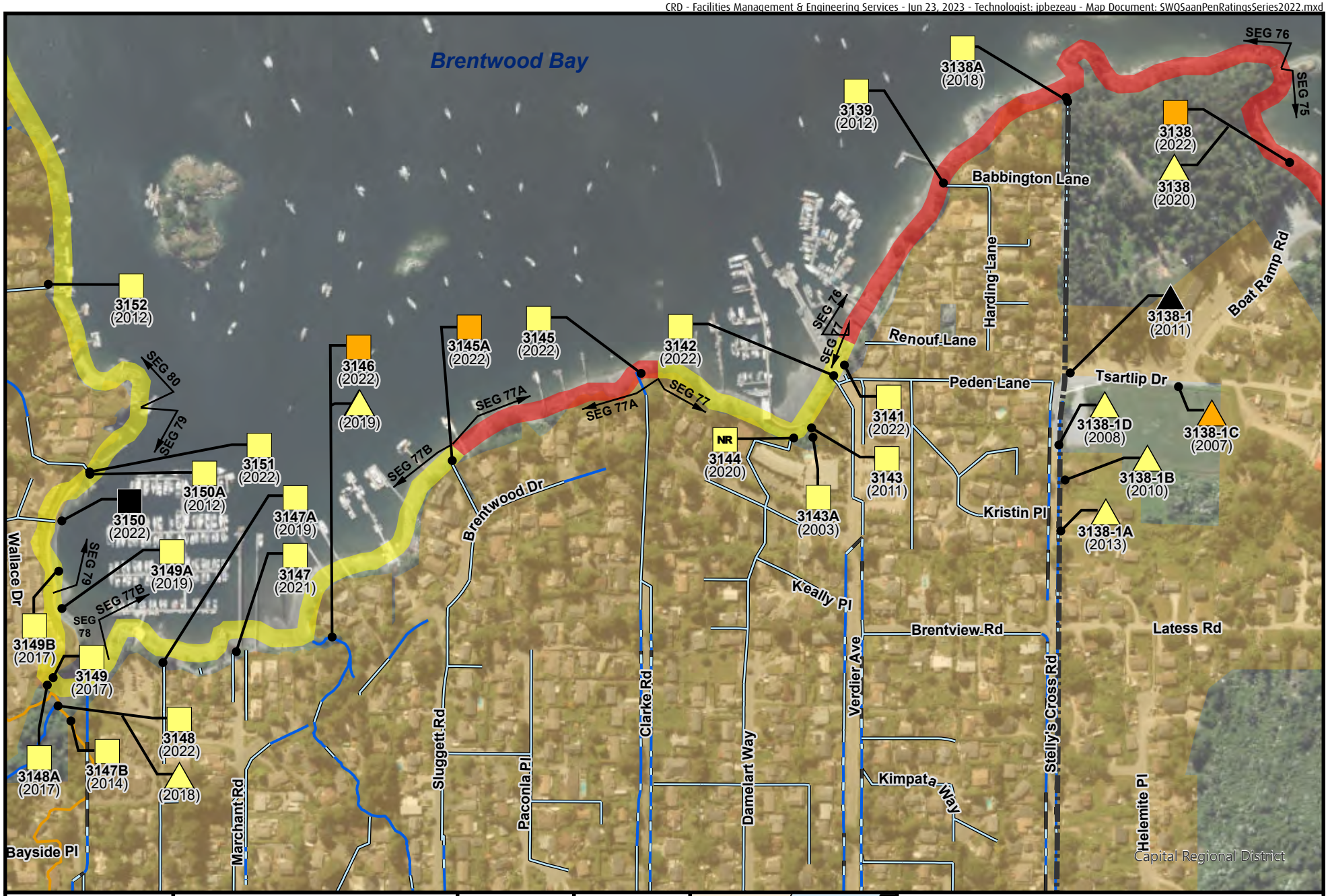


Figure 35
Saanich Peninsula 2022 Stormwater Discharge Location and Level of Concern



Making a difference...together

0 25 50 100 150 Metres

Projection: UTM ZONE 10N NAD 83

For Key Index and Legend See Figure 1

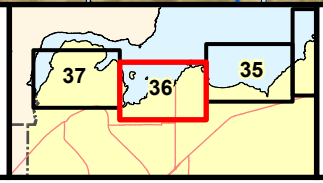


Figure 36
Saanich Peninsula 2022 Stormwater Discharge Location and Level of Concern

Making a difference...together

Metres
0 25 50 100 150
Projection: UTM ZONE 10N NAD 83

W S E N

For Key Index and Legend See Figure 1

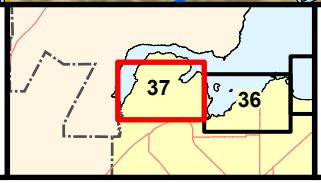
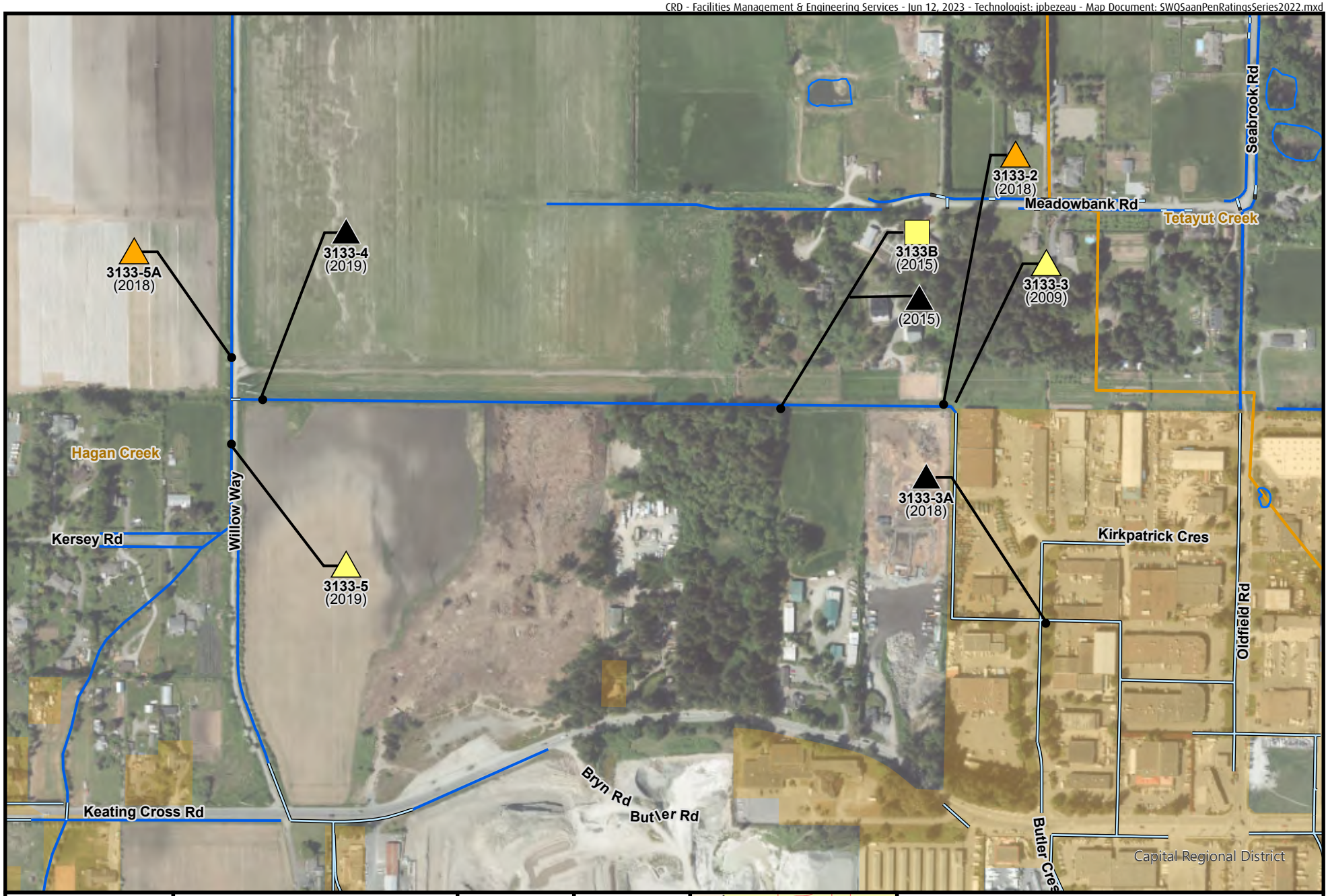


Figure 37
Saanich Peninsula 2022 Stormwater Discharge Location and Level of Concern



Making a difference...together

Metres
0 25 50 100 150
Projection: UTM ZONE 10N NAD 83

N
W E
S

For Key Index and Legend See Figure 1

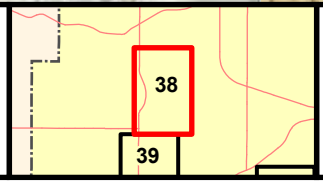


Figure 38
Saanich Peninsula 2022 Stormwater Discharge Location and Level of Concern

Making a difference...together

Metres

0 25 50 100 150

Projection: UTM ZONE 10N NAD 83

N W E S

For Key Index and Legend See Figure 1

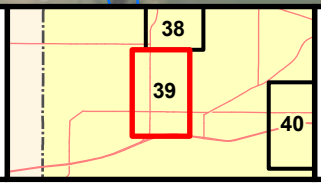


Figure 39

Saanich Peninsula 2022
Stormwater Discharge Location
and Level of Concern

Making a difference...together

Metres
0 25 50 100 150
Projection: UTM ZONE 10N NAD 83

N
W E
S

For Key Index and Legend See Figure 1

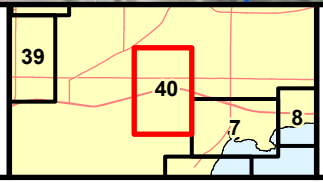
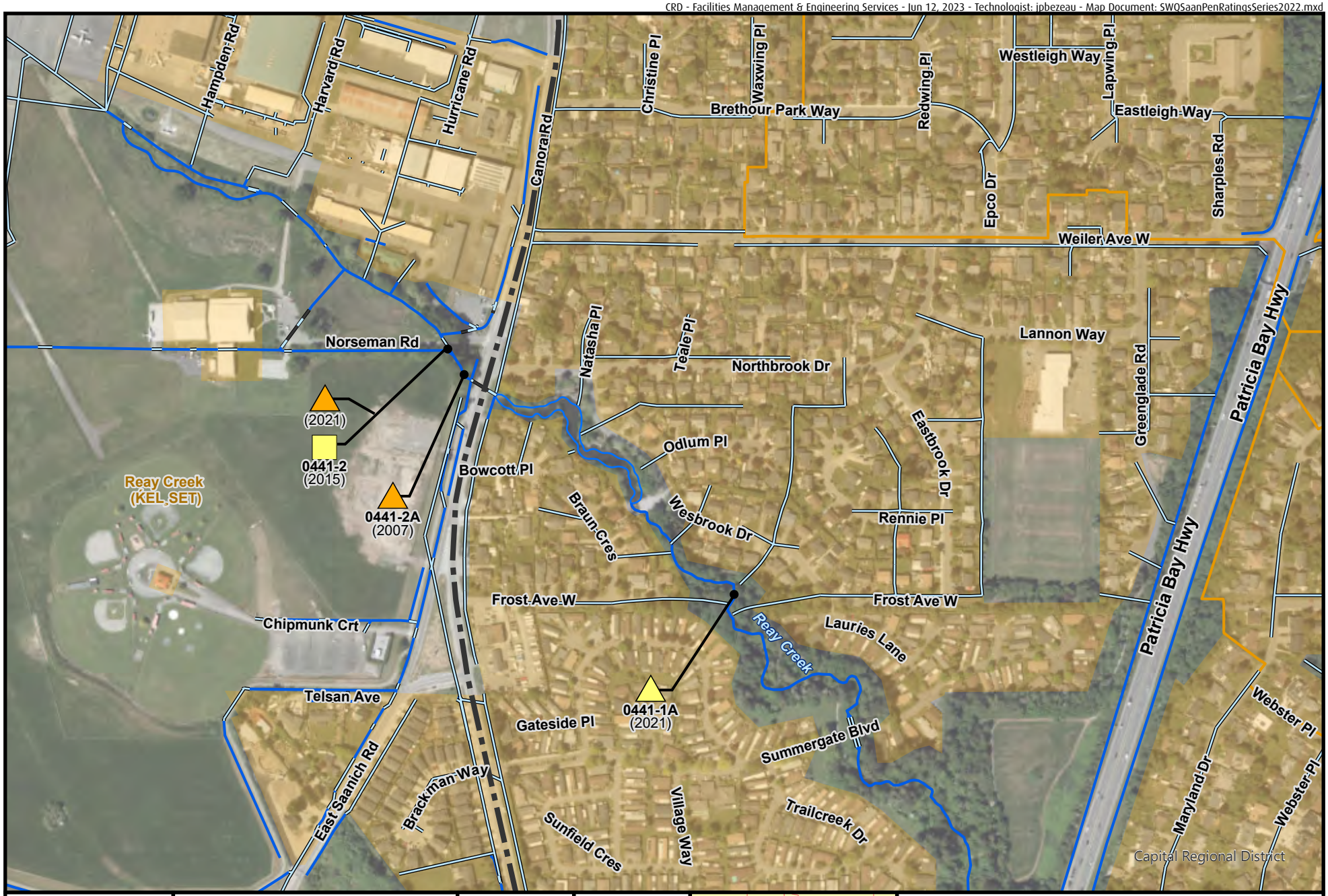


Figure 40
Saanich Peninsula 2022 Stormwater Discharge Location and Level of Concern



Making a difference...together

Metres

0 25 50 100 150

Projection: UTM ZONE 10N NAD 83

N W E S

For Key Index and Legend See Figure 1

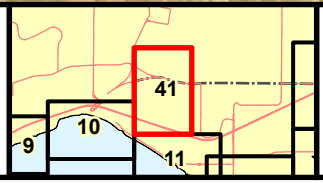


Figure 41

Saanich Peninsula 2022
Stormwater Discharge Location
and Level of Concern

Making a difference...together

0 25 50 100 150 Metres

Projection: UTM ZONE 10N NAD 83

W S E N

For Key Index and Legend See Figure 1

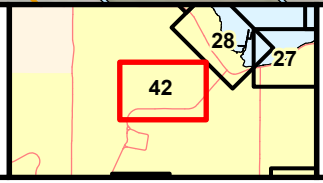
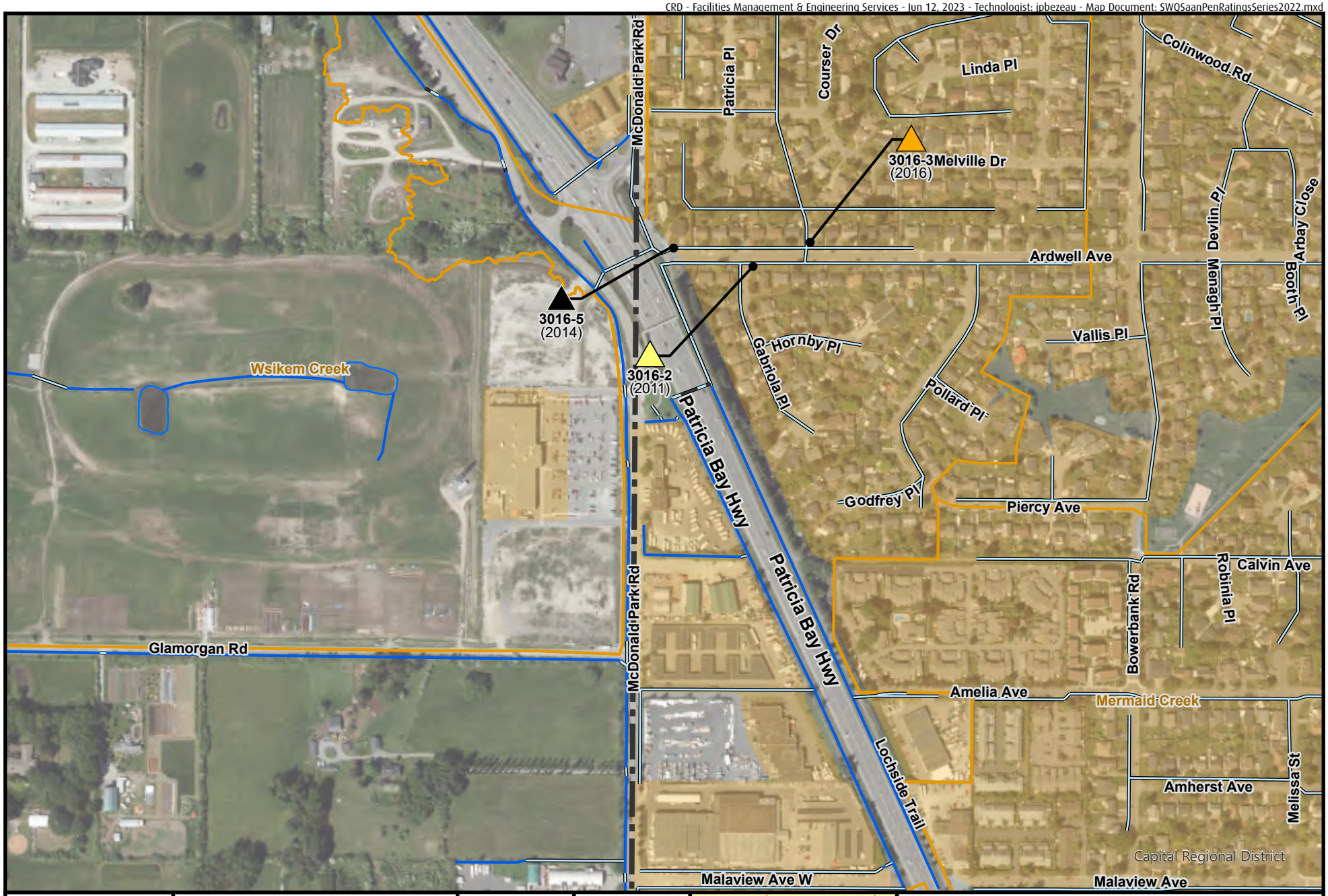


Figure 42

Saanich Peninsula 2022
Stormwater Discharge Location
and Level of Concern



Making a difference...together

Metres

0 25 50 100 150

Projection: UTM ZONE 10N NAD 83

N W E S

For Key Index and Legend See Figure 1

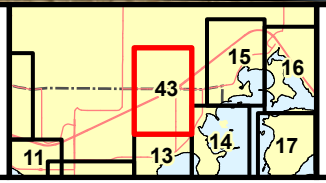


Figure 43

Saanich Peninsula 2022
Stormwater Discharge Location
and Level of Concern

APPENDIX B

BACTERIAL AND FLOW DATA (2020-2022)

Bacterial and Flow Data (2020-2022)

Station ID	Station Name	Sample Date	E. Coli CFU/100 mL	Flow Rate L/min	Sample Comment
SW0405	N of Island View beach parking lot	2020-02-13	2	> 40	no odour, amber, pooled water with some flow
		2020-07-10	210	65	no odour, rusty
		2021-01-26	7	< 0.01	no odour, tea colour, unknown flow, light rain previous
		2021-07-19	1700		no odour, amber, no rain, flow not estimated
		2022-03-22	10	> 500	organic odour, tea colour, light rain
		2022-07-07	270		no odour, iron oxide bacteria, pooled, no rain prior
SW0411	Near SA-SU Rd. and Mt. Newton X Rd.	2020-01-23	1000	7	no odour, clear
		2020-09-29		< 0.01	flow too low to sample
		2021-01-26	20	2	no odour, clear, light rain previous
		2021-07-19		0	dry, no rain
		2022-03-11	< 1	8	no odour, clear, no rain
		2022-07-27		0	dry, not sampled, no rain prior
SW0411A	Across from 2721 Mt. Newton X Rd.	2020-01-23	120	24	no odour, clear
		2020-05-28	10	4	no odour, murky brown
		2020-09-29	53	1	no odour, clear
		2021-04-29	3	7	no odour, clear, light rain previous
		2021-07-19		0	dry, not sampled, no rain
		2022-03-11	< 1	11	no odour, clear, no rain
		2022-07-27	90	1	no odour, turbid brown, no rain prior
SW0412	Tetayut Creek, d/s of Mure Brook	2020-03-23	100	> 2000	no odour, clear
		2020-09-29	49	1000	no odour, clear
		2021-01-26	100000	> 1000	no odour, clear, light rain previous
		2021-02-01	400	> 2000	no odour, brown, heavy rain
		2021-07-16	890	> 500	no odour, clear, no rain
		2021-08-10	96	> 250	no odour, clear, no recent rain
		2021-08-17	210	> 250	no odour, clear, no recent rain
		2021-08-24	190	> 300	no odour, clear, no recent rain
		2021-08-31	550	> 300	no odour, clear, no recent rain
		2021-09-07	64	> 300	no odour, clear, no recent rain
		2021-10-12	170	> 600	no odour, clear, rain within past two days
		2021-10-20	270	> 2000	no odour, turbid, rain during sampling and previously
		2021-10-26	350	> 3200	no odour, turbid, rain during sampling and previously
		2021-11-03	150	> 3500	no odour, turbid brown, rain within previous two days
		2021-11-09	900	> 3600	no odour, turbid brown, heavy rain previous
		2022-03-11	23	> 2000	no odour, clear, no rain

Bacterial and Flow Data (2020-2022)

Station ID	Station Name	Sample Date	E. Coli CFU/100 mL	Flow Rate L/min	Sample Comment
		2022-07-27	220	> 250	no odour, clear, no rain prior
SW0412-2B	Tetayut Creek, Cooperidge Park	2021-07-16	80	30	no odour, clear, no rain
		2021-08-10		< 0.01	wet only, no previous rain
		2021-08-17		< 0.01	wet only, no recent rain
		2021-08-24		< 0.01	wet only, no recent rain
		2021-08-31		< 0.01	wet only, no recent rain
		2021-09-07		< 0.01	wet only, no recent rain
		2021-10-12	33	40	no odour, clear, rain within past two days
		2021-10-20	1600	> 250	no odour, turbid, rain during sampling and previously
		2021-10-26	270	> 300	no odour, turbid, rain during sampling and previously
		2021-11-03	150	> 450	no odour, turbid brown, rain within the previous two days
		2021-11-09	25	> 450	no odour, turbid brown, heavy rain previous
SW0412-2C	Tetayut Creek, d/s of East Saanich Rd. near fish ladder.	2021-08-17	72	200	no odour, clear, no recent rain
		2021-08-24	40	200	no odour, clear, no recent rain
		2021-08-31	130	250	no odour, clear, no recent rain
		2021-09-07	22	220	no odour, clear, no recent rain
		2021-10-12	20	> 350	no odour, clear, rain within past two days
		2021-10-20	72	> 1000	no odour, turbid, rain during sampling and previous
		2021-10-26	320	> 1200	no odour, turbid, rain during sampling and previously
		2021-11-03	90	> 1500	no odour, turbid brown, rain within the previous two days
		2021-11-09	38	> 2000	no odour, turbid brown, heavy rain previous
SW0412-3	Tetayut Creek, Slough in park SW of Keating X Rd. & Central Saanich Rd.	2021-07-16	12	18	no odour, clear, no rain
SW0416	Ferguson Rd. beach access	2020-01-23	140	> 200	slight sewer odour, murky
		2020-07-10	11	16	no odour, clear
		2021-01-19	< 1	10	no odour, clear, no rain
		2021-07-09	19	11	no odour, clear, otter in pipe, no rain
SW0420	Arthur Rd. beach access, in rock wall	2022-03-11	< 1	20	no odour, clear, no rain
		2022-07-07	70	20	no odour, clear, no rain prior
SW0422A	Newman Rd., 3 m north of boat house	2022-03-11		0	dry, not sampled, no rain
		2022-07-07		0	dry no sample, no rain prior
SW0424	Between 8475 and 8443 Lochside Dr.	2020-01-23	28	> 200	no odour, amber
		2020-01-23	70	> 200	no odour, amber

Bacterial and Flow Data (2020-2022)

Station ID	Station Name	Sample Date	E. Coli CFU/100 mL	Flow Rate L/min	Sample Comment
		2020-07-10	1	< 1	no odour, slight amber
		2021-01-19	4	40	no odour, clear, no rain
		2021-07-09		0	dry, no rain
		2022-01-17	7	75	no odour, clear, rain previous
		2022-01-17	8	75	no odour, clear, rain previous
		2022-01-17	4	75	no odour, clear, rain previous
		2022-01-17	7	75	no odour, clear, rain previous
		2022-01-17	4	75	no odour, clear, rain previous
SW0426	Wardle Rd. beach access	2020-01-23	60	> 200	no odour, amber
		2020-07-10	500	6	no odour, clear
		2021-01-19	360	60	no odour, clear, no rain
		2021-07-09	10	5	no odour, clear, no rain
		2022-03-11	23	12	no odour, clear, no rain
		2022-07-07	470	6	no odour, clear, no rain prior
SW0428	3 m N of beach access steps at Amity Dr.	2020-01-23	220	> 200	no odour, amber
		2020-07-10	190	8	no odour, slight amber
		2021-01-19	1	100	no odour, clear, no rain
		2021-07-09	70	5	no odour, clear, no rain
SW0430	Ditch at south end of Bazan Bay Park	2020-01-23	80	> 300	no odour, clear
		2020-07-10	17	18	no odour, slight amber
		2021-01-19	1	> 250	no odour, clear, no rain
		2021-07-09	140	13	no odour, clear, no rain
SW0430A	20 m N of public beach path from Cy Hampton Park, cement pipe	2020-01-23	40	12	no odour, clear
		2020-07-10	8	4	no odour, clear
		2021-01-19	1	5	no odour, clear, no rain
		2021-07-09	8	4	no odour, clear, no rain
SW0430B	40 m N of public beach path from Cy Hampton Park, black PVC pipe	2020-07-10	250	6	no odour, clear
		2021-01-19	< 1	6	no odour, clear, no rain
		2021-07-09	120	1	no odour, dirty from sample agitation, no rain
		2022-03-11	< 1	5	no odour, slightly amber, no rain
		2022-07-07	350	3	no odour, slight amber, no rain prior
SW0431	Bazan Bay Park 20 m north of dirt path	2020-01-23	70	> 300	no odour, clear
		2020-07-10	1000	42	no odour, clear

Bacterial and Flow Data (2020-2022)

Station ID	Station Name	Sample Date	E. Coli CFU/100 mL	Flow Rate L/min	Sample Comment
		2021-01-19	3	> 200	no odour, clear, no rain
		2021-07-09	180	10	no odour, clear, no rain
SW0432	Foot of Bazan Bay Rd.	2020-01-23	29	> 600	no odour, clear
		2020-07-10	160	60	no odour, clear
		2021-01-19	200	> 250	no odour, clear, no rain
		2021-07-09	170	32	no odour, clear, no rain
		2022-03-11	1	45	no odour, clear, no rain
		2022-07-07	190	48	no odour, clear, no rain prior
SW0435	NE property line of 9165 Lochside Dr.	2020-02-13	13	100	no odour, clear, otter influence
		2020-07-10	50	65	no odour, clear
		2021-01-19	29	> 250	no odour, clear, no rain
		2021-07-19	120	60	no odour, clear, no rain
SW0441	Reay Creek, beach access; 9265 Lochside	2020-02-13	77	> 800	no odour, clear
		2020-07-10	130	80	no odour, clear
		2020-12-07			no odour, clear, back flooded, no flow estimated
		2020-12-16	52	> 300	no odour, slight amber
		2021-02-02	450	> 2000	no odour, brown, heavy rain
		2021-04-29	7	> 500	no odour, clear, light rain previous
		2021-07-19	600	85	no odour, clear, no rain
		2022-03-11	6	> 800	no odour, clear, no rain
		2022-05-18	86	> 500	no odour, slight amber, rain within two days
		2022-07-07	300	80	no odour, clear, no rain prior
		2022-08-12	5500	> 250	no odour, clear, no rain prior
		2022-08-18	800	> 200	no odour, clear, no rain prior
		2022-08-25	690	> 200	no odour, clear, no rain prior
		2022-09-01	240	> 200	no odour, clear, no rain prior
		2022-09-08	140	> 250	no odour, clear, no rain prior
		2022-10-25	380	> 300	no odour, clear, raining, potential first flush
		2022-10-25	470	> 300	no odour, clear, raining, potential first flush
		2022-11-03	96	800	no odour, clear, rain prior
		2022-11-08	130	> 800	no odour, clear, rain prior
		2022-11-17	78	> 600	no odour, clear, rain prior
		2022-11-24	330		no odour, clear, no recent rain
SW0441-1	125 m d/s of Frost Rd.	2020-12-16	55	300	no odour, slight amber

Bacterial and Flow Data (2020-2022)

Station ID	Station Name	Sample Date	E. Coli CFU/100 mL	Flow Rate L/min	Sample Comment
SW0441-1A	Reay Creek, Frost Ave., 20 m d/s of bridge	2021-04-29	30	> 200	no odour, clear, light rain previous
		2022-08-12	7	120	no odour, clear, no rain prior
		2022-08-18	14	120	no odour, clear, no rain prior
		2022-08-25	30	120	no odour, clear, no rain prior
		2022-09-01	53	120	no odour, clear, no rain prior
		2022-09-08	28	120	no odour, clear, no rain prior
		2022-10-25	200	> 150	no odour, clear, raining, potential first flush
		2022-11-03	170	400	no odour, clear, rain prior
		2022-11-08	120	> 400	no odour, clear, rain prior
		2022-11-17	42	> 300	no odour, clear, rain prior
		2022-11-24	93		no odour, clear, no recent rain
SW0441-2	Reay Creek, Canora Rd. @ Norseman Rd.	2021-04-29	4	> 120	no odour, clear, light rain previous
SW0442	9334 Lochside Dr. beach access	2020-02-13	20	2	no odour, clear
		2020-07-13		< 0.01	flow too low to sample
SW0443	9348 Lochside Dr.	2020-02-13	40	8	no odour, murky/sudsy, sampled during surge flow
		2020-07-13		0	dry, not sampled
SW0444	Across from 9360 Lochside Dr.	2021-02-01	490	10	earthy odour, brown, dead fish in pipe, heavy rain
		2021-07-12		0	dry, not sampled, no rain
		2022-03-10	< 1	< 1	no odour, clear, no rain
		2022-07-07	79	5	no odour, clear, no rain prior
SW0444A	12 m south of steps across from 9388 Lochside Dr.	2021-02-01	400	7	earthy odour, brown, heavy rain
		2021-07-12		0	dry, not sampled, no rain
		2022-03-10		< 0.01	flow too low to sample
		2022-07-07		0	dry no sample, no rain prior
SW0445	20 m north of steps across from 9388 Lochside Dr.	2020-02-13	< 1	9	no odour, clear
		2020-07-13	61	1	no odour, clear
		2022-12-08	170	30	no odour, murky amber, rain (at times heavy)
SW0446	15 m S. of beach access; 9462 Lochside Dr.	2020-02-13	< 1	5	no odour, clear
		2020-03-02	3	3	no odour, slight amber
		2020-07-13		0	dry, not sampled
		2021-01-26	6	3	no odour, clear, light rain previous

Bacterial and Flow Data (2020-2022)

Station ID	Station Name	Sample Date	E. Coli CFU/100 mL	Flow Rate L/min	Sample Comment
		2021-07-12		0	dry, not sampled, no rain
		2022-03-10	< 1	1	no odour, clear, no rain
		2022-07-07	320	2	no odour, clear, no rain prior
SW0447	Across from 9498 Lochside Dr.	2020-02-13	1300	9	no odour, clear
		2020-07-13	84	3	no odour, clear
		2021-01-26	250	7	no odour, clear, light rain previous
		2021-07-12	16000	7	no odour, clear, no rain
		2022-03-10	34	2	no odour, clear, no rain
SW0448	Foot of Weiller Rd., Tulista Park	2020-02-13	560	5	no odour, clear
		2020-07-13	2	1	no odour, clear
		2021-01-26	10	7	no odour, clear, light rain previous
		2021-07-12		0	dry, not sampled, no rain
		2022-03-10	2	3	no odour, slightly amber, no rain
		2022-07-07	290	7	no odour, amber, no rain prior
SW0449	Ditch, west and south side of Tulista Park	2020-02-13	53	70	no odour, murky
		2020-07-13	66	28	no odour, amber
		2021-02-01	500	> 250	no odour, murky brown, heavy rain
		2021-07-09	8000	23	no odour, clear, no rain
		2022-03-10	1	> 350	no odour, murky brown, no rain
		2022-05-18	140	90	no odour, murky, rain within two days
		2022-07-11	50	20	no odour, slight amber, no rain prior
SW0449-2D	MH153F on Fifth Street near boat launch	2020-07-13	1200		no odour, clear, pooled water
SW0449A	Manhole, corner of Oakville & Eighth St.	2020-02-13	750	60	no odour, clear
		2020-07-13	2700		no odour, clear, pooled water
		2021-02-02	1900	> 200	no odour, murky, heavy rain
		2021-07-12	27		no odour, clear, pooled, no rain
		2022-03-10	10	40	no odour, clear, no rain
		2022-05-18	600		no odour, clear, pooled, rain within two days
		2022-07-11	16		no odour, amber, pooled, no rain prior
SW0450	Below Ocean Ave. and Second St.	2020-02-13	4400	100	no odour, murky
		2020-07-13	240	12	no odour, clear
		2021-02-01	1800	> 400	no odour, murky brown, heavy rain
		2021-07-12	1600	7	no odour, clear, no rain

Bacterial and Flow Data (2020-2022)

Station ID	Station Name	Sample Date	E. Coli CFU/100 mL	Flow Rate L/min	Sample Comment
		2021-07-29	140000	10	no odour, clear, no rain
		2021-09-24	2300000	24	sewer odour from pipe, clear, no rain
		2022-03-10	860	35	no odour, slightly murky, no rain
		2022-05-18	2000	40	slight sewer odour, clear, rain within two days
		2022-06-03	2700	70	no odour, murky, rain
		2022-07-21	2300	14	sewer odour, murky, no rain prior
		2022-08-25	1300	5	no odour, slightly murky, no rain prior
SW0456	Eastview Dr., 10 m north of sea wall	2021-02-22	< 1	1	no odour, clear, rain yesterday
		2021-07-12		< 0.01	flow too low to sample, no rain
SW0458B	Seaport Pt., 10 m north of dock access	2021-03-02	< 1	1	no odour, clear, no rain
		2021-07-12	< 1	2	no odour, clear, no rain
SW0458C	West of Seaport, west end of wood posts	2021-03-02	< 1	< 1	no odour, clear, no rain
		2021-07-12		< 0.01	flow too low to sample, no rain
SW0459	Behind 9901-3rd St. parking lot, 20 m S of beach access	2020-02-13	45	7	no odour, clear
		2020-07-13	5	1	no odour, amber
		2021-01-26	6	6	no odour, clear, light rain previous
		2021-07-12	11	3	no odour, amber, no rain
		2022-03-14	90	5	no odour, clear, no rain
		2022-07-11	590	1	no odour, amber, no rain prior
SW0462	Beach access at 10003 - 3rd St.	2020-02-19		< 0.01	flow too low to sample
		2020-07-13		0	dry, not sampled
		2022-03-14	1	2	no odour, clear, no rain
		2022-07-11		0.01	flow too low to sample, no rain
SW0464	Foot of Rothesay Rd. beach access	2022-03-14	< 1	3	no odour, clear, no rain
		2022-07-11			
SW0466	Memory Lane beach access	2021-02-22	4	7	no odour, clear, rain yesterday
		2021-07-12	120	6	no odour, clear, no rain
SW0467	Beach access at Shoreacres Rd. / Memory	2022-03-14	6	2	no odour, clear, no rain
		2022-03-22	5	5	no odour, amber, light rain
		2022-07-11			
SW0472	Surfside Place beach access	2022-07-11		0	dry, not sampled
SW3001	Access at 10232 Sommerset Place	2020-02-19	1	1	no odour, clear
		2020-07-14		0	dry, not sampled

Bacterial and Flow Data (2020-2022)

Station ID	Station Name	Sample Date	E. Coli CFU/100 mL	Flow Rate L/min	Sample Comment
SW3003	Roberts Bay beach access at Third St.	2020-02-19	< 1	4	no odour, clear
		2020-07-14	760	3	no odour, clear
		2021-02-01	32	6	no odour, clear, heavy rain
		2021-07-12	72	1	no odour, clear, no rain
		2022-03-14	15	4	no odour, clear, no rain
		2022-07-11	52	1	
SW3005	Foot of Fifth St., Mermaid Canal	2020-03-24	2600	> 120	no odour, clear
		2020-05-28	70	> 120	no odour, clear
		2020-06-18		> 150	no odour, clear, low tide
		2020-07-14	50	40	no odour, clear, likely influenced by marine
		2020-11-23	170	60	no odour, murky
		2021-02-01	210	> 100	no odour, clear, heavy rain
		2021-04-29	32	> 100	no odour, clear, light rain previous
		2021-07-12	480	32	no odour, clear, no rain
		2022-03-15	< 1	> 500	no odour, amber, light rain
		2022-07-11	60	50	
		2022-12-12	50		no odour, clear, pooled, rain within past two days
SW3005-1A	MH on Rd. in front of 1021 Resthaven Dr.	2020-11-23	17	40	no odour, murky
		2021-04-29	18	24	no odour, clear, light rain previous
		2021-06-21	100	12	no odour, clear, no rain
		2022-03-15	280	60	no odour, amber, light rain
SW3005-2A	MH in sidewalk at 2356/2362 Malaview Ave. property line	2021-04-29	18	50	no odour, clear, light rain previous
SW3005-3	MH in grass @ 2287 Malaview Ave.	2020-11-23	19	10	no odour, murky
SW3005-4	MH in middle of Amelia Ave./Fifth Street Intersection	2020-11-23	190	90	no odour, murky
		2021-04-29	2	40	no odour, clear, light rain previous
		2021-06-21	2700	36	no odour, clear, no rain
SW3006	Foot of Ardwell Ave.	2020-02-19	7	12	no odour, clear
		2020-07-14	40	7	no odour, clear
SW3007	Foot of Bowden, 9 m west of beach access	2020-02-19	49	7	no odour, clear
		2020-07-14	80	1	no odour, clear
		2021-01-26	810	5	no odour, clear, light rain previous
		2021-07-12	1300	1	no odour, clear, no rain

Bacterial and Flow Data (2020-2022)

Station ID	Station Name	Sample Date	E. Coli CFU/100 mL	Flow Rate L/min	Sample Comment
		2022-03-15	130	7	no odour, clear, light rain
		2022-07-11	7	1	
SW3014	Eastern pipe, east side of wharf at DFO Small Craft Harbour Branch	2020-03-24	3	1	no odour, clear
		2020-07-14	10000	< 1	no odour, clear
		2021-02-01	150	11	no odour, murky, heavy rain
		2021-07-13	140	1	no odour, clear, no rain
		2022-03-17	36	22	earthy odour, slightly murky, heavy rain
		2022-07-11	15	1	
SW3015	Western pipe, east of wharf at DFO Small Craft Harbour Branch	2020-03-24	140	2	no odour, clear
		2020-07-14	290	1	no odour, clear
		2021-02-01	110	12	no odour, murky, heavy rain
		2021-07-13	200	3	no odour, clear, no rain
		2022-03-17	42	22	no odour, murky amber, heavy rain
		2022-07-11	16000	2	no odour, clear
SW3015A	White PVC pipe above larger aqua blue half pipe (SW3015), east of DFO wharf	2022-03-17	70		
		2022-07-11		0	dry, not sampled
SW3016	Behind 10462 Resthaven Rd.	2020-03-24	690	24	no odour, clear
		2020-07-14	47000	18	no odour, clear, potentially marine influenced
		2021-02-01	740	> 120	no odour, murky, heavy rain
		2021-04-29	42	16	no odour, clear, light rain previous
		2021-05-06	< 1	20	no odour, clear, no rain
		2021-07-13	4800	5	no odour, clear, no rain
		2022-03-15	3400	> 120	no odour, clear, light rain
		2022-07-11	1000	9	
SW3017A	Allbay Park, in front of first townhouse	2022-03-15	< 1	< 1	no odour, clear, light rain
		2022-07-11		0.01	
SW3017B	Allbay Park, between townhouses	2022-03-15	< 2	< 1	no odour, clear, light rain
		2022-07-11		0	
SW3018	Behind 2056 White Birch	2020-03-24	< 1	2	no odour, clear
		2020-07-14	< 1	< 1	no odour, clear
SW3019	Near 2056 White Birch, west end of grass	2020-03-24	19	2	no odour, clear
		2020-07-14	80	3	no odour, clear

Bacterial and Flow Data (2020-2022)

Station ID	Station Name	Sample Date	E. Coli CFU/100 mL	Flow Rate L/min	Sample Comment
SW3020	E of Capital City Yacht Club (Blue Heron Rd.), NE pipe	2020-02-19	90	40	no odour, clear
		2020-05-28	10	6	no odour, clear
		2020-07-16	340	6	no odour, clear
		2021-02-03	470	> 50	no odour, clear, heavy rain previous day
		2021-09-22	110	9	no odour, clear, light rain prior
		2022-03-17	510	60	earthy odour, dirty brown, heavy rain
		2022-07-21	15	4	no odour, clear, no rain prior
SW3020A	E of Capital City Yacht Club (Blue Heron Rd.), SW pipe	2020-02-19	1	10	no odour, clear
		2020-05-28	3	2	no odour, clear
		2020-07-16	40	6	no odour, clear
		2021-02-03	240	> 60	no odour, clear, heavy rain previous day
		2021-09-22	< 100	3	no odour, turbid from sampling, light rain prior
		2022-03-17	40	18	no odour, clear, heavy rain
		2022-07-21	2	4	no odour, clear, no rain prior
SW3021	Corner of McDonald Park Rd., Bayfield Rd.	2020-02-13	3	80	no odour, clear
		2020-07-15	7	18	no odour, clear
		2020-11-23	7	13	no odour, clear
		2021-05-06	52	30	no odour, clear, no rain
		2021-07-13	310	2	no odour, slight amber, no rain
		2022-12-08	8	40	no odour, murky brown, rain (at times heavy)
SW3021A	1835 Marina Dr., SW side of North Saanich Marina	2020-03-02	46	15	no odour, slight amber
		2020-07-15	4400	9	no odour, slight green
		2021-02-03	130	16	no odour, clear, heavy rain previous day
		2021-07-13	30	4	no odour, amber, no rain
		2022-03-17	2700	> 80	sewer odour, amber, heavy rain
		2022-07-21	140	4	garlic odour, clear, no rain prior
SW3034B	West of Royal Victoria Yacht Club ramp	2021-02-08	< 1	18	no odour, clear, no rain
		2021-07-13	70	1	no odour, clear, no rain
SW3034C	Between Cedar Grove Marina and large house	2021-03-02	24	9	no odour, clear, no rain
		2021-07-13	29	1	no odour, clear, no rain
SW3034D	In riprap, north end of Westport Marina	2020-03-02	77	60	no odour, clear

Bacterial and Flow Data (2020-2022)

Station ID	Station Name	Sample Date	E. Coli CFU/100 mL	Flow Rate L/min	Sample Comment
		2020-07-15	330	6	no odour, clear
SW3034E	Under parking area, north Westport Marina	2020-03-02	< 1	4	no odour, clear
		2020-07-15		< 0.01	flow too low to sample
SW3035C	West side of foot of Tyron Rd.	2020-03-02	18	4	no odour, clear
		2020-07-15		< 0.01	flow too low to sample
SW3041	6 m west of A dock, Canoe Cove Marina	2020-03-02	110	8	no odour, amber
		2020-07-15		0	dry, not sampled
		2021-02-03	6	9	no odour, amber, heavy rain previous day
		2021-07-13		0	dry, not sampled, no rain
SW3042	Barnacle Rd., 5 m east of government dock	2020-03-02	10	3	no odour, amber
		2020-07-15		0	dry, not sampled
SW3051	40 m west of large dock at Shearwater Terrace beach access, Queen Mary Bay	2021-02-08	1	80	no odour, clear, no rain
		2021-07-14		< 0.01	flow too low to sample, no rain
SW3051A	55 m west of large dock at Shearwater Terrace beach access, Queen Mary Bay	2021-02-08	< 1	7	no odour, clear, no rain
		2021-07-14	4	2	no odour, clear, no rain
		2022-03-17	18	8	no odour, amber, heavy rain
		2022-07-21	5	1	no odour, clear, no rain prior
SW3052	50 m west of dock at Shearwater Terrace beach access, Queen Mary Bay	2021-02-08	2	8	no odour, clear, no rain
		2021-07-14	42	3	no odour, clear, no rain
SW3053	West end of Queen Mary Bay, west of Shearwater Terrace beach access	2020-03-19	760	6	no odour, clear
		2021-02-08	1	5	no odour, clear, no rain
		2021-07-14		< 0.01	flow too low to sample, no rain
SW3054	Foot of Dawson Way	2020-03-19	6	40	no odour, clear
		2020-07-15	90	30	no odour, clear
SW3055	35 m E of wharf, Lands End Rd. & Sylvan Pl.	2020-05-28	64	7	no odour, clear
		2020-07-15	50	3	no odour, clear

Bacterial and Flow Data (2020-2022)

Station ID	Station Name	Sample Date	E. Coli CFU/100 mL	Flow Rate L/min	Sample Comment
SW3076	200 m W of Tatlow Rd. beach access	2020-03-19	1	4	no odour, slight murky
		2020-07-16		0	dry, not sampled
SW3077	50 m west of beach access at Tatlow Rd.	2020-03-19	75	< 1	no odour, clear
		2020-07-16	3100	8	no odour, clear, construction present
		2021-02-03	20	10	no odour, clear, heavy rain previous day
		2021-05-06	32	1	no odour, clear, no rain
		2021-07-14	44	1	no odour, clear, no rain
		2022-03-17	94	6	no odour, brown, heavy rain
		2022-07-22	10000	3	no odour, slight amber, no rain prior
SW3077A	Foot of Tatlow beach access east of 3077 (incorrectly labelled 3076)	2021-02-08	1	1	no odour, clear, no rain
		2021-07-14		0	dry, no rain
SW3078	Beach access at foot of Tatlow Rd.	2021-02-03	15	8	no odour, clear, heavy rain previous day
		2021-07-14		< 0.01	flow too low to sample, no rain
SW3078A	Tatlow Beach access, between 11250 Tatlow and 11198 Chalet Rd.	2020-03-19	770	1	no odour, clear
		2020-07-16	630	1	no odour, murky
		2021-02-03	490000	8	strong sewer odour, brown, heavy rain previous day
		2021-02-08	1600	5	slight sewer odour, murky, no rain
		2021-07-14	480	2	no odour, clear, no rain
		2022-03-17	13000	12	sewer odour, brown, heavy rain
		2022-07-22	11000	1	sewer odour, turbid amber, no rain prior
		2022-12-08	1300	6	no odour, murky, rain (at times heavy)
SW3078B	Foot of Tatlow, N of Tatlow Creek in rock wall	2021-07-14	220	1	no odour, murky, no rain, one off sample
SW3079	Tatlow Creek, Tatlow beach access	2020-03-19	34	> 200	no odour, clear
		2020-07-16	40	40	no odour, clear
		2020-10-27	59	180	
		2020-12-10	49	> 250	no odour, slight amber colour with foam
		2021-02-03	260	> 2000	no odour, brown, heavy rain previous day
		2021-05-21	42	50	no odour, clear, no rain
		2021-07-14	150	> 40	no odour, clear, no rain
		2022-03-17	740	> 5000	no odour, murky, heavy rain
		2022-07-22	340	45	no odour, slight turbid, no rain prior
		2022-07-28	170	45	no odour, slight amber, no rain prior

Bacterial and Flow Data (2020-2022)

Station ID	Station Name	Sample Date	E. Coli CFU/100 mL	Flow Rate L/min	Sample Comment
SW3080A	Bennes Creek, 10992 Kalitan Rd., under stairs	2020-03-19	4	32	no odour, clear
		2020-07-16	57	12	no odour, clear
		2021-02-03	530	> 180	no odour, slight amber, heavy rain previous day
		2021-07-19	510	7	no odour, clear, no rain
		2022-03-22	150	> 100	no odour, murky, light rain
		2022-07-22	36	8	no odour, slight amber, no rain prior
SW3086	2 m south of Norris Rd. beach access	2020-03-19	42	7	no odour, clear
		2020-07-16		< 0.01	flow too low to sample
		2021-02-08	110	22	no odour, clear, no rain
		2021-07-21		0	dry, no rain
SW3087	1 m S of Towner Rd. beach access	2021-02-08	19	18	no odour, clear, no rain
		2021-07-21	4	2	no odour, clear, no rain
		2022-03-22	34	70	no odour, amber, light rain
		2022-07-22	8	5	no odour, clear, no rain prior
SW3088	10608 Towner Rd., 4 m S of beach access	2021-02-08	1	< 0.01	flow too low to sample
		2021-07-21	1	0	dry, no rain
		2022-03-22	9600	< 1	no odour, clear, light rain
		2022-07-22	1	0	dry, not sampled, no rain prior
SW3089A	North side of 945 Towner Park Rd.	2021-02-23	49	85	no odour, clear, drizzle
		2021-07-23		0	dry, no rain
		2022-04-19	210	12	no odour, clear, rain yesterday
		2022-07-28		0	dry, no sample, no rain prior
SW3089AA	East side of stairs below 693 Finlayson	2020-03-19		0	dry, not sampled
		2020-07-16		0	dry, not sampled
SW3089AAD	West of 693 Towner Park Rd.	2021-02-23	250	12	no odour, clear, drizzle
		2021-07-23		0	dry, no rain
		2022-04-19	2	1	no odour, clear, rain yesterday
		2022-07-28		0	dry, no sample, no rain prior
SW3089AB	Between 785 and 771 Towner Park Rd.	2021-02-22	19	6	no odour, clear, rain yesterday
		2021-07-23		< 0.01	flow too low to sample, no rain
		2022-04-19	720	12	no odour, clear, rain yesterday
		2022-07-28	140	< 1	no odour, clear, no rain prior
SW3089AC	West side of 825 Towner Park Rd.	2021-02-23	4	6	no odour, clear, drizzle
		2021-07-23		< 0.01	flow too low to sample, no rain

Bacterial and Flow Data (2020-2022)

Station ID	Station Name	Sample Date	E. Coli CFU/100 mL	Flow Rate L/min	Sample Comment
		2022-04-19	2	2	no odour, clear, rain yesterday
		2022-07-28		0	dry, no sample, no rain prior
SW3089BB	West 701 Towner Park Rd., E of 3089AA	2021-02-22	470	32	no odour, clear, rain yesterday
		2021-07-23		0	dry, no rain
		2022-04-19	12	1	no odour, clear, rain yesterday
		2022-07-28		0	dry, no sample, no rain prior
SW3089CC	East side of 701 Towner Park Rd.	2021-02-23	13	25	no odour, clear, drizzle
		2021-07-23		0	dry, no rain
		2022-04-19	< 1	3	no odour, clear, rain yesterday
		2022-07-28	1	1	no odour, clear, no rain prior
SW3090	100 m N of 10429 West Saanich Rd.	2020-03-19	< 1	10	no odour, clear
		2020-07-16		0	dry, not sampled
		2021-02-03	17	40	no odour, murky amber, heavy rain previous day
		2021-07-21		0	dry, no rain
		2022-04-08	2	35	no odour, clear, no rain prior
		2022-07-22		0	dry, not sampled, no rain prior
SW3091	25 m N of 10425 West Saanich Rd.	2020-03-19		0	dry, not sampled
		2020-09-29		0	dry, not sampled
		2021-02-23	12	35	no odour, clear, drizzle
		2021-07-21		0	dry, no rain
		2022-04-08	130	10	no odour, clear, no rain prior
		2022-07-27		0	dry, no sample, no rain prior
SW3092	100 m S of 10429 West Saanich Rd.	2020-03-19		0	dry, not sampled
		2020-09-29		0	dry, not sampled
SW3093	10 m N of totem pole, Totem Lane	2021-02-23		< 0.01	flow too low to sample, drizzle
		2021-07-21		0	dry, no rain
SW3095	Tseycum Creek 10 m N of 1036 West Saanich Rd.	2020-03-19	34000	> 80	sewer odour, murky
		2020-07-16	2800	24	no odour, clear
		2021-02-23	260	> 500	no odour, clear, drizzle
		2021-07-21	440	26	no odour, amber, no rain
		2022-04-08	53	70	no odour, murky amber, no rain prior
		2022-07-27	5100	12	no odour, amber, no rain prior
SW3096	Below 10299 West Saanich Rd.	2021-02-23	1	3	no odour, clear, drizzle
		2021-07-21		0	dry, no rain

Bacterial and Flow Data (2020-2022)

Station ID	Station Name	Sample Date	E. Coli CFU/100 mL	Flow Rate L/min	Sample Comment
SW3097	Foot of Munro Rd.	2021-02-23		0	dry, not sampled, drizzle
		2021-07-21		0	dry, no rain
SW3099	20 m south of Munro beach access stairs	2021-02-23	1	3	no odour, clear, drizzle
		2021-07-21		0	dry, no rain
SW3099A	Across from 10221 West Saanich Rd.	2021-02-23	14	6	no odour, clear, drizzle
		2021-07-21		0	dry, no rain
SW3100	Below 10177 West Saanich Rd.	2021-02-23	4	11	no odour, clear, drizzle
		2021-07-21	280	2	no odour, clear, no rain
SW3102	Middle of cemetery, convergence of paths	2020-03-19	< 1	1	no odour, clear
		2020-09-29		0	dry, not sampled
SW3102A	Below south side of Patricia Bay Park	2020-03-19		0	dry, not sampled
		2020-09-29		0	dry, not sampled
SW3102B	Ditch near seaplane base	2020-03-19		0	dry, not sampled
		2020-09-29		0	dry, not sampled
SW3104	TEN TEN Creek, north end of seaplane base	2020-03-23	24	> 1000	no odour, clear
		2020-09-29	25	50	no odour, clear
		2021-03-02	< 1	> 500	no odour, slight amber, no rain
		2021-08-24	700	50	no odour, slightly murky, no recent rain
		2022-04-19	7	> 180	no odour, slight amber, rain yesterday
		2022-08-18	400	65	no odour, slightly amber, no rain prior
SW3116	Ardmore Drive	2020-03-20		0	dry, not sampled
		2020-09-15		0	dry, not sampled
		2020-12-10		< 0.01	flow too low to sample
SW3117	Coles Bay	2020-03-20		0	dry, not sampled
		2020-09-15		0	dry, not sampled
		2020-12-10		< 0.01	flow too low to sample
SW3117A	SE corner of 673 Ardmore Dr., black pipe	2020-12-10	450	14	no odour, clear, pipe possibly from construction
		2021-02-02	500	> 200	no odour, clear, heavy rain
		2021-07-22		0	dry, no rain
		2021-12-02	22	18	no odour, clear, rain previous
		2022-03-25	190	10	no odour, clear, light rain two days ago
		2022-08-12		0	dry, no sample, no rain prior

Bacterial and Flow Data (2020-2022)

Station ID	Station Name	Sample Date	E. Coli CFU/100 mL	Flow Rate L/min	Sample Comment
SW3117B	703 Ardmore Dr., white pipe in rock patio	2020-09-15	18	< 1	no odour, clear
		2020-09-17	7	< 1	no odour, clear
		2020-12-10	1	3	no odour, clear
		2021-02-02	17	7	no odour, clear, heavy rain
		2021-07-22	48	< 1	no odour, clear, no rain
		2022-03-25	< 1	2	no odour, clear, light rain two days ago
		2022-08-12	32	2	no odour, clear, no rain prior
SW3118	Foot of Hartfell Ave.	2020-03-20	89	24	no odour, clear
		2020-09-15		0	dry, not sampled
		2020-11-23	20	15	no odour, clear
		2020-12-10	65	32	no odour, clear
		2021-02-02	2800	> 180	no odour, murky, heavy rain
		2021-04-15	75	9	no odour, slight amber, no rain
		2021-07-22		0	dry, no rain
		2021-11-09	28	48	no odour, turbid brown, heavy rain the previous night
		2022-03-25	480	55	no odour, clear, light rain two days ago
		2022-08-12		0	dry, no sample, no rain prior
SW3118A	20 m east of Hartfell beach access	2020-04-28	< 1	3	no odour, clear
		2020-09-15	7	< 1	no odour, clear
		2020-09-17	4	< 1	no odour, slight amber
		2020-12-10	1	4	no odour, clear
		2021-02-02	1	9	no odour, clear, heavy rain
		2021-07-22	15	< 1	no odour, clear, no rain
SW3118AA	18 m east of Hartfell beach access	2020-09-15		0	dry, not sampled
		2020-12-10		< 0.01	flow too low to sample
SW3118B	30 m east Hartfell beach access	2020-09-15	1300	< 1	no odour, brown (stirred up bottom during sampling)
		2020-09-17		0	dry, not sampled
		2020-12-10	4800	3	no odour, clear
		2021-02-02	130	2	no odour, murky, heavy rain
		2021-07-22	4800	< 1	no odour, amber, no rain
		2021-12-02	50	< 1	no odour, clear, rain previous
		2022-03-25	< 1	< 1	no odour, clear, light rain two days ago
		2022-08-12		< 0.01	flow too low to sample, no rain prior
SW3118C	45 m east of Hartfell beach access	2020-09-15		0	could not find pipe, no flow found at location
		2020-12-10	41	4	no odour, clear

Bacterial and Flow Data (2020-2022)

Station ID	Station Name	Sample Date	E. Coli CFU/100 mL	Flow Rate L/min	Sample Comment
		2021-02-02	60	8	no odour, clear, heavy rain
		2021-07-22		< 0.01	flow too low to sample, no rain
		2022-03-25	< 2	3	no odour, dirty brown from erosion, light rain two days ago
		2022-08-12	< 1	1	no odour, clear, no rain prior
SW3118D	50 m east of Hartfell beach access	2020-04-28	440	12	no odour, slightly murky
		2020-09-15		0	dry, not sampled
		2020-12-10	< 1	3	no odour, clear
		2021-02-02	< 1	5	no odour, clear, heavy rain
		2021-07-22		0	dry, no rain
		2022-03-25	< 1	2	no odour, clear, light rain two days ago
		2022-08-12	11	< 1	no odour, clear, no rain prior
SW3119	E of Coles Bay Regional Park beach access	2020-03-20	7	40	no odour, clear
		2020-04-28	41	20	no odour, clear
		2020-09-17		0	dry, not sampled
		2020-12-10	40	32	no odour, clear
		2021-02-02	270	> 250	no odour, clear, heavy rain
		2021-07-22		0	dry, no rain
		2022-03-25	19	75	no odour, clear, light rain two days ago
		2022-08-12		0	dry, no sample, no rain prior
SW3120	5 m S of wood steps at McTavish Rd.	2020-03-20	25	40	no odour, clear
		2020-04-28	79	20	no odour, clear
		2020-09-17		0	dry, not sampled
		2020-12-10	90	45	no odour, clear
		2021-02-02	240	> 200	no odour, slightly amber, heavy rain
		2021-05-06	68	12	no odour, clear, no rain
		2021-07-27		0	dry, no rain
		2022-03-25	3	50	no odour, clear, light rain two days ago
		2022-08-12		0	dry, no sample, no rain prior
		2022-11-08	530	6	no odour, clear, rain in the past two days
SW3121	Eastern corner of Coles Bay, flow from Pauquachin Lane (near pump station).	2021-02-18	3	45	no odour, clear, snow melt and rain
		2021-03-03	1	12	no odour, clear, no rain
		2021-07-22	53	< 1	no odour, clear, no rain
		2022-03-25	1	10	no odour, clear, light rain two days ago

Bacterial and Flow Data (2020-2022)

Station ID	Station Name	Sample Date	E. Coli CFU/100 mL	Flow Rate L/min	Sample Comment
		2022-08-12	220	2	no odour, clear, no rain prior
SW3122	40 m S of boat ramp on Pauquachin FN	2020-09-17		0	dry, not sampled
		2021-02-18	10	80	no odour, clear, snow melt and rain
		2021-07-27		0	dry, no rain
		2022-04-08	12	60	no odour, clear, no rain prior
		2022-08-12		0	dry, no sample, no rain prior
		2022-08-18		0	dry, no sample, no rain prior
		2022-11-08	3200	6	no odour, clear, rain in the past two days
SW3123	50 m S of boat ramp on Pauquachin FN	2020-03-20	2	22	no odour, clear
		2020-09-17		0	dry, not sampled
		2021-02-18	6	60	no odour, clear, snow melt and rain
		2021-07-27		0	dry, no rain
		2022-04-08	12	45	no odour, clear, no rain prior
		2022-08-12		0	dry, no sample, no rain prior
		2022-08-18		0	dry, no sample, no rain prior
SW3124	200 m S of boat ramp on Pauquachin FN	2020-03-20	30	> 200	no odour, clear
		2020-09-17	44	8	no odour, clear
		2021-02-18	< 1	> 250	no odour, clear, snow melt and rain
		2021-07-22	210	9	no odour, clear, no rain
		2022-04-08	< 1	> 500	no odour, clear, no rain prior
		2022-08-18	89	20	no odour, clear, no rain prior
		2022-08-25	110	14	no odour, clear, no rain prior
		2022-09-01	24	12	no odour, clear, no rain prior
		2022-09-08	30	10	no odour, clear, no rain prior
		2022-09-15	1500	8	no odour, clear, no rain prior
		2022-10-25	81	8	no odour, clear, rain during sampling, potential first flush
		2022-11-03	25	11	no odour, clear, rain prior
		2022-11-08	20	20	no odour, clear, rain prior
		2022-11-17	13	18	no odour, clear, rain prior
		2022-11-24	12		no odour, clear, no recent rain
SW3124-2	Downstream of West Saanich Rd., Pauquachin FN	2020-06-04	1	7	slight sewer odour, clear
		2020-09-17		0	dry, not sampled

Bacterial and Flow Data (2020-2022)

Station ID	Station Name	Sample Date	E. Coli CFU/100 mL	Flow Rate L/min	Sample Comment
SW3124A	300 m S of 3124, by alder, Pauquachin FN	2021-02-19		< 0.01	flow too low to sample, no rain
		2021-07-23		0	dry, no rain
		2022-04-08	1	50	no odour, clear, no rain prior
SW3124B	Between 8660 & 8640 Kleewyck Rd.	2020-09-17		0	dry, not sampled
		2021-02-19	< 1	22	no odour, clear, rain and snow previous
		2021-07-23		0	dry, no rain
		2022-04-19	10	11	no odour, clear, rain yesterday
		2022-07-29		< 0.01	flow too low to sample, no rain prior
SW3125	Kleewyck Rd.	2020-09-17		0	dry, not sampled
		2021-03-03	1	> 250	no odour, clear, no rain
		2021-07-23		0	dry, no rain
		2022-04-19	3	110	no odour, clear, rain yesterday
		2022-07-29	32	3	no odour, clear, no rain prior
SW3125A	1 m E of wood stairs, access through 8580 Mink Rd.	2020-09-17	250	< 1	no odour, amber
		2021-03-03	1	7	no odour, clear, no rain
		2021-07-23		0	dry, no rain
		2022-04-19	1800	4	no odour, clear, rain yesterday
		2022-07-29	12	< 1	no odour, clear, no rain prior
SW3125B	Between 8560 and 8580 Mink Rd.	2020-09-17		0	dry, not sampled
		2021-03-03	2	8	no odour, clear, no rain
		2021-07-23		0	dry, no rain
		2022-04-19	< 1	9	no odour, clear, rain yesterday
		2022-07-29	70	5	no odour, clear, no rain prior
SW3125C	Below 570 Seacliff Rd.	2020-09-17		0	dry, not sampled
		2021-03-03	< 1	22	no odour, clear, no rain
		2021-07-23		0	dry, no rain
		2022-04-19	< 1	7	no odour, clear, rain yesterday
		2022-07-29	72	5	no odour, clear, no rain prior
SW3126	Under patio at 750 Seacliff Rd.	2020-09-17		0	dry, not sampled
		2021-03-03	13	5	no odour, clear, no rain
		2021-07-23		< 0.01	flow too low to sample, no rain
		2022-04-19	2	3	no odour, clear, rain yesterday
		2022-07-29		0	dry, no sample, no rain prior
SW3126A	Below 8530 W Saanich Rd.	2020-09-17		0	dry, not sampled

Bacterial and Flow Data (2020-2022)

Station ID	Station Name	Sample Date	E. Coli CFU/100 mL	Flow Rate L/min	Sample Comment
		2021-02-19	2	22	no odour, clear, rain and snow previous
		2021-07-23		0	dry, no rain
		2022-04-19	< 1	14	no odour, clear, rain yesterday
		2022-07-29		< 0.01	flow too low to sample, no rain prior
SW3127	Salmon Creek, 570 Lawrence Rd.	2020-09-17		0	dry, not sampled
		2021-02-19	6	70	no odour, clear, rain and snow previous
		2021-07-23		0	dry, no rain
		2022-04-19	< 1	4	no odour, clear, rain yesterday
		2022-07-29		< 0.01	flow too low to sample, no rain prior
SW3127A	30 m east of large grey boat house	2021-02-19	22	65	no odour, clear, rain and snow previous
		2021-07-23		0	dry, no rain
		2022-04-19	< 1	15	no odour, clear, rain yesterday
		2022-07-29		< 0.01	flow too low to sample, no rain prior
SW3127AA	Between 530 and 531 Salmon Rd.	2021-02-19	< 1	11	no odour, clear, rain and snow previous
		2021-07-23		0	dry, no rain
		2022-04-19	< 1	4	no odour, clear, rain yesterday
		2022-07-29		< 0.01	flow too low to sample, no rain prior
SW3133	Hagan Creek mouth, u/s of waterfall	2020-03-20	14	> 2000	no odour, clear
		2020-07-17	66	> 400	no odour, clear
		2020-08-11	15	> 2000	no odour, clear
		2020-08-18	31	> 2000	no odour, amber
		2020-08-25	6	> 2000	no odour, clear
		2020-09-01	7	> 2000	no odour, clear
		2020-09-08	26	> 2000	no odour, clear
		2020-09-24	1500	> 2500	no odour, murky brown
		2020-10-13	1000	> 2000	no odour, brown
		2020-10-20	29	> 2000	no odour, clear
		2020-10-27	40	> 2000	no odour, clear
		2020-11-04	1300	> 2000	no odour, slight amber
		2020-11-12	8	> 2000	no odour, clear
		2021-02-19	250	> 3000	no odour, murky, rain and snow previous
		2021-07-16	24	> 250	no odour, clear, no rain
		2021-11-18	490	> 3000	earthy odour, turbid brown, heavy rain, sewer spill investigation
		2022-04-08	30	> 2000	no odour, amber, no rain prior
		2022-08-18	20	> 500	no odour, clear, no rain prior

Bacterial and Flow Data (2020-2022)

Station ID	Station Name	Sample Date	E. Coli CFU/100 mL	Flow Rate L/min	Sample Comment
SW3133-1B	Graham Creek above confluence with Hagan Creek, d/s of Centennial Park	2020-08-11	29	> 200	no odour, clear
		2020-08-18	160	> 200	no odour, clear
		2020-08-25	82	> 200	no odour, clear
		2020-09-01	140	> 200	no odour, clear
		2020-09-08	110	> 200	no odour, clear
		2020-09-24	2200	> 1000	no odour, amber
		2020-10-13	5500	> 1000	no odour, turbid brown
		2020-10-20	46	800	no odour, clear
		2020-10-27	50	700	no odour, clear
		2020-11-04	1100	800	no odour, slight amber
		2020-11-12	26	1000	no odour, clear
		2021-07-16	100	> 150	no odour, clear, no rain
		2021-11-18	5000	> 1500	earthy odour, turbid brown, heavy rain, sewer spill investigation
SW3133-2	Hagan Creek, d/s of Industrial Park, Kirkpatrick Cres. (ditch)	2020-07-17	81000	38	musty organic odour, murky
		2020-07-21	8000	35	organic odour, murky
		2020-09-24	7500	48	sewer odour, murky grey/brown
		2020-10-13	7900	68	no odour, murky grey
		2020-10-23	1900	> 300	organic odour, murky brown
		2020-12-08	2600	100	organic odour, murky brown
		2021-07-16	1200	20	slight organic odour, murky, no rain
		2022-08-29	150000	12	strong sewer/chemical odour, black, no rain prior
		2022-09-13	160000	8	strong sewer/chemical odour, grey with black flocculant, no rain prior, used Peninsula Streams equipment
		2022-09-13	230000	12	strong sewer/chemical odour, grey with black flocculant, no rain prior, slight surge directly from flow
SW3133-4	Stevens Creek, ditch on Willow Way, upstream of confluence with Graham Creek	2020-07-21	26		no odour, clear, unknown flow (pooled)
		2020-08-11	320	80	no odour, clear
		2020-08-18	670	70	no odour, clear
		2020-08-25	90	60	no odour, clear
		2020-09-01	140	40	no odour, clear

Bacterial and Flow Data (2020-2022)

Station ID	Station Name	Sample Date	E. Coli CFU/100 mL	Flow Rate L/min	Sample Comment
		2020-09-08	97	30	no odour, clear, mowed vegetation in channel slowed flow
		2020-09-24	15000	200	no odour, murky brown
		2020-10-13	9600	> 250	no odour, turbid brown
		2020-10-20	2000	200	no odour, clear
		2020-10-27	100	180	no odour, slight murky
		2020-11-04	1000	160	no odour, slight murky
		2020-11-12	2300	200	no odour, slight amber
SW3133-5	Graham Creek above confluence with Stevens Creek	2020-07-21	160	18	no odour, clear
		2020-08-11	240	40	no odour, clear
		2020-08-18	120	30	no odour, clear
		2020-08-25	540	30	no odour, clear
		2020-09-01	200	26	no odour, clear
		2020-09-08	42	26	no odour, clear
		2020-09-24	7700	80	no odour, amber
		2020-10-13	6800	> 250	no odour, turbid brown
		2020-10-20	150	250	no odour, clear
		2020-10-27	90	200	no odour, clear
		2020-11-04	2200	200	no odour, clear
		2020-11-12	470	250	no odour, clear
SW3133-6	Graham Creek, u/s of Stelly's Cross Rd.	2021-11-18	200	> 1500	earthy odour, turbid brown, heavy rain during sampling
SW3134	30 m north of viewing platform at Tsartlip	2021-02-18	2	7	no odour, clear, snow melt and rain
		2021-09-22		0	dry, not sampled, light rain prior
SW3135	Above viewing platform on Tsartlip FN	2020-11-26	1	3	no odour, clear
		2021-02-18	1	9	no odour, clear, snow melt and rain
		2021-05-06	320	2	no odour, clear, no rain
		2021-09-22		0	dry, not sampled, light rain prior
		2022-04-11	1	5	no odour, clear, light rain prior
		2022-08-18		0	dry, no sample, no rain prior
SW3136	Intersection of Ettiene and Tsartlip Rd.	2020-11-26	56	80	no odour, clear, sampled due to significant flow
		2021-02-18	210	> 300	no odour, brown, snow melt and rain
		2021-09-22		0	dry, not sampled, light rain prior
		2022-04-11	35	100	no odour, clear, light rain prior

Bacterial and Flow Data (2020-2022)

Station ID	Station Name	Sample Date	E. Coli CFU/100 mL	Flow Rate L/min	Sample Comment
		2022-08-18		0	dry, no sample, no rain prior
SW3136A	Shoreline west of Tsartlip Drive	2020-03-24		< 0.01	flow too low to sample
		2020-09-29		0	dry, not sampled
		2020-11-26	66	2	no odour, murky brown
		2021-02-18	15	7	no odour, clear, snow melt and rain
		2021-09-22		0	dry, not sampled, light rain prior
		2022-04-11	52	12	no odour, clear, light rain prior
		2022-08-18		0	dry, no sample, no rain prior
SW3136B	Shoreline west of Tsartlip Drive	2020-11-26	28	7	no odour, clear
SW3138	South side of Tsartlip boat launch parking	2020-03-24	< 1	8	no odour, clear
		2020-09-29		< 0.01	flow too low to sample
		2020-11-26	22	35	no odour, slightly murky
		2021-02-18	200	60	slight sewer odour, black, snow melt and rain
		2021-09-22	130	5	no odour, clear, light rain prior
		2022-04-11	23	40	no odour, clear, light rain prior
		2022-08-18	12000	1	no odour, clear, no rain prior
SW3141	Under ferry wharf at foot of Verdier Ave.	2021-02-18	1000	12	no odour, brown, snow melt and rain
		2021-07-21		0	dry, no rain
		2022-03-23	< 1	< 1	no odour, clear, light rain previous two days
SW3142	North of ferry wharf at foot of Verdier Ave.	2020-02-27	17	20	no odour, clear
		2020-07-20	11	3	no odour, clear
		2021-02-18	2200	> 400	no odour, murky brown, snow melt and rain
		2021-07-21	800	3	no odour, clear, no rain
		2022-03-23	11	> 80	no odour, clear, light rain previous two days
		2022-06-13	12	8	no odour, clear, no rain prior
SW3143	N end of Brentwood Inn on Verdier Ave.	2021-02-18	10	22	no odour, clear, snow melt and rain
		2021-07-21		0	dry, no rain
SW3144	15 m north of Brentwood Inn wharf	2021-02-18	170	80	no odour, murky brown, snow melt and rain
		2021-07-21	49	< 1	no odour, clear, no rain
SW3145	Foot of Clarke Rd.	2020-02-27	1	30	no odour, clear
		2020-06-04	10	4	slight sewer odour, clear
		2020-07-20		0	dry, not sampled
		2020-09-29	1700	1	no odour, clear
		2021-01-26	2	32	no odour, clear, light rain previous

Bacterial and Flow Data (2020-2022)

Station ID	Station Name	Sample Date	E. Coli CFU/100 mL	Flow Rate L/min	Sample Comment
		2021-07-21		0	dry, no rain
		2021-12-02	15	24	no odour, clear, rain previous
		2022-03-23	1	45	no odour, clear, light rain previous two days
		2022-06-03	70	9	no odour, clear, rain
		2022-06-13	12	8	no odour, clear, no rain prior
SW3145A	Devonshire beach access	2020-02-27	50	18	no odour, clear
		2020-07-20	7	4	no odour, clear
		2021-01-26	4	6	no odour, clear, light rain previous
		2021-07-21	8	3	no odour, clear, no rain
		2022-03-23	6	9	no odour, clear, light rain previous two days
		2022-07-22	470	4	no odour, slight amber, no rain prior
SW3146	Brentwood Drive near Marchant Rd.	2020-02-27	6000	> 500	no odour, clear
		2020-07-20	230	42	no odour, clear
		2021-01-26	90	> 150	no odour, clear, light rain previous
		2021-07-23	56	9	no odour, clear, no rain
		2022-03-23	240	> 1000	no odour, clear, light rain previous two days
		2022-07-22	870	50	no odour, clear, no rain prior
SW3147	Foot of Marchant Rd.	2020-02-27	3	18	no odour, clear
		2020-07-20	100	8	no odour, clear
		2021-02-18	15	20	no odour, clear, snow melt and rain
		2021-07-23	38	5	no odour, clear, no rain
SW3148	East of Port Royale, under wooden bridge	2022-04-07	100	> 500	no odour, clear, no rain prior
		2022-07-22	42	28	no odour, clear, no rain prior
SW3150	Below Port Royale path, 40 m E of wharf	2020-03-24	140000	9	no odour, clear
		2020-06-04	87	7	slight sewer odour, clear, sampled before storm surge
		2020-06-04	1100	48	earthy sewer odour, dirty, sampled after storm surge
		2020-07-20	120	< 1	no odour, clear
		2021-02-18	140	100	no odour, clear, snow melt and rain
		2021-07-23		< 0.01	flow too low to sample, no rain
		2022-04-07	64	50	no odour, clear, no rain prior
		2022-06-03	1400	5	no odour, clear, some foam, rain
		2022-06-13	3200	7	sulphur odour, clear, no rain prior
		2022-07-22	6000	3	no odour, clear, no rain prior

Bacterial and Flow Data (2020-2022)

Station ID	Station Name	Sample Date	E. Coli CFU/100 mL	Flow Rate L/min	Sample Comment
SW3151	Foot of Deamere, west end of Port Royale	2022-04-07		0	dry, not sampled, no rain prior
		2022-07-28		0	dry, no sample, no rain prior
SW3153	Small bay at Butchart Gardens	2020-03-24	4	8	no odour, clear
		2020-07-20		0	dry, not sampled
		2021-03-02	1	9	no odour, clear, no rain
		2021-09-22		< 0.01	flow too low to sample, light rain prior
SW3154	Tod Creek, south of Butchart Gardens	2020-03-24	6	> 2000	no odour, clear
		2020-07-20	20	> 90	no odour, clear
		2020-12-16	13	> 2000	no odour, clear
		2021-03-02	7	> 2000	no odour, clear, no rain
		2021-04-15	11	> 2000	slight sewer odour, amber, no meter readings, no rain
		2021-09-22	35	80	no odour, clear, light rain prior
		2022-04-07	18	> 4000	no odour, clear, no rain prior
		2022-07-28	100	> 250	no odour, slight amber, no rain prior

Notes:
Flow is visually estimated.
CFU/100 mL is colony forming units per 100 millilitres.
u/s is upstream.
d/s is downstream.
b/t is between.

APPENDIX C

PUBLIC HEALTH CONCERN RATINGS 2022

Public Health Concern Ratings

CRD Discharge No.	Report Figure No.	Jurisdiction at Discharge	Rating			Level of Concern			Comments	Recommendations
			E.coli Rating	Public Shoreline Use	Overall Rating	2020	2021	2022		
405	4	Central Saanich	2	2	4	moderate	moderate	moderate	Amber colour; Island View beach	Continue monitoring
420	7	Central Saanich	1	1	2	NA	NA	low	Arthur Road beach access	Resample in 2027
422A	8	Central Saanich	1	1	2	NA	NA	low	Dry	Resample in 2027
3127	32	Central Saanich	1	1	2	NA	low	low	Dry in summer	Resample in 2027
3127A	33	Central Saanich	1	1	2	NA	low	low	Dry in summer	Resample in 2027
3127AA	33	Central Saanich	1	1	2	NA	low	low	Dry in summer	Resample in 2027
3133	35	Central Saanich	2	2	4	moderate	moderate	moderate	SPSO, Hagan Creek	Continue monitoring
3141	36	Central Saanich	1	2	3	NA	moderate	low	Dry in summer	Confirm rating
3142	36	Central Saanich	1	2	3	moderate	moderate	low	Elevated intermittently; suds observed	Continue monitoring
3145	36	Central Saanich	1	3	4	**high**	low	low	Human bacteria upstream in past	Confirm rating
3145A	36	Central Saanich	2	2	4	low	low	moderate	Elevated in summer	Continue monitoring
3146	36	Central Saanich	2	2	4	moderate	low	moderate	SPSO	Confirm rating
3148	36	Central Saanich	1	2	3	NA	NA	low		Confirm rating
3150	36	Central Saanich	3	2	5	moderate	low	**high**	Brentwood Bay	Confirm rating
3151	36	Central Saanich	1	2	3	NA	NA	low	Dry	Confirm rating with 3151A
3154	37	Central Saanich	1	2	3	low	low	low	Tod Creek	Continue monitoring
424	8	North Saanich	1	1	2	low	low	low	No flow in summer. Bazan Bay	Resample in 2027
426	9	North Saanich	2	1	3	low	low	low	Bazan Bay; no human bacteria measured	Continue monitoring
430B	9	North Saanich	2	1	3	low	low	low	Dog park	Continue monitoring
432	10	North Saanich	1	1	2	low	low	low	Bazan Bay	Continue monitoring
441	10	North Saanich	2	2	4	moderate	low	moderate	Reay Creek; birds upstream	Continue monitoring
3020	15	North Saanich	2	2	4	moderate	moderate	moderate		Continue monitoring
3020A	15	North Saanich	1	2	3	low	moderate	low	Dry in summer	Confirm rating
3021A	16	North Saanich	2	2	4	moderate	low	moderate	Dry in summer	Continue monitoring
3051A	19	North Saanich	1	2	3	NA	low	low	Low counts	Resample in 2027
3077	23	North Saanich	3	3	6	**high**	moderate	**high**	Deep Cove; counts lower	Continue monitoring
3078A	23	North Saanich	3	3	6	**high**	**high**	**high**	Deep Cove; human bacteria present	Continue monitoring and source investigations
3079	23	North Saanich	1	3	4	moderate	moderate	moderate	Tatlow/Chalet Creek; human bacteria present	Continue monitoring

Public Health Concern Ratings

CRD Discharge No.	Report Figure No.	Jurisdiction at Discharge	Rating			Level of Concern			Comments	Recommendations
			E.coli Rating	Public Shoreline Use	Overall Rating	2020	2021	2022		
3080A	24	North Saanich	1	1	2	low	low	low	Benes Creek	Continue monitoring
3087	25	North Saanich	1	3	4	NA	low	low	Low counts	Resample in 2027
3088	25	North Saanich	2	3	5	NA	low	moderate	High count; dry upon resampling	Confirm rating
3089A	26	North Saanich	1	3	4	NA	low	low	Stream; one count slightly elevated; dry in summer	Continue monitoring
3089AAD	26	North Saanich	1	3	4	NA	low	low	Slightly elevated count; dry in summer	Confirm rating
3089AB	26	North Saanich	1	3	4	NA	low	moderate	Low flow and low counts in summer	Confirm rating
3089AC	26	North Saanich	1	3	4	NA	low	low	Dry in summer	Resample in 2027
3089BB	26	North Saanich	1	3	4	NA	**high**	moderate	Dry in summer	Confirm rating
3089CC	26	North Saanich	1	3	4	NA	low	low	Low flow in summer	Resample in 2027
3104	28	North Saanich	2	2	4	low	moderate	moderate	SPSO, Ten Ten Creek.	Continue monitoring
3117A	31	North Saanich	1	2	3	moderate	moderate	low	New; private; no human bacteria present	Confirm rating
3117B	31	North Saanich	1	2	3	low	low	low	Private discharge	Resample in 2027
3118	31	North Saanich	2	3	5	moderate	moderate	moderate	One source fixed; human bacteria present in 2021	Continue monitoring
3118B	31	North Saanich	1	3	4	**high**	**high**	moderate	Counts lower; human bacteria present in 2021	Continue monitoring and source investigations
3118C	31	North Saanich	1	3	4	low	low	low	Dry in summer	Continue monitoring
3118D	31	North Saanich	1	3	4	low	low	low	Elevated count in past	Continue monitoring
3119	31	North Saanich	1	3	4	low	moderate	low	Coles Bay; dry in summer; human bacteria not present	Confirm rating
3120	31	North Saanich	2	3	5	low	moderate	moderate	Coles Bay; dry in summer; human bacteria not present	Continue monitoring
3124B	32	North Saanich	1	2	3	NA	low	low	Dry in summer	Confirm rating
3125	32	North Saanich	1	2	3	NA	low	low	Dry in summer	Confirm rating
3125A	32	North Saanich	2	2	4	NA	low	moderate	Dry in summer	Confirm rating
3125B	32	North Saanich	1	2	3	NA	low	low	Dry in summer	Confirm rating
3125C	32	North Saanich	1	2	3	NA	low	low	Dry in summer	Confirm rating
3126	32	North Saanich	1	2	3	NA	low	low	Dry in summer	Confirm rating
3126A	32	North Saanich	1	2	3	NA	low	low	Dry in summer	Confirm rating
444	11	Sidney	1	3	4	NA	moderate	low	High count during heavy rain; dry in summer	Confirm rating

Public Health Concern Ratings

CRD Discharge No.	Report Figure No.	Jurisdiction at Discharge	Rating			Level of Concern			Comments	Recommendations
			E.coli Rating	Public Shoreline Use	Overall Rating	2020	2021	2022		
444A	11	Sidney	1	3	4	NA	moderate	low	High count during heavy rain; dry in summer	Confirm rating
446	11	Sidney	1	3	4	low	low	moderate	Suds previously in discharge	Continue monitoring
447	11	Sidney	3	3	6	**high**	**high**	**high**	Counts fluctuate	Continue monitoring and source investigations
448	11	Sidney	1	3	4	moderate	low	moderate	Low flow in summer. SPSO.	Confirm rating
449	11	Sidney	1	3	4	moderate	**high**	moderate	Counts fluctuate	Continue monitoring and source investigations
449A	11	Sidney	1	3	4	moderate	moderate	moderate	Low flows; lower counts; extended outfall	Continue monitoring
450	11	Sidney	2	3	5	moderate	moderate	moderate	Cross-connection fixed; multiple sources upstream	Confirm investigations
459	12	Sidney	2	1	3	low	low	low	Elevated in summer	Confirm rating
462	12	Sidney	1	1	2	low	NA	low	Dry in summer; small catchment	Resample in 2027
464	12	Sidney	1	1	2	NA	NA	low	Dry in summer; small catchment	Resample in 2027
467	12	Sidney	1	1	2	NA	NA	low	Dry in summer; small catchment	Resample in 2027
472	13	Sidney	1	2	3	NA	NA	low	Only one visit in summer; dry not sampled	Confirm rating
3003	13	Sidney	1	2	3	moderate	low	low	Low flow	Continue monitoring
3005	13	Sidney	1	2	3	moderate	moderate	low	SPSO	Confirm rating
3007	14	Sidney	1	2	3	low	moderate	low	Foot of Bowden	Continue monitoring
3014	14	Sidney	1	2	3	moderate	low	low	Low EC, low flows	Continue monitoring
3015	14	Sidney	3	1	4	low	low	moderate	High count in summer	Confirm rating
3015A	14	Sidney	1	1	2	NA	NA	low	Low count; dry in summer	Confirm rating
3016	14	Sidney	2	2	4	**high**	moderate	moderate	Elevated EC, SPSO, source known but challenging to fix	Continue monitoring
3017A	14	Sidney	1	2	3	NA	NA	low	Low count; low flow	Resample in 2027
3017B	14	Sidney	1	2	3	NA	NA	low	Low count; low flow	Resample in 2027
3090	26	Tseycum/North Saanich	1	3	4	low	low	low	Dry in summer	Continue monitoring
3091	26	Tseycum/North Saanich	1	3	4	low	low	low	Dry in summer	Continue monitoring
3095	27	Tseycum/North Saanich	3	3	6	**high**	**high**	**high**	Tseycum Creek, SPSO	Continue monitoring;
3121	31	Pauquachin/North Saanich	1	3	4	low	low	low	Dry in summer	Continue monitoring
3122	31	Pauquachin/North Saanich	2	3	5	low	low	moderate	Dry in summer	Confirm rating
3123	31	Pauquachin/North Saanich	1	3	4	low	low	low	Dry in summer	Continue monitoring
3124	31	Pauquachin/North Saanich	1	3	4	low	moderate	low	Low upstream as well	Continue monitoring

Public Health Concern Ratings

CRD Discharge No.	Report Figure No.	Jurisdiction at Discharge	Rating			Level of Concern			Comments	Recommendations
			E.coli Rating	Public Shoreline Use	Overall Rating	2020	2021	2022		
3124A	31	Pauquachin/North Saanich	1	1	2	NA	low	low	Dry in summer	Confirm rating
3135	35	Tsartlip/Central Saanich	1	3	4	low	moderate	low	Dry in summer	Confirm rating
3136	35	Tsartlip/Central Saanich	1	3	4	NR	moderate	low	Dry in summer	Confirm rating
3136A	35	Tsartlip/Central Saanich	1	3	4	low	low	low	Dry in summer	Continue monitoring
3138	36	Tsartlip/Central Saanich	2	3	5	low	moderate	moderate	Low flow in summer	Continue monitoring
411	6	Tsawout/Central Saanich	1	3	4	moderate	moderate	low	Dry in summer	Continue monitoring
411A	6	Tsawout/Central Saanich	1	3	4	low	low	low	Dry in summer	Continue monitoring
412	7	Tsawout/Central Saanich	2	2	4	low	moderate	moderate	Tetayut Creek	Continue monitoring

Notes

Level of Concern determined by sum of the *Escherichia coli* (*E.coli)* and shoreline ratings. Low = sums of 2 and 3, moderate = sum of 4 and high = sums of 5 and 6.
Flow, season, previous *E.coli* measurements and recent changes in the catchment are also considered.
EC = *E.coli* counts.
NA = Not rated because it was not one of the discharges assessed this year.
SPSO = This discharge acts as a sewage pump station overflow.

APPENDIX D

E. COLI SAMPLING QUALITY ASSURANCE AND QUALITY CONTROL PROGRAM 2022

APPENDIX D
***E. COLI* SAMPLING QUALITY ASSURANCE**
AND QUALITY CONTROL PROGRAM
2022

TABLE OF CONTENTS

LIST OF TABLES

APPENDIX D

E. COLI SAMPLING QUALITY ASSURANCE AND QUALITY CONTROL PROGRAM FOR 2022

1.0 INTRODUCTION

Quality Assurance and Quality Control (QA/QC) programs are protocols adopted to ensure that results of any study are valid, internally consistent and comparable with similar projects. These protocols are set out in writing and based on current and relevant research on related topics.

Data collected for the quality assurance (QA) program are used to ensure consistency in field handling and analytical methods. If data exceed a specified precision criterion, then the lab is notified of a potential problem in the procedure and steps are taken to resolve the issue.

2.0 METHODS FOR BACTERIAL SAMPLING

All water samples were collected in 250 mL wide-mouth polypropylene bottles supplied by the analytical laboratories (Bureau Veritas Laboratories formerly Maxxam Analytics International Corporation in Victoria). Labelled samples were stored in an insulated cooler with ice packs for protection from prolonged exposure to UV light and delivered the same day to the laboratory. *Escherichia coli* bacteria (*E. coli*) were analyzed following the procedures in Standard Methods (APHA, 1998) and reported as colony forming units per 100 mL (CFU/100 mL).

2.1 Stormwater Discharge Sampling

Where possible, stormwater samples were collected from the point of discharge. Where this was not possible, the stormwater system was followed back to the nearest point where samples could be taken.

2.2 Quality Assurance

2.2.1 Stormwater Sample Replicates (Field Splits)

Ten percent of the total number of samples collected were replicated in the field (field replicates) and are identified in this report as field splits. A single sample was collected in a laboratory-prepared one-litre sample bottle and inverted 30 times to ensure that the sample was homogeneous. The sample was split evenly into two sample bottles. The two bottles were labelled and sent to the lab for analysis as separate samples, but not identified as field splits.

2.2.2 Quality Control Assessment

To establish the precision criteria, 18 replicates (field splits) were analyzed for *E. coli* bacteria. Field splits were collected from six stormwater discharges on the Saanich Peninsula. Discharges were chosen based on previous results, specifically high, moderate or low levels of *E. coli* concentrations. The QA sampling for the assessment was for all *E. coli* samples analyzed by Maxxam. The three levels of *E. coli* concentrations were selected to represent the variance in the samples analyzed during the sampling program. Three grab samples were taken at each of the six stations and split into two replicate sample bottles. Three blank samples of potable water were also collected as part of the assessment. Samples were supplied to the lab with individual numbers.

2.2.3 Calculation of Quality Assurance Results

Laboratory precision for *E. coli* analysis is determined by analyzing several pairs of field samples (field splits). The following procedure is the same as that used for fecal coliforms from Standard Methods, 20th edition (APHA, 1998).

The data are arranged in pairs (D1 and D2). The log of each field measurement is determined (L1, L2) and the difference (range) in the log value between each pair of field splits is calculated: R = (L2 - L1). An average range (Mean-R) is then determined for all of the pairs.

The precision criterion is calculated by multiplying the Mean-R by 3.27 and is rounded to one decimal place.

The log range (R) is calculated for each of the field splits and compared to the precision criterion, to determine whether the sample is acceptable or not, according to the following criteria:

Acceptable (A) If the calculation is less than the precision criterion, then the field data are within normal variability.

Unacceptable (U) If the calculation is greater than the precision criterion, then the field data are outside of the normal variability. Data collected after the last "acceptable" set of data should be discarded and no further analysis should be done until the source of the problem is identified by the lab.

It is important not to put too severe an interpretation on the results, especially when they are close to the "unacceptable" guideline. Each result represents a value within a 95% confidence interval, which gets proportionately larger as the actual result gets smaller. Therefore, one can expect, through randomness, 5% of the samples to be outside of the precision criterion. Also, bacterial counts under 200 CFU/100 mL are considered too small to accurately calculate or compare to a precision criterion (APHA, 1998). It is also important to note that discharges with *E. coli* counts lower than 200 CFU/100 mL receive a low public health concern rating.

The results should be rounded to one decimal place and compared to the precision criterion (e.g., 0.3). If the calculated value from the duplicate results still exceeds the criterion, then an informal investigation of the laboratory should be initiated. If only a few duplicates are unacceptable (i.e., one out of every 20 pairs of duplicates), the lab is probably meeting the guideline.

The overall process is intended to act as an alarm, alerting the study group to potential problems with the sampling and analytical procedures.

3.0 RESULTS

CRD staff collected 18 pairs of stormwater samples from six discharges having high, moderate, or low levels of bacteria. Samples were analyzed for *E. coli* concentration used to calculate the precision criterion.

3.1 Blanks

Staff submitted three blank samples (tap water) to the lab for *E. coli* analysis. Blanks were reported as having <1 CFU/100 mL. Therefore, the results meet the QA requirements.

3.2 Precision Criteria

None of the field splits exceeded the precision criterion, therefore, the data are acceptable.

Table 1 shows lab results of the 18 pairs of samples used to determine the precision criterion. The calculated precision criterion was 0.6.

3.3 Field Splits

Table 2 presents results for the field splits collected during the wet period. Data were compared to the precision criterion of 0.6. None of the field splits exceeded the precision criterion, therefore, the data are acceptable.

Table 3 presents results for the field splits collected during the dry period. None of the field splits exceeded the precision criterion, therefore, the data are acceptable.

Table 1 2022 Precision Criterion Calculation

Date	Discharge No.	Pair No.	1st Duplicate D1	2nd Duplicate D2	Log of D1 L1	Log of D2 L2	Range of Logs (Rlog) (Log L1 - Log L2)
17-Jan	424	1	3	7	0.4771	0.8451	0.3680
		2	8	4	0.9031	0.6021	0.3010
		3	7	4	0.8451	0.6021	0.2430
20-Jan	543	1	<10	<1	1.0000	0.0000	1.0000
		2	<1	<1	0.0000	0.0000	0.0000
		3	1	2	0.0000	0.3010	0.3010
24-Jan	245	1	870	830	2.9395	2.9191	0.0204
		2	720	860	2.8573	2.9345	0.0772
		3	870	980	2.9395	2.9912	0.0517
28-Jan	231	1	72	67	1.8573	1.8261	0.0313
		2	64	90	1.8062	1.9542	0.1481
		3	60	70	1.7782	1.8451	0.0669
17-Jan	805	1	23000	25000	4.3617	4.3979	0.0362
		2	52000	28000	4.7160	4.4472	0.2688
		3	24000	25000	4.3802	4.398	0.0177
24-Jan	777A	1	51000	44000	4.7076	4.6435	0.0641
		2	53000	57000	4.7243	4.7559	0.0316
		3	55000	47000	4.7404	4.6721	0.0683
	Mean - R_{log} (Sum R_{log}/18)						0.1720
	Precision Criterion (3.27 x Mean - R_{log})						0.5623

Table 2 Comparison of Field Splits to Precision Criterion – 2022 Dry Period

Date	Discharge	Field Split Fecal Coliform Counts	Log	Log Range	Acceptable (A), Unacceptable (U) or Conditionally Acceptable (A*)
7-Jul	432	90	1.9542	0.3245	A
		190	2.2788		
11-Jul	449	140	2.1461	0.4472	A
		50	1.6990		
21-Jul	3021A	460	2.6628	0.5166	A
		140	2.1461		
22-Jul	3078A	9800	3.9912	0.0502	A
		11000	4.0414		
22-Jul	3146	840	2.9243	0.0152	A
		870	2.9395		
27-Jul	412	280	2.4472	0.1047	A
		220	2.3424		
28-Jul	3154	120	2.0792	0.0792	A
		100	2.0000		
29-Jul	3125	29	1.4624	0.0428	A
		32	1.5051		
12-Aug	3021	230	2.3617	0.0193	A
		220	2.3424		
18-Aug	3138	12000	4.0792	0.0000	A
		12000	4.0792		
25-Aug	450	1500	3.1761	0.0621	A
		1300	3.1139		

Notes:
CFU: colony forming units.
A: calculated data is less than the precision criterion and, therefore, falls within normal variability.
U: calculated data is greater than the precision criterion and, therefore, falls outside normal variability.
A*: any *E. coli* count under 200 is considered too small an amount to calculate precision.

Table 3 Comparison of Field Splits to Precision Criterion – 2022 Wet Period

Date	Discharge	Field Split Fecal Coliform Counts	Log	Log Range	Acceptable (A), Unacceptable (U) or Conditionally Acceptable (A*)
10-Mar	448	1	0.0000	0.3010	A
		2	0.3010		
10-Mar	449	1	0.0000	0.0000	A
		1	0.0000		
11-Mar	411A	1	0.0000	0.0000	A
		1	0.0000		
11-Mar	432	2	0.3010	0.3010	A
		1	0.0000		
14-Mar	3003	25	1.3979	0.2218	A
		15	1.1761		
17-Mar	3078A	17000	4.2304	0.1165	A
		13000	4.1139		
22-Mar	3080A	200	2.3010	0.1249	A
		150	2.1761		
25-Mar	3120	1	0.0000	0.4771	A
		3	0.4771		
7-Apr	3150	57	1.7559	0.0503	A
		64	1.8062		
8-Apr	3133	27	1.4314	0.0458	A
		30	1.4771		
19-Apr	3127A	1	0.0000	0.0000	A
		1	0.0000		

Notes:
CFU: colony forming units.
A: calculated data is less than the precision criterion and, therefore, falls within normal variability.
U: calculated data is greater than the precision criterion and, therefore, falls outside normal variability.
A*: any *E. coli* count under 200 is considered too small an amount to calculate precision.

4.0 CONCLUSIONS

All requirements for the stormwater monitoring QA/QC program were carried out in 2022. All QA/QC results were acceptable for rating stormwater discharges for public health concerns.

5.0 REFERENCES

APHA, 1998. American Public Health Association, American Water Works Association, Water Pollution Control Federation, 20th Edition. Standard Methods for the Examination of Water and Wastewater.

APPENDIX E

Contaminant Data and Ratings for Environmental Concern

Table 1 2022 Stormwater Sediment Contaminant Concentrations

			Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Silver	Zinc	HPAH	LPAH	TOC (%)	Sample Comments
Marine Sediment Quality Guidelines		CRD MSQG	57	5.1	260	390	450	0.41	6.1	410	12	5.2	-	
		CCME ISQG	7.24	0.7	52.3	18.7	30	0.13	1	124	-	-	-	
		CCME PEL	42	4.2	160	108	112	0.7	2.2	271	-	-	-	
Vancouver Island Background			4	0.95	65	100	40	0.15	1	150	-	-	-	
SW0407	Tsawout Creek	2022-12-12	4.05	0.104	26.9	*27.3*	5.99	<0.05	<0.05	43.7	0.03	0.012	1.4	brown fines, marine influenced, rain in the past two days
SW0411A	Saanichton Bay	2021-04-29	2.68	0.058	18.2	*20.1*	6.76	<0.05	<0.05	81.1	0.012	<0.001	0.81	grey sand and gravel, vegetation
SW0412	Tetayut Creek, near Mure Brook	2021-09-07	1.32	0.05	17.6	12.6	2.45	<0.05	<0.05	48.2	0.0022	<0.001	0.65	grey/brown sand and fines, no rain
SW0441	Reay Creek beach access	2021-04-29	2.73	*2.25*	23.3	*27.2*	19.4	<0.05	0.075	*128*	0.15	0.017	5.2	brown fines and sand
SW0441-1A	Reay Creek at Frost Ave.	2021-04-29	2.69	*0.76*	17.3	16.6	5.16	<0.05	0.051	*143*	0.03	0.0029	0.5	brown fines, sand and gravel
SW0441-2	Reay Creek at Norseman Rd.	2021-04-29	6.47	*1.75*	39.4	*19.8*	7.24	<0.05	<0.05	*142*	0.087	0.0067	0.29	brown fines and sand
SW0467	Shoreacres and Memory roads	2022-12-12	3.83	0.093	26.2	*29.5*	8.36	<0.05	<0.05	44.8	0.04	0.009	8	dark brown fines, organic debris, rain in past two days, no flow
SW3006	Roberts Bay at Ardwell	2022-12-12	3.79	0.091	25.8	*27.9*	6.35	<0.05	<0.05	44	0.29	0.065	0.55	grey sand and gravel, marine influenced, rain in past two days
SW3016	Tsehum Harbour, 10462 Resthaven Rd.	2021-04-29	6.15	0.267	35.9	*56.4*	16.8	0.054	0.08	*146*	0.34	0.047	1.1	brown fines
SW3021	McDonald Park and Bayfield	2021-05-06	3.77	0.215	21.3	*33.3*	60.3	0.174	0.178	106	0.4	0.065	2.9	brown fines and sand, organics, no rain
SW3021	McDonald Park and Bayfield	2021-07-13	4.67	0.21	22.6	*27*	23.7	0.239	0.18	105	0.7	0.16	4.1	brown fines, evidence of iron oxide bacteria on surface, no rain
SW3021	McDonald Park and Bayfield	2022-12-08	3.54	0.177	20.7	*22.5*	43.1	0.161	0.14	97.5	0.17	0.027	3.8	grey sand and fines, rain (at times heavy)
SW3104	Tén Tén Creek mouth	2021-08-24	6.56	0.225	26.4	*44.7*	9	0.055	0.115	167	0.076	0.024	3.2	no odour, slightly murky, no recent rain
SW3120	Coles Bay	2021-05-06	6.35	0.114	29.5	*29*	5.08	<0.05	<0.05	67.6	0.0099	0.0072	0.72	brown sand and gravel
SW3135	Brentwood Bay; Etienne Rd.	2021-05-06	6.24	*0.929*	32.5	*60.8*	*32.5*	0.08	0.09	*254*	0.024	0.007	4.3	brown fines and gravel, rusty metal in channel, no rain
SW3154	Tod Creek	2022-12-08	8.12	0.233	24.6	*51.1*	92.5	1.15	0.065	169	0.0048	0.0013	0.52	grey sand and brown fines, rain (at times heavy)

Notes:
Concentrations are in mg/kg dry weight.
CRD MSQG = Marine sediment quality guidelines adopted from Washington State's Department of Ecology for protection of aquatic life.
LPAH and HPAH are low and high molecular weight polycyclic aromatic hydrocarbons, respectively.
CCME = Canadian Council of Ministers of the Environment.
ISQG = interim sediment quality guideline; concentrations above this level but below the PEL will occasionally result in adverse effects on aquatic life.
PEL = probable effects level; concentrations above this level will frequently result in adverse effects to aquatic life.
Vancouver Island Background Concentrations are regional estimates (95th percentiles) from BC MOE; https://www2.gov.bc.ca/assets/gov/environment/air-land-water/site-remediation/docs/protocols/protocol_4.pdf
XX Italicized values are those that exceed a guideline but are below the Vancouver Island background concentration.
XX Value is greater than or equal to the CCME ISQG.
XX Value is greater than or equal to the CCME PEL.
XX Value it greater than or equal to CRD MSQG and adverse effects to aquatic life are likely to occur.
For mercury only, the CRD MSQG is lower than the CCME PEL.
Some samples are not collected at the discharge to marine and therefore marine guidelines are not applicable but are used for screening purposes.

Table 2 2022 Sediment Contaminant Ratings

Station ID	Sample Date	Ratios of Contaminant Concentration / CRD Marine Sediment Quality Guidelines										Sum of Ratios	Contaminant Rating
		Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Silver	Zinc	HPAH	LPAH		
SW0407	2022-12-12	0.07	0.02	0.10	0.07	0.01	0.12	0.01	0.11	0.00	0.00	0.52	Low
SW0411A	2021-04-29	0.05	0.01	0.07	0.05	0.02	0.12	0.01	0.20	0.00	0.00	0.52	Low
SW0412	2021-09-07	0.02	0.01	0.07	0.03	0.01	0.12	0.01	0.12	0.00	0.00	0.39	Low
SW0441	2021-04-29	0.05	0.44	0.09	0.07	0.04	0.12	0.01	0.31	0.01	0.00	1.15	Moderate
SW0441-1A	2021-04-29	0.05	0.15	0.07	0.04	0.01	0.12	0.01	0.35	0.00	0.00	0.80	Low
SW0441-2	2021-04-29	0.11	0.34	0.15	0.05	0.02	0.12	0.01	0.35	0.01	0.00	1.16	Moderate
SW0467	2022-12-12	0.07	0.02	0.10	0.08	0.02	0.12	0.01	0.11	0.00	0.00	0.52	Low
SW3006	2022-12-12	0.07	0.02	0.10	0.07	0.01	0.12	0.01	0.11	0.02	0.01	0.54	Low
SW3016	2021-04-29	0.11	0.05	0.14	0.14	0.04	0.13	0.01	0.36	0.03	0.01	1.02	Mod
SW3021	2021-05-06	0.07	0.04	0.08	0.09	0.13	0.42	0.03	0.26	0.03	0.01	1.17	Moderate
SW3021	2021-07-13	0.08	0.04	0.09	0.07	0.05	0.58	0.03	0.26	0.06	0.03	1.29	Moderate
SW3021	2022-12-08	0.06	0.03	0.08	0.06	0.10	0.39	0.02	0.24	0.01	0.01	1.00	Low
SW3104	2021-08-24	0.12	0.04	0.10	0.11	0.02	0.13	0.02	0.41	0.01	0.00	0.97	Low
SW3120	2021-05-06	0.11	0.02	0.11	0.07	0.01	0.12	0.01	0.16	0.00	0.00	0.63	Low
SW3135	2021-05-06	0.11	0.18	0.13	0.16	0.07	0.20	0.01	0.62	0.00	0.00	1.48	Moderate
SW3154	2022-12-08	0.14	0.05	0.09	0.13	0.21	2.80	0.01	0.41	0.00	0.00	3.85	**High**

Notes:
CRD MSQG = Marine sediment quality guidelines adopted from Washington State's Department of Ecology for protection of aquatic life.
These are ratios of the measured value over the MSQG.
LPAH and HPAH are low and high molecular weight polycyclic aromatic hydrocarbons, respectively.
Concentration exceeds MSQG (ratio greater than 1).
Some samples are not collected at the discharge to marine and therefore marine guidelines are not applicable but are used for screening purposes.
Rating methods are summarized in Appendix G.

Table 3 Summary of Contaminant Ratings for Environmental Concern

Discharge # Location	Figure #	Jurisdiction	Contaminant Ratings								Comments & Recommendations
			2015	2016	2017	2018	2019	2020	2021	2022	
405 (Island View Beach)	4	Central Saanich	-	-	-	Low	Low	-	-	-	Resample in 2024 to monitor for change.
407 (Saanichton Bay)	5	Tsawout First Nation	-	-	Low	-	-	-	-	Low	Rated low in 2005, 2011 and 2017. Resample in 2027 to monitor for change.
409C (Saanichton Bay)	6	Tsawout First Nation	-	-	-	Low	Low	-	-	-	Resample in 2024 to monitor for change.
410 (Saanichton Bay)	6	Tsawout First Nation	-	-	-	-	Low	-	-	-	Elevated lead in 2012. Resample in 2025.
411A (Saanichton Bay)	6	Tsawout First Nation	-	Low	-	-	-	-	Low	-	Rated low in 2011 and 2016. Rated moderate in 2008. Resample in 2026 to confirm rating.
412 (Tetayut Creek)	7	Tsawout First Nation	Low	Low	Low	-	Low	-	Low	-	Low at discharge but elevated levels upstream. Resample discharge in 2024 to monitor for change.
416 (Foot of Ferguson Rd.)	7	Central Saanich	-	Moderate	-	Low	Low	-	-	-	Rated low in 1999, 2000 & 2011. Resample in 2024 to monitor for change.
435 (Bazan Bay)	10	North Saanich	-	-	Low	Low	-	-	-	-	High upstream near highway but low at discharge and in marine. Resample in 2024 to monitor for change.
441 (Reay Creek)	10	North Saanich	High	High	-	-	-	Moderate	Moderate	-	Remedial action undertaken, continue monitoring.
445 (Foot of Frost Ave.)	11	Sidney	-	-	-	-	-	NR	-	-	Rated high yearly (2002 to 2007) due to zinc. HPAH elevated in 2005. U/S: 445-2 high in 2007 due to mercury & PAHs. No sediment available since 2009. Elevated copper and zinc in water.

Table 3, continued

Discharge # Location	Figure #	Jurisdiction	Contaminant Ratings								Comments & Recommendations
			2015	2016	2017	2018	2019	2020	2021	2022	
449 (Tulista Park)	11	Sidney	-	-	Moderate	Low	Moderate	Low *	-	-	Tidally influenced at discharge. Sample 449-2D for rating. *Zn low in sediment, but copper and zinc elevated in one water sample.
450 (Foot of Ocean Ave.)	11	Sidney	-	-	Low	-	-	-	-	-	Rated moderate in 2005 and 2007 due to cumulative contaminants. Rated low in 2011, 2012 and 2017. Resample in 2023 to monitor for change.
467 (Foot of Shoreacres)	12	Sidney	-	-	Low	-	-	-	-	Low	Resample in 2027 to monitor for change.
3005 (Mermaid Canal)	13	Sidney	-	-	**High**	-	-	NR	-	-	Rated high due to Zn & PAH. Marine data >CCME ISQG for Cu, Pb, Hg and Zn. Zn and Cu elevated in water (2020). Elevated As, Cu, Pb and Zn at 3005-3 (2011). Sediment usually not available. **Action Required** (higher priority). Continue source investigations with water.
3006 (Roberts Bay)	13	Sidney	-	-	Low	-	-	-	-	Low	Resample in 2027 to monitor for change.
3016 (All Bay)	14	Sidney	Low	Low	Moderate	Moderate	-	-	Moderate	-	Rated moderate due to Cu and Zn > CCME ISQG. Upstream arsenic concentrations lower. Sidney flushed line in 2015. Resample in 2024.
3021 (Tsehum Harbour)	15	North Saanich	-	-	-	**High**	Moderate	**High**	Moderate	Low	2020: elevated Hg and Pb in sediment; no exceedances in water. Confirm rating.
3051A (Queen Mary Bay)	19	North Saanich	-	-	-	-	-	-	-	-	Elevated PAHs measured in water. Collect a sediment sample in 2023.
3077 (Deep Cove)	23	North Saanich	-	-	-	-	-	NR	**High**	-	In 2020, Cu and Zn 10X above BC ENV marine guidelines. Cu and Zn moderate in water. Pipe buried; measure aqueous metals.
3079 (Tatlow Creek)	23	North Saanich	-	-	-	Low	-	-	-	-	Rated low in 2000 & 2008. Resample in 2023 to monitor for change.

Table 3, continued

Discharge # Location	Figure #	Jurisdiction	Contaminant Ratings								Comments & Recommendations
			2015	2016	2017	2018	2019	2020	2021	2022	
3080A (Benes Creek)	24	North Saanich	High	Low	Low	Low	-	-	-	-	Rated high in 2015 due to mercury; possible lab error. Resample in 2023 to monitor for change.
3090 (Patricia Bay)	26	Tseycum First Nation	-	-	Low	Low	Low	-	-	-	Rated low in 2001, 2005 & 2010. Resample in 2024 to monitor for change.
3095 (Tseycum Creek)	27	Tseycum First Nation	-	-	Low	Low	-	-	-	-	Rated low in previous years. Resample in 2023 to monitor for change.
3104 (Tén Tén Creek)	28	North Saanich	-	-	**High**	Moderate High u/s	Low High u/s	-	Low	-	Zn and Cu above the PEL at Willingdon Road but low at discharge. Transport Canada remediated gross contaminants. Confirm rating.
3118 (Coles Bay)	31	North Saanich	-	-	-	-	-	Low	-	-	Rated low in 2001, 2005 & 2011. Rated moderate in 2006 and 2008 & 2012. Resample in 2025.
3119 (Coles Bay)	31	North Saanich	High	-	Low	Low	-	-	-	-	Rated low in 1998, 2004 & 2011. Rated high in 2015 due to mercury; possible lab error. Resample in 2023 to monitor for change.
3120 (Coles Bay)	31	North Saanich	-	Low	-	-	-	-	Low	-	Rated low in 1999, 2006, 2011 and 2016. Resample in 2026 to monitor for change.
3122 (Coles Bay)	31	Pauquachin First Nation	High	Low	**High**	Low	Low	-	-	-	Rated low in past. Rated high in 2015 due to Hg and in 2017 due to Ca. Resample in 2024.
3124 (Coles Bay)	31	Pauquachin First Nation	-	-	-	Low	-	-	-	-	Rated low in 2001 & 2005. Resample in 2024 to monitor for change.
3133 (Hagan Creek)	35	Tsartlip First Nation	High U/S	-	Low to High U/S	Low to High U/S	Low but High U/S	Low	-	-	Rated low at point of discharge. Elevated As, Ca, Cr, Cu, Pb and Zn upstream. Resample discharge in 2025. Continue investigations around Keating Industrial Park.
3135 (South of Hagan Bight)	35	Tsartlip First Nation	-	-	Moderate	-	-	Moderate	Moderate	-	Copper and zinc elevated above CCME PEL. U/S: stations were rated low. Resample in 2026.

Table 3, continued

Discharge # Location	Figure #	Jurisdiction	Contaminant Ratings								Comments & Recommendations
			2015	2016	2017	2018	2019	2020	2021	2022	
3136A (Stream, south of Hagan Bight)	35	Tsartlip First Nation	Moderate	Moderate	-	-	Low	Low	-	-	No exceedances of guidelines in 2015. Rated high in 2014 due to zinc. Resample in 2025.
3136B (North of Tsartlip boat launch)	35	Tsartlip First Nation	-	-	-	-	-	Low	-	-	Rated low in 2002 & 2008. Resample in 2025.
3138 (Brentwood Bay, north of boat ramp)	36	Tsartlip First Nation	High	High	-	**High**	Low	Low	-	-	Rated high between 2004-2013 due to zinc. Tsartlip replaced pipes. Resample in 2025.
3146 (Brentwood Drive)	36	Central Saanich	-	-	-	-	Low	-	-	-	Rated low in 2006, 2007. Resample in 2024.
3148 (Brentwood Bay)	36	Central Saanich	-	-	-	Low	-	-	-	-	Rated low in 2000, 2005, 2010 & 2011. Resample in 2023 to monitor for change.
3153 (Brentwood Bay)	37	Central Saanich	-	-	Moderate	-	-	-	-	-	Elevated levels of Zn but rated moderate because the sediment is pumped out. U/S: in 2008 & 2009, station 3153-1 rated low. Remedial action undertaken, confirm sediment is still being removed.
3154 (Tod Creek)	43	Central Saanich	Low	-	Moderate	-	-	Low	-	High	U/S: station 3154-1 rated low. As, Cd, Cu, Pb, Zn elevated above CCME ISQG at mouth. Confirm rating.

Notes:
POD = Point of discharge; U/S = upstream
CCME = Canadian Council of Ministers of the Environment
ISQG = Interim sediment quality guidelines
U/S = upstream

Table 4 2022 Stream Sediment Data

		Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Silver	Zinc	HPAH	LPAH	TOC
Marine Sediment Quality Guidelines	**CCME ISQG**	5.9	0.6	37.3	35.7	35	0.17	0.5	123	0.1	0.1	-
	CCME PEL	17	3.5	90	197	91	0.486	-	315			-
Vancouver Island Background		4	0.95	65	100	40	0.15	1	150	-	-	-
SW0407	2022-12-12	4.05	0.104	26.9	27.3	5.99	<0.05	<0.05	43.7	0.03	0.012	1.4
SW0411A	2021-04-29	2.68	0.058	18.2	20.1	6.76	<0.05	<0.05	81.1	0.012	<0.001	0.81
SW0412	2021-09-07	1.32	0.05	17.6	12.6	2.45	<0.05	<0.05	48.2	0.0022	<0.001	0.65
SW0441	2021-04-29	2.73	2.25	23.3	27.2	19.4	<0.05	0.075	*128*	0.15	0.017	5.2
SW0441-1A	2021-04-29	2.69	*0.76*	17.3	16.6	5.16	<0.05	0.051	*143*	0.03	0.0029	0.5
SW0441-2	2021-04-29	6.47	1.75	*39.4*	19.8	7.24	<0.05	<0.05	*142*	0.087	0.0067	0.29
SW0467	2022-12-12	3.83	0.093	26.2	29.5	8.36	<0.05	<0.05	44.8	0.04	0.009	8
SW3006	2022-12-12	3.79	0.091	25.8	27.9	6.35	<0.05	<0.05	44	0.29	0.065	0.55
SW3016	2021-04-29	6.15	0.267	35.9	*56.4*	16.8	0.054	0.08	*146*	0.34	0.047	1.1
SW3021	2021-05-06	3.77	0.215	21.3	33.3	60.3	0.174	0.178	106	0.4	0.065	2.9
SW3021	2021-07-13	4.67	0.21	22.6	27	23.7	0.239	0.18	105	0.7	0.16	4.1
SW3021	2022-12-08	3.54	0.177	20.7	22.5	43.1	0.161	0.14	97.5	0.17	0.027	3.8
SW3104	2021-08-24	6.56	0.225	26.4	*44.7*	9	0.055	0.115	167	0.076	0.024	3.2
SW3120	2021-05-06	6.35	0.114	29.5	29	5.08	<0.05	<0.05	67.6	0.0099	0.0072	0.72
SW3135	2021-05-06	6.24	*0.929*	32.5	*60.8*	*32.5*	0.08	0.09	254	0.024	0.007	4.3
SW3154	2022-12-08	8.12	0.233	24.6	*51.1*	92.5	1.15	0.065	169	0.0048	0.0013	0.52

Notes:
Concentrations are in mg/kg dry weight.
LPAH and HPAH are low and high molecular weight polycyclic aromatic hydrocarbons, respectively.
CCME = Canadian Council of Ministers of the Environment.
ISQG = interim sediment quality guideline; concentrations above this level but below the PEL will occasionally result in adverse effects on aquatic life.
PEL = probable effects level; concentrations above this level will frequently result in adverse effects to aquatic life.
Vancouver Island Background Concentrations are regional estimates (95th percentiles) from BC MOE; https://www2.gov.bc.ca/assets/gov/environment/air-land-water/site-remediation/docs/protocols/protocol_4.pdf

XX Italicized values are those that exceed a guideline but are below the Vancouver Island background concentration.
XX Value is greater than or equal to the CCME ISQG.
XX Value is greater than or equal to the CCME PEL.

Table 5 2022 Stormwater Aqueous Metals Concentrations on Saanich Peninsula

			Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Calcium	Chromium	Cobalt	Copper	Flow Rate
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	L/min
BC Marine Aquatic Life Guidelines		**max**	-	-	**12.5** [1]	-	-	-	**0.12**	-	-	-	**3**	-
		average	-	-	-	-	-	-	-	-	-	-	**2**	-
BC Freshwater Aquatic Life Guidelines		**max**	-	-	**5**	-	-	-	-	-	**1/9** [2]	-	-	-
		average	-	-	-	-	-	-	-	-	-	-	-	-
Station ID	**Location**	**Sample Start Date**												
SW0405	N of Island View beach parking lot	2022-03-22	837	0.192	1.47	9.3	0.075	202	0.0712	33.2	*3.58*	2.77	*5.79*	>500
SW0411	SA-SU Rd./Mt. Newton X Rd.	2022-03-11	333	0.133	0.333	12.1	0.016	16	0.0087	28.2	0.65	0.337	*3.6*	8
SW0412	Tetayut Creek, near Mure Brook	2021-11-09	1470	0.17	0.751	22.4	0.035	63	0.0258	25.1	*2.19*	0.667	*5.1*	>3600
SW0420	Arthur Rd. beach access	2022-03-11	206	0.079	0.302	8.7	<0.01	14	0.0061	18.3	0.27	0.208	*2.26*	20
SW0426	Wardle Rd. beach access	2022-03-11	193	0.118	0.372	10.5	<0.01	35	0.0078	24.3	0.35	0.198	*2.58*	12
SW0430B	N of Cy Hampton Park beach access	2022-03-11	345	0.034	0.514	9.01	<0.01	14	0.0054	30.5	0.59	0.396	*2.17*	5
SW0441	Reay Creek, beach access	2022-11-24	255	0.172	0.47	9.29	<0.01	21	0.0852	17.7	0.65	0.19	*3.54*	
SW0444	Across from 9360 Lochside Dr.	2022-03-10	185	0.266	0.566	13.8	<0.01	23	0.0063	40.5	0.42	0.151	*3.36*	<1
SW0445	9388 Lochside Dr. north of steps	2022-12-08	1660	0.411	0.762	18.9	0.035	<10	0.056	4.22	*2.86*	1.28	*15.4*	30
SW0446	S of 9462 Lochside Dr. beach access	2022-03-10	48.8	0.301	0.598	8.09	<0.01	26	0.0078	41.5	0.27	0.095	*5.27*	1
SW0447	Across from 9498 Lochside Dr.	2022-03-10	522	0.256	0.822	16.5	<0.01	32	0.0082	44.3	0.97	0.177	*5.07*	2
SW0448	Foot of Weiller Rd., Tulista Park	2022-03-10	526	0.306	0.936	14.8	0.016	24	0.0158	31.5	0.9	0.234	*7.89*	3
SW0449	Ditch west/south of Tulista Park	2022-03-10	929	0.133	0.538	9.72	0.025	<10	0.0181	7.3	*1.72*	0.81	*5.69*	>350
SW0449A	MH; Oakville/Eighth St.	2022-03-10	79.7	0.2	0.62	17.4	<0.01	50	0.0283	51	0.37	0.131	*13.2*	40
SW0450	Ocean Ave/Second St. intersection	2022-03-10	125	0.34	0.895	18.1	<0.01	63	0.0179	49.6	0.85	0.236	*6.84*	35
SW0459	South of 9901-3rd St. beach access	2022-03-14	214	0.371	1.01	8.1	<0.01	20	0.0148	12.7	0.47	0.142	*17.8*	5
SW0462	Beach access at 10003 - 3rd St.	2022-03-14	75.2	0.203	0.343	2.56	<0.01	13	0.0071	5.61	0.17	0.0578	*17.3*	2
SW0464	Foot of Rothesay Rd. beach access	2022-03-14	151	0.147	0.411	8.18	<0.01	16	0.0078	16.6	0.3	0.103	*3.39*	3
SW0467	Shoreacres Rd./Memory beach access	2022-03-14	377	0.302	0.627	11.3	0.012	23	0.0085	17.6	0.56	0.136	*9.32*	2
SW0467	Shoreacres Rd./Memory beach access	2022-03-22	1760	0.177	1.19	22.2	0.047	97	0.0221	14.3	*2.52*	0.702	*7.6*	5
SW3005	Fifth St., Mermaid Canal	2021-04-29	504	0.244	0.75	16.9	0.012	86	0.0288	51.2	*3.57*	0.529	*6.03*	>100
SW3005	Fifth St., Mermaid Canal	2022-03-15	835	0.417	0.952	18.6	0.023	49	0.0182	32.4	*1.39*	0.328	*8.26*	>500
SW3005	Fifth St., Mermaid Canal	2022-12-12	66	<0.4	0.94	21.5	<0.2	1800	<0.1	184	*<2*	<0.1	*2.9*	
SW3005-1A	MH 1021 Resthaven Dr.	2021-04-29	153	0.25	0.794	23.7	<0.01	183	0.0174	60.9	*3.5*	0.118	*3.66*	24
SW3005-1A	MH 1021 Resthaven Dr.	2021-06-21	295	0.181	1.02	27.9	<0.01	142	0.0233	55.3	0.45	0.343	*10.5*	12
SW3005-2A	MH 2356/2362 Malaview Ave.	2021-04-29	1670	0.432	1.32	34.5	0.036	65	0.112	60.5	*4.25*	1.63	*23.4*	50
SW3005-4	MH Amelia Ave./Fifth St.	2021-04-29	215	0.289	0.634	15.2	<0.01	53	0.0155	42.6	*2.38*	0.23	*4.83*	40
SW3005-4	MH Amelia Ave./Fifth St.	2021-06-21	206	0.331	0.917	19.7	<0.01	67	0.0214	53.6	0.75	0.188	*6.7*	36
SW3007	W of Bowden beach access	2022-03-15	354	0.376	0.465	14.1	0.012	44	0.0114	51.1	*0.53*	0.142	*6.29*	7
SW3014	E of DFO Small Craft wharf	2022-03-17	601	0.276	0.604	6.65	0.01	<10	0.0258	3.33	*1.17*	0.359	*21.4*	22
SW3015	E of DFO Small Craft wharf	2022-03-17	382	0.161	0.38	4.68	0.011	<10	0.015	4.09	0.69	0.225	*3.33*	22
SW3015A	E of DFO Small Craft wharf	2022-03-17	145	0.186	0.255	2.3	<0.01	<10	0.0172	0.749	0.51	0.0992	*4.51*	
SW3016	Behind 10462 Resthaven Rd.	2021-04-29	251	0.177	0.934	15.1	<0.01	30	0.0257	41.7	*1.28*	0.27	*5.2*	16
SW3016	Behind 10462 Resthaven Rd.	2021-05-06	758	0.242	1.1	19.9	0.014	30	0.0464	40.9	*1.52*	0.864	*9.21*	20
SW3016	Behind 10462 Resthaven Rd.	2021-07-13	414	0.33	1.11	13.2	0.01	54	0.0299	27	0.85	0.379	*10.1*	5
SW3016	Behind 10462 Resthaven Rd.	2022-03-15	542	0.248	0.723	13.9	0.01	25	0.0289	25.3	*1.08*	0.27	*7.15*	>120
SW3020	Blue Heron Rd., NE pipe	2022-03-17	2770	0.41	1.75	20.8	0.047	10	0.0444	9.65	*5.03*	1.36	*9.85*	60
SW3020A	Blue Heron Rd., SW pipe	2022-03-17	98.3	0.228	0.536	5.93	<0.01	106	<0.005	47.3	0.35	0.118	*4.25*	18
SW3021	McDonald Park Rd./Bayfield Rd.	2021-05-06	204	0.106	0.592	19.1	<0.01	126	0.01	52.6	0.51	0.339	*4.56*	30
SW3021	McDonald Park Rd./Bayfield Rd.	2021-07-13	105	0.079	0.499	17.5	<0.01	252	0.0051	55	*0.23*	0.298	*2.15*	2
SW3021	McDonald Park Rd./Bayfield Rd.	2022-12-08	54.2	0.096	0.279	16.6	<0.01	80	<0.005	41.6	*0.24*	0.136	*3.52*	40
SW3021A	1835 Marina Dr., SW of marina	2022-03-17	2060	0.287	1.36	17.7	0.057	110	0.0325	18.7	*2.89*	0.758	*9.24*	>80
SW3051A	Queen Mary Bay	2022-03-17	5270	0.348	2.06	44.1	0.099	13	0.061	9.47	*6.13*	3.07	*10.2*	8
SW3077	50 m W of Tatlow beach access	2021-05-06	156	0.133	0.592	10.1	<0.01	161	0.0082	42.3	0.43	0.169	*4.21*	1
SW3077	50 m W of Tatlow beach access	2022-03-17	1910	0.161	1.16	17.9	0.035	22	0.021	20.9	*2.96*	0.716	*7.26*	6
SW3078A	Tatlow beach access	2022-03-17	2440	0.178	1.14	19.9	0.048	30	0.0412	13.8	*3.78*	1.37	*10*	12
SW3079	Tatlow Creek	2022-03-17	4770	0.095	1.1	45.6	0.096	50	0.0444	16.6	*6.28*	1.7	*8.27*	>5000

Table 5, continued

			Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Calcium	Chromium	Cobalt	Copper	Flow Rate
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	L/min
BC Marine Aquatic Life Guidelines		**max**	-	-	**12.5** [1]	-	-	-	**0.12**	-	-	-	**3**	-
		average	-	-	-	-	-	-	-	-	-	-	**2**	-
BC Freshwater Aquatic Life Guidelines		**max**	-	-	**5**	-	-	-	-	-	**1/9** [2]	-	-	-
		average	-	-	-	-	-	-	-	-	-	-	-	-
Station ID	**Location**	**Sample Start Date**												
SW3079	Tatlow Creek	2022-07-28	467	0.06	1.81	28.9	0.013	1050	0.0204	45.9	0.83	0.449	*2.08*	45
SW3080A	Bennes Creek	2022-03-22	991	0.123	0.649	20.5	0.025	101	0.0233	23.3	*1.49*	0.587	*5.8*	>100
SW3087	Towner Rd. beach access	2022-03-22	1200	0.099	0.586	20	0.033	29	0.0161	23.6	*1.84*	0.549	*6.43*	70
SW3088	S of Towner Rd. beach access	2022-03-22	200	0.282	0.836	14.2	0.163	36	0.0671	41.9	0.44	0.176	*6.61*	<1
SW3104	Tén Tén Creek mouth	2022-04-19	293	0.067	0.553	10.7	<0.01	22	0.007	23.9	0.48	0.267	*3.01*	>180
SW3104	Tén Tén Creek mouth	2022-08-18	49.1	0.09	6.52	23.5	<0.01	88	0.137	51.9	*0.43*	1.85	*64.8*	65
SW3124	S of Pauquachin boat ramp	2022-04-08	133	0.031	0.103	3.38	0.013	<10	0.0102	9.14	0.2	0.0548	1.11	>500
SW3124	S of Pauquachin boat ramp	2022-08-18	59.7	0.023	0.199	7.3	<0.01	10	<0.005	28.1	0.1	0.0393	0.628	20
SW3124	S of Pauquachin boat ramp	2022-08-25	54.1	0.024	0.205	7.74	<0.01	11	<0.005	30.3	0.18	0.0483	0.774	14
SW3124	S of Pauquachin boat ramp	2022-09-01	58.5	<0.02	0.186	6.68	<0.01	13	<0.005	28.2	0.15	0.043	0.6	12
SW3124	S of Pauquachin boat ramp	2022-09-08	65.3	0.02	0.226	7.54	<0.01	<10	<0.005	31.4	0.14	0.0462	0.624	10
SW3124	S of Pauquachin boat ramp	2022-09-15	52.1	<0.02	0.22	7.37	<0.01	12	<0.005	33.4	0.18	0.0437	0.662	8
SW3124	S of Pauquachin boat ramp	2022-10-25	70.8	0.02	0.263	9.05	<0.01	16	0.0053	36	*0.15*	0.069	0.781	8
SW3124	S of Pauquachin boat ramp	2022-11-03	78.2	0.027	0.224	8.78	<0.01	<10	0.0052	33.2	*0.2*	0.056	0.78	11
SW3124	S of Pauquachin boat ramp	2022-11-08	172	0.031	0.213	8.33	<0.01	10	<0.005	30.1	0.29	0.0566	0.724	20
SW3124	S of Pauquachin boat ramp	2022-11-17	46.2	0.022	0.184	7.07	<0.01	<10	<0.005	32.3	*0.11*	0.0426	0.585	18
SW3124	S of Pauquachin boat ramp	2022-11-24	126	0.031	0.205	7.86	<0.01	<10	<0.005	27.8	0.24	0.059	0.74	
SW3133	Hagan Creek mouth	2022-08-18	40.6	0.071	0.646	7.57	<0.01	28	0.0124	28.7	0.13	0.0707	0.882	>500
SW3133-2	Hagan Creek, ditch at Kirkpatrick Cres.	2021-07-16	3150	0.317	1.27	31.1	0.057	328	0.0505	56.8	*7.05*	2.46	*20.4*	20
SW3138	Tsartlip boat launch parking south	2022-04-11	179	0.194	0.769	12.1	<0.01	22	0.0163	53.9	0.76	0.153	*3.51*	40
SW3141	Under ferry wharf at Verdier Ave.	2022-03-23	724	0.236	0.45	7.46	<0.01	<10	0.0273	5	*1.71*	0.55	*16.3*	<1
SW3142	N of ferry wharf at Verdier Ave.	2022-03-23	174	0.254	0.398	10	<0.01	22	0.0143	32.7	*0.46*	0.125	*2.56*	>80
SW3145	Clarke Road	2022-03-23	150	0.109	0.242	9.35	<0.01	21	0.0071	27.8	0.25	0.0997	*2.11*	45
SW3145A	Devonshire beach access	2022-03-23	98.1	0.104	0.324	7.27	<0.01	18	0.0057	35.9	0.24	0.0755	*2.01*	9
SW3146	Brentwood Dr. near Marchant Rd.	2022-03-23	1040	0.111	0.734	16.4	0.019	22	0.0148	29.3	*1.65*	0.79	*6.57*	>1000
SW3148	East of Port Royale	2022-04-07	218	0.078	0.251	15	0.012	16	0.0053	37.2	*0.37*	0.122	1.74	>500
SW3154	Tod Creek	2022-04-07	138	0.089	0.364	6.07	<0.01	30	0.0051	18.6	0.34	0.25	1.99	>4000

Table 5, continued

			Hardness ($CaCO_3$)	Iron	Lead	Lithium	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silicon	Silver
			mg/L	µg/L	µg/L	µg/L	mg/L	µg/L		µg/L	µg/L	mg/L	µg/L	µg/L	µg/L
BC Marine Aquatic Life Guidelines		**max**	**-**	**-**	**140**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**
		average	**-**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1.5**
BC Freshwater Aquatic Life Guidelines		**max**	**-**	**1000**	**81.6**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.1**
		average	**-**	**-**	**6.5**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.05**
Station ID	**Location**	**Sample Start Date**													
SW0405	N of Island View beach parking lot	2022-03-22	253	3460	0.635	11.4	41.2	134		1.45	12.8	12.7	0.194	9770	0.02
SW0411	SA-SU Rd./Mt. Newton X Rd.	2022-03-11	106	536	0.31	0.55	8.67	19.8		0.736	1.08	0.8	0.08	6640	<0.01
SW0412	Tetayut Creek, near Mure Brook	2021-11-09	134	1590	0.912	2.77	17.2	45	<0.0019	0.952	2.12	6.66	0.099	7070	0.012
SW0420	Arthur Rd. beach access	2022-03-11	72.3	298	0.125	<0.5	6.47	110		0.735	0.613	1.02	0.067	5020	<0.005
SW0426	Wardle Rd. beach access	2022-03-11	92.8	273	0.152	1.21	7.81	34.5		0.776	0.78	1.32	0.062	6450	<0.005
SW0430B	N of Cy Hampton Park beach access	2022-03-11	137	908	0.159	1.65	14.7	329		0.157	1.24	0.36	0.057	9380	<0.01
SW0441	Reay Creek, beach access	2022-11-24	69.9	414	0.328	0.66	6.23	49.1	<0.0019	2.41	0.75	1.59	0.076	4420	0.011
SW0444	Across from 9360 Lochside Dr.	2022-03-10	199	129	0.0903	1.75	23.7	8.39		1.77	1.27	1.57	0.116	7400	0.0051
SW0445	9388 Lochside Dr. north of steps	2022-12-08	15.3	2160	3.23	0.95	1.16	75.9		0.283	2.86	0.58	0.084	2300	0.023
SW0446	S of 9462 Lochside Dr. beach access	2022-03-10	141	57.4	0.089	2.22	9.18	1.65		4.41	2.98	0.9	0.166	5080	<0.01
SW0447	Across from 9498 Lochside Dr.	2022-03-10	179	330	0.389	1.7	16.7	12.2		3.2	1.6	1.6	0.083	6800	0.0052
SW0448	Foot of Weiller Rd., Tulista Park	2022-03-10	132	487	0.289	0.84	12.9	27.6		0.922	2	3.82	0.101	6990	0.0139
SW0449	Ditch west/south of Tulista Park	2022-03-10	27.2	1630	1.18	0.77	2.18	48.1		0.294	1.85	0.39	0.064	3540	<0.01
SW0449A	MH; Oakville/Eighth St.	2022-03-10	209	218	0.114	2.43	19.7	16.4		5.64	1.24	2.4	0.207	5320	<0.01
SW0450	Ocean Ave. /Second St. intersection	2022-03-10	243	157	0.284	3.87	29	13.5		8.91	1.03	2.55	0.308	5230	0.0105
SW0459	South of 9901-3rd St. beach access	2022-03-14	56.6	221	0.556	1.12	6.03	11.5		1.31	0.81	1.83	0.085	1670	0.0063
SW0462	Beach access at 10003 - 3rd St.	2022-03-14	18.3	98.9	0.171	<0.5	1.04	3.63		0.31	0.293	0.341	0.047	1040	<0.005
SW0464	Foot of Rothesay Rd. beach access	2022-03-14	61.6	145	0.13	0.53	4.86	4.08		0.527	0.516	0.574	0.092	3050	<0.005
SW0467	Shoreacres Rd./Memory beach access	2022-03-14	69.6	311	0.285	0.61	6.22	6.31		0.299	1.11	1.41	0.06	5020	0.0061
SW0467	Shoreacres Rd./Memory beach access	2022-03-22	56.2	1500	1.21	1.14	5	47.5		0.472	3.37	1.28	0.078	6020	0.026
SW3005	Fifth St., Mermaid Canal	2021-04-29	269	641	1.14	4.78	34.3	62		6.79	13.7	4.48	0.111	8040	0.012
SW3005	Fifth St., Mermaid Canal	2022-03-15	143	700	0.792	2.04	15	21		3.33	2.09	2.83	0.14	7570	0.011
SW3005	Fifth St., Mermaid Canal	2022-12-12	2590	64	<0.1	70	518	22.9		5.4	1.25	157	<0.8	3670	<0.1
SW3005-1A	MH 1021 Resthaven Dr.	2021-04-29	428	140	0.101	8.22	66.9	12.4		12.1	14.3	11	0.228	6920	0.0059
SW3005-1A	MH 1021 Resthaven Dr.	2021-06-21	337	411	0.61	6.85	48.4	25.8	<0.0019	3.97	1.8	8.15	0.115	8020	<0.01
SW3005-2A	MH 2356/2362 Malaview Ave.	2021-04-29	289	2260	4.86	4.46	33.6	186		5.69	8.45	2.06	0.132	10300	0.083
SW3005-4	MH Amelia Ave./Fifth St.	2021-04-29	196	365	0.297	2.54	21.7	16.5		8.52	9.42	2.13	0.169	6900	0.0059
SW3005-4	MH Amelia Ave./Fifth St.	2021-06-21	268	326	0.239	3.36	32.5	9.9	<0.0019	7.6	2.62	3.23	0.241	7350	0.0053
SW3007	W of Bowden beach access	2022-03-15	181	316	0.318	1.94	12.9	8.23		2.93	1.09	0.84	0.112	7330	<0.01
SW3014	E of DFO Small Craft wharf	2022-03-17	12.2	739	2.87	<0.5	0.93	19.8		0.249	0.99	0.38	0.04	1270	<0.01
SW3015	E of DFO Small Craft wharf	2022-03-17	14.8	453	0.877	<0.5	1.12	16		0.18	0.72	0.34	<0.04	1240	<0.01
SW3015A	E of DFO Small Craft wharf	2022-03-17	2.86	153	1.48	<0.5	0.241	5.79		0.12	0.475	0.282	<0.04	302	0.0055
SW3016	Behind 10462 Resthaven Rd.	2021-04-29	167	669	0.276	1.39	15.2	43		3.06	4.6	1.04	0.074	6250	<0.01
SW3016	Behind 10462 Resthaven Rd.	2021-05-06	164	1890	0.976	1.42	15.1	166		2.23	3	1.04	0.08	6820	<0.01
SW3016	Behind 10462 Resthaven Rd.	2021-07-13	130	502	0.298	3.83	15.2	38.3		0.889	2.29	3.36	0.118	10100	0.015
SW3016	Behind 10462 Resthaven Rd.	2022-03-15	101	637	0.601	1.23	9.26	33		1.26	1.94	1.22	0.085	6490	<0.01
SW3020	Blue Heron Rd., NE pipe	2022-03-17	41.1	3210	2.6	1.89	4.14	136		1.15	3.28	1.11	0.081	5940	0.042
SW3020A	Blue Heron Rd., SW pipe	2022-03-17	205	120	0.15	2.23	21.1	9.77		6.5	0.736	4.1	0.154	6190	<0.005
SW3021	McDonald Park Rd./Bayfield Rd.	2021-05-06	208	1060	0.329	0.86	18.6	347	<0.0019	2.86	2.03	2.91	0.091	6450	<0.01
SW3021	McDonald Park Rd./Bayfield Rd.	2021-07-13	241	483	0.164	1.06	25.2	561	<0.0019	3.23	1.47	3.77	0.087	8690	<0.01
SW3021	McDonald Park Rd./Bayfield Rd.	2022-12-08	165	*445*	0.111	0.67	14.8	101		0.878	0.786	3.64	0.062	6690	<0.005
SW3021A	1835 Marina Dr., SW of marina	2022-03-17	59.7	2080	1.29	1.59	3.15	79.3		1.64	2.17	0.84	0.393	6210	0.019
SW3051A	Queen Mary Bay	2022-03-17	37.5	6090	8.43	4.54	3.36	210		0.378	7.15	0.82	0.068	8870	0.027
SW3077	50 m W of Tatlow beach access	2021-05-06	180	179	0.087	2.42	18	9.58	0.002	1.21	1.14	3.19	0.09	9440	<0.01
SW3077	50 m W of Tatlow beach access	2022-03-17	79.8	2060	0.969	1.75	6.72	51.1		0.79	2.48	1.33	0.068	6930	0.018
SW3078A	Tatlow beach access	2022-03-17	54.5	2990	1.25	1.78	4.85	125		0.429	4.46	2.46	0.089	6650	0.054

Table 5, continued

			Hardness ($CaCO_3$)	Iron	Lead	Lithium	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silicon	Silver
			mg/L	µg/L	µg/L	µg/L	mg/L	µg/L		µg/L	µg/L	mg/L	µg/L	µg/L	µg/L
BC Marine Aquatic Life Guidelines		**max**	**-**	**-**	**140**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**
		average	**-**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1.5**
BC Freshwater Aquatic Life Guidelines		**max**	**-**	**1000**	**81.6**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.1**
		average	**-**	**-**	**6.5**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.05**
Station ID	**Location**	**Sample Start Date**													
SW3079	Tatlow Creek	2022-03-17	65	4580	1.62	3.02	5.69	127		0.484	5.58	2.12	0.114	10400	0.04
SW3079	Tatlow Creek	2022-07-28	242	900	0.403	3.9	31	195		3.4	1.43	7.73	0.085	9860	<0.01
SW3080A	Bennes Creek	2022-03-22	91.1	1100	0.564	0.89	7.97	70.6		1.21	2.03	3.4	0.087	6580	0.013
SW3087	Towner Rd. beach access	2022-03-22	87.5	1340	0.524	1.24	6.96	43.2		0.726	2	0.83	0.061	8970	0.013
SW3088	S of Towner Rd. beach access	2022-03-22	144	230	0.121	0.66	9.62	2.87		0.612	1.24	1.76	0.219	10000	0.019
SW3104	Tén Tén Creek mouth	2022-04-19	93.5	545	0.12	0.56	8.23	79.2		1.68	1.09	1.52	0.105	6120	0.0052
SW3104	Tén Tén Creek mouth	2022-08-18	219	1260	0.162	1.56	21.7	30.7		5.33	4.59	33.3	0.139	8230	<0.005
SW3124	S of Pauquachin boat ramp	2022-04-08	30.3	90.8	0.0809	<0.5	1.81	3.91		0.476	0.2	0.246	<0.04	5800	<0.005
SW3124	S of Pauquachin boat ramp	2022-08-18	95.1	69.5	0.0552	<0.5	6.06	4.29		0.764	0.215	0.354	0.064	8860	<0.005
SW3124	S of Pauquachin boat ramp	2022-08-25	101	73.2	0.068	<0.5	6.09	6.39		0.836	0.226	0.431	<0.04	7950	<0.005
SW3124	S of Pauquachin boat ramp	2022-09-01	94	75	0.058	<0.5	5.72	5.04	<0.0019	0.768	0.19	0.36	<0.04	7580	<0.01
SW3124	S of Pauquachin boat ramp	2022-09-08	102	80.3	0.0607	<0.5	5.84	6.15		0.846	0.208	0.374	<0.04	7230	<0.005
SW3124	S of Pauquachin boat ramp	2022-09-15	110	71.1	0.0503	<0.5	6.46	3.97		0.852	0.197	0.535	<0.04	7280	<0.005
SW3124	S of Pauquachin boat ramp	2022-10-25	121	129	0.17	<0.5	7.56	16.2	<0.0019	0.694	0.216	1.32	<0.04	9060	<0.005
SW3124	S of Pauquachin boat ramp	2022-11-03	114	104	0.095	<0.5	7.47	15.2	<0.0019	0.606	0.44	1.06	<0.04	8510	<0.01
SW3124	S of Pauquachin boat ramp	2022-11-08	100	149	0.0741	<0.5	6.05	4.08	<0.0019	0.482	0.31	0.951	0.043	8070	<0.005
SW3124	S of Pauquachin boat ramp	2022-11-17	106	70.7	0.0506	<0.5	6.14	5.36	<0.0019	0.486	0.182	0.622	<0.04	7320	<0.005
SW3124	S of Pauquachin boat ramp	2022-11-24	95.2	141	0.093	<0.5	6.24	8.32	<0.0019	0.425	0.29	0.68	<0.04	8130	<0.01
SW3133	Hagan Creek mouth	2022-08-18	117	129	0.0404	0.56	11.1	64.9		0.498	0.395	1.04	0.052	9730	<0.005
SW3133-2	Hagan Creek, ditch at Kirkpatrick Cres.	2021-07-16	189	3570	1.78	3.88	11.5	211		1.33	8.72	8.85	0.108	12000	0.017
SW3138	Tsartlip boat launch parking south	2022-04-11	185	142	0.0878	0.77	12.2	4.69		1.73	1.3	1.27	0.189	7710	0.0061
SW3141	Under ferry wharf at Verdier Ave.	2022-03-23	17.3	1090	1.77	<0.5	1.17	21.2		0.27	1.45	0.37	0.045	3100	<0.01
SW3142	N of ferry wharf at Verdier Ave.	2022-03-23	128	183	0.219	0.51	11.2	10.9		0.525	0.56	0.99	0.069	7670	<0.01
SW3145	Clarke Road	2022-03-23	105	128	0.15	<0.5	8.55	4.27		0.377	0.44	0.682	0.074	7700	<0.005
SW3145A	Devonshire beach access	2022-03-23	125	74.7	0.0512	0.57	8.56	2.91		0.205	0.405	0.532	0.081	8690	<0.005
SW3146	Brentwood Dr. near Marchant Rd.	2022-03-23	113	1350	0.569	0.87	9.56	42.7		2.97	2.4	3.9	0.076	7380	0.014
SW3148	East of Port Royale	2022-04-07	113	244	0.132	<0.5	4.79	19.4		0.309	0.397	0.841	0.073	5430	0.0086
SW3154	Tod Creek	2022-04-07	61.8	447	0.238	<0.5	3.73	33.3		0.253	0.8	0.97	0.066	3460	<0.01

Table 5, continued

			Sodium	Strontium	Sulfur	Thallium	Tin	Titanium	Uranium	Vanadium	Zinc	Zirconium	Sample description	Recent precipitation
			mg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L		
BC Marine Aquatic Life Guidelines		**max**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**55**	**-**		
		average	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**10**	**-**		
BC Freshwater Aquatic Life Guidelines		**max**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**40.5**	**-**		
		average	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**15**	**-**		
Station ID	**Location**	**Sample Start Date**												
SW0405	N of Island View beach parking lot	2022-03-22	278	334	38.8	0.0147	<0.2	22.3	1.18	6.66	10.6	1.24	organic odour, amber	light rain
SW0411	SA-SU Rd./Mt. Newton X Rd.	2022-03-11	22.7	151	4.2	<0.002	<0.2	13.6	0.0703	1.78	6.2	0.17	clear	no rain
SW0412	Tetayut Creek, near Mure Brook	2021-11-09	91	174	12.4	0.0063	<0.2	53.2	0.119	4.09	11.7	0.32	turbid brown	heavy rain
SW0420	Arthur Rd. beach access	2022-03-11	11.9	79.6	<3	0.0021	<0.2	6.82	0.112	0.87	7.98	0.12	clear	no rain
SW0426	Wardle Rd. beach access	2022-03-11	17.2	137	3.3	0.0021	<0.2	7.83	0.269	1.17	8.43	0.13	clear	no rain
SW0430B	N of Cy Hampton Park beach access	2022-03-11	18.9	139	<3	<0.002	<0.2	12.9	0.0553	1.26	3.2	0.12	amber	no rain
SW0441	Reay Creek, beach access	2022-11-24	22.8	79.4	6.7	0.0032	<0.2	9.9	0.119	1.19	10.2	<0.1	clear	no recent rain
SW0444	Across from 9360 Lochside Dr.	2022-03-10	39	186	10.9	<0.002	<0.2	9.28	0.661	1.6	8.78	0.14	clear	no rain
SW0445	9388 Lochside Dr. north of steps	2022-12-08	3.63	16.5	<3	0.0073	0.46	53.1	0.0793	5	*65*	0.21	murky amber	rain
SW0446	S of 9462 Lochside Dr. beach access	2022-03-10	21	149	5.2	<0.002	<0.2	<2	0.312	2.07	11.8	<0.1	clear	no rain
SW0447	Across from 9498 Lochside Dr.	2022-03-10	23.6	166	9.9	<0.002	<0.2	24.2	0.456	2.62	6.46	0.4	clear	no rain
SW0448	Foot of Weiller Rd., Tulista Park	2022-03-10	26.1	128	4.7	0.0026	<0.2	27.7	0.176	2.23	9.64	0.59	amber	no rain
SW0449	Ditch west/south of Tulista Park	2022-03-10	9.91	24.3	<3	0.0021	<0.2	39.8	0.0562	2.98	*17.1*	0.1	murky brown	no rain
SW0449A	MH; Oakville / Eighth St.	2022-03-10	76.8	207	13.9	<0.002	<0.2	2.4	0.896	1.1	14.9	<0.1	clear	no rain
SW0450	Ocean Ave. /Second St. intersection	2022-03-10	78.2	229	20.2	0.0021	0.24	12	1.71	2.22	*27.7*	0.21	murky	no rain
SW0459	South of 9901-3rd St. beach access	2022-03-14	18	56	4.8	<0.002	<0.2	10.5	0.314	1.34	*33.1*	0.11	clear	no rain
SW0462	Beach access at 10003 - 3rd St.	2022-03-14	3.22	18	<3	<0.002	<0.2	3.49	0.0263	0.58	14.6	<0.1	clear	no rain
SW0464	Foot of Rothesay Rd. beach access	2022-03-14	9.4	62.1	<3	<0.002	<0.2	5.92	0.0803	0.96	8.91	<0.1	clear	no rain
SW0467	Shoreacres Rd./Memory beach access	2022-03-14	15.3	75.5	3.4	<0.002	<0.2	16.5	0.0671	1.26	5.27	0.34	clear	no rain
SW0467	Shoreacres Rd./Memory beach access	2022-03-22	15.3	74.4	3.2	0.0078	<0.2	50.6	0.0534	3.79	*20.2*	0.29	amber	light rain
SW3005	Fifth St., Mermaid Canal	2021-04-29	126	305	21.7	0.0046	<0.2	19.8	1.23	2.57	*20.3*	0.22	clear	light rain previous
SW3005	Fifth St., Mermaid Canal	2022-03-15	41.7	166	9.7	0.0059	<0.2	29.6	0.519	2.85	14.7	0.42	amber	light rain
SW3005	Fifth St., Mermaid Canal	2022-12-12	4310	3760	366	<0.04	<4	<10	1.48	<4	11.3	<2	clear	pooled water, tidal, rain past two days
SW3005-1A	MH 1021 Resthaven Dr.	2021-04-29	330	553	45.2	0.0043	<0.2	8.17	2.05	2.55	3.06	0.18	clear	light rain previous
SW3005-1A	MH 1021 Resthaven Dr.	2021-06-21	185	392	32	0.0042	<0.2	10.4	1.87	3.79	6.2	0.11	clear	no rain
SW3005-2A	MH 2356/2362 Malaview Ave.	2021-04-29	70.4	302	23.3	0.0115	0.32	65.5	1.64	5.45	*82*	0.36	clear	light rain previous
SW3005-4	MH Amelia Ave/Fifth St.	2021-04-29	53	196	12.2	0.0032	<0.2	7.17	0.842	1.65	*16.8*	0.11	clear	light rain previous
SW3005-4	MH Amelia Ave/Fifth St.	2021-06-21	83.5	270	23	0.004	<0.2	8.04	1.38	2.15	14.8	0.14	clear	no rain
SW3007	W of Bowden beach access	2022-03-15	21.1	152	6.3	0.0035	<0.2	12.7	0.425	1.78	6.2	0.15	clear	light rain
SW3014	E of DFO Small Craft wharf	2022-03-17	3.49	12.7	<3	0.0033	0.31	20.3	0.0211	1.73	*29.5*	0.16	earthy odour, murky	heavy rain
SW3015	E of DFO Small Craft wharf	2022-03-17	2.99	15.5	<3	0.0025	<0.2	15.6	0.0165	1.29	12.9	<0.1	murky amber	heavy rain
SW3015A	E of DFO Small Craft wharf	2022-03-17	1.83	3.62	<3	<0.002	0.28	6.07	0.0039	0.44	*16.1*	<0.1		
SW3016	Behind 10462 Resthaven Rd.	2021-04-29	43.8	172	6.8	0.0028	<0.2	10.2	0.353	1.3	9.1	<0.1	clear	light rain previous
SW3016	Behind 10462 Resthaven Rd.	2021-05-06	45.9	172	6.9	0.005	<0.2	31.7	0.382	3.21	*22.1*	0.24	clear	no rain
SW3016	Behind 10462 Resthaven Rd.	2021-07-13	27.2	108	5	0.0042	<0.2	16	0.331	2.92	*16.4*	0.61	clear	no rain
SW3016	Behind 10462 Resthaven Rd.	2022-03-15	24.1	100	4.7	0.0038	<0.2	20.1	0.143	1.82	13	0.2	clear	light rain
SW3020	Blue Heron Rd, NE pipe	2022-03-17	8.47	44.6	<3	0.0099	0.32	88.1	0.106	6.79	*52.1*	0.59	earthy odour, brown	heavy rain
SW3020A	Blue Heron Rd, SW pipe	2022-03-17	74.2	219	18.4	0.0033	<0.2	3.46	0.786	1.49	6.82	<0.1	clear	heavy rain
SW3021	McDonald Park Rd./Bayfield Rd.	2021-05-06	22.4	214	9.9	0.003	<0.2	8.4	0.682	1.09	3.2	0.15	clear	no rain
SW3021	McDonald Park Rd./Bayfield Rd.	2021-07-13	35.1	259	12.9	<0.002	<0.2	4.2	0.726	0.54	3.1	<0.1	slight amber	no rain
SW3021	McDonald Park Rd./Bayfield Rd.	2022-12-08	28.2	188	6.9	0.0025	<0.2	2	0.147	0.41	2.52	<0.1	murky brown	rain
SW3021A	1835 Marina Dr., SW of marina	2022-03-17	4.67	56.3	<3	0.0115	0.37	94.1	0.14	5.07	*17.9*	1.02	sewer odour, amber	heavy rain
SW3051A	Queen Mary Bay	2022-03-17	3.36	64.4	<3	0.0219	<0.2	166	0.102	12.3	*37.8*	0.42	amber	heavy rain
SW3077	50 m W of Tatlow beach access	2021-05-06	40.6	268	10.4	0.0023	<0.2	6.9	0.379	1.72	3.4	0.11	clear	no rain
SW3077	50 m W of Tatlow beach access	2022-03-17	10.2	114	3.6	0.0081	<0.2	86.7	0.165	5.63	11.4	1.2	brown	heavy rain
SW3078A	Tatlow beach access	2022-03-17	8.53	102	<3	0.0095	<0.2	96.8	0.0851	7.07	13.8	0.76	sewer odour, brown	heavy rain
SW3079	Tatlow Creek	2022-03-17	8.36	126	<3	0.0211	<0.2	183	0.146	10.8	*24.3*	0.73	very murky	heavy rain
SW3079	Tatlow Creek	2022-07-28	196	455	20.3	0.0027	<0.2	19.5	0.382	3.93	6.1	0.15	slight amber	no rain prior

Table 5, continued

			Sodium	Strontium	Sulfur	Thallium	Tin	Titanium	Uranium	Vanadium	Zinc	Zirconium	Sample description	Recent precipitation
			mg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L		
BC Marine Aquatic Life Guidelines		**max**	-	-	-	-	-	-	-	-	**55**	-		
		average	-	-	-	-	-	-	-	-	**10**	-		
BC Freshwater Aquatic Life Guidelines		**max**	-	-	-	-	-	-	-	-	**40.5**	-		
		average	-	-	-	-	-	-	-	-	**15**	-		
Station ID	**Location**	**Sample Start Date**												
SW3080A	Bennes Creek	2022-03-22	11.6	103	5.6	0.0053	<0.2	41.1	0.143	3.18	*23.3*	0.29	murky	light rain
SW3087	Towner Rd. beach access	2022-03-22	10.6	107	3.2	0.0063	<0.2	52.5	0.0594	3.65	11	0.21	amber	light rain
SW3088	S of Towner Rd beach access	2022-03-22	19.6	168	6.6	0.0122	<0.2	8.4	0.114	1.24	*92*	0.14	clear	light rain
SW3104	Tén Tén Creek mouth	2022-04-19	16	99.6	<3	0.0032	<0.2	14.1	0.206	1.38	5.67	0.24	slight amber	rain yesterday
SW3104	Tén Tén Creek mouth	2022-08-18	27.7	243	25.9	0.0043	<0.2	1.64	0.412	1.46	*133*	<0.1	slightly amber	no rain prior
SW3124	S of Pauquachin boat ramp	2022-04-08	4.9	30.4	<3	<0.002	<0.2	4.29	0.0988	0.53	2.49	0.11	clear	no rain prior
SW3124	S of Pauquachin boat ramp	2022-08-18	9	80	3	<0.002	<0.2	1.92	0.388	0.78	0.96	<0.1	clear	no rain prior
SW3124	S of Pauquachin boat ramp	2022-08-25	9.1	77.8	<3	<0.002	<0.2	2.31	0.437	0.83	1.05	<0.1	clear	no rain prior
SW3124	S of Pauquachin boat ramp	2022-09-01	7.98	69.3	<3	<0.002	<0.2	2.3	0.453	0.73	<1	<0.1	clear	no rain prior
SW3124	S of Pauquachin boat ramp	2022-09-08	8.18	79	<3	<0.002	<0.2	3.01	0.545	0.85	1.75	<0.1	clear	no rain prior
SW3124	S of Pauquachin boat ramp	2022-09-15	7.78	84.6	<3	<0.002	<0.2	2.35	0.549	0.77	1.37	<0.1	clear	no rain prior
SW3124	S of Pauquachin boat ramp	2022-10-25	9.09	92.7	3.3	<0.002	<0.2	2.46	0.644	0.74	6.77	<0.1	clear	potential first flush conditions
SW3124	S of Pauquachin boat ramp	2022-11-03	9.14	92.3	4.4	<0.002	<0.2	3.4	0.51	0.67	1.8	0.24	clear	rain prior
SW3124	S of Pauquachin boat ramp	2022-11-08	8.1	74.9	5	<0.002	<0.2	6.54	0.4	0.81	1.74	0.25	clear	rain prior
SW3124	S of Pauquachin boat ramp	2022-11-17	8.28	85.4	4.8	<0.002	<0.2	2.45	0.457	0.54	1.36	<0.1	clear	rain prior
SW3124	S of Pauquachin boat ramp	2022-11-24	8.49	80.6	5.2	<0.002	<0.2	5	0.364	0.77	3.7	<0.1	clear	no recent rain
SW3133	Hagan Creek mouth	2022-08-18	13.2	120	4.8	<0.002	<0.2	1.44	0.146	1.43	1.92	<0.1	clear	no rain prior
SW3133-2	Hagan Creek, ditch at Kirkpatrick Cres.	2021-07-16	25.7	207	13.2	0.0069	0.27	125	0.25	11	*30.5*	0.65	organic odour, murky	no rain
SW3138	Tsartlip boat launch parking south	2022-04-11	17.5	181	9.9	<0.002	<0.2	6.32	0.264	2.04	2.56	<0.1	clear	light rain prior
SW3141	Under ferry wharf at Verdier Ave.	2022-03-23	8.74	15.6	<3	0.0028	<0.2	28.7	0.013	2.37	*36.1*	0.18	clear	light rain previous two days
SW3142	N of ferry wharf at Verdier Ave.	2022-03-23	16.2	114	5	<0.002	<0.2	8.1	0.123	1.31	9.3	<0.1	clear	light rain previous two days
SW3145	Clarke Road	2022-03-23	15.6	94.8	3.9	0.0025	<0.2	6.71	0.0604	1.13	14.8	<0.1	clear	light rain previous two days
SW3145A	Devonshire beach access	2022-03-23	14	107	3.6	<0.002	<0.2	4.77	0.037	0.96	3.68	<0.1	clear	light rain previous two days
SW3146	Brentwood Dr. near Marchant Rd.	2022-03-23	13.2	99.1	3.1	0.0042	<0.2	42.6	0.0913	3.38	*18.2*	0.31	clear	light rain previous two days
SW3148	East of Port Royale	2022-04-07	12.7	76.6	<3	0.0036	<0.2	8.61	0.0877	1.04	3.24	0.12	clear	no rain prior
SW3154	Tod Creek	2022-04-07	7.42	63.6	4.2	<0.002	<0.2	4.6	0.0309	0.99	2.6	<0.1	clear	no rain prior

Notes:
All metals are total state.
MH = manhole.
British Columbia approved and working water quality guidelines for protection of freshwater or marine aquatic life were used for comparison.
Although aquatic life guidelines would not apply to stormdrains, guidelines are used for screening purposes.
A hardness of 100 mg/L CaCO3 was used to calculate hardness dependant water quality parameters.
1 interim guideline.
2 Cr(IV) / Cr (III).

xx	Value exceeds the provincial guideline for protection of freshwater aquatic life.
xx	Value exceeds the provincial guideline for protection of marine aquatic life.
xx	Value exceeds the provincial guideline for the marine and freshwater aquatic life.
xx	Italicized value exceeds a guideline which is only partially applicable. Further investigation is needed.

Table 6 2022 Stormwater Aqueous Polycyclic Aromatic Hydrocarbon Data from Saanich Peninsula

Guidelines	Parameter	1-Methyl-naphthalene	2-Methyl-naphthalene	Acenaphthene	Acenaphthylene	Acridine	Anthracene	Benzo(B) Fluoranthene + Benzo(J) Fluoranthene	Benzo(K) Fluoranthene	Benzo(A) Anthracene	Benzo(A) Pyrene	Benzo(G,H,I)Perylene	Chrysene	Dibenzo(A,H)Anthracene	Fluoranthene	Fluorene	Indeno (1,2,3-C,D) Pyrene	Naphthalene	Phenanthrene	Pyrene	Quinoline	Total HMW-PAH	Total LWM-PAH	Total PAH
	Freshwater			6						0.1	0.01				4	12		1	0.3	0.02				
	Marine	1	1	6							0.01		0.1			12		1		phototoxic criteria				
Station ID	Sample Date	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
SW0405	2022-03-22	<0.05	<0.1	<0.05	<0.05	<0.05	<0.01	<0.03	<0.05	<0.01	<0.005	<0.05	<0.02	<0.003	<0.02	<0.05	<0.05	<0.1	<0.05	<0.02	<0.02	<0.05	<0.1	<0.1
SW0411	2022-03-11	<0.05	<0.1	<0.05	<0.05	<0.05	<0.01	<0.03	<0.05	<0.01	<0.005	<0.05	<0.02	<0.003	<0.02	<0.05	<0.05	<0.1	<0.05	<0.02	<0.02	<0.05	<0.1	<0.1
SW0420	2022-03-11	<0.05	<0.1	<0.05	<0.05	<0.05	<0.01	<0.03	<0.05	<0.01	<0.005	<0.05	<0.02	<0.003	<0.02	<0.05	<0.05	<0.1	<0.05	<0.02	<0.02	<0.05	<0.1	<0.1
SW0426	2022-03-11	<0.05	<0.1	<0.05	<0.05	<0.05	<0.01	<0.03	<0.05	<0.01	<0.005	<0.05	<0.02	<0.003	<0.02	<0.05	<0.05	<0.1	<0.05	<0.02	<0.02	<0.05	<0.1	<0.1
SW0430B	2022-03-11	<0.05	<0.1	<0.05	<0.05	<0.05	<0.01	<0.03	<0.05	<0.01	<0.005	<0.05	<0.02	<0.003	<0.02	<0.05	<0.05	<0.1	<0.05	<0.02	<0.02	<0.05	<0.1	<0.1
SW0441	2020-12-16	<0.05	<0.1	<0.05	<0.05	<0.05	<0.01	<0.03	<0.05	<0.01	<0.005	<0.05	<0.02	<0.003	<0.02	<0.05	<0.05	<0.1	<0.05	<0.02	<0.02		<0.1	<0.1
SW0444	2022-03-10	<0.05	<0.1	<0.05	<0.05	<0.05	<0.01	<0.03	<0.05	<0.01	<0.005	<0.05	<0.02	<0.003	<0.02	<0.05	<0.05	<0.1	<0.05	<0.02	<0.02	<0.05	<0.1	<0.1
SW0445	2020-07-13	<0.05	<0.1	<0.05	<0.05	<0.05	<0.01	<0.03	<0.05	<0.01	<0.005	<0.05	<0.02	<0.003	<0.02	<0.05	<0.05	<0.1	<0.05	<0.02	<0.02		<0.1	<0.1
SW0446	2022-03-10	<0.05	<0.1	<0.05	<0.05	<0.05	<0.01	<0.03	<0.05	<0.01	<0.005	<0.05	<0.02	<0.003	<0.02	<0.05	<0.05	<0.1	<0.05	<0.02	<0.02	<0.05	<0.1	<0.1
SW0447	2022-03-10	<0.05	<0.1	<0.05	<0.05	<0.05	<0.01	<0.03	<0.05	<0.01	<0.005	<0.05	<0.02	<0.003	<0.02	<0.05	<0.05	<0.1	<0.05	<0.02	<0.02	<0.05	<0.1	<0.1
SW0448	2022-03-10	<0.05	<0.1	<0.05	<0.05	<0.05	<0.01	<0.03	<0.05	<0.01	<0.005	<0.05	<0.02	<0.003	<0.02	<0.05	<0.05	<0.1	<0.05	<0.02	<0.02	<0.05	<0.1	<0.1
SW0449	2022-03-10	<0.05	<0.1	0.071	<0.05	<0.05	<0.01	<0.03	<0.05	<0.01	0.013	<0.05	<0.02	0.0071	0.042	<0.05	<0.05	0.14	0.15	0.023	<0.021	0.084	0.36	0.44
SW0449A	2022-03-10	<0.05	<0.1	<0.05	<0.05	<0.05	<0.01	<0.03	<0.05	<0.01	<0.005	<0.05	<0.02	<0.003	<0.02	<0.05	<0.05	<0.1	<0.05	<0.02	<0.02	<0.05	<0.1	<0.1
SW0450	2022-03-10	<0.05	<0.1	<0.05	<0.05	<0.05	<0.01	<0.03	<0.05	<0.01	<0.005	<0.05	<0.02	<0.003	<0.02	<0.05	<0.05	<0.1	<0.05	<0.02	<0.02	<0.05	<0.1	<0.1
SW0459	2022-03-14	<0.05	<0.1	<0.05	<0.05	<0.05	<0.01	<0.03	<0.05	<0.01	<0.005	<0.05	<0.02	<0.003	<0.02	<0.05	<0.05	<0.1	<0.05	<0.02	<0.02	<0.05	<0.1	<0.1
SW0462	2022-03-14	<0.05	<0.1	<0.05	<0.05	<0.05	<0.01	<0.03	<0.05	<0.01	<0.005	<0.05	<0.02	<0.003	<0.02	<0.05	<0.05	<0.1	<0.05	<0.02	<0.02	<0.05	<0.1	<0.1
SW0464	2022-03-14	<0.05	<0.1	<0.05	<0.05	<0.05	<0.01	<0.03	<0.05	<0.01	<0.005	<0.05	<0.02	<0.003	<0.02	<0.05	<0.05	<0.1	<0.05	<0.02	<0.02	<0.05	<0.1	<0.1
SW0467	2022-03-14	<0.05	<0.1	<0.05	<0.05	<0.05	<0.01	<0.03	<0.05	<0.01	<0.005	<0.05	<0.02	<0.003	<0.02	<0.05	<0.05	<0.1	<0.05	<0.02	<0.02	<0.05	<0.1	<0.1
SW0467	2022-03-22	<0.05	<0.1	<0.05	<0.05	<0.05	<0.01	<0.03	<0.05	<0.01	<0.005	<0.05	<0.02	<0.003	<0.02	<0.05	<0.05	<0.1	<0.05	<0.02	<0.02	<0.05	<0.1	<0.1
SW3005	2020-11-23	<0.05	<0.1	<0.05	<0.05	<0.05	<0.01	<0.03	<0.05	<0.01	<0.005	<0.05	<0.02	<0.003	<0.02	<0.05	<0.05	<0.1	<0.05	<0.02	<0.02	<0.05	<0.1	<0.1
SW3005	2022-03-15	<0.05	<0.1	<0.05	<0.05	<0.05	<0.01	<0.03	<0.05	<0.01	<0.005	<0.05	<0.02	<0.003	<0.02	<0.05	<0.05	<0.1	<0.05	<0.02	<0.02	<0.05	<0.1	<0.1
SW3005-4	2020-11-23	<0.05	<0.1	<0.05	<0.05	<0.05	<0.01	<0.03	<0.05	<0.01	<0.005	<0.05	<0.02	<0.003	<0.02	<0.05	<0.05	<0.1	<0.05	<0.02	<0.02	<0.05	<0.1	<0.1
SW3007	2022-03-15	<0.05	<0.1	<0.05	<0.05	<0.05	<0.01	<0.03	<0.05	<0.01	<0.005	<0.05	<0.02	<0.003	<0.02	<0.05	<0.05	<0.1	<0.05	<0.02	<0.02	<0.05	<0.1	<0.1
SW3014	2022-03-17	<0.05	<0.1	<0.05	<0.05	<0.05	<0.01	<0.03	<0.05	<0.01	0.0052	<0.05	<0.02	<0.003	0.021	<0.05	<0.05	<0.1	<0.05	0.021	<0.02	<0.05	<0.1	<0.1
SW3015	2022-03-17	<0.05	<0.1	<0.05	<0.05	<0.05	<0.01	<0.03	<0.05	<0.01	<0.005	<0.05	<0.02	<0.003	<0.02	<0.05	<0.05	<0.1	<0.05	<0.02	<0.02	<0.05	<0.1	<0.1
SW3015A	2022-03-17	<0.05	<0.1	<0.05	<0.05	<0.05	<0.01	<0.03	<0.05	<0.01	<0.005	<0.05	<0.02	<0.003	<0.02	<0.05	<0.05	<0.1	<0.05	<0.02	<0.02	<0.05	<0.1	<0.1
SW3016	2020-07-14	<0.05	<0.1	<0.05	<0.05	<0.05	<0.01	<0.03	<0.05	<0.01	<0.005	<0.05	<0.02	<0.003	<0.02	<0.05	<0.05	<0.1	<0.05	<0.02	<0.02	<0.05	<0.1	<0.1
SW3016	2021-05-06	<0.05	<0.1	<0.05	<0.05	<0.05	<0.01	<0.03	<0.05	<0.01	<0.005	<0.05	<0.02	<0.003	<0.02	<0.05	<0.05	<0.1	<0.05	<0.02	<0.02	<0.05	<0.1	<0.1
SW3016	2021-07-13	<0.05	<0.1	<0.05	<0.05	<0.05	<0.01	<0.03	<0.05	<0.01	<0.005	<0.05	<0.02	<0.003	<0.02	<0.05	<0.05	<0.1	<0.05	<0.02	<0.02	<0.05	<0.1	<0.1
SW3016	2022-03-15	<0.05	<0.1	<0.05	<0.05	<0.05	<0.01	<0.03	<0.05	<0.01	<0.005	<0.05	<0.02	<0.003	<0.02	<0.05	<0.05	<0.1	<0.05	<0.02	<0.02	<0.05	<0.1	<0.1
SW3020	2022-03-17	<0.05	<0.1	<0.05	<0.05	<0.05	<0.01	<0.03	<0.05	<0.01	0.013	<0.05	<0.02	<0.003	<0.02	<0.05	<0.05	<0.1	<0.05	0.021	<0.02	<0.05	<0.1	<0.1
SW3020A	2022-03-17	<0.05	<0.1	<0.05	<0.05	<0.05	<0.01	<0.03	<0.05	<0.01	<0.005	<0.05	<0.02	<0.003	<0.02	<0.05	<0.05	<0.1	<0.05	<0.02	<0.02	<0.05	<0.1	<0.1
SW3021	2021-05-06	<0.05	<0.1	<0.05	<0.05	<0.05	<0.01	<0.03	<0.05	<0.01	<0.005	<0.05	<0.02	<0.003	<0.02	<0.05	<0.05	<0.1	<0.05	<0.02	<0.02	<0.05	<0.1	<0.1
SW3021	2021-07-13	<0.05	<0.1	<0.05	<0.05	<0.05	<0.01	<0.03	<0.05	<0.01	<0.005	<0.05	<0.02	<0.003	<0.02	<0.05	<0.05	<0.1	<0.05	<0.02	<0.02	<0.05	<0.1	<0.1
SW3021A	2022-03-17	<0.05	<0.1	<0.05	<0.05	<0.05	<0.01	<0.03	<0.05	<0.01	<0.005	<0.05	<0.02	<0.003	<0.02	<0.05	<0.05	<0.1	<0.05	<0.02	<0.02	<0.05	<0.1	<0.1
SW3051A	2022-03-17	<0.05	<0.1	<0.05	<0.05	<0.05	<0.01	0.03	<0.05	0.016	0.036	<0.05	0.026	0.0058	0.041	<0.05	<0.05	<0.1	<0.05	0.045	<0.02	0.2	<0.1	0.2
SW3077	2020-07-16	<0.05	<0.1	<0.05	<0.05	<0.05	<0.01	<0.03	<0.05	<0.01	<0.005	<0.05	<0.02	<0.003	<0.02	<0.05	<0.05	<0.1	<0.05	<0.02	<0.02	<0.05	<0.1	<0.1
SW3077	2021-05-06	<0.05	<0.1	<0.05	<0.05	<0.05	<0.01	<0.03	<0.05	<0.01	<0.005	<0.05	<0.02	<0.003	<0.02	<0.05	<0.05	<0.1	<0.05	<0.02	<0.02	<0.05	<0.1	<0.1
SW3077	2022-03-17	<0.05	<0.1	<0.05	<0.05	<0.05	<0.01	<0.03	<0.05	<0.01	<0.005	<0.05	<0.02	<0.003	<0.02	<0.05	<0.05	<0.1	<0.05	<0.02	<0.02	<0.05	<0.1	<0.1

Table 5, continued

Guidelines	Parameter	1-Methyl-naphthalene	2-Methyl-naphthalene	Acenaphthene	Acenaphthylene	Acridine	Anthracene	Benzo(B) Fluoranthene + Benzo(J) Fluoranthene	Benzo(K) Fluoranthene	Benzo(A) Anthracene	Benzo(A) Pyrene	Benzo(G,H,I)Perylene	Chrysene	Dibenzo(A,H)Anthracene	Fluoranthene	Fluorene	Indeno (1,2,3-C,D) Pyrene	Naphthalene	Phenanthrene	Pyrene	Quinoline	Total HMW-PAH	Total LWM-PAH	Total PAH
	Freshwater			6						0.1	0.01				4	12		1	0.3	0.02				
	Marine	1	1	6							0.01		0.1			12		1		phototoxic criteria				
Station ID	Sample Date	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
SW3078A	2022-03-17	<0.05	<0.1	<0.05	<0.05	<0.05	<0.01	<0.03	<0.05	<0.01	<0.005	<0.05	<0.02	<0.003	<0.02	<0.05	<0.05	<0.1	<0.05	<0.02	<0.02	<0.05	<0.1	<0.1
SW3079	2022-03-17	<0.05	<0.1	<0.05	<0.05	<0.05	<0.01	<0.03	<0.05	<0.01	<0.005	<0.05	<0.02	<0.003	<0.02	<0.05	<0.05	<0.1	<0.05	<0.02	<0.02	<0.05	<0.1	<0.1
SW3080A	2022-03-22	<0.05	<0.1	<0.05	<0.05	<0.05	<0.01	<0.03	<0.05	<0.01	<0.005	<0.05	<0.02	<0.003	<0.02	<0.05	<0.05	<0.1	<0.05	<0.02	<0.02	<0.05	<0.1	<0.1
SW3087	2022-03-22	<0.05	<0.1	<0.05	<0.05	<0.05	<0.01	<0.03	<0.05	<0.01	<0.005	<0.05	<0.02	<0.003	<0.02	<0.05	<0.05	<0.1	<0.05	<0.02	<0.02	<0.05	<0.1	<0.1
SW3088	2022-03-22	<0.05	<0.1	<0.05	<0.05	<0.05	<0.01	<0.03	<0.05	<0.01	<0.005	<0.05	<0.02	<0.003	<0.02	<0.05	<0.05	<0.1	<0.05	<0.02	<0.02	<0.05	<0.1	<0.1
SW3104	2022-04-19	<0.05	<0.1	<0.05	<0.05	<0.05	<0.01	<0.03	<0.05	<0.01	<0.005	<0.05	<0.02	<0.003	<0.02	<0.05	<0.05	<0.1	<0.05	<0.02	<0.02	<0.05	<0.1	<0.1
SW3124	2022-04-08	<0.05	<0.1	<0.05	<0.05	<0.05	<0.01	<0.03	<0.05	<0.01	<0.005	<0.05	<0.02	<0.003	<0.02	<0.05	<0.05	<0.1	<0.05	<0.02	<0.02	<0.05	<0.1	<0.1
SW3133	2020-07-17	<0.05	<0.1	<0.05	<0.05	<0.05	<0.01	<0.03	<0.05	<0.01	<0.005	<0.05	<0.02	<0.003	<0.02	<0.05	<0.05	<0.1	<0.05	<0.02	<0.02	<0.05		<0.1
SW3133-2	2020-07-17	0.3	0.4	<0.05	0.54	<0.05	<0.018	<0.03	<0.05	0.011	0.014	<0.05	0.033	<0.003	0.11	0.07	<0.05	0.99	0.17	0.15	0.021	0.31	2.5	2.8
SW3133-2	2020-07-21	0.06	<0.1	<0.05	0.16	<0.05	<0.01	<0.03	<0.05	<0.01	<0.005	<0.05	<0.02	<0.003	0.029	<0.05	<0.05	0.12	0.055	0.046	<0.02	0.075	0.4	0.47
SW3133-2	2020-10-23	<0.05	<0.1	<0.05	<0.05	<0.05	<0.01	<0.03	<0.05	0.013	0.02	<0.05	0.03	0.0034	0.04	<0.05	<0.05	<0.1	<0.05	0.056	0.064	0.16	<0.1	0.23
SW3133-2	2020-12-08	<0.05	<0.1	<0.05	<0.05	<0.05	<0.01	0.063	<0.05	0.041	0.053	0.1	0.095	0.012	0.16	<0.05	<0.05	<0.1	0.12	0.24	0.057	0.77	0.18	0.94
SW3133-2	2021-07-16	<0.05	<0.1	<0.05	<0.05	<0.05	<0.01	<0.03	<0.05	<0.01	<0.005	<0.05	<0.02	<0.003	<0.02	<0.05	<0.05	<0.1	<0.05	<0.02	<0.02	<0.05	<0.1	<0.1
SW3133-3B	2020-12-08	<0.05	<0.1	<0.05	<0.05	<0.05	0.026	0.044	<0.05	0.045	0.039	0.052	0.085	0.0071	0.17	<0.05	<0.05	<0.1	0.19	0.22	0.041	0.66	0.26	0.92
SW3138	2020-11-26	<0.05	<0.1	<0.05	<0.05	<0.05	<0.01	<0.03	<0.05	<0.01	<0.005	<0.05	<0.02	<0.003	<0.02	<0.05	<0.05	<0.1	<0.05	<0.02	<0.02	<0.05	<0.1	<0.1
SW3138	2022-04-11	<0.05	<0.1	<0.05	<0.05	<0.05	<0.01	<0.03	<0.05	<0.01	<0.005	<0.05	<0.02	<0.003	<0.02	<0.05	<0.05	<0.1	<0.05	<0.02	<0.02	<0.05	<0.1	<0.1
SW3141	2022-03-23	<0.05	<0.1	<0.05	<0.05	<0.05	<0.01	<0.03	<0.05	<0.01	0.011	<0.05	0.025	<0.003	0.086	<0.05	<0.05	<0.1	0.17	0.056	0.25	0.18	0.42	0.6
SW3142	2022-03-23	<0.05	<0.1	<0.05	<0.05	<0.05	<0.01	<0.03	<0.05	<0.01	<0.005	<0.05	<0.02	<0.003	<0.02	<0.05	<0.05	<0.1	<0.05	<0.02	<0.02	<0.05	<0.1	<0.1
SW3145	2022-03-23	<0.05	<0.1	<0.05	<0.05	<0.05	<0.01	<0.03	<0.05	<0.01	<0.005	<0.05	<0.02	<0.003	<0.02	<0.05	<0.05	<0.1	<0.05	<0.02	<0.02	<0.05	<0.1	<0.1
SW3145A	2022-03-23	<0.05	<0.1	<0.05	<0.05	<0.05	<0.01	<0.03	<0.05	<0.01	<0.005	<0.05	<0.02	<0.003	<0.02	<0.05	<0.05	<0.1	<0.05	<0.02	<0.02	<0.05	<0.1	<0.1
SW3146	2022-03-23	<0.05	<0.1	<0.05	<0.05	<0.05	<0.01	<0.03	<0.05	<0.01	<0.005	<0.05	<0.02	<0.003	<0.02	<0.05	<0.05	<0.1	<0.05	<0.02	<0.02	<0.05	<0.1	<0.1
SW3148	2022-04-07	<0.05	<0.1	<0.05	<0.05	<0.05	<0.01	<0.03	<0.05	<0.01	<0.005	<0.05	<0.02	<0.003	<0.02	<0.05	<0.05	<0.1	<0.05	<0.02	<0.02	<0.05	<0.1	<0.1
SW3154	2022-04-07	<0.05	<0.1	<0.05	<0.05	<0.05	<0.01	<0.03	<0.05	<0.01	<0.005	<0.05	<0.02	<0.003	<0.02	<0.05	<0.05	<0.1	<0.05	<0.02	<0.02	<0.05	<0.1	<0.1

Notes
All units are µ/L.
PAH = polycyclic aromatic hydrocarbons
HMW = High Molecular Weight, LMW = Low Molecular Weight
Guidelines are from BC ENV for protection of aquatic life from long-term chronic exposure.
The guideline for methylated naphthalene was used for 1-methylnaphthalene and 2-methylnaphthalene.
The guideline for pyrene is based on a phototoxic exposure.
XX Value exceeds a BC water quality guideline protective of aquatic life.

APPENDIX F

2022 WATERCOURSE MONITORING DATA

Table 1. 2022 Reay Creek 5 in 30 Water Quality Data

Station ID	Sample Comment	Sample Date	Aluminum		Antimony		Arsenic		Barium		Beryllium		Bismuth	
			TOT	DISS	TOT	DISS	TOT	DISS	TOT	DISS	TOT	DISS	TOT	DISS
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
	BC ENV Freshwater Aquatic Life Guidelines	acute			20 [1]		5		5,000 [1]		0.13 [1]			
		chronic	130-240 [2]						1,000 [1]					
SW0441	clear, pooled	2020-12-07	405	313	0.155	0.162	0.526	0.596	12.2	12.9	0.011	<0.01	<0.01	<0.005
SW0441	slight amber	2020-12-16	1040		0.114		0.691		13.4		0.019		<0.01	
SW0441	clear, light rain previous	2021-04-29	344		0.144		0.598		13.3		0.01		<0.01	
SW0441	clear, no rain	2021-07-19	90		0.119		0.978		10.9		<0.01		<0.005	
SW0441-1A	slight amber	2020-12-16	1330		0.089		0.768		16		0.025		<0.01	
SW0441-1A	clear	2020-12-07	316	301	0.178	0.171	0.458	0.503	11.7	11.7	<0.01	<0.01	<0.01	0.006
SW0441-1A	clear, light rain previous	2021-04-29	232		0.18		0.519		11.4		<0.01		<0.01	
SW0441-2	clear, light rain previous	2021-04-29	49.8		0.15		0.49		12.7		<0.01		<0.005	
SW0441	clear, no rain	2022-03-11	96.7		0.101		0.402		10.4		<0.01		<0.005	
SW0441	clear, no rain prior	2022-08-12	106	5.2	<0.1	<0.1	1.1	0.9	11.1	10.4	<0.05	<0.05	<0.025	<0.025
SW0441	clear, no rain prior	2022-08-18	116	7	0.104	0.096	0.994	0.934	9.02	8.03	<0.02	<0.02	<0.01	<0.01
SW0441	clear, no rain prior	2022-08-25	256	7.9	0.095	0.098	1.17	1.17	9.45	8.65	<0.02	0.037	<0.02	<0.01
SW0441	clear, no rain prior	2022-09-01	110	7.67	0.081	0.079	0.938	0.85	9.26	7.66	<0.02	<0.01	<0.02	<0.005
SW0441	clear, no rain prior	2022-09-08	89.8	6.1	0.07	0.059	0.913	0.873	8.4	7.62	<0.02	<0.02	<0.01	<0.01
	summer	n	5	5	5	5	5	5	5	5	5	5	5	5
		not detected (%)	0%	0%	20%	20%	0%	0%	0%	0%	100%	80%	100%	100%
		min	89.8	5.2	0.07	0.059	0.913	0.85	8.4	7.62	0.02	0.01	0.01	0.005
		max	256	7.9	0.104	0.1	1.17	1.17	11.1	10.4	0.05	0.05	0.025	0.025
		average	136	6.8	0.09	0.09	1.02	0.95	9.45	8.47	0.03	0.03	0.02	0.012
		SD	68	1.1	0.01	0.02	0.11	0.13	1.01	1.15	0.01	0.02	0.01	0.008
SW0441	clear, potential first flush	2022-10-25	178	5.8	0.16	0.191	0.792	0.704	9.42	9	<0.02	0.021	<0.01	<0.01
SW0441	clear, rain prior	2022-11-03	150	16.8	0.194	0.184	0.597	0.565	10.7	8.81	<0.01	<0.01	<0.01	<0.005
SW0441	clear, rain prior	2022-11-08	130	8.2	0.194	0.2	0.659	0.586	10.1	8.7	<0.01	<0.02	<0.005	<0.01
SW0441	clear, rain prior	2022-11-17	117	3.8	0.119	0.131	0.677	0.551	10.7	9.26	<0.02	<0.02	<0.01	<0.01
SW0441	clear, no recent rain	2022-11-24	255	12.2	0.172	0.173	0.47	0.386	9.29	7.44	<0.01	<0.01	<0.01	<0.005
	fall	n	5	5	5	5	5	5	5	5	5	5	5	5
		not detected (%)	0%	0%	0%	0%	0%	0%	0%	0%	100%	80%	100%	100%
		min	117	3.8	0.119	0.131	0.47	0.386	9.29	7.44	0.01	0.01	0.005	0.005
		max	255	16.8	0.194	0.2	0.792	0.704	10.7	9.26	0.02	0.021	0.01	0.01
		average	166	9.4	0.17	0.18	0.64	0.56	10.04	8.64	0.01	0.02	0.01	0.008
		SD	55	5.2	0.03	0.03	0.12	0.11	0.67	0.70	0.01	0.01	0.00	0.003
SW0441-1A	clear, no rain prior	2022-08-12	83.6	<0.5	0.053	0.052	0.616	0.558	8.96	7.51	<0.01	<0.01	<0.005	<0.005
SW0441-1A	clear, no rain prior	2022-08-18	67.3	1.97	0.047	0.048	0.652	0.642	9.42	7.97	<0.01	<0.01	<0.005	<0.005
SW0441-1A	clear, no rain prior	2022-08-25	52.5	1.54	0.043	0.05	0.651	0.645	9.06	7.89	<0.01	<0.01	<0.01	<0.005
SW0441-1A	clear, no rain prior	2022-09-01	84.8	2.22	0.034	0.04	0.573	0.608	7.86	7.4	<0.01	<0.01	<0.01	<0.005
SW0441-1A	clear, no rain prior	2022-09-08	56	1.46	0.039	0.029	0.641	0.598	9.15	7.97	<0.01	<0.01	<0.005	<0.005

Table 1, continued

Station ID	Sample Comment	Sample Date	Aluminum		Antimony		Arsenic		Barium		Beryllium		Bismuth	
			TOT	DISS	TOT	DISS	TOT	DISS	TOT	DISS	TOT	DISS	TOT	DISS
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
	BC ENV Freshwater Aquatic Life Guidelines	acute			20 [1]		5		5,000 [1]		0.13 [1]			
		chronic	130-240 [2]						1,000 [1]					
	summer	n	5	5	5	5	5	5	5	5	5	5	5	5
		not detected (%)	0%	20%	0%	0%	0%	0%	0%	0%	100%	100%	100%	100%
		min	52.5	0.5	0.034	0.029	0.573	0.558	7.86	7.4	0.01	0.01	0.005	0.005
		max	84.8	2.22	0.053	0.052	0.652	0.645	9.42	7.97	0.01	0.01	0.01	0.005
		average	69	1.5	0.04	0.04	0.63	0.61	8.89	7.75	0.01	0.01	0.01	0.005
		SD	15	0.7	0.01	0.01	0.03	0.04	0.60	0.27	0.00	0.00	0.00	0.000
SW0441-1A	clear, potential first flush	2022-10-25	71.7	5.48	0.149	0.142	0.631	0.577	9.32	8.32	<0.01	<0.01	<0.005	<0.005
SW0441-1A	clear, rain prior	2022-11-03	121	8.75	0.187	0.182	0.614	0.563	8.94	7.03	<0.01	<0.01	<0.01	<0.005
SW0441-1A	clear, rain prior	2022-11-08	124	8.33	0.187	0.192	0.464	0.44	8.47	7.14	<0.01	<0.01	<0.005	<0.005
SW0441-1A	clear, rain prior	2022-11-17	27.8	2.48	0.106	0.112	0.413	0.404	9.55	9.56	<0.01	<0.01	<0.005	<0.005
SW0441-1A	clear, no recent rain	2022-11-24	192	12.8	0.18	0.17	0.441	0.359	8.3	6.92	<0.01	<0.01	<0.01	<0.005
	fall	n	5	5	5	5	5	5	5	5	5	5	5	5
		not detected (%)	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%	100%	100%
		min	27.8	2.48	0.106	0.112	0.413	0.359	8.3	6.92	0.01	0.01	0.005	0.005
		max	192	12.8	0.187	0.192	0.631	0.577	9.55	9.56	0.01	0.01	0.01	0.005
		average	107	7.6	0.16	0.16	0.51	0.47	8.92	7.79	0.01	0.01	0.01	0.005
		SD	62	3.9	0.03	0.03	0.10	0.10	0.53	1.14	0.00	0.00	0.00	0.000

Table 1, continued

Station ID	Sample Comment	Sample Date	Boron		Cadmium		Calcium		Chromium		Cobalt		Sp. Conductivity 25°C.	Copper	
			TOT	DIS	TOT	DISS	TOT	DISS	TOT	DISS	TOT	DISS	NA	TOT	DISS
			µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µS/cm	µg/L	µg/L
	BC ENV Freshwater Aquatic Life Guidelines	acute	1,200			0.37 - 6.01 [2]			1 / 9 [1,3]		110				2.6-26.5 [4]
		chronic				0.15 - 1.11 [2]					4				0.4 - 5.0 [4]
SW0441	clear, pooled	2020-12-07	26	28	0.12	0.125	27.6	28.3	*1.09*	0.82	0.328	0.266		3.69	*4.51*
SW0441	slight amber	2020-12-16	30		0.0149		19.9		*1.46*		0.427		158.8	4.82	
SW0441	clear, light rain previous	2021-04-29	34		0.122		32.2		*1.09*		0.271			4.24	
SW0441	clear, no rain	2021-07-19	199		0.0333		49.3		0.28		0.151			2.65	
SW0441-1A	slight amber	2020-12-16	31		0.0191		20.3		*1.87*		0.558			5.29	
SW0441-1A	clear	2020-12-07	22	23	0.0599	0.0631	25.9	25.9	0.9	0.81	0.248	0.316		3.88	*3.85*
SW0441-1A	clear, light rain previous	2021-04-29	27		0.0575		29		*1.04*		0.238			3.89	
SW0441-2	clear, light rain previous	2021-04-29	30		0.0329		46.3		*5.16*		0.15			2.71	
SW0441	clear, no rain	2022-03-11	50		0.0394		35.6		0.39		0.138		706.1	2.12	
SW0441	clear, no rain prior	2022-08-12	620	661	0.041	0.026	80.6	82.2	<0.5	<0.5	0.147	0.094	184.7	1.06	0.88
SW0441	clear, no rain prior	2022-08-18	226	245	0.041	0.017	47.2	50.3	0.46	<0.2	0.132	0.087	2995	1.95	*1.22*
SW0441	clear, no rain prior	2022-08-25	462	408	0.063	0.027	52.1	62.7	0.46	<0.2	0.227	0.144	4631	1.91	0.62
SW0441	clear, no rain prior	2022-09-01	213	177	0.033	0.0184	47.5	44.3	0.29	<0.1	0.131	0.0929	2022	1.47	0.857
SW0441	clear, no rain prior	2022-09-08	338	298	0.026	0.015	48.4	53.6	0.25	<0.2	0.109	0.075	278.4	1.14	0.83
	summer	n	5	5	5	5	5	5	5	5	5	5	5	5	5
		not detected (%)	0%	0%	0%	0%	0%	0%	20%	100%	0%	0%	0%	0%	0%
		min	213	177	0.026	0.015	47.2	44.3	0.25	0.1	0.109	0.075	184.7	1.06	0.62
		max	620	661	0.063	0.027	80.6	82.2	0.5	0.5	0.227	0.144	4631	1.95	*1.22*
		average	372	358	0.041	0.021	55.2	59	0.4	0.2	0.149	0.099	2022.2	1.51	0.88
		SD	171	189	0.014	0.005	14.4	15	0.1	0.2	0.046	0.026	1882.1	0.42	0.22
SW0441	clear, potential first flush	2022-10-25	255	268	0.077	0.035	45.5	46	0.45	0.24	0.507	0.251	3532	4.01	2.36
SW0441	clear, rain prior	2022-11-03	27	27	0.0714	0.0505	27.1	26.5	0.53	0.32	0.112	0.0694	309.7	3.66	*3.13*
SW0441	clear, rain prior	2022-11-08	187	184	0.122	0.252	39.9	40.4	0.51	0.38	0.104	0.072	1994	3.04	2.43
SW0441	clear, rain prior	2022-11-17	163	205	0.09	0.019	50	53.7	0.39	<0.2	0.176	0.111	2238	2.01	0.99
SW0441	clear, no recent rain	2022-11-24	21	23	0.0852	0.0409	17.7	20.2	0.65	0.28	0.19	0.0911		3.54	*2.93*
	fall	n	5	5	5	5	5	5	5	5	5	5	4	5	5
		not detected (%)	0%	0%	0%	0%	0%	0%	0%	20%	0%	0%	0%	0%	0%
		min	21	23	0.0714	0.019	17.7	20.2	0.39	0.2	0.104	0.0694	309.7	2.01	0.99
		max	255	268	0.122	0.252	50	53.7	0.65	0.38	0.507	0.251	3532	4.01	*3.13*
		average	131	141	0.089	0.079	36.0	37	0.5	0.3	0.218	0.119	2018.4	3.25	2.37
		SD	103	111	0.020	0.097	13.4	14	0.1	0.1	0.166	0.076	1324.1	0.78	0.84
SW0441-1A	clear, no rain prior	2022-08-12	36	35	0.0272	0.009	28.5	28.3	0.33	0.15	0.119	0.0429	305.7	1.09	*0.87*
SW0441-1A	clear, no rain prior	2022-08-18	36	42	0.0258	0.0104	28.1	29.3	0.27	0.13	0.0986	0.0459	340.5	0.955	*0.8*
SW0441-1A	clear, no rain prior	2022-08-25	42	37	0.0204	0.0186	26.5	28.2	0.19	0.16	0.091	0.0601	328.7	0.88	*0.771*
SW0441-1A	clear, no rain prior	2022-09-01	35	35	0.0313	0.0163	24.7	27	0.32	<0.1	0.102	0.0547	341.3	0.82	*0.71*
SW0441-1A	clear, no rain prior	2022-09-08	32	30	0.0179	0.0076	26.7	28.7	0.23	0.14	0.0857	0.0447	341.4	0.868	*0.679*

Watercourse Monitoring Data

Table 1, continued

Station ID	Sample Comment	Sample Date	Boron		Cadmium		Calcium		Chromium		Cobalt		Sp. Conductivity 25°C.	Copper	
			TOT	DIS	TOT	DISS	TOT	DISS	TOT	DISS	TOT	DISS	NA	TOT	DISS
			µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µS/cm	µg/L	µg/L
	BC ENV Freshwater Aquatic Life Guidelines	acute	1,200			0.37 - 6.01 [2]			1 / 9 [1,3]		110				2.6-26.5 [4]
		chronic				0.15 - 1.11 [2]					4				0.4 - 5.0 [4]
	summer	n	5	5	5	5	5	5	5	5	5	5	5	5	5
		not detected (%)	0%	0%	0%	0%	0%	0%	0%	20%	0%	0%	0%	0%	0%
		min	32	30	0.0179	0.0076	24.7	27	0.19	0.1	0.0857	0.0429	305.7	0.82	*0.679*
		max	42	42	0.0313	0.0186	28.5	29.3	0.33	0.16	0.119	0.0601	341.4	1.09	*0.87*
		average	36	36	0.025	0.012	26.9	28	0.3	0.1	0.099	0.050	331.5	0.92	0.77
		SD	4	4	0.005	0.005	1.5	1	0.1	0.0	0.013	0.007	15.4	0.11	0.08
SW0441-1A	clear, potential first flush	2022-10-25	45	38	0.0419	0.0261	22	22.6	0.32	0.24	0.0832	0.0433	281.4	3.2	*2.68*
SW0441-1A	clear, rain prior	2022-11-03	23	25	0.0176	0.014	20.8	20.1	0.46	0.28	0.089	0.0434	243.7	3.36	*2.89*
SW0441-1A	clear, rain prior	2022-11-08	23	20	0.0177	0.0132	21.3	21.3	0.52	0.37	0.083	0.0378	258.7	2.93	*2.58*
SW0441-1A	clear, rain prior	2022-11-17	24	32	0.0149	0.0148	30	34	0.3	0.21	0.0565	0.0423	374.6	1.46	*1.24*
SW0441-1A	clear, no recent rain	2022-11-24	21	22	0.0198	0.0126	16.3	17.9	0.51	0.25	0.104	0.0339		3.41	*2.8*
	fall	n	5	5	5	5	5	5	5	5	5	5	4	5	5
		not detected (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
		min	21	20	0.0149	0.0126	16.3	17.9	0.3	0.21	0.0565	0.0339	243.7	1.46	*1.24*
		max	45	38	0.0419	0.0261	30	34	0.52	0.37	0.104	0.0434	374.6	3.41	*2.89*
		average	27	27	0.022	0.016	22.1	23	0.4	0.3	0.083	0.040	289.6	2.87	2.44
		SD	10	7	0.011	0.006	5.0	6	0.1	0.1	0.017	0.004	58.7	0.81	0.68

Table 1, continued

Station ID	Sample Comment	Sample Date	Oxygen	E. Coli	Flow Rate	Hardness		Iron		Lead		Lithium		Magnesium	
			DISS	NA	NA	TOT	DISS	TOT	DISS	TOT	DISS	TOT	DISS	TOT	DISS
			mg/L	CFU/100 mL	L/min	mg/L as $CaCO_3$	mg/L as $CaCO_3$	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L
	BC ENV Freshwater Aquatic Life Guidelines	acute	5 [5]	400 [6]				1,000	350	46-1443 [2]			870 [1]		
		chronic	8 [5]	200 [6]						5.1-60 [2]					
SW0441	clear, pooled	2020-12-07				117	120	638	488	0.525	1.29	1.17	1.11	11.7	12
SW0441	slight amber	2020-12-16			>300	80.2		957		0.387		1.04		7.43	
SW0441	clear, light rain previous	2021-04-29			>500	133		574		0.488		1.3		12.7	
SW0441	clear, no rain	2021-07-19			85	343		346		0.112		7.01		53.5	
SW0441-1A	slight amber	2020-12-16		55	300	81.2		1250		0.416		1.22		7.42	
SW0441-1A	clear	2020-12-07			>2000	110	109	453	423	0.45	0.45	1.09	1.04	11	10.8
SW0441-1A	clear, light rain previous	2021-04-29		30	>200	121		396		0.221		1.2		11.7	
SW0441-2	clear, light rain previous	2021-04-29		4	>120	198		306		0.0624		1.64		20.1	
SW0441	clear, no rain	2022-03-11	11.56		>800	163		329		0.118		1.71		18.1	
SW0441	clear, no rain prior	2022-08-12	9.9	5500	>250	955	1030	269	23	1.13	<0.025	20.6	21.9	183	200
SW0441	clear, no rain prior	2022-08-18	8.06	800	>200	375	395	285	60.3	0.205	0.022	7.5	8	62.5	65.3
SW0441	clear, no rain prior	2022-08-25	8.61	690	>200	564	621	486	44.6	0.475	0.055	12.5	14.2	105	113
SW0441	clear, no rain prior	2022-09-01	7.97	240	>200	332	336	295	84.3	0.128	0.0274	6.5	5.34	51.8	54.7
SW0441	clear, no rain prior	2022-09-08	9.02	140	>250	465	476	231	26.9	0.121	0.014	10.1	8.7	83.5	83.1
	summer	n	5	5	5	5	5	5	5	5	5	5	5	5	5
		not detected (%)	0%	0%	100%	0%	0%	0%	0%	0%	20%	0%	0%	0%	0%
		min	7.97	140	200	332	336	231	23	0.121	0.014	6.5	5.34	51.8	54.7
		max	9.9	5500	250	955	1030	486	84.3	1.13	0.055	20.6	21.9	183	200
		average	8.7	633	220	538	572	313	48	0.41	0.029	11.4	11.6	97.16	103.22
		SD	0.8	2268	27	249	278	100	25	0.43	0.016	5.6	6.6	52.14	58.44
SW0441	clear, potential first flush	2022-10-25	10.31	380	>300	405	413	453	131	0.417	0.087	7.7	8.7	70.8	72.5
SW0441	clear, rain prior	2022-11-03	9.15	96	800	104	99.9	220	96.1	0.149	0.0932	0.77	0.7	8.9	8.16
SW0441	clear, rain prior	2022-11-08	8.31	130	>800	344	339	187	54	0.18	0.05	6.66	6.6	59.3	57.9
SW0441	clear, rain prior	2022-11-17	11.4	78	>600	359	374	338	78.7	0.289	0.033	6.4	6.3	56.9	58.4
SW0441	clear, no recent rain	2022-11-24		330		69.9	77.9	414	130	0.328	0.0617	0.66	0.61	6.23	6.66
	fall	n	4	5	4	5	5	5	5	5	5	5	5	5	5
		not detected (%)	0%	0%	75%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
		min	8.31	78	300	69.9	77.9	187	54	0.149	0.033	0.66	0.61	6.23	6.66
		max	11.4	380	800	405	413	453	131	0.417	0.0932	7.7	8.7	70.8	72.5
		average	9.8	165	625	256	261	322	98	0.27	0.065	4.4	4.6	40.43	40.72
		SD	1.3	141	236	157	159	117	33	0.11	0.025	3.4	3.7	30.47	30.98
SW0441-1A	clear, no rain prior	2022-08-12	9.02	7	120	121	122	166	5.6	0.0616	<0.005	0.85	0.8	12.2	12.5
SW0441-1A	clear, no rain prior	2022-08-18	8.99	14	120	122	124	135	14.6	0.0479	<0.005	0.9	0.91	12.5	12.4
SW0441-1A	clear, no rain prior	2022-08-25	8.95	30	120	115	119	116	14.8	0.091	0.0112	0.62	0.98	11.8	11.9
SW0441-1A	clear, no rain prior	2022-09-01	8.46	53	120	104	112	150	20.1	0.077	<0.005	0.75	0.56	10.2	10.8
SW0441-1A	clear, no rain prior	2022-09-08	8.17	28	120	109	115	114	7.1	0.0383	<0.005	0.76	0.58	10.3	10.7

Table 1, continued

Station ID	Sample Comment	Sample Date	Oxygen	E.Coli	Flow Rate	Hardness		Iron		Lead		Lithium		Magnesium	
			DISS	NA	NA	TOT	DISS	TOT	DISS	TOT	DISS	TOT	DISS	TOT	DISS
			mg/L	CFU/100 mL	L/min	mg/L as $CaCO_3$	mg/L as $CaCO_3$	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L
	BC ENV Freshwater Aquatic Life Guidelines	acute	5 [5]	400 [6]				1,000	350	46-1443 [2]			870 [1]		
		chronic	8 [5]	200 [6]						5.1-60 [2]					
	summer	n	5	5	5	5	5	5	5	5	5	5	5	5	5
		not detected (%)	0%	0%	0%	0%	0%	0%	0%	0%	80%	0%	0%	0%	0%
		min	8.17	7	120	104	112	114	5.6	0.0383	0.005	0.62	0.56	10.2	10.7
		max	9.02	53	120	122	124	166	20.1	0.091	0.0112	0.9	0.98	12.5	12.5
		average	8.7	21	120	114	118	136	12.4	0.063	0.006	0.8	0.8	11.40	11.66
		SD	0.4	18	0	8	5	22	6.0	0.021	0.003	0.1	0.2	1.08	0.86
SW0441-1A	clear, potential first flush	2022-10-25	9.05	200	>150	90.1	92.1	137	37.3	0.103	0.0252	0.61	0.65	8.55	8.67
SW0441-1A	clear, rain prior	2022-11-03	8.61	170	400	82	78.2	177	41.9	0.126	0.0292	0.63	0.66	7.27	6.8
SW0441-1A	clear, rain prior	2022-11-08	8.54	120	>400	79.5	78.6	159	33.6	0.116	0.0348	0.57	<0.5	6.37	6.16
SW0441-1A	clear, rain prior	2022-11-17	11.07	42	>300	115	131	72.1	18.4	0.0215	0.0072	0.87	0.89	9.75	11.1
SW0441-1A	clear, no recent rain	2022-11-24		93		64.5	69.2	234	45.4	0.17	0.0404	0.62	0.59	5.76	5.95
	fall	n	4	5	4	5	5	5	5	5	5	5	5	5	5
		not detected (%)	0%	0%	75%	0%	0%	0%	0%	0%	0%	0%	20%	0%	0%
		min	8.54	42	150	64.5	69.2	72.1	18.4	0.0215	0.0072	0.57	0.5	5.76	5.95
		max	11.07	200	400	115	131	234	45.4	0.17	0.0404	0.87	0.89	9.75	11.1
		average	9.3	110	313	86	90	156	35.3	0.11	0.027	0.7	0.7	7.54	7.74
		SD	1.2	62	118	19	24	59	10.5	0.05	0.013	0.1	0.1	1.62	2.16

Table 1, continued

Station ID	Sample Comment	Sample Date	Manganese		Mercury	Molybdenum		Nitrite as N	Nitrate as N	Nickel		O. Carbon	Phosphorus	
			TOT	DISS	TOT	TOT	DISS	DISS	DISS	TOT	DISS	DISS	TOT	TOT (condensed)
			µg/L	µg/L	µg/L	µg/L	µg/L	mg/l	mg/L	µg/L	µg/L	mg/L	mg/L	µg/L
	BC ENV Freshwater Aquatic Life Guidelines	acute		1251-11064 [2]			2,000	0.06	32.8		25 -110 [1,2]		0.01 [7]	0.01 [7]
		chronic		889-4807 [2]			1,000	0.02	3				0.005 [7]	0.005 [7]
SW0441	clear, pooled	2020-12-07	60.7	62.4		1.97	1.89			1.25	1.11			*0.056*
SW0441	slight amber	2020-12-16	45.5			1.45				1.91				*0.111*
SW0441	clear, light rain previous	2021-04-29	70.8			3.36				1.24				
SW0441	clear, no rain	2021-07-19	127			4.33				0.813				
SW0441-1A	slight amber	2020-12-16	54.7			1.12				2.3				*0.139*
SW0441-1A	clear	2020-12-07	60.2	60.7		2.04	1.86			1.05	0.971			*0.049*
SW0441-1A	clear, light rain previous	2021-04-29	72.2			3.12				2.11				
SW0441-2	clear, light rain previous	2021-04-29	108			9.58				21.6				
SW0441	clear, no rain	2022-03-11	70.9			2.64				0.774				
SW0441	clear, no rain prior	2022-08-12	162	143		3.32	3.36	0.0096	0.632	0.68	0.56	11	0.088	
SW0441	clear, no rain prior	2022-08-18	117	120		4.02	4.04	0.0109	0.755	0.817	0.519	5.3	0.087	
SW0441	clear, no rain prior	2022-08-25	130	129		3.52	4.17	0.0138	0.609	0.98	0.565	12	0.12	
SW0441	clear, no rain prior	2022-09-01	113	118	<0.0019	3.04	2.97	0.0109	0.761	0.6	0.494	6.2	0.092	
SW0441	clear, no rain prior	2022-09-08	96.7	62.7		2.88	3.06	0.0107	0.719	0.507	0.418	6.7	0.08	
	summer	n	5	5	1	5	5	5	5	5	5	5	5	
		not detected (%)	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	
		min	96.7	62.7	0.0019	2.88	2.97	0.0096	0.609	0.507	0.418	5.3	0.08	
		max	162	143	0.0019	4.02	4.17	0.0138	0.761	0.98	0.565	12	0.12	
		average	123.74	115		3.356	3.520	0.0112	0.695	0.72	0.511	8	0.09	
		SD	24.47	31		0.446	0.555	0.0016	0.071	0.19	0.060	3.0	0.02	
SW0441	clear, potential first flush	2022-10-25	144	131	0.002	3.04	3.44	0.011	0.993	0.819	0.654	6.6		
SW0441	clear, rain prior	2022-11-03	28.7	24.9	<0.0019	4.44	4.34	0.005	0.969	0.74	0.568	4.3		*0.0636*
SW0441	clear, rain prior	2022-11-08	43.8	46.9	<0.0019	3.82	4.03	0.0066	0.82	0.611	0.557	16		*0.0623*
SW0441	clear, rain prior	2022-11-17	183	176	<0.0019	3.82	4.19	0.0082	0.978	0.748	0.632	13		*0.0707*
SW0441	clear, no recent rain	2022-11-24	49.1	39.3	<0.0019	2.41	2.48	<0.002	0.8	0.75	0.529	3.8		*0.0552*
	fall	n	5	5	5	5	5	5	5	5	5	5		4
		not detected (%)	0%	0%	80%	0%	0%	20%	0%	0%	0%	0%		0%
		min	28.7	24.9	0.0019	2.41	2.48	0.002	0.8	0.611	0.529	3.8		*0.0552*
		max	183	176	0.002	4.44	4.34	0.011	0.993	0.819	0.654	16		*0.0707*
		average	89.72	84		3.506	3.696	0.007	0.91	0.73	0.588	9		*0.0630*
		SD	69.15	66		0.789	0.761	0.003	0.09	0.08	0.053	5.5		0.01
SW0441-1A	clear, no rain prior	2022-08-12	38.3	0.331		1.34	1.32	0.0034	0.965	0.539	0.386	3.2	0.033	
SW0441-1A	clear, no rain prior	2022-08-18	34	1.28		1.27	1.28	0.0048	0.965	0.497	0.392	3.2	0.03	
SW0441-1A	clear, no rain prior	2022-08-25	31.6	3.13		1.13	1.13	0.0062	0.861	0.46	0.392	3	0.039	
SW0441-1A	clear, no rain prior	2022-09-01	31.1	8.35	<0.0019	0.868	0.96	0.0056	0.944	0.46	0.338	2.5	0.036	
SW0441-1A	clear, no rain prior	2022-09-08	28	0.268		0.885	0.903	0.0071	1.02	0.433	0.361	2.9	0.037	

Table 1, continued

Station ID	Sample Comment	Sample Date	Manganese		Mercury	Molybdenum		Nitrite as N	Nitrate as N	Nickel		O. Carbon	Phosphorus	
			TOT	DISS	TOT	TOT	DISS	DISS	DISS	TOT	DISS	DISS	TOT	TOT (condensed)
			µg/L	µg/L	µg/L	µg/L	µg/L	mg/l	mg/L	µg/L	µg/L	mg/L	mg/L	µg/L
	BC ENV Freshwater Aquatic Life Guidelines	acute		1251-11064 [2]			2,000	0.06	32.8		25 -110 [1,2]		0.01 [7]	0.01 [7]
		chronic		889-4807 [2]			1,000	0.02	3				0.005 [7]	0.005 [7]
	summer	n	5	5	1	5	5	5	5	5	5	5	5	
		not detected (%)	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	
		min	28	0.268	0.0019	0.868	0.903	0.0034	0.861	0.433	0.338	2.5	0.03	
		max	38.3	8.35	0.0019	1.34	1.32	0.0071	1.02	0.539	0.392	3.2	0.039	
		average	32.60	2.67		1.099	1.119	0.0054	0.95	0.48	0.374	3	0.04	
		SD	3.84	3.38		0.216	0.186	0.0014	0.06	0.04	0.024	0.3	0.004	
SW0441-1A	clear, potential first flush	2022-10-25	23.2	3.57	<0.0019	1.59	1.64	0.0079	1.22	0.571	0.467	4.9		
SW0441-1A	clear, rain prior	2022-11-03	20.6	13.1	<0.0019	2.69	2.69	0.0074	0.813	0.6	0.481	3.8		*0.0545*
SW0441-1A	clear, rain prior	2022-11-08	15	7.46	<0.0019	2.73	2.75	0.0061	0.789	0.55	0.425	5		*0.0305*
SW0441-1A	clear, rain prior	2022-11-17	12.3	9.67	<0.0019	2.09	2.18	0.0053	1.11	0.451	0.401	3.2		*0.0282*
SW0441-1A	clear, no recent rain	2022-11-24	13.2	2.52	<0.0019	1.89	1.81	0.0029	0.83	0.64	0.44	3.5		*0.0463*
	fall	n	5	5	5	5	5	5	5	5	5	5		4
		not detected (%)	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%		0%
		min	12.3	2.52	0.0019	1.59	1.64	0.0029	0.789	0.451	0.401	3.2		*0.0282*
		max	23.2	13.1	0.0019	2.73	2.75	0.0079	1.22	0.64	0.481	5		*0.0545*
		average	16.86	7.3		2.198	2.214	0.0059	0.95	0.56	0.443	4		*0.04*
		SD	4.79	4.4		0.500	0.502	0.0020	0.20	0.07	0.032	0.8		0.01

Table 1, continued

Station ID	Sample Comment	Sample Date	pH	Potassium		Selenium		Silicon		Silver		Sodium		Strontium	
			NA	DISS	TOT	TOT	DISS	TOT	DISS	TOT	DISS	TOT	DISS	TOT	DISS
			pH	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	µg/L	µg/L
	BC ENV Freshwater Aquatic Life Guidelines	acute	6.5-9 [8]			2				0.1-3.0 [2]					
		chronic								0.05-1.5 [2]					
SW0441	clear, pooled	2020-12-07		1.42	1.53	0.107	0.116	7130	7110	<0.01	0.013	25.5	27.9	130	129
SW0441	slight amber	2020-12-16	7.65	1.97		0.135		6750		<0.01		16.7		89.7	
SW0441	clear, light rain previous	2021-04-29		1.67		0.1		6320		<0.01		34		155	
SW0441	clear, no rain	2021-07-19		15.5		0.09		7530		0.0062		376		451	
SW0441-1A	slight amber	2020-12-16		2.16		0.161		7510		<0.01		16.5		87.2	
SW0441-1A	clear	2020-12-07		1.42	1.37	0.096	0.11	5970	5860	<0.01	<0.005	52.6	50.7	122	117
SW0441-1A	clear, light rain previous	2021-04-29		1.56		0.096		6000		<0.01		32.6		140	
SW0441-2	clear, light rain previous	2021-04-29		1.38		0.104		5270		<0.005		62.4		214	
SW0441	clear, no rain	2022-03-11	7.48	2.93		0.096		6440		<0.005		72.4		202	
SW0441	clear, no rain prior	2022-08-12	7.4	49.1	51.4	1.4	0.24	7740	7530	<0.025	<0.025	1360	1400	1150	1140
SW0441	clear, no rain prior	2022-08-18	7	18.1	17.9	0.27	0.088	9030	9090	<0.01	<0.01	457	468	498	493
SW0441	clear, no rain prior	2022-08-25	7.1	28.6	33.5	<0.08	0.142	7980	10800	<0.02	<0.01	816	881	726	825
SW0441	clear, no rain prior	2022-09-01	7.1	14.7	14.2	<0.08	0.24	9320	7750	<0.02	<0.005	372	362	453	404
SW0441	clear, no rain prior	2022-09-08	7.2	22.9	24	1.45	<0.08	7900	8830	<0.01	<0.01	595	608	581	599
	summer	n	5	5	5	5	5	5	5	5	5	5	5	5	5
		not detected (%)	0%	0%	0%	40%	20%	0%	0%	100%	100%	0%	0%	0%	0%
		min	7	14.7	14.2	0.08	0.08	7740	7530	0.01	0.005	372	362	453	404
		max	7.4	49.1	51.4	1.45	0.24	9320	10800	0.025	0.025	1360	1400	1150	1140
		average	7	26.68	28.20	0.7	0.16	8394	8800	0.02	0.012	720	743.8	682	692.2
		SD	0.2	13.58	14.88	0.7	0.08	725	1304	0.01	0.01	395	415.2	282	295.6
SW0441	clear, potential first flush	2022-10-25	7.2	22.5	23.4	0.108	0.11	6110	5970	<0.01	<0.01	553	563	529	543
SW0441	clear, rain prior	2022-11-03	7.2	1.8	1.78	0.156	0.125	5570	5210	<0.01	<0.005	22.1	21.1	117	112
SW0441	clear, rain prior	2022-11-08	7.2	17.6	17.6	0.12	0.104	4910	4820	<0.005	<0.01	441	434	435	443
SW0441	clear, rain prior	2022-11-17	7.3	14	14.8	0.098	0.085	7210	7340	<0.01	<0.01	364	376	436	433
SW0441	clear, no recent rain	2022-11-24		1.59	1.76	0.076	0.064	4420	4160	0.011	<0.005	22.8	25.3	79.4	80.7
	fall	n	4	5	5	5	5	5	5	5	5	5	5	5	5
		not detected (%)	0%	0%	0%	0%	0%	0%	0%	80%	100%	0%	0%	0%	0%
		min	7.2	1.59	1.76	0.076	0.064	4420	4160	0.005	0.005	22.1	21.1	79.4	80.7
		max	7.3	22.5	23.4	0.156	0.125	7210	7340	0.011	0.01	553	563	529	543
		average	7	11.50	11.87	0.11	0.10	5644	5500	0.01	0.008	281	283.9	319	322.3
		SD	0.0	9.44	9.73	0.03	0.02	1085	1219	0.00	0.00	245	247.4	206	211.0
SW0441-1A	clear, no rain prior	2022-08-12	7.2	1.19	1.2	0.074	0.08	8640	8050	<0.005	<0.005	27.4	27	152	149
SW0441-1A	clear, no rain prior	2022-08-18	6.8	1.23	1.22	0.089	0.072	9670	9570	<0.005	<0.005	27.4	27.6	162	155
SW0441-1A	clear, no rain prior	2022-08-25	6.9	1.21	1.27	0.064	0.062	8490	10300	<0.01	<0.005	25.9	26.4	155	160
SW0441-1A	clear, no rain prior	2022-09-01	7.3	1.08	1.21	0.054	0.075	8010	7740	<0.01	<0.005	22.4	24.9	139	148
SW0441-1A	clear, no rain prior	2022-09-08	7.1	1.3	1.33	0.055	0.059	7580	8860	<0.005	<0.005	22.7	24.1	154	151

Table 1, continued

Station ID	Sample Comment	Sample Date	pH	Potassium		Selenium		Silicon		Silver		Sodium		Strontium	
			NA	DISS	TOT	TOT	DISS	TOT	DISS	TOT	DISS	TOT	DISS	TOT	DISS
			pH	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	µg/L	µg/L
	BC ENV Freshwater Aquatic Life Guidelines	acute	6.5-9 [8]			2				0.1-3.0 [2]					
		chronic								0.05-1.5 [2]					
	summer	n	5	5	5	5	5	5	5	5	5	5	5	5	5
		not detected (%)	0%	0%	0%	0%	0%	0%	0%	100%	100%	0%	0%	0%	0%
		min	6.8	1.08	1.2	0.054	0.059	7580	7740	0.005	0.005	22.4	24.1	139	148
		max	7.3	1.3	1.33	0.089	0.08	9670	10300	0.01	0.005	27.4	27.6	162	160
		average	7	1.20	1.25	0.07	0.07	8478	8904	0.01	0.005	25.2	26.0	152	152.6
		SD	0.2	0.08	0.05	0.01	0.01	786	1058	0.00	0.00	2.5	1.5	8	4.9
SW0441-1A	clear, potential first flush	2022-10-25	7.1	3.01	3.08	0.089	0.089	7200	7280	<0.005	<0.005	21	21.6	113	116
SW0441-1A	clear, rain prior	2022-11-03	7.2	1.66	1.65	0.079	0.069	5300	4990	<0.01	<0.005	18.6	17.9	96.2	96.3
SW0441-1A	clear, rain prior	2022-11-08	7.4	1.5	1.52	0.07	0.073	4810	4540	<0.005	<0.005	18.1	17.8	85.9	82.6
SW0441-1A	clear, rain prior	2022-11-17	7.2	1.53	1.68	0.063	0.066	7020	7590	<0.005	<0.005	30.4	33.5	140	152
SW0441-1A	clear, no recent rain	2022-11-24		1.62	1.77	0.061	0.061	4430	4090	<0.01	<0.005	23.4	25	76.1	73.9
	fall	n	4	5	5	5	5	5	5	5	5	5	5	5	5
		not detected (%)	0%	0%	0%	0%	0%	0%	0%	100%	100%	0%	0%	0%	0%
		min	7.1	1.5	1.52	0.061	0.061	4430	4090	0.005	0.005	18.1	17.8	76.1	73.9
		max	7.4	3.01	3.08	0.089	0.089	7200	7590	0.01	0.005	30.4	33.5	140	152
		average	7	1.86	1.94	0.07	0.07	5752	5698	0.01	0.005	22	23.2	102	104.2
		SD	0.1	0.64	0.64	0.01	0.01	1279	1621	0.00	0.00	5	6.5	25	31.1

Table 1, continued

Station ID	Sample Comment	Sample Date	Sulphur		Temperature	Thallium		Tin		Titanium		Sus. Solids
			TOT	DISS	NA	TOT	DISS	TOT	DISS	TOT	DISS	TOT
			mg/L	mg/L	°C	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L
	BC ENV Freshwater Aquatic Life Guidelines	acute			17 [9]		0.8				2,000 [1]	26 [10]
		chronic					0.3				4,600	6 [10]
SW0441	clear, pooled	2020-12-07	6.2	7.1		0.0029	0.0028	<0.2	<0.2	17.1	13.3	
SW0441	slight amber	2020-12-16	4.2		7	0.0043		<0.2		43.3		
SW0441	clear, light rain previous	2021-04-29	6.7			0.0032		<0.2		12.3		
SW0441	clear, no rain	2021-07-19	39.5			0.0025		<0.2		4.44		
SW0441-1A	slight amber	2020-12-16	4.3			0.0055		<0.2		52.5		
SW0441-1A	clear	2020-12-07	6.4	5.8		0.0031	0.0023	<0.2	<0.2	12.9	15.2	
SW0441-1A	clear, light rain previous	2021-04-29	5.4			0.0034		<0.2		8.6		
SW0441-2	clear, light rain previous	2021-04-29	8.6			0.0023		<0.2		2.28		
SW0441	clear, no rain	2022-03-11	11.1		7.3	0.0022		<0.2		3.97		
SW0441	clear, no rain prior	2022-08-12	116	115	15.9	<0.01	<0.01	<1	<1	8.9	<2.5	6
SW0441	clear, no rain prior	2022-08-18	44.8	44.2	*17.8*	<0.004	<0.004	<0.4	<0.4	3.9	<1	2.8
SW0441	clear, no rain prior	2022-08-25	69.4	77.2	*17.3*	<0.004	0.0069	<0.4	<0.4	9.4	<1	11
SW0441	clear, no rain prior	2022-09-01	35.6	35	*18.7*	<0.004	0.0023	<0.4	<0.2	4.9	<0.5	2.8
SW0441	clear, no rain prior	2022-09-08	55.8	57.6	16.6	<0.004	<0.004	<0.4	<0.4	3	<1	4
	summer	n	5	5	5	5	5	5	5	5	5	5
		not detected (%)	0%	0%	0%	100%	60%	100%	100%	0%	100%	0%
		min	35.6	35	15.9	0.004	0.0023	0.4	0.2	3	0.5	2.8
		max	116	115	18.7	0.01	0.01	1	1	9.4	2.5	11
		average	64	66	*17.3*	0.01	0.005	0.5	0.5	6.0	1.2	5
		SD	32	32	1.1	0.00	0.0030	0.3	0.3	2.9	0.8	3
SW0441	clear, potential first flush	2022-10-25	53.6	54	10.5	<0.004	<0.004	<0.4	<0.4	10.1	<1	8.4
SW0441	clear, rain prior	2022-11-03	11.9	11.3	8.8	<0.002	0.0021	<0.2	<0.2	5.3	<0.5	<1
SW0441	clear, rain prior	2022-11-08	49.6	52.9	7.5	<0.002	<0.004	<0.2	<0.4	5.3	<1	2.4
SW0441	clear, rain prior	2022-11-17	44.2	48.3	5.2	<0.004	<0.004	<0.4	<0.4	4.6	<1	12
SW0441	clear, no recent rain	2022-11-24	6.7	6.6		0.0032	0.0027	<0.2	<0.2	9.9	0.89	<1
	fall	n	5	5	4	5	5	5	5	5	5	5
		not detected (%)	0%	0%	0%	80%	60%	100%	100%	0%	80%	40%
		min	6.7	6.6	5.2	0.002	0.0021	0.2	0.2	4.6	0.5	1
		max	53.6	54	10.5	0.004	0.004	0.4	0.4	10.1	1	12
		average	33	35	8.0	0.00	0.003	0.3	0.3	7.0	0.9	5
		SD	22	24	2.2	0.00	0.0009	0.1	0.1	2.7	0.2	5
SW0441-1A	clear, no rain prior	2022-08-12	4.4	4.8	17	<0.002	<0.002	<0.2	<0.2	3.07	<0.5	4
SW0441-1A	clear, no rain prior	2022-08-18	5.1	4.9	*18.1*	<0.002	<0.002	<0.2	<0.2	2.22	<0.5	1.6
SW0441-1A	clear, no rain prior	2022-08-25	4.1	5.2	*17.1*	<0.002	0.004	<0.2	<0.2	2.1	<0.5	3.2
SW0441-1A	clear, no rain prior	2022-09-01	3.7	4.5	16.8	<0.002	<0.002	<0.2	<0.2	2.9	<0.5	1.6
SW0441-1A	clear, no rain prior	2022-09-08	4.5	4.8	15.3	<0.002	<0.002	<0.2	<0.2	2.85	<0.5	3.2

Table 1, continued

Station ID	Sample Comment	Sample Date	Sulphur		Temperature	Thallium		Tin		Titanium		Sus. Solids
			TOT	DISS	NA	TOT	DISS	TOT	DISS	TOT	DISS	TOT
			mg/L	mg/L	°C	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L
	BC ENV Freshwater Aquatic Life Guidelines	acute			17 [9]		0.8				2,000 [1]	26 [10]
		chronic					0.3				4,600	6 [10]
	summer	n	5	5	5	5	5	5	5	5	5	5
		not detected (%)	0%	0%	0%	100%	80%	100%	100%	0%	100%	0%
		min	3.7	4.5	15.3	0.002	0.002	0.2	0.2	2.1	0.5	1.6
		max	5.1	5.2	*18.1*	0.002	0.004	0.2	0.2	3.07	0.5	4
		average	4	5	16.9	0.00	0.002	0.2	0.2	2.6	0.5	3
		SD	1	0	1.0	0.00	0.0009	0.0	0.0	0.4	0.0	1
SW0441-1A	clear, potential first flush	2022-10-25	5.2	5.3	10.8	<0.002	<0.002	<0.2	<0.2	2.69	<0.5	2
SW0441-1A	clear, rain prior	2022-11-03	7.3	7.1	9.5	<0.002	<0.002	<0.2	<0.2	4.3	0.64	2.4
SW0441-1A	clear, rain prior	2022-11-08	8	8	8.1	<0.002	<0.002	<0.2	<0.2	6.06	0.66	<1
SW0441-1A	clear, rain prior	2022-11-17	10.1	10.2	6	<0.002	<0.002	<0.2	<0.2	1.28	<0.5	<1
SW0441-1A	clear, no recent rain	2022-11-24	5.2	5		0.0025	0.002	<0.2	<0.2	7.1	0.87	<1
	fall	n	5	5	4	5	5	5	5	5	5	5
		not detected (%)	0%	0%	0%	80%	80%	100%	100%	0%	40%	60%
		min	5.2	5	6	0.002	0.002	0.2	0.2	1.28	0.5	1
		max	10.1	10.2	10.8	0.0025	0.002	0.2	0.2	7.1	0.87	2.4
		average	7	7	8.6	0.00	0.002	0.2	0.2	4.3	0.6	1
		SD	2	2	2.1	0.00	0.0000	0.0	0.0	2.4	0.2	1

Table 1, continued

Station ID	Sample Comment	Sample Date	Turbidity	Uranium		Vanadium		Zinc		Zirconium	
			NA	TOT	DISS	TOT	DISS	TOT	DISS	TOT	DISS
			NTU	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
	BC ENV Freshwater Aquatic Life Guidelines	acute	9 [11]		8.5 [1]			13-681 [2]			
		chronic	3 [11]					7.5-656 [2]			
SW0441	clear, pooled	2020-12-07		0.423	0.44	1.65	1.51	15.9	22.4	0.2	0.24
SW0441	slight amber	2020-12-16	25.1	0.15		2.82		11.4		0.63	
SW0441	clear, light rain previous	2021-04-29		0.387		1.74		10.2		<0.1	
SW0441	clear, no rain	2021-07-19		0.664		1.61		2.58		0.76	
SW0441-1A	slight amber	2020-12-16		0.157		3.64		13.3		0.54	
SW0441-1A	clear	2020-12-07		0.401	0.389	1.37	1.43	20.7	22.6	0.19	0.22
SW0441-1A	clear, light rain previous	2021-04-29		0.29		1.4		11		<0.1	
SW0441-2	clear, light rain previous	2021-04-29		0.739		0.62		11.3		<0.1	
SW0441	clear, no rain	2022-03-11	4.69	0.435		0.96		5.89		<0.1	
SW0441	clear, no rain prior	2022-08-12	5.51	0.616	0.624	1.5	<1	3.24	1.95	<0.5	<0.5
SW0441	clear, no rain prior	2022-08-18	6.15	0.421	0.437	1.67	1.41	5.78	1.14	<0.2	<0.2
SW0441	clear, no rain prior	2022-08-25	13.2	0.517	0.694	2.27	1.96	6.3	0.88	<0.2	<0.2
SW0441	clear, no rain prior	2022-09-01	5.63	0.422	0.407	1.5	1.4	2.6	1.09	<0.2	<0.1
SW0441	clear, no rain prior	2022-09-08	4.74	0.457	0.482	1.52	1.34	2.81	1.54	<0.2	<0.2
	summer	n	5	5	5	5	5	5	5	5	5
		not detected (%)	0%	0%	0%	0%	20%	0%	0%	100%	100%
		min	4.74	0.421	0.407	1.5	1	2.6	0.88	0.2	0.1
		max	13.2	0.616	0.694	2.27	1.96	6.3	1.95	0.5	0.5
		average	7.05	0.487	0.53	1.69	1.42	4.1	1.3	0.3	0.2
		SD	3.48	0.082	0.12	0.33	0.34	1.8	0.4	0.1	0.2
SW0441	clear, potential first flush	2022-10-25	6.95	0.326	0.331	1.56	1.15	12.4	3.19	<0.2	<0.2
SW0441	clear, rain prior	2022-11-03	4.12	0.242	0.254	1.02	0.83	6.9	5.01	<0.1	<0.1
SW0441	clear, rain prior	2022-11-08	4.69	0.324	0.321	0.98	0.7	8.56	6.45	<0.1	<0.2
SW0441	clear, rain prior	2022-11-17	8.11	0.483	0.522	1.07	0.7	6.85	3.27	<0.2	<0.2
SW0441	clear, no recent rain	2022-11-24		0.119	0.105	1.19	0.66	10.2	5.97	<0.1	<0.1
	fall	n	4	5	5	5	5	5	5	5	5
		not detected (%)	0%	0%	0%	0%	0%	0%	0%	100%	100%
		min	4.12	0.119	0.105	0.98	0.66	6.85	3.19	0.1	0.1
		max	8.11	0.483	0.522	1.56	1.15	12.4	6.45	0.2	0.2
		average	5.97	0.299	0.31	1.16	0.81	9.0	4.8	0.1	0.2
		SD	1.88	0.133	0.15	0.24	0.20	2.4	1.5	0.1	0.1
SW0441-1A	clear, no rain prior	2022-08-12	3.43	0.191	0.186	1.08	0.76	3.57	1	<0.1	<0.1
SW0441-1A	clear, no rain prior	2022-08-18	3.06	0.172	0.171	1.05	0.91	3.14	1.14	<0.1	<0.1
SW0441-1A	clear, no rain prior	2022-08-25	2.99	0.14	0.163	0.85	0.82	2.8	1.18	<0.1	<0.1
SW0441-1A	clear, no rain prior	2022-09-01	4.14	0.109	0.127	0.83	0.79	3.1	1.35	<0.1	<0.1
SW0441-1A	clear, no rain prior	2022-09-08	2.32	0.114	0.112	0.89	0.75	3.39	0.98	<0.1	<0.1

Table 1, continued

Station ID	Sample Comment	Sample Date	Turbidity	Uranium		Vanadium		Zinc		Zirconium	
			NA	TOT	DISS	TOT	DISS	TOT	DISS	TOT	DISS
			NTU	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
	BC ENV Freshwater Aquatic Life Guidelines	acute	9 [11]		8.5 [1]			13-681 [2]			
		chronic	3 [11]					7.5-656 [2]			
	summer	n	5	5	5	5	5	5	5	5	5
		not detected (%)	0%	0%	0%	0%	0%	0%	0%	100%	100%
		min	2.32	0.109	0.112	0.83	0.75	2.8	0.98	0.1	0.1
		max	4.14	0.191	0.186	1.08	0.91	3.57	1.35	0.1	0.1
		average	3.19	0.145	0.15	0.94	0.81	3.2	1.1	0.1	0.1
		SD	0.67	0.036	0.03	0.12	0.06	0.3	0.2	0.0	0.0
SW0441-1A	clear, potential first flush	2022-10-25	3.55	0.0813	0.0855	1.03	0.88	11.7	3.14	<0.1	<0.1
SW0441-1A	clear, rain prior	2022-11-03	3.64	0.109	0.107	0.95	0.66	7.4	5.19	<0.1	<0.1
SW0441-1A	clear, rain prior	2022-11-08	3.74	0.148	0.147	0.97	0.72	11.6	8.83	<0.1	<0.1
SW0441-1A	clear, rain prior	2022-11-17	1.4	0.245	0.272	0.72	0.58	6.98	5.05	<0.1	<0.1
SW0441-1A	clear, no recent rain	2022-11-24		0.0775	0.0679	1.06	0.67	11.6	7.38	<0.1	<0.1
	fall	n	4	5	5	5	5	5	5	5	5
		not detected (%)	0%	0%	0%	0%	0%	0%	0%	100%	100%
		min	1.4	0.0775	0.0679	0.72	0.58	6.98	3.14	0.1	0.1
		max	3.74	0.245	0.272	1.06	0.88	11.7	8.83	0.1	0.1
		average	3.08	0.132	0.14	0.95	0.70	9.9	5.9	0.1	0.1
		SD	1.12	0.069	0.08	0.13	0.11	2.4	2.2	0.0	0.0

Notes:
Reay Creek Pond was designated a Class 1 contaminated site by Transport Canada (TC) in 2016, due to elevated cadmium, chromium, lead and zinc.
TC remediated the creek and pond on Victoria Airport Authority lands in 2019 and 2020.
Where values were not detected, the detection limit was used to calculate statistics.
BC ENV approved water quality guidelines for protection of freshwater aquatic life applied unless otherwise stated.
DIS = dissolved state, TOT = total state
Hardness and conductivity measurements indicate marine influence at the mouth.
[1] BC ENV working water quality guideline.
[2] Hardness-dependant guideline.
Hardness measurements at the mouth are above allowable input data into aluminum and copper site-specific guideline models likely due to marine influence.
[3] Cr (IV) / Cr (III)
[4] BC Biotic Ligand Model used to determine guidelines for each sample; hardness measurements at the mouth are elevated above the allowable input data, so a lower estimate was used.
If more than 1 of 5 samples or average of the 5 samples exceed chronic guideline, the site has exceeded guidelines.
[5] Guidelines are minimum (rather than maximum) values for dissolved oxygen.
[6] Average guideline is a geomean of 200 CFU/100 mL; E. coli values in the "average" row are geomeans.
[7] Vancouver Island Objective applies to monthly samples collected June to September; our data was collected 5 times in 30 days; Total condensed phosphate as P was preserved with nitric acid (not sulfuric).
[8] Optimum pH range.
[9] Draft objective proposed to protect juvenile Coho (the most sensitive species); average weekly temperature at any location in the creeks.
[10] 25 and 5 mg/L over ambient levels of 2 mg/L in the upper Sooke River watersheds.
[11] Max: 9 NTU (8 NTU above ambient levels in the upper Sooke River watershed) at any time during clear flow periods, and average 3 NTU (2 NTU above ambient levels during clear flow periods.

xx	Value exceeds the provincial guideline protective for aquatic life.
xx	Italicized value exceeds a guideline/objective which is only partially applicable. For example, single vales that exceed a chronic guideline may be italicized. Further investigation is needed.

Station Locations:

SW0441	Reay Creek beach access; 9265 Lochside Dr.
SW0441-1A	Foot of Frost Ave., 20 m downstream of wood bridge.
SW0441-2	Canora Rd. @ Norseman Rd.

Table 2. 2022 Coles Bay Unnamed Stream 5 in 30 Water Quality Data

Station ID	Station Name	Sample Start Date	Sample Comment	Aluminum		Antimony		Arsenic		Barium		Beryllium		Bismuth	
				DISS	TOT	TOT	DISS	TOT	DISS	TOT	DISS	TOT	DISS	TOT	DISS
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
		BC ENV Freshwater Aquatic Life Guidelines	acute			20 [1]		5		5,000 [1]		0.13 [1]			
			chronic		130-240					1,000 [1]					
SW3124	Sacred Stream	2022-08-18	no odour, clear, no rain prior	7.28	59.7	0.023	0.024	0.199	0.199	7.3	6.25	<0.01	<0.01	<0.005	<0.005
		2022-08-25	no odour, clear, no rain prior	7.16	54.1	0.024	0.026	0.205	0.212	7.74	6.65	<0.01	<0.01	<0.005	<0.005
		2022-09-01	no odour, clear, no rain prior	6.06	58.5	<0.02	0.023	0.186	0.209	6.68	6.33	<0.01	<0.01	<0.01	<0.005
		2022-09-08	no odour, clear, no rain prior	6.39	65.3	0.02	<0.02	0.226	0.202	7.54	6.56	<0.01	<0.01	<0.005	<0.005
		2022-09-15	no odour, clear, no rain prior	5.28	52.1	<0.02	0.022	0.22	0.22	7.37	6.56	<0.01	<0.01	<0.005	<0.005
summer	n			5	5	5	5	5	5	5	5	5	5	5	5
	not detected (%)			0%	0%	40%	20%	0%	0%	0%	0%	100%	100%	100%	100%
	min			5.28	52.1	0.02	0.02	0.186	0.199	6.68	6.25	0.01	0.01	0.005	0.005
	max			7.28	65.3	0.024	0.026	0.226	0.22	7.74	6.65	0.01	0.01	0.01	0.005
	average			6.43	57.9	0.02	0.02	0.21	0.21	7.33	6.47	0.01	0.01	0.01	0.005
	SD			0.82	5.2	0.00	0.00	0.02	0.01	0.40	0.17	0.00	0.00	0.00	0.000
		2022-10-25	no odour, clear, rain during sampling, potential first flush conditions	4.92	70.8	0.02	0.021	0.263	0.247	9.05	7.55	<0.01	<0.01	<0.005	<0.005
		2022-11-03	no odour, clear, rain prior	6.62	78.2	0.027	0.032	0.224	0.219	8.78	7.08	<0.01	<0.01	<0.01	<0.005
		2022-11-08	no odour, clear, rain prior	9.42	172	0.031	0.031	0.213	0.205	8.33	6.6	<0.01	<0.01	<0.005	<0.005
		2022-11-17	no odour, clear, rain prior	4.68	46.2	0.022	0.028	0.184	0.175	7.07	6.53	<0.01	<0.01	<0.005	<0.005
		2022-11-24	no odour, clear, no recent rain	6.64	126	0.031	0.026	0.205	0.175	7.86	6.43	<0.01	<0.01	<0.01	<0.005
fall	n			5	5	5	5	5	5	5	5	5	5	5	5
	not detected (%)			0%	0%	0%	0%	0%	0%	0%	0%	100%	100%	100%	100%
	min			4.68	46.2	0.02	0.021	0.184	0.175	7.07	6.43	0.01	0.01	0.005	0.005
	max			9.42	172	0.03	0.032	0.263	0.247	9.05	7.55	0.01	0.01	0.01	0.005
	average			6.46	98.6	0.03	0.03	0.22	0.20	8.22	6.84	0.01	0.01	0.01	0.005
	SD			1.89	50.2	0.01	0.00	0.03	0.03	0.79	0.47	0.00	0.00	0.00	0.000

Table 2, continued

Station ID	Station Name	Sample Start Date	Sample Comment	Boron		Cadmium		Calcium		Chromium		Cobalt		Sp. Conductivity 25°C.
				TOT	DIS	TOT	DISS	TOT	DISS	TOT	DISS	TOT	DISS	NA
				µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µS/cm
		BC ENV Freshwater Aquatic Life Guidelines	acute	1,200			0.55 - 0.71 [2]			1 / 9 [1,3]		110		
			chronic				0.20 - 0.24 [2]					4		
SW3124	Sacred Stream	2022-08-18	no odour, clear, no rain prior	10	11	<0.005	<0.005	28.1	28.8	0.1	<0.1	0.0393	0.0158	237.4
		2022-08-25	no odour, clear, no rain prior	11	11	<0.005	0.0106	30.3	30.1	0.18	0.1	0.0483	0.0358	212.8
		2022-09-01	no odour, clear, no rain prior	13	12	<0.005	<0.005	28.2	31	0.15	<0.1	0.043	0.0216	149.6
		2022-09-08	no odour, clear, no rain prior	<10	10	<0.005	<0.005	31.4	32.3	0.14	<0.1	0.0462	0.0163	250.5
		2022-09-15	no odour, clear, no rain prior	12	<10	<0.005	<0.005	33.4	32.2	0.18	<0.1	0.0437	0.0171	127.3
summer	n			5	5	5	5	5	5	5	5	5	5	5
	not detected (%)			20%	20%	100%	80%	0%	0%	0%	80%	0%	0%	0%
	min			10	10	0.005	0.005	28.1	28.8	0.1	0.1	0.0393	0.0158	127.3
	max			13	12	0.005	0.0106	33.4	32.3	0.18	0.1	0.0483	0.0358	250.5
	average			11	11	0.005	0.006	30.3	31	0.2	0.1	0.044	0.021	195.5
	SD			1	1	0.000	0.003	2.2	1	0.0	0.0	0.003	0.008	54.4
		2022-10-25	no odour, clear, rain during sampling, potential first flush conditions	16	<10	0.0053	<0.005	36	36.7	0.15	<0.1	0.069	0.0239	131.2
		2022-11-03	no odour, clear, rain prior	<10	<10	0.0052	<0.005	33.2	33.3	0.2	<0.1	0.056	0.0216	268.4
		2022-11-08	no odour, clear, rain prior	10	<10	<0.005	<0.005	30.1	30.7	0.29	0.13	0.0566	0.0236	241.2
		2022-11-17	no odour, clear, rain prior	<10	<10	<0.005	<0.005	32.3	35.3	0.11	<0.1	0.0426	0.0166	194.2
		2022-11-24	no odour, clear, no recent rain	<10	10	<0.005	<0.005	27.8	31.2	0.24	<0.1	0.059	0.0198	
fall	n			5	5	5	5	5	5	5	5	5	5	4
	not detected (%)			60%	80%	60%	100%	0%	0%	0%	80%	0%	0%	0%
	min			10	10	0.005	0.005	27.8	30.7	0.11	0.1	0.0426	0.0166	131.2
	max			16	10	0.0053	0.005	36	36.7	0.29	0.13	0.069	0.0239	268.4
	average			11	10	0.005	0.005	31.9	33.4	0.2	0.1	0.057	0.021	208.8
	SD			3	0	0.000	0.000	3.1	2.6	0.1	0.0	0.009	0.003	60.1

Watercourse Monitoring Data

Table 2, continued

Station ID	Station Name	Sample Start Date	Sample Comment	Copper		Oxygen	E. Coli	Flow Rate	Hardness		Iron		Lead	
				TOT	DISS	DISS	NA	NA	TOT	DISS	TOT	DISS	TOT	DISS
				µg/L	µg/L	mg/L	CFU/100 mL	L/min	mg/L as $CaCO_3$	mg/L as $CaCO_3$	µg/L	µg/L	µg/L	µg/L
		BC ENV Freshwater Aquatic Life Guidelines	acute		3.3 - 8.3 [4]	5 [5]	400 [6]				1,000	350	75-104 [2]	
			chronic		0.5 - 1.4 [4]	8 [5]	200 [6]						6.3-7.4 [2]	
SW3124	Sacred Stream	2022-08-18	no odour, clear, no rain prior	0.628	0.573	9.8	89	20	95.1	95.5	69.5	9.9	0.0552	<0.005
		2022-08-25	no odour, clear, no rain prior	0.774	0.618	9.21	110	14	101	101	73.2	11.8	0.068	0.0151
		2022-09-01	no odour, clear, no rain prior	0.6	0.617	9.52	24	12	94	103	75	9.8	0.058	<0.005
		2022-09-08	no odour, clear, no rain prior	0.624	0.468	8.9	30	10	102	110	80.3	5.9	0.0607	<0.005
		2022-09-15	no odour, clear, no rain prior	0.662	0.58	8.13	1500	8	110	108	71.1	9.1	0.0503	<0.005
summer	n			5	5	5	5	5	5	5	5	5	5	5
	not detected (%)			0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	80%
	min			0.6	0.468	8.13	24	8	94	95.5	69.5	5.9	0.0503	0.005
	max			0.774	0.618	9.8	1500	20	110	110	80.3	11.8	0.068	0.0151
	average			0.66	0.57	9.1	101	13	100	104	73.8	9.3	0.058	0.007
	SD			0.07	0.06	0.6	644	5	6	6	4.2	2.1	0.007	0.005
		2022-10-25	no odour, clear, rain during sampling, potential first flush conditions	0.781	0.831	10.85	81	8	121	123	129	13.3	0.17	0.0207
		2022-11-03	no odour, clear, rain prior	0.78	0.617	10.05	25	11	114	112	104	21.4	0.095	<0.005
		2022-11-08	no odour, clear, rain prior	0.724	0.625	9.18	20	20	100	101	149	35.4	0.0741	0.0163
		2022-11-17	no odour, clear, rain prior	0.585	0.471	12.88	13	18	106	117	70.7	11.4	0.0506	<0.005
		2022-11-24	no odour, clear, no recent rain	0.74	0.598		12		95.2	105	141	18.6	0.093	0.0069
fall	n			5	5	4	5	4	5	5	5	5	5	5
	not detected (%)			0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	40%
	min			0.585	0.471	9.18	12	8	95.2	101	70.7	11.4	0.0506	0.005
	max			0.781	0.831	12.88	81	20	121	123	149	35.4	0.17	0.0207
	average			0.72	0.63	10.7	23	14	107	112	118.7	20.0	0.097	0.011
	SD			0.08	0.13	1.6	29	6	10	9	31.8	9.5	0.045	0.007

Table 2, continued

Station ID	Station Name	Sample Start Date	Sample Comment	Lithium		Magnesium		Manganese		Mercury	Molybdenum		Nitrite as N	Nitrate as N
				TOT	DISS	TOT	DISS	DISS	TOT	TOT	TOT	DISS	DISS	DISS
				µg/L	µg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/l	mg/L
		BC ENV Freshwater Aquatic Life Guidelines	acute		870 [1]			1576-1873 [2]				2,000	0.06	32.8
			chronic					1019-1137 [2]				1,000	0.02	3
SW3124	Sacred Stream	2022-08-18	no odour, clear, no rain prior	<0.5	<0.5	6.06	5.73	1.39	4.29		0.764	0.769	<0.002	0.0278
		2022-08-25	no odour, clear, no rain prior	<0.5	<0.5	6.09	6.26	1.66	6.39		0.836	0.868	<0.002	0.0367
		2022-09-01	no odour, clear, no rain prior	<0.5	<0.5	5.72	6.18	1.39	5.04	<0.0019	0.768	0.839	<0.002	0.0445
		2022-09-08	no odour, clear, no rain prior	<0.5	<0.5	5.84	7.03	0.143	6.15		0.846	0.866	<0.002	0.0429
		2022-09-15	no odour, clear, no rain prior	<0.5	<0.5	6.46	6.64	0.107	3.97		0.852	0.909	<0.002	0.0422
summer	n			5	5	5	5	5	5	1	5	5	5	5
	not detected (%)			100%	100%	0%	0%	0%	0%	100%	0%	0%	100%	0%
	min			0.5	0.5	5.72	5.73	0.107	3.97	0.0019	0.764	0.769	0.002	0.0278
	max			0.5	0.5	6.46	7.03	1.66	6.39	0.0019	0.852	0.909	0.002	0.0445
	average			0.5	0.5	6.03	6.37	0.94	5.17		0.813	0.850	0.00	0.0388
	SD			0.0	0.0	0.28	0.49	0.75	1.08		0.043	0.052	0.00	0.0068
		2022-10-25	no odour, clear, rain during sampling, potential first flush conditions	<0.5	<0.5	7.56	7.63	1.73	16.2	<0.0019	0.694	0.694	<0.002	0.0076
		2022-11-03	no odour, clear, rain prior	<0.5	<0.5	7.47	6.98	1.51	15.2	<0.0019	0.606	0.605	<0.002	0.0164
		2022-11-08	no odour, clear, rain prior	<0.5	<0.5	6.05	6.03	2.38	4.08	<0.0019	0.482	0.494	<0.002	0.0065
		2022-11-17	no odour, clear, rain prior	<0.5	<0.5	6.14	6.87	1.27	5.36	<0.0019	0.486	0.511	<0.002	0.0133
		2022-11-24	no odour, clear, no recent rain	<0.5	<0.5	6.24	6.54	1.53	8.32	<0.0019	0.425	0.45	<0.002	0.0095
fall	n			5	5	5	5	5	5	5	5	5	5	5
	not detected (%)			100%	100%	0%	0%	0%	0%	100%	0%	0%	100%	0%
	min			0.5	0.5	6.05	6.03	1.27	4.08	0.0019	0.425	0.45	0.002	0.0065
	max			0.5	0.5	7.56	7.63	2.38	16.2	0.0019	0.694	0.694	0.002	0.0164
	average			0.5	0.5	6.69	6.81	1.68	9.83		0.539	0.551	0.00	0.0107
	SD			0.0	0.0	0.75	0.59	0.42	5.58		0.109	0.098	0.00	0.0041

Watercourse Monitoring Data

Table 2, continued

Station ID	Station Name	Sample Start Date	Sample Comment	Nickel		O. Carbon	Phosphorus		pH	Potassium		Selenium	
				TOT	DISS	DISS	TOT (condensed)	TOT	NA	DISS	TOT	TOT	DISS
				µg/L	µg/L	mg/L	µg/L	µg/L	pH	mg/L	mg/L	µg/L	µg/L
		BC ENV Freshwater Aquatic Life Guidelines	acute		25 -110 [1,2]		10 [7]	10 [7]	6.5-9 [8]			2	
			chronic				5 [7]	5 [7]					
SW3124	Sacred Stream	2022-08-18	no odour, clear, no rain prior	0.215	0.133	2.9		*15*	7.2	0.348	0.354	0.064	0.041
		2022-08-25	no odour, clear, no rain prior	0.226	0.157	2.8		*18*	7	0.421	0.431	<0.04	0.057
		2022-09-01	no odour, clear, no rain prior	0.19	0.131	2.7	*17.4*	*18*	7.2	0.415	0.36	<0.04	0.044
		2022-09-08	no odour, clear, no rain prior	0.208	0.122	2.9		*18*	7.2	0.423	0.374	<0.04	<0.04
		2022-09-15	no odour, clear, no rain prior	0.197	0.145	3		*30*	7.1	0.539	0.535	<0.04	0.059
summer	n			5	5	5	1	5	5	5	5	5	5
	not detected (%)			0%	0%	0%	0%	0%	0%	0%	0%	80%	20%
	min			0.19	0.122	2.7	17.4	*15*	7	0.348	0.354	0.04	0.04
	max			0.226	0.157	3	17.4	*30*	7.2	0.539	0.535	0.064	0.059
	average			0.21	0.138	3		*20*	7	0.429	0.41	0.04	0.05
	SD			0.01	0.014	0.1		6	0	0.069	0.08	0.01	0.01
		2022-10-25	no odour, clear, rain during sampling, potential first flush conditions	0.216	0.202	2.8			7.5	1.36	1.32	<0.04	<0.04
		2022-11-03	no odour, clear, rain prior	0.44	0.16	3.7	42.9		7.2	1.05	1.06	<0.04	<0.04
		2022-11-08	no odour, clear, rain prior	0.31	0.25	5.2	35.2		7.3	0.973	0.951	0.043	<0.04
		2022-11-17	no odour, clear, rain prior	0.182	0.142	4.6	20.2		7.3	0.66	0.622	<0.04	<0.04
		2022-11-24	no odour, clear, no recent rain	0.29	0.135	2.5	31.5			0.727	0.68	<0.04	<0.04
fall	n			5	5	5	4		4	5	5	5	5
	not detected (%)			0%	0%	0%	0%		0%	0%	0%	80%	100%
	min			0.182	0.135	2.5	20.2		7.2	0.66	0.622	0.04	0.04
	max			0.44	0.25	5.2	42.9		7.5	1.36	1.32	0.043	0.04
	average			0.29	0.178	4	32		7	0.954	0.93	0.04	0.04
	SD			0.10	0.048	1.2	9.4		0	0.279	0.29	0.00	0.00

Table 2, continued

Station ID	Station Name	Sample Start Date	Sample Comment	Silicon		Silver		Sodium		Strontium		Sulphur	
				TOT	DISS	TOT	DISS	TOT	DISS	TOT	DISS	TOT	DISS
				µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	µg/L	µg/L	mg/L	mg/L
		BC ENV Freshwater Aquatic Life Guidelines	acute			0.1-3.0 [2]							
			chronic			0.05-1.5 [2]							
SW3124	Sacred Stream	2022-08-18	no odour, clear, no rain prior	8860	8380	<0.005	<0.005	9	8.8	80	79.4	3	<3
		2022-08-25	no odour, clear, no rain prior	7950	9600	<0.005	<0.005	9.1	9.13	77.8	83.5	<3	3
		2022-09-01	no odour, clear, no rain prior	7580	7490	<0.01	<0.005	7.98	8.78	69.3	81.2	<3	<3
		2022-09-08	no odour, clear, no rain prior	7230	9240	<0.005	<0.005	8.18	9.37	79	86.1	<3	<3
		2022-09-15	no odour, clear, no rain prior	7280	7680	<0.005	<0.005	7.78	8.67	84.6	88.4	<3	<3
summer	n			5	5	5	5	5	5	5	5	5	5
	not detected (%)			0%	0%	100%	100%	0%	0%	0%	0%	80%	80%
	min			7230	7490	0.005	0.005	7.78	8.67	69.3	79.4	3	3
	max			8860	9600	0.01	0.005	9.1	9.37	84.6	88.4	3	3
	average			7780	8478	0.01	0.005	8.4	9.0	78	83.7	3	3
	SD			669	930	0.00	0.00	0.6	0.3	6	3.6	0	0
		2022-10-25	no odour, clear, rain during sampling, potential first flush conditions	9060	9210	<0.005	<0.005	9.09	9.35	92.7	95.8	3.3	3.5
		2022-11-03	no odour, clear, rain prior	8510	8370	<0.01	<0.005	9.14	8.76	92.3	89.8	4.4	4.4
		2022-11-08	no odour, clear, rain prior	8070	7870	<0.005	<0.005	8.1	8.17	74.9	76.5	5	5
		2022-11-17	no odour, clear, rain prior	7320	7950	<0.005	<0.005	8.28	8.96	85.4	91.2	4.8	5.3
		2022-11-24	no odour, clear, no recent rain	8130	7770	<0.01	<0.005	8.49	9.27	80.6	79	5.2	4.9
fall	n			5	5	5	5	5	5	5	5	5	5
	not detected (%)			0%	0%	100%	100%	0%	0%	0%	0%	0%	0%
	min			7320	7770	0.005	0.005	8.1	8.17	74.9	76.5	3.3	3.5
	max			9060	9210	0.01	0.005	9.14	9.35	92.7	95.8	5.2	5.3
	average			8218	8234	0.01	0.005	8.6	8.9	85	86.5	5	5
	SD			638	592	0.00	0.00	0.5	0.5	8	8.3	1	1

Table 2, continued

Station ID	Station Name	Sample Start Date	Sample Comment	Temperature	Thallium	Thallium	Tin	Tin	Titanium	Titanium	Sus. Solids
				NA	TOT	DISS	TOT	DISS	TOT	DISS	TOT
				°C	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L
		BC ENV Freshwater Aquatic Life Guidelines	acute	17 [9]		0.8				2,000 [1]	26 [10]
			chronic			0.3				4,600	6 [10]
SW3124	Sacred Stream	2022-08-18	no odour, clear, no rain prior	*17.7*	<0.002	<0.002	<0.2	<0.2	1.92	<0.5	<1
		2022-08-25	no odour, clear, no rain prior	*17.3*	<0.002	0.0025	<0.2	<0.2	2.31	<0.5	1.6
		2022-09-01	no odour, clear, no rain prior	16.4	<0.002	<0.002	<0.2	<0.2	2.3	<0.5	2
		2022-09-08	no odour, clear, no rain prior	15.3	<0.002	<0.002	<0.2	<0.2	3.01	<0.5	<1
		2022-09-15	no odour, clear, no rain prior	14.6	<0.002	<0.002	<0.2	<0.2	2.35	<0.5	<1
summer	n			5	5	5	5	5	5	5	5
	not detected (%)			0%	100%	80%	100%	100%	0%	100%	60%
	min			14.6	0.002	0.002	0.2	0.2	1.92	0.5	1
	max			17.7	0.002	0.0025	0.2	0.2	3.01	0.5	2
	average			16.3	0.00	0.002	0.2	0.2	2.4	0.5	1
	SD			1.3	0.00	0.0002	0.0	0.0	0.4	0.0	0
		2022-10-25	no odour, clear, rain during sampling, potential first flush conditions	9.8	<0.002	<0.002	<0.2	<0.2	2.46	<0.5	3.6
		2022-11-03	no odour, clear, rain prior	7.4	<0.002	<0.002	<0.2	<0.2	3.4	<0.5	<1
		2022-11-08	no odour, clear, rain prior	5.8	<0.002	<0.002	<0.2	<0.2	6.54	1.11	<1
		2022-11-17	no odour, clear, rain prior	5.8	<0.002	<0.002	<0.2	<0.2	2.45	<0.5	2.8
		2022-11-24	no odour, clear, no recent rain		<0.002	<0.002	<0.2	<0.2	5	<0.5	<1
fall	n			4	5	5	5	5	5	5	5
	not detected (%)			0%	100%	100%	100%	100%	0%	80%	60%
	min			5.8	0.002	0.002	0.2	0.2	2.45	0.5	1
	max			9.8	0.002	0.002	0.2	0.2	6.54	1.11	3.6
	average			7.2	0.00	0.002	0.2	0.2	4.0	0.6	2
	SD			1.9	0.00	0.0000	0.0	0.0	1.8	0.3	1

Table 2, continued

Station ID	Station Name	Sample Start Date	Sample Comment	Turbidity	Uranium	Uranium	Vanadium	Vanadium	Zinc	Zinc	Zirconium	Zirconium
				NA	TOT	DISS	TOT	DISS	TOT	DISS	TOT	DISS
				NTU	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
		BC ENV Freshwater Aquatic Life Guidelines	acute	9 [11]		8.5 [1]			36-56 [2]			
			chronic	3 [11]					10.5-30.75 [2]			
SW3124	Sacred Stream	2022-08-18	no odour, clear, no rain prior	3.49	0.388	0.39	0.78	0.7	0.96	0.2	<0.1	<0.1
		2022-08-25	no odour, clear, no rain prior	2.23	0.437	0.46	0.83	0.79	1.05	0.23	<0.1	<0.1
		2022-09-01	no odour, clear, no rain prior	2.18	0.453	0.487	0.73	0.73	<1	0.21	<0.1	<0.1
		2022-09-08	no odour, clear, no rain prior	3.49	0.545	0.558	0.85	0.6	1.75	0.14	<0.1	<0.1
		2022-09-15	no odour, clear, no rain prior	2.03	0.549	0.548	0.77	0.74	1.37	0.2	<0.1	<0.1
summer	n			5	5	5	5	5	5	5	5	5
	not detected (%)			0%	0%	0%	0%	0%	20%	0%	100%	100%
	min			2.03	0.388	0.39	0.73	0.6	0.96	0.14	0.1	0.1
	max			3.49	0.549	0.558	0.85	0.79	1.75	0.23	0.1	0.1
	average			2.68	0.474	0.49	0.79	0.71	1	0.2	0.1	0.1
	SD			0.74	0.070	0.07	0.05	0.07	0	0.0	0.0	0.0
		2022-10-25	no odour, clear, rain during sampling, potential first flush conditions	3.67	0.644	0.636	0.74	0.62	6.77	0.52	<0.1	<0.1
		2022-11-03	no odour, clear, rain prior	2.1	0.51	0.506	0.67	0.5	1.8	0.31	0.24	<0.1
		2022-11-08	no odour, clear, rain prior	4.58	0.4	0.391	0.81	0.5	1.74	0.38	0.25	<0.1
		2022-11-17	no odour, clear, rain prior	1.94	0.457	0.486	0.54	0.39	1.36	0.36	<0.1	<0.1
		2022-11-24	no odour, clear, no recent rain		0.364	0.366	0.77	0.44	3.7	0.24	<0.1	<0.1
fall	n			4	5	5	5	5	5	5	5	5
	not detected (%)			0%	0%	0%	0%	0%	0%	0%	60%	100%
	min			1.94	0.364	0.366	0.54	0.39	1.36	0.24	0.1	0.1
	max			4.58	0.644	0.636	0.81	0.62	6.77	0.52	0.25	0.1
	average			3.1	0.475	0.48	0.71	0.49	3	0.4	0.2	0.1
	SD			1.3	0.110	0.11	0.11	0.09	2	0.1	0.1	0.0

Notes:
Where values were not detected, the detection limit was used to calculate statistics.
BC ENV approved water quality guidelines for protection of freshwater aquatic life applied unless otherwise stated.
DIS = dissolved state, TOT = total state
Hardness and conductivity measurements suggest there is marine influence at the mouth.
[1] BC ENV working water quality guideline.
[2] Hardness-dependant guideline.
[3] Cr (IV) / Cr (III)
[4] Site specific BC Biotic Ligand Model guidelines for dissolved copper; hardness measurements at the mouth are elevated above the allowable input data into the model, so a lower estimate was used.
If more than 1 of 5 samples or average of the 5 samples exceed chronic guideline, station has exceeded.
[5] Guidelines are minimum (rather than maximum) values for dissolved oxygen.
[6] Average guideline is a geomean of 200 CFU/100 mL; E. coli values in the "Average" row are geomeans.
[7] Draft Vancouver Island Objective, applies to monthly samples collected June to September; our data was collected 5 times in 30 days; Total condensed phosphate as P was preserved with nitric acid (not sulfuric).
[8] Optimum pH range.
[9] Draft objective proposed to protect juvenile Coho (the most sensitive species); average weekly temperature at any location in the creeks.
[10] 25 and 5 mg/L over ambient levels of 2 mg/L in the upper Sooke River watersheds.
[11] Max: 9 NTU (8 NTU above ambient levels in the upper Sooke River watershed) at any time during clear flow periods, and above 3 NTU (2 NTU above ambient levels at any time within 30 days during clear flow periods.

xx	Value exceeds the provincial guideline protective for aquatic life.
xx	Italicized value exceeds a guideline/objective which is only partially applicable. Further investigation is needed.

APPENDIX G

CRD Public Health and Environmental Concern Rating System

STORMWATER DISCHARGE RATING SYSTEM

The Capital Regional District (CRD) evaluates stormwater discharges for public health and environmental concerns using a rating system for stormwater discharges developed by the CRD titled *Stormwater Discharge Rating System for the Capital Regional District* (Drinnan, 1997). As part of the rating system, the following study was used to determine levels of public use, coastline habitat sensitivity and flushing characteristics of the marine receiving waters:

- *An Evaluation of the Coastline Sensitivity Associated with Stormwater Discharges on the Saanich Peninsula (Drinnan, 1997)*

Public shoreline use ratings indicate the potential for public contact with stormwater. These ratings were updated in 2010.

The rating of discharges allows the jurisdictions involved to better manage limited funds and undertake remedial measures where necessary. A copy of the rating system and the coastline sensitivity evaluations are available upon request from the CRD. A brief explanation of the stormwater discharge rating system follows.

1.1 Public Health Concern

CRD staff rate each discharge as a high, moderate or low level of concern for public health based on the level of bacterial contamination in the stormwater and the potential for human contact. The parameters used to assess the level of concern for public health are:

- Escherichia coli (*E. coli*) concentrations in the stormwater discharge
- discharge flow rate
- location of the discharge (e.g., below high-water line)
- public use of the shoreline (uses such as swimming, fishing, or kayaking)

The level of contamination is used to assign a bacterial rating. Public shoreline use ratings are used to indicate the potential for public contact with stormwater and depends on the type of activities carried out on the shoreline. Table 1 shows criteria for the bacterial and public shoreline use ratings.

Table 1 Fecal Coliform and Public Shoreline Use Rating Criteria

Rating	Bacterial Rating Criteria	Rating	Public Shoreline Use Rating Criteria
1	No flow measured or *E. coli* count consistently under 200 CFU/100 mL	1	Low contact (e.g., inaccessible, beach walking)
2	*E. coli* count between 200 and 5,000 CFU/100 mL	2	Secondary contact (e.g., kayaking)
3	*E. coli* count greater than 5,000 CFU/100 mL	3	Primary contact (e.g., swimming, scuba diving)

Note: *E. coli* counts above 200 CFU/100 mL (on average) indicate the potential to cause adverse public health effects from primary recreational activities such as swimming or diving.

1.2 Environmental Concern

Environmental concerns are based on a contaminant rating of discharge sediments. The contaminant rating is determined by comparing the sediment concentration of each of eight metals and two groups of organic contaminants (Cn) with the CRD Marine Sediment Quality Guidelines (MSQG) to obtain a ratio (Cn/MSQG). To account for potential additive effects, these ratios are summed to calculate the toxic equivalent unit (TEU). Table 2 provides the criteria for determining the contaminant rating.

Table 2 Criteria for Determining the Contaminant Rating

Contaminant Rating	Criteria for Determining the Contaminant Rating
Low	Sum of the individual ratios of Cn/MSQG (TEU) is less than 1.0
Moderate	Sum of the individual ratios of Cn/MSQG (TEU) is greater than or equal to 1.0, but no individual parameter exceeds, or is equal to, a value of 0.75
High	The ratio Cn/MSQG is greater than, or equal to, 0.75 for any single parameter

Discharges evaluated are located near environmentally sensitive areas, in creeks or near heavily settled areas where there is an increased probability of pollution. All discharges sampled for environmental concern are sampled for at least two years to confirm the contaminant concentrations and contaminant(s) of concern. Only a small number of discharges can be sampled each year due to budgetary constraints; therefore, each discharge selected for sampling can only be sampled once per year.

Discharges with a confirmed high contaminant rating are investigated to determine the source(s) of contamination. The priority in which high-rated discharges are investigated and problems mitigated is determined by calculating a habitat rating (high, moderate or low). The habitat rating is based on the habitat sensitivity, discharge flow and marine flushing characteristics. The following briefly describes the rating criteria for the habitat rating.

Table 3 Criteria for Determining Ratings for Habitat Sensitivity, Discharge Flow and Marine Flushing

Habitat Sensitivity Rating		Discharge Flow Rating		Marine Flushing Ratings	
Rating	Criteria	Rating	Criteria	Rating	Criteria
1	Low productivity; less diverse habitats	0.5	Less than 50 L/minute	0.5	Open shoreline; high flushing
2	Moderate productivity; diverse habitats	1	Between 50 to 500 L/minute	1	Partially enclosed area; moderate flushing
3	High productivity or endangered or protected habitats	1.5	Greater than 500 L/minute	1.5	Enclosed area; poor flushing

These three ratings (habitat sensitivity, discharge flow and marine flushing) are summed to determine a habitat rating as shown in Table 4. The habitat rating assigned to each discharge will allow limited resources to be spent in a prioritized manner.

Table 4 Criteria for Establishing the Habitat Rating

Habitat Rating and Mitigative Priority	Sum of Criteria (Habitat + Flow + Flushing)
Low	2.0-3.0
Moderate	3.5-4.5
High	5.0-6.0

OTHER CONCERNS

There are a number of other concerns that have been jointly reviewed and discussed by staff from the CRD and the other jurisdictions involved. This review and discussion assists in setting priorities for remediation of discharges with a high level of concern for public health and the environment. These include:

- the cost of remediation
- the likelihood that remediation will be successful
- compatibility with the priorities of the jurisdictions
- public interest