UVic Sustainability Scholars Program

Bracing for Rain: A cross-municipal analysis of stormwater policy in the capital region

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Disclaimer

This report is a product of the UVic Sustainability Scholars Program, a partnership between UVic and various on- and off-campus organizations offering internship opportunities to graduate students working on sustainability-focused research projects that advance sustainability in the region. This project was conducted under the mentorship of the Community Social Planning Council staff.

Territorial Acknowledgement

We acknowledge and respect living and working within Coast and Straits Salish territory, the territories of the Lekwungen peoples, known today as Songhees and Esquimalt Nations, and the W̱SÁNEĆ peoples, known today as W̱JOŁEŁP (Tsartlip), BOḴEĆEN (Pauquachin), SṮÁUTW̱ (Tsawout), W̱SIḴEM (Tseycum), and MÁLEXEŁ (Malahat) Nations, whose historical relationships with the land continue to this day. We would also like to acknowledge that this study benefited from the research and knowledge of local nations, who provided invaluable insight into this work.

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1. Introduction

Stormwater management is an important issue in the Capital Regional District (CRD). This report examines the management of stormwater in the region through an analysis of current stormwater policies and interviews with professionals working in the area. The interviews identify challenges to improved management, including limited funding, unclear or inconsistent rules around green stormwater infrastructure (GSI), and a general lack of coordination among local governments and agencies. The project also highlights opportunities to improve stormwater management, including expanding funding opportunities for monitoring and GSI, as well as improving collaboration, education, and regulations. This study provides a concise overview of the current stormwater policies in various municipalities in the CRD in comparison to a standard developed based on best management practices for the purpose of this report. This report is intended to bring awareness to current policies and ways local governments can improve stormwater management through strong bylaws and regulations.

2. Background

Managing stormwater is key to reducing runoff impacts in our increasingly urbanized and impermeable landscape. As stormwater runs off hard surfaces like roofs, driveways, and roads, it also carries pollutants to those environments, impacting local wildlife and public health (Congressional Research Service, 2016). While today, public and environmental health are important considerations for urban stormwater infrastructure, this has not always been the case. A vast majority of the urban stormwater infrastructure is based on the sewer systems developed in 19th-century Europe (Bertrand-Krajewski, 2021). These systems, which are built into many cities' underlying structures, focus only on sanitation. After almost a century, the drawbacks of these systems have been recognised widely. From the discharge of contaminants to water bodies, to high infrastructure costs and the modification of important hydrological cycles, the issues with traditional stormwater infrastructure led to a significant paradigm shift, and new integrated management approaches began to emerge in the 1970s (Bertrand-Krajewski, 2021).

Across North America, stormwater management still relies heavily on traditional infrastructure, also referred to as grey infrastructure, which utilises pipes, tanks, and other artificial means to transport stormwater. While this approach focuses on the process of removing stormwater, it does not consider water quality or natural flow processes. Green stormwater management (GSM) has emerged in recent decades as a commonly acknowledged approach to stormwater management that can help regions build strategies for management that also consider environmental sustainability, climate change, and adaptation (Heidari et al., 2022). While research has demonstrated the benefits of these

approaches and led to their widespread acceptance, implementation is still slow (Heidari et al., 2022). In order to gain a better understanding of current stormwater management approaches in the Capital Regional District (CRD), this study provides an analysis of the current stormwater policies across various municipalities and provides insights into some of the challenges in implementation and management, as well as opportunities for improvement.

3. Project Description

3.1 Research Objectives

The purpose of this study is to provide an overview of current stormwater policies in the CRD to help encourage municipalities to adopt more rigorous guidelines and empower residents to install their own stormwater solutions where possible. In order to achieve this, it was decided that a series of interviews would be conducted alongside a policy review that would outline the current state of stormwater infrastructures, as well as the barriers and opportunities for implementation.

The first phase of this research was to establish a standard with a rating matrix for stormwater policy in Southern Vancouver Island. The next was to conduct a policy review of various municipalities in the CRD in comparison to how well they met the requirements set out in the rating matrix. At this stage, a series of informal interviews were conducted with community members and professionals to gain insight into any gaps or opportunities for improving the rating matrix. Once the rating matrix was finalized, a complete review of all existing bylaws, online resources, and council policies was conducted and rated based on the established rating matrix. Following this rating process, a series of interviews were conducted with city representatives, staff, and stormwater professionals.

These materials are intended to be used within the PSS community and other organizations with similar missions to promote progressive stormwater infrastructure and policy development within the regional government in southern Vancouver Island. The report will provide an outline of the current stormwater infrastructure policy landscape, and can be used for future research and advocacy by PSS, partner organizations, and community members.

3.2 Limitations and Scope

Because of the limited timeframe for this project, this study was unable to cover all of the municipalities in the CRD. Working with the project mentor, priority municipalities were chosen based on the focus area of PSS on the Peninsula and the surrounding areas. Also, as a result of the time constraints, this project was unable to address specific regional

dynamics or the context of local Nations. It also did not consider local area plans, watershed models or plans in the ratings. These would all be important areas for future investigation.

While there was a significant effort to identify and extract all relevant policies in this review, stormwater bylaws, policies, and guidelines lack standardisation and are found embedded in a wide variety of documents, which vary from municipality to municipality. As a result of these dimensions, researchers recognize that some policy dimensions or guidelines may have been missed. Additionally, many municipalities are currently in the process of updating their Official Community Plans (OCPs) and updating or implementing Integrated Stormwater Management Plans (ISMPs). With these components under consideration, PSS would like to consider this research an ongoing process where collaboration continues, and documentation is regularly adapted to most accurately reflect stormwater management in the CRD.

4. Interview Analysis

4.1 Introduction

The following section outlines the results from the interviews, addressing the challenges in better stormwater management with a strong focus on implementing green stormwater infrastructure. In order to investigate these dynamics, interviews were conducted with stormwater professionals in the CRD.

4.2 Methods

Interviews were conducted to explore the complex dynamics involved in stormwater management and infrastructure policy. Initial participants were identified through Peninsula Streams Society's network, and a snowball sampling method was used to reach additional relevant professionals (*Snowball sampling*, 2020). The aim was to capture a diverse range of perspectives across different roles and municipalities. A total of 11 individuals participated in eight semi-structured interviews. Two of these were group interviews, involving two or three participants each. Informed consent was obtained through a consent form, which was also confirmed verbally at the beginning of each interview. Participants were also sent interview transcripts for interviewee transcript review to allow them the opportunity to edit or clarify information provided (Hagens et al., 2009)

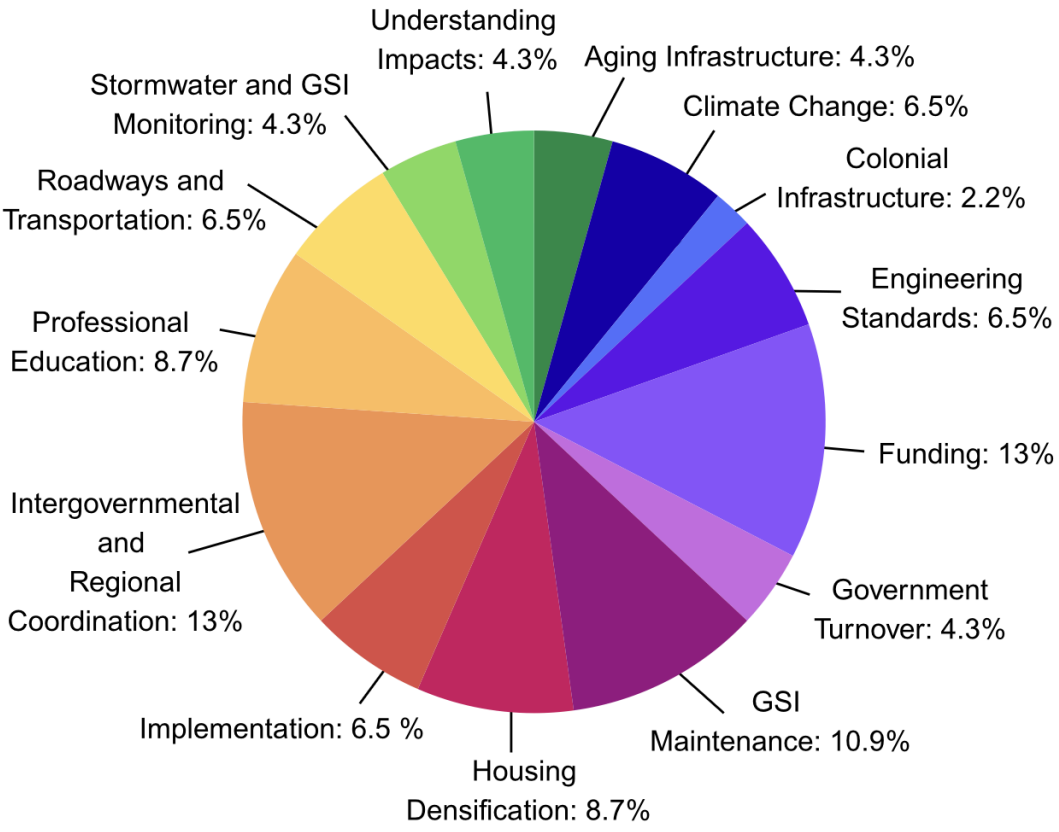
Participants represented a variety of organizations, including the Capital Regional District (CRD), local First Nations, ENGOs, and the municipalities of Sidney, Victoria, Saanich, and Oak Bay. The roles of participants included stormwater specialists, parks and marine managers, community leaders, city councillors, landscape architects, engineers, consultants, and directors of engineering. Interview data was analyzed using inductive

coding in NVivo software, where themes were identified based on what participants shared, rather than applying predefined categories. The relative weight of each theme was assessed based on the number of participants who identified it as a challenge or opportunity.

4.3 Results: Challenges in Stormwater Management

Figure 1 shows the breakdown of the challenges identified through interviews that impact the ability to improve stormwater management. The following section provides a detailed breakdown of each of these challenges.

Figure 1.
Interview Results: Challenges in Stormwater Management



4.3.1 Aging Infrastructure

A challenge that two participants emphasised was around municipalities' ability to deal with aging stormwater infrastructure. One participant mentioned that as infrastructure ages out, municipalities are spending millions of dollars annually to replace stormwater pipes. They also mention that old pipes are frequently undersized and require major resizing projects. Another participant mentioned that as infrastructure ages out and housing densification occurs, there is a lot of pressure on the current stormwater infrastructure, which

increases the pressure to replace and expand existing stormwater infrastructure. One participant mentioned that “... some of our utilities are over a hundred years old. So that's kind of one of the reasons that we want to push people to consider low-impact development is that these pipes are small and old and not in great shape” (July 23rd interview).

4.3.2 Climate Change

Three participants brought up climate change as having a significant impact on how stormwater is managed. One participant mentions that most of the stormwater infrastructure currently in place in the CRD was developed before climate change was being considered. Another participant brought up how sea level rise is having increased impacts on coastal communities in relation to their stormwater drainage. A third participant stated that “Climate change has obviously changed the way we handle stormwater management and how we have to handle it in the future and, I would say our legislation is a bit behind compared to where we probably should be” (July 18th Interview).

4.3.3 Colonial Infrastructure

One participant discussed how current stormwater and septic systems can be considered as extensions of colonial narratives. They discussed how stormwater is not currently deemed critical infrastructure, and instead falls under a parallel concept of non-critical infrastructure. As a result, stormwater infrastructure tends to lack funding and is generally not included in any mandated jurisdictional strategies. This participant also expressed how infrastructure is often used to justify the violation of First Nations' treaties, and that the pollution of stormwater is not currently being considered as a violation of both treaties and Indigenous law in Canada.

This participant expressed that a major way that stormwater impacts Nations is by impacting their ability to harvest food. This participant expressed that “ There's no separation within jurisdictional boundaries from a cultural standpoint. Land impacts ocean, ocean impacts land, and people understand that what you put on the land will impact the surrounding seabeds and harvesting spots…Stormwater is a huge part of the impacts Nations face, not just in terms of physical pollutants, but the compression of their harvesting spaces with the expansion of urban environments” (July 11th Interview).

4.3.4 Engineering Standards

Three participants identified current engineering standards as being overly prescriptive. It was mentioned that a lot of the engineering standards used today are heavily tied to the use of grey infrastructure and can make the implementation of greener or alternative stormwater projects more difficult. They stated that requiring an engineer to sign

off on some projects and having grey infrastructure standards can limit stormwater infrastructure initiatives that think outside the box. It was also mentioned that these standards can lead to difficulties within design team dynamics, where certain individuals prefer more traditional infrastructure models, which can limit the approaches taken in a project.

4.3.5 Funding

Six participants brought up funding as a significant barrier to improving stormwater management. One participant discussed how there are a number of opportunities for improving stormwater infrastructure, but it can be very expensive. They mention that for municipalities other than Victoria that do not have funding models, upgrading stormwater infrastructure would either not fit into the budget or have significant tax implications for residents. It was also mentioned that maintaining the staff to keep up with regular monitoring and follow-through is outside the budget of many small municipalities.

Another participant outlined how funding can often be unpredictable and inconsistent. When municipalities apply for Provincial and Federal funding, the Provincial or Federal governments may not prioritize projects that are of high priority for the municipality. Participants also mentioned that funding restrictions have led to various new projects having significant oversights in terms of their stormwater implications.

4.3.6 Government Turnover

Two participants mentioned that government officials and staff turnover can lead to difficulties in achieving long-term progress and relationships of trust between community members, professionals, and government bodies. They also discussed how this can lead to disconnects between government guidelines and the interpretations of these guidelines by staff members who ultimately have a significant impact on the types of projects that are restricted or approved, with one participant stating, “I think there's a disconnect there between staff and the political level” (July 24th Interview).

4.3.7 GSI Maintenance

Five participants identified ongoing green stormwater infrastructure (GSI) maintenance, both from private land owners and municipalities, as a challenge. Multiple participants expressed that often, property owners do not realize what's happening below the surface, and whether or not they have a stormwater management system operating there. One participant stated that “these systems might be installed on private property by a professional, and then it's not necessarily the professional that is going to be operating and maintaining the system. So if there's no clear idea about what, how the system is

functioning, how it should be functioning, what those operations and maintenance procedures are, then that can kind of be a gap in terms of it functioning how it should" (July 14th Interview).

Other participants expressed that there are also issues with maintenance from municipalities, where it is not always clear who is responsible for maintenance, or there is a lack of resources. When describing the issue of maintenance, one participant stated, "Who's going to maintain it? Is it a park's thing? Parks doesn't want to maintain it, and Parks said, No, it's an engineering thing, so you should maintain it … this whole maintenance thing is getting to be really bad because they're like, you know, what? We have hardly any money to maintain anything anymore, so you make this rain garden bomb proof, or we're gonna turn it into a lawn in a couple of years" (July 24th Interview).

4.3.8 Housing Densification

Four different participants discussed how housing densification has created challenges for improving stormwater management. One participant mentions how, in new developments which are much higher density, there are more infrastructure requirements such as sidewalks and bus pullouts, which leave less room for landscape and potential permeable materials for on-site stormwater infiltration. Another participant echoed a similar sentiment when stating, "It used to be that we were densifying development to have more green space. And now it seems like we're densifying to have more houses, and no one's talking about the green space anymore" (July 24th Interview).

The fourth participant discussed how, with new provincial zoning allowing for higher-density housing and requiring certain housing criteria to be met, municipalities are faced with trying to balance these priorities with the municipality's other objectives, including sustainability and environmental protection.

4.3.9 Implementation

Three participants identified implementation as a challenge, with one participant stating that there is an issue with large-scale stormwater initiatives being siloed to different regional or agency responsibilities, with a lack of integrated planning and delivery. This participant stated, "What we don't have is within these government agencies, right down to the smallest municipality, to the regional governments, to the provincial government, we don't have something that says, you need to implement this. So how are we implementing this?" (July 8th Interview)

Another participant identified that there are sometimes issues with a lack of professional experience in integrating stormwater infrastructure, particularly when it comes to design that aims to mimic the natural environment. Where grey infrastructure design has

been the same for some time, there are a lot of variables when it comes to implementing GSI. One participant stated that “A lot of things that can change because you have your design, but then you also have to consider what the site conditions are, so there are so many things that can shift and adapt to meet your needs. So with all of those moving pieces, it's easy for something to just fall through the cracks” (July 14th Interview).

4.3.10 Intergovernmental and Regional Coordination

The coordination and collaboration between various government bodies was brought up as a challenge by six participants. Multiple participants discussed the multijurisdictional nature of waterways, with one participant explaining that, for municipalities with shoreline, there is a mix of municipal, federal, and provincial jurisdiction overlapping. This issue was also expressed by participants with regard to intermunicipal departments, such as parks planning versus maintenance. Another participant explained this through the example of fish habitat, stating that “Salmon are considered a federal jurisdiction, and everything that's not a salmon is considered provincial jurisdiction, if it's a freshwater fish. The problem being that salmon spend a great deal of their life cycle and the critical life cycles of spawning and rearing in freshwater streams, and that is provincial jurisdiction, and the province has jurisdiction over all the things that can impact these species and wipe them out in a single rainfall” (July 8th Interview).

Another participant expresses this issue when explaining that “What consistently happens under four-year election cycles is that they will promise to join a bylaw or say that they're doing it, or assume that the regional district is doing it, even though they're not. And then nothing happens, because ““whatever, it goes into the ocean, and the ocean is not our problem””. The ocean is DFO's problem, Transport Canada's problem. As long as it's on the beach, it's the province's problem. When it exits the beach, it is no longer the province's problem. Nobody wants to take action” (July 11th Interview).

This participant also explains that from a First Nation standpoint, mitigating challenges within stormwater is often considered at the watershed model rather than a jurisdictional model. They stated that “ As far as I understand, within Canada, that has always been the engineering approach of the solution to pollution is dilution, which it is not. That doesn't capture anything in terms of nations, rights to access and worldview” (July 11th Interview).

4.3.11 Professional Education

Four participants expressed that there may be some gaps in expertise around designing stormwater systems. One participant expressed that this was true for both design professionals, as well as municipal staff stating that “If you have design professionals that

are in management positions, decision-making positions within local government, they can choose not to or choose to implement green infrastructure, and when you're dealing with very constrained sites, you've got complicated underground infrastructure, it's pretty easy just to kind of go: too risky. We're not gonna do that" (July 9th Interview). It was also mentioned that design professionals may be lacking access to the tools they need to design infrastructure effectively, especially where green infrastructure methods are concerned.

4.3.12 Roadways and Transportation

The Ministry of Transportation, roadways, and transportation in general, were brought up by three participants as having significant impacts on stormwater quality and proving to be a challenge in advancing integrated stormwater management. Multiple participants outlined how traffic and cars have one of the biggest influences over water quality in creeks and streams, particularly since the chemicals from tires have been linked to the killing of salmon and other fish. One participant explained that this was also important geographically because "you'll find this all over North America and all around the world, I'm sure, a lot of major roads follow major rivers, because that was the lowest ground and was the easiest ground to follow, and so you have a lot of infrastructure that just goes directly from the road into a stream" (July 8th Interview).

4.3.13 Stormwater and GSI Monitoring

Two participants identified monitoring as something useful, but also as a challenge to implement. One participant described that if the municipality wanted to install flow monitoring devices, they would need significant funds to purchase, install, and staff people to interpret the data, which is not feasible for many municipalities. Another participant identified monitoring for water quality as an additional challenge. It was discussed that developing minimum standards for water quality in bylaws and continuously monitoring for this standard would be extremely difficult to execute. This sentiment was not shared by all participants, as one participant discussed that they did not think that monitoring for water quality was as essential an element for when using green approaches, as it is generally very clear where the infrastructure is working based on vegetation health and other markers.

4.3.14 Understanding Impacts

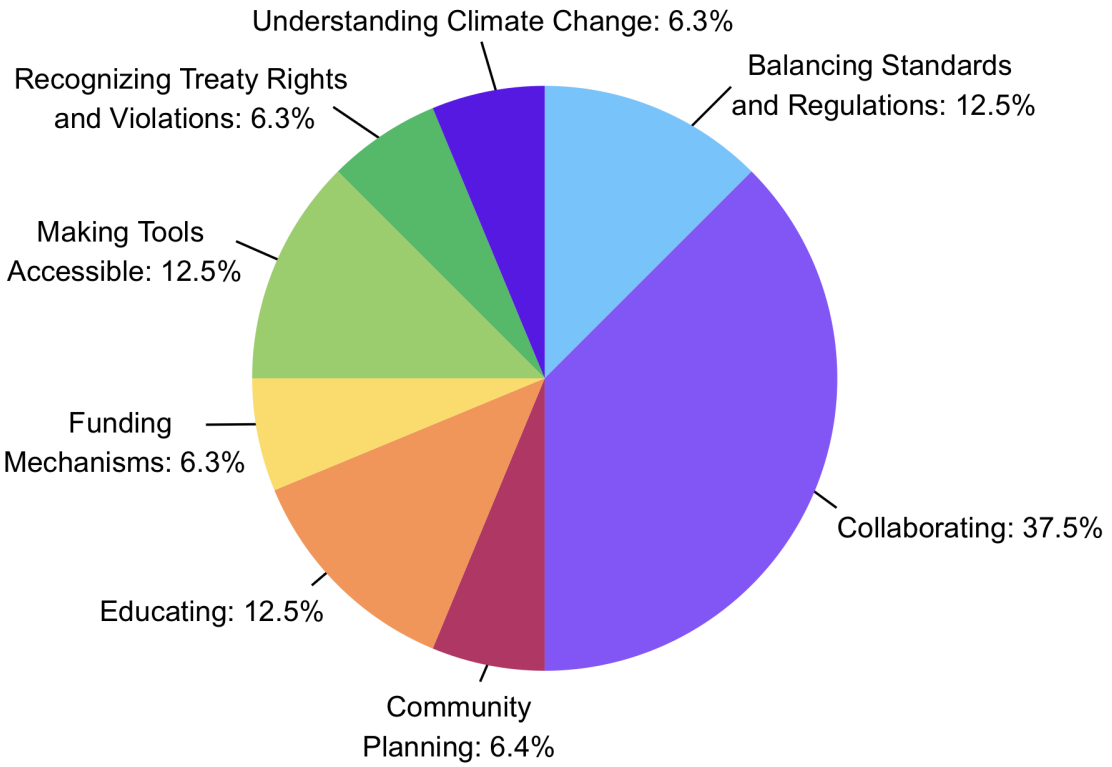
Two participants identified a lack of knowledge around the impacts of stormwater infrastructure as a challenge. One explained that there is a lack of knowledge around how stormwater impacts the receiving bodies that it flows into, such as streams and creeks. Another participant stated that there is still a lack of trust in green stormwater infrastructure methods, outlining that "A big risk and a big challenge with implementing green infrastructure

is that it is new. It's, especially ten to fifteen years ago, fairly unknown, a lot of lack of trust in how these systems are going to function" (July 14th Interview).

4.4 Results: Opportunities for Improving Stormwater Management

Figure 2 shows a breakdown of the opportunities for change identified through interviews. The following section details these various opportunities for improvement.

Figure 2.
Interview Results: Opportunities for Improving Stormwater Management



4.4.1 Balanced Standards and Regulations

Two participants discussed how balancing requirements for stormwater infrastructure and standards for best practice could be a useful step in improving management overall. One participant stated that by loosening some engineering specifications and allowing for flexibility within design, more site-specific designs could be accomplished. This participant also outlined that having requirements that go beyond just guidelines and require certain practices in policy will also be an important step in improving stormwater management.

4.4.2 Collaborating

Six participants identified collaboration across various levels of government, municipalities, and various stakeholders and community groups as an important step in improving stormwater management. Participants mentioned how stormwater programs and

green infrastructure projects where there is coordination from the planning, to the implementation and maintenance are the ones that are the most successful. The CRD's core area storm water quality program and the Bowker Creek initiative were both mentioned as examples of where this collaboration is working well. While some participants mentioned how these regional approaches tend to be fairly high-level in terms of implementation, they also help with education and the balancing of competing priorities in certain areas. One participant expressed this, stating, "I would say that getting everybody at all the different levels involved is really key so that everybody knows that this is a priority" (July 8th Interview). Another participant echoed a similar sentiment, saying, " It has to do with communication and listening, and understanding that everybody brings something to the table" (July 24th Interview).

4.4.3 Community Planning

One participant discussed the importance of community planning, especially through official community plans, as these outline the fundamental actions and directions that a municipality is following. Ensuring the community's plans and vision are well-defined and solidified to guide these large-scale changes, like infrastructure improvement, was something this participant deemed essential for enhancing future stormwater management and infrastructure projects.

4.4.4 Educating

Educating both professionals and the general public on watershed health, stormwater infrastructure, and the potential benefits of green infrastructure approaches was identified by two participants as an important opportunity for improvement. Helping design professionals understand the risks and benefits of GSI was identified as having the potential to allow for more consistent and regular implementation. Additionally, encouraging citizens to learn through action by building rain gardens on their properties or considering alternatives to impervious surfaces was also identified as an important tool in education. One participant also specified that making sure this education is tailored to its specific audience is one of the most effective ways to make an impact.

4.4.5 Funding Mechanisms

One participant identified that innovative funding mechanisms are an essential component of moving stormwater management forward. This participant identified asset management approaches in particular as having the potential to help with financing, outlining how "municipalities all over Canada are working feverishly on asset management, developing asset management plans, complying with provincial regulations. If you're talking

about a policy piece where you could effect a lot of change on this topic, affect it through asset management" (July 9th Interview).

4.4.6 Making Tools Accessible

Two participants identified having accessible tools for both professionals and homeowners as an important way of advancing stormwater management and infrastructure. This was also identified as being an important element when municipalities require certain stormwater infrastructure measures. One participant outlines this by stating, "when we set the requirements, we also want to be able to have supports in place to help with the implementation and not make it too onerous" (July 14th Interview).

4.4.7 Recognizing Treaty Rights and Violations

One participant outlined that it is essential that when there is pollution from stormwater causing beach closures and other sanitary or safety concerns around First Nations, this is considered a violation of these Nations' Treaties and their right to harvest foods. This participant explained this through the example of Washington State, explaining that "In Washington, Nations have a stake in 50% of all commercial and recreational harvest, which means that all stormwater has to be managed. They don't have a legal choice. Nations can sue the government for violations and closures of beaches that go on due to their infrastructure challenges. And that is a similar approach that needs to happen here" (July 11th Interview).

4.4.8 Understanding Climate Change

One participant mentioned how, by understanding climate change, we can be better prepared for its impacts. They explained that by accounting for sea level rise, and the impacts of reduced urban tree canopy, etc., our infrastructure is better able to meet those needs.

5. Stormwater Infrastructure Management Standard Rating Framework

5.1 Introduction

In order to understand the current state of stormwater management across municipalities, a rating matrix was established to provide a baseline for assessment. Due to the lack of standardization in this area, the matrix was designed to capture key dimensions of stormwater policy while remaining within the scope of the study.

5.2 Methods

To develop the rating framework for this project, an exploratory research process was conducted using Google Scholar and document recommendations from the project mentor. Following a literature review, a combination of resources were explored. With these approaches, the Greenbylaws toolkit (2021) was identified as a useful source on stormwater management and provided concrete examples of policy that would cover the various dimensions of policy that should be present within municipal regulations and guidelines. This toolkit was then adapted, with the influence of Dhakal & Chevalier's 2017 paper *Managing urban stormwater for urban sustainability: Barriers and policy solutions for green infrastructure application*. These documents were considered and adapted based on consultation with the project mentor, where key areas of interest and needs were also identified. Following the development of this standard rating criteria, four informal interviews were conducted to receive feedback on the rating matrix and make adjustments.

5.3 Results

Due to the diverse nature of stormwater policies, the rating matrix was broken down into two categories. The first category includes high-level management considerations, education, and collaboration as criteria. These components, addressed in Table 1, are generally found in guidelines and other documents, including municipal websites, OCPs, and design manuals. The second category, found in Table 2, details the developed standard criteria matrix for stormwater management bylaws and provides a framework to assess the existing bylaws and policies of various municipalities.

Table 1

Design, Education, and Collaboration Criteria for Stormwater Management

Policy Measure	**Summery**	**Examples**
1. Policy and Design Criteria Manual for Stormwater Management	A long-term planning and technical tool for governments and developers, defining stormwater goals, sustainable design strategies, and assessment procedures to protect watersheds and promote green infrastructure.	● Provide step-by-step instructions and performance benchmarks for phased drainage. ● Provide specific criteria for developers. ● Outline a drainage philosophy.
2. Collaborative Governance Approaches	Create formal structures and informal networks that allow multiple stakeholders to work together effectively on	● Establish a regional watershed-level agency or committee.

	stormwater and watershed management.	● Facilitate and fund research, education, data collection, and collaboration. ● Establish communication and coordination within government agencies and outside stakeholders.
3. Community Engagement Opportunities and Educational Materials	Increase public awareness and engage communities to support and participate in watershed education, stormwater management best practices, and GSI initiatives.	● Engage in public outreach campaigns. ● Include stormwater education in the K-12 curriculum and encourage universities to offer research opportunities and courses on GSI. ● Establish award and recognition programs

Note. Adapted from Green Bylaws Toolkit (2021) and Dhakal & Chevalier (2017).

Table 2

Standard Criteria Matrix for Stormwater Policy

Policy Measure	**Summary**	**Example**
1. Integrated Stormwater Management Plan	Focus on long-term strategies to manage rainwater using green stormwater infrastructure to protect water quality and maintain natural waterways.	● Mandates that new developments include green stormwater infrastructure. ● Policies protect natural watercourses and reduce piping or covering of watercourses. ● Ensure groundwater recharge through the use of vegetated swales, infiltration basins, and absorbent vegetation.
2. Watercourse Protection Requirements	Regulate to prevent pollution or obstruction of natural waterways, protect aquatic life, and restore buried or altered streams.	● Dumping into creeks is restricted and penalized. ● Remove obstacles impeding the movement of fish with fish-friendly designs. ● Buried streams are “daylighted” by removing pipes and allowing them to flow naturally.
3. Minimizing Disruption to Natural	Limit construction that harms soil and implement best management practices to preserve vegetation and	● Minimize the disruption to, or removal of, the existing permeable soil layers during construction wherever possible.

Vegetation and Soil	natural water infiltration and hydrology.	● Design roads to avoid cutting into slopes that intercept groundwater. ● Provide vegetated areas with a minimum of 300mm of absorbent soil cover.
4. Drainage Requirements	Encourage stormwater drainage through natural systems, such as swales and permeable soils, instead of conventional pipes and sewers.	● Streets are redesigned with grass-lined ditches instead of curbs. ● New developments must have areas with 300 mm of absorbent soil. ● Rain from roofs must infiltrate on-site rather than flow into storm sewers.
5. Development Requirements	Ensures that developments do not increase the volume or rate of stormwater runoff or affect water quality, particularly in sensitive areas.	● Developments must retain the same runoff volume post-construction. ● Roof water from industrial buildings must pass through oil/grit filters before discharge. ● Sediment control plans are required before construction begins.
6. Grey Infrastructure Alternatives	Promote the replacement of hard surfaces with permeable alternatives to reduce runoff and improve infiltration.	● Driveways made with permeable pavers instead of asphalt. ● Maximize on-site pervious surfaces through landscaping. ● No curb requirements in low-traffic areas.
7. Allowance for Permit-Exempt Small-Scale Integration	Supports small, homeowner- or community-scale green infrastructure projects by simplifying approval and permitting processes.	● Support small-scale designs by not requiring permits for stormwater infrastructure development at a certain scale. ● Allow rainwater collection. ● Provide simple diagrams and fast-track permits for small GSI projects.
8. Ongoing Monitoring and Assessment	Incorporates monitoring systems and enforces penalties for violations of stormwater regulations.	● Ensure ongoing monitoring and system maintenance.

Requirements / Penalties		● Incorporate monitoring equipment into rainwater system designs. ● Include fines for the pollution of water or the removal of vegetation.
9. Financial incentives	Support innovation that leads to affordable, practical rainwater solutions and encourages private landowners and developers to implement GI through financial support or incentives.	● Homeowners get rebates for installing GSI. ● Support innovation that leads to affordable, practical rainwater solutions and to increased awareness and application of these solutions. ● Adopt long-term financial strategies to fund stormwater infrastructure innovation and implementation.

Note. Adapted from Green Bylaws Toolkit (2021) and Dhakal & Chevalier (2017).

6. Municipal Stormwater Management Analysis

6.1 Introduction

Stormwater in the CRD is managed through a combination of CRD initiatives and guidelines, as well as the bylaws and guidelines of individual municipalities. Many of the components that are managed on a more regional scale through the CRD are covered in Table 1, *Design, Education, and Collaboration Criteria for Stormwater Management*. These components are considered in the overviews of each municipality in section 6.3: Results. The more technical elements covered in Table 2, *Standard Criteria Matrix for Stormwater Policy,* are outlined in the tables in section 6, for each municipality respectively.

6.2 Methods

To assess each of the municipalities in this study, a review of all of the bylaws and council policies was conducted using each municipality's website. For continuity and accessibility, consolidated bylaws were used. After assigning all of the bylaws to the respective categories, the requirements outlined in Table 1 were reviewed and addressed at the beginning of each section; however, a rating was not applied. For the requirements outlined in Table 2, a rating matrix was applied based on how well the municipality met the criteria outlined. These ratings, outlined in Table 3, range from dark green, meaning a policy

or bylaw could be found that meets most elements of the standard criteria, to pink, meaning that no elements of the standard could be found in existing policy or bylaw.

Table 3

Stormwater Management Rating Key

3	2	1	0
Meets most elements of Standard Criteria.	Meets some elements of Standard Criteria.	Provides guidelines for potential work or meets minor elements of Standard Criteria.	Does not meet any elements of Standard Criteria.

6.3 Results

6.3.1 Overview

Table 4 provides a summary of the results of municipal performance against the established standard criteria outlined in Table 2. These results indicate that some key criteria that are lacking for most municipalities include: having an Integrated stormwater management plan (ISMP), allowing for small-scale GSI integration, and having financial incentives for GIS in place. While some municipalities are currently in the process of developing ISMPs, many are still lacking an overall vision for their stormwater management. Small-scale GSI integration was also something of particular importance to the mentor organization, and based on these results, while being a component discussed in many municipalities' community plans, small-scale integration is generally restricted through requirements in current bylaws. This element was discussed in interviews as difficult to achieve, as it is hard to find a balance between overly prescriptive engineering standards and requirements that ensure certain standards are met. Financing stormwater infrastructure improvements and finding long-term financial strategies and incentives were also important components discussed in the interviews, and as seen in Table 4, they do not appear to be present in most municipalities.

Some components that have higher ratings overall include watercourse protection provisions and ongoing monitoring and assessment requirements/ penalties. These categories are seen as generally meeting some dimensions of good policy across the board, with some exceptions. These mostly came in the form of restrictions and penalties for polluting, using pesticides or other chemicals, requiring minimum setbacks to watercourses, and restrictions on removing trees. The remaining categories, including minimizing disruption to natural vegetation and soil, drainage requirements, development requirements, and

promoting the use of grey infrastructure alternatives, ranged from meeting most elements of our standard criteria to having no measures in place.

Table 4

Summary of Municipal Performance Against Standard Stormwater Policy Criteria

Municipality	Criteria Categories								
	Integrated Stormwater Management Plan	Watercourse Protection Provisions	Minimizing Disruption to Natural Vegetation and Soil	Drainage Requirements	Development Requirements	Promoting the use of Grey Infrastructure Alternatives	Allowance for Permit-Exempt Small-Scale Integration	Ongoing Monitoring and Assessment Requirements/ Penalties	Financial Incentives
Central Saanich	• ISMP	• CRD No. 1 • 1606 • 1544 • 2014	• 2065 • 1544 • ISMP	• 1606 • ISMP • 2100	• 1606 • 2100	• 1606 • 2100	• ISMP	• 2065 • CRD No. 1 • ISMP	• ISMP
Esquimalt	• DNE	• CRD No.1 • 2971 • 2899 • 2686	• 3076 • 2922	• 3128 • 2922 • 2971	• 2922 • 3128	• 2922	• 2971	• CRD No. 1 • 2971 • 2899 • 3128 • 2686	• DNE
Langford	• DNE	• CRD No.1 • 550 • 300 • 1160	• 1800 • 2206 • 300 • 1200	• 1000 • 300	• 300 • 1160 • 1000	• 1000	• DNE	• CRD No. 1 • 1800 • 550 • 2206	• 1200
North Saanich	• ISMP • DMP	• CRD No. 1 • 1150 • ISMP	• 255 • 1548	• 246 • ISMP • 1587	• 246 • ISMP	• 246 • 1587	• DNE	• 246 • 1548 • 255 • CRD No. 1	• DNE
Oak Bay	• DNE	• CRD No. 1 • 4518 • 4247 • 3531	• 4742 • 4620	• 4620	• DNE	• 3891 • 4620	• DNE	• 4518 • 4742 • CRD No. 1 • 3891	• DNE

		• 4620							
Saanich	• DNE	• CRD No. 1 • 7501 • SDPA • 9054 • 10000	• SDPA • 984 • 9272	• 7452 • SDPA	• 7452 • SSMDG • 10000	• 9529	• DNE	• 9842 • 9272 • 7452 • CRD No. 1	• 10000
Sidney	• DNE	• CRD No. 1 • 1318 • 2240 • 2275	• 2138 • 2240	• 2240	• 2016 • 2240	• 2240	• DNE	• 2275 • 1318 • CRD No. 1 • 2138	• DNE
Victoria	• DNE	• CRD No. 1 • 07-094 • 14-071	• 21-035 • 14-071	• 14-071 • RMS	• 14-071 • 12-013 • RMS	• 14-071 • RMS	• RMS	• 14-071 • 21-035 • 07-094 • CRD No. 1 • RMS	• 14-071 • RMS
View Royal	• MDP	• CRD No. 1 • 902 • 869 • 900	• 1069 • 869 • 881	• 902 • 35 • 1111	• 985 • 902 • 1111	• 1111	• 902	• CRD No. 1 • 902 • MDP • 1069	• DNE

Note: All numbers refer to the city's respective bylaws. Abbreviated terms include: Integrated Stormwater Management Plan(ISMP), Streamside Development Permit Area (SDPA), Drainage Master Plan (DMP), Surface Stormwater Management Development Guidelines (SSMDG), Rainwater Management Standards (RMS), and Does Not Exist (DNE).

6.3.2 Capital Regional District

CRD provides a variety of regulatory, educational, and testing services for various municipalities within the region. The CRD's website has a page that details what stormwater is, some challenges related to stormwater, such as pollution and flooding, and the role of the CRD in coordinating and assisting municipalities with their stormwater (Stormwater, n.d.). The page also provides links to the municipality's other pages on preventing stormwater pollution, GSI, managing rainwater, watersheds, and local stewardship groups. The page on preventing stormwater pollution provides some examples of how individuals can prevent pollution at home (*Preventing stormwater pollution,* n.d.). The CRD's page on GSI provides information on the benefits of GSI rooted in the fundamental principles of capturing and slowing flow, cleaning and infiltrating stormwater, and storing stormwater to minimize peak flow and floods *(Green stormwater infrastructure, n.d.)*. The website also provides information and educational materials on a wide variety of GSI techniques, including rain gardens, green roofs, living walls, permeable paving, erosion prevention, sediment control, and bioswales. The CRD also provides common design guidelines for stormwater in the Capital Region, which provide a design reference for residents, as well as materials sample policies for municipalities to adopt and further integrate GSI *(Green stormwater infrastructure, n.d.).* It was also discussed during interviews that the CRD is an important body for coordinating stormwater infrastructure across the region.

6.3.3 *Central Saanich*

The District of Central Saanich website includes a page on stormwater management that provides a summary and link to the District of Central Saanich integrated stormwater management plan (ISMP) as well as the Peninsula Streams website. The ISMP outlines how the district plans on working collaboratively with the business community, agricultural sector, and representatives from Peninsula Streams in order to implement the community's stormwater management plans (*Stormwater Management,* n.d.a). The Official Community Plan Bylaw No. 2100 (2003) also outlines how the district is considering implementing an educational program in partnership with educational organizations and the local school district in order to implement education around water pollution and the storm drain system. Table 5 provides a rating and breakdown of the district's stormwater bylaws.

Table 5

District of Central Saanich Stormwater Bylaw Rating

Standard Criteria	Rating and Summary of how Municipality meets the Criteria
1. Integrated Stormwater Management Plan	The **District of Central Saanich Integrated Stormwater Management Plan** (2009) takes a comprehensive watershed approach to stormwater management. The plan focuses on actions that can be taken to reduce erosion and maintain water quality in the Hagan-Graham, Tetayut, and McHugh-Noble watersheds. The plan also promotes the use of green stormwater infrastructure in maintaining these watersheds.
2. Watercourse Protection Provisions	Central Saanich is included in the CRD's **Core Area Stormwater Quality Management Extended Service Establishment Bylaw No. 1, 1997,** which controls pollution in stormwater runoff by investigating, monitoring, and reporting on stormwater quality. The district also has the **Central Saanich Surface Water Management Plan Bylaw No. 1606, 2010** and the **Soil Removal and Deposit Bylaw 2006, No. 1544**, which prohibit the pollution or damage of any stream or waterway. Additionally, the **Central Saanich Building Bylaw No. 2014, 2019,** outlines when site plans are required to outline setbacks from natural boundaries.
3. Minimizing Disruption to Natural Vegetation and Soil	The **Central Saanich Tree Management Bylaw No. 2065, 2021**, restricts the removal of trees, particularly protected species and trees in erosion districts. Central Saanich's **Soil Removal and Deposit Bylaw 2006, No. 1544,** outlines some restrictions around the removal of trees and soil and sets out specifications for replacement trees. The **Central Saanich Integrated Stormwater Management Plan** (2009) recommends increasing the depth of permeable soil across the district.
4. Drainage Requirements	The **Central Saanich Surface Water Management Plan Bylaw No. 1606, 2010** outlines how surface water runoff should, to the greatest extent possible, be retained on the site where it falls, ideally through soil infiltration. They also require a run-off control plan prepared by a professional engineer when this is not possible. The **District of Central Saanich Integrated Stormwater Management Plan** (2009) outlines best management practices for stormwater management on private property. The region's **Official Community Plan Bylaw No. 2100** also outlines the region's aims to increase stormwater capture and detention capacity near agricultural areas (Central Saanich, 2003).
5. Development Requirements	The **Central Saanich Surface Water Management Plan Bylaw No. 1606, 2010** requires erosion control measures during construction, such as retaining woody debris and organic matter on-site. Central Saanich's **Official Community Plan Bylaw No. 2100** (2003) also recommends the reduction of stormwater through innovative and site-sensitive housing and subdivision development and design.
6. Grey Infrastructure Alternatives	The **Central Saanich Surface Water Management Plan Bylaw No. 1606, 2010** requires a run-off control plan to be submitted for the construction of over 200 square metres of impervious surface. Additionally, the **Official Community Plan Bylaw No. 2100** strives to reduce the total level of impervious cover to 25% or less and support

	projects to restore streams (Central Saanich, 2003).
7. Allowance for Permit-Exempt Small-Scale Integration	The **District of Central Saanich Integrated Stormwater Management Plan** (2009) identifies the potential for downspout disconnection areas where residents would not need to apply for a permit to disconnect their downspout to utilize rain gardens, bioswales, or other green methods for their rainwater disposal, should they meet certain design requirements.
8. Ongoing Monitoring and Assessment Requirements/ Penalties	The **Central Saanich Tree Management Bylaw No. 2065, 2021** holds a penalty of up to $50,000 for anyone who contravenes the bylaw. The CRD also conducts water quality tests on an ongoing basis through the **Core Area Stormwater Quality Management Extended Service Establishment Bylaw No. 1, 1997.** Additionally, the **District of Central Saanich Integrated Stormwater Management Plan** (2009) recommends the implementation of regular evaluation and reporting around stormwater initiatives.
9. Financial Incentives	The **District of Central Saanich Integrated Stormwater Management Plan** (2009) recommends that the district develop funding strategies and support the NGO's and community programs in accessing funding.

6.3.4 *Esquimalt*

The Township of Esquimalt's website has a page on sewers and drains that provides contact information for the township's Engineering and Public Works department and Development Services Department. It also provides links to some bylaws relating to subdivisions and servicing, as well as a catch basin map, and tips from the CRD on flood prevention for homes (*Sewers & drains*, n.d.). Table 6 provides a rating and breakdown of the townships' stormwater bylaws.

Table 6

Township of Esquimalt Stormwater Bylaw Rating

Standard Criteria	Rating and Summary of how Municipality meets the Criteria
1. Integrated Stormwater Management Plan	This study did not find an integrated stormwater management plan for the Township of Esquimalt.
2. Watercourse Protection Provisions	Esquimalt is included in the CRD's **Core Area Stormwater Quality Management Extended Service Establishment Bylaw No. 1, 1997,** which controls pollution in stormwater runoff by investigating, monitoring, and reporting on stormwater quality. The townships' **Watercourse and Drainage Regulation Bylaw, 2019, No. 2971** also restricts the pollution, impeding of waterflow, or the enclosure of any watercourse, and the **Building Regulation Bylaw, 2017, No. 2899** requires plans outlining setbacks to the natural watercourse. The District also has a **Pesticide Use Reduction Bylaw, 2008, No. 2686**, which restricts the use of pesticides through permit requirements

3. Minimizing Disruption to Natural Vegetation and Soil	Esquimalt's **Tree Protection Bylaw, 2022, No. 3076**, regulates the ability to alter, cut, damage or remove protected trees and sets out replanting requirements. Esquimalt's **Official Community Plan Bylaw, 2018, No. 2922,** also suggests that the retention and protection of trees and the natural habitat should be further encouraged wherever possible.
4. Drainage Requirements	Esquimalt's **Subdivision and Development Servicing Bylaw No. 3128, 2023** and **Watercourse and Drainage Regulation Bylaw, 2019, No. 2971** outline the requirements for plans and specifications that address potential impacts on the Municipal Drainage System or Watercourse. The Town's **Official Community Plan Bylaw, 2018, No. 2922,** specifies that permeable paving materials should be encouraged for surface parking and that appropriate stormwater management measures to ensure that stormwater from the driveway infiltrates back into the ground to ensure no net runoff off.
5. Development Requirements	The **Subdivision and Development Servicing Bylaw No. 3128, 2023** specifies that post-development flows shall not exceed pre-development flows into the Municipal Drainage System. Additionally, the townships' **Official Community Plan Bylaw, 2018, No. 2922** suggests that there is a review and development of best management practices for stormwater management that uses mechanical and natural-based stormwater treatment systems. The plan also supports rainwater collection and harvesting, and encourages green management techniques that control rainfall on properties to slow and treat stormwater before it enters local waterways. This could include rain gardens and bioswales adjacent to the parking and roadways.
6. Grey Infrastructure Alternatives	Esquimalt's **Official Community Plan Bylaw, 2018, No. 2922** outlines that future works should maximize the ratio of planted and pervious surfaces to unplanted surfaces, and use porous surfaces to enhance stormwater infiltration through permeable paving. It also encourages installation methods to contribute to sustained permeability and retention of stormwater on the site, and design paved areas to direct water towards vegetated areas, to help reduce surface runoff. Where paved surfaces are needed, intersperse drought-resistant vegetation and trees to help absorb stormwater.
7. Allowance for Permit-Exempt Small-Scale Integration	Esquimalt's **Watercourse and Drainage Regulation Bylaw, 2019, No. 2971** allows for the director to waive some written report requirements for works in the municipal drainage system if works are proposed works are deemed minor enough that the director deems that the proposed works will not impair the quality of stormwater, alter any flow patterns, or increase the risk of flooding, environmental damage, or interfere with the proper functioning of a Watercourse.
8. Ongoing Monitoring and Assessment Requirements/ Penalties	The CRD conducts water quality tests on an ongoing basis through the **Core Area Stormwater Quality Management Extended Service Establishment Bylaw No. 1, 1997**. Esquimalt's **Watercourse and Drainage Regulation Bylaw, 2019, No. 2971** holds a fine of no more than $10,000 for each day the violation occurs. Esquimalt's **Building Regulation Bylaw, 2017, No. 2899,** and **Subdivision and Development Servicing Bylaw No. 3128, 2023,** also hold fines of no more than $10,000, imprisonment for no more than 6 months, or both.

	Additionally, Esquimalt's **Pesticide Use Reduction Bylaw, 2008, No. 2686**, holds a warning for the first offence of the bylaw, $100 for a second offence, and $250 for a third or subsequent offence.
9. Financial Incentives	This study did not find any financial incentives in place for the development of green stormwater infrastructure alternatives in Esquimalt.

6.3.5 Langford

The City of Langford's website does not have any information pertaining to stormwater infrastructure; however, the City of Langford Official Community Plan Bylaw No. 1200 (2024) highlights that the city should aim to collaborate with adjacent municipalities in developing a flow routing strategy for major storm events. The OCP also outlines that the region aims to support community outreach and education around the benefits of maintaining stormwater infrastructure and encourage water conservation practices. Table 7 provides a rating and breakdown of the city's stormwater bylaws.

Table 7

City of Langford Stormwater Bylaw Rating

Standard Criteria	Rating and Summary of how Municipality meets the Criteria
1. Integrated Stormwater Management Plan	This study did not find an integrated stormwater management plan for the City of Langford.
2. Watercourse Protection Provisions	Langfords **Bylaw No. 550, 2001** prohibits the pollution and obstruction of watercourses by restricting the discharge of any substances that may be harmful to aquatic life in any waterway or watercourse. The **Langford Zoning Bylaw No. 300, 1999** also restricts the construction of any structure within 30m of the natural boundary of any watercourse and requires plans showing the locations of any watercourses. **Langford Zoning Bylaw No. 300, 1999,** also has guidelines stating that fish habitat is protected, and slope instability and erosion are prevented adjacent to water bodies and sensitive ecosystems. The Langford **Building Bylaw No. 1160, 2008,** also states that work should not obstruct the passage of stormwater in any drainage way or watercourse. Additionally, the CRD has the **Core Area Stormwater Quality Management Extended Service Establishment Bylaw No. 1, 1997,** which controls pollution in stormwater runoff by investigating, monitoring, and reporting on stormwater quality.
3. Minimizing Disruption to Natural Vegetation and Soil	The **City of Langford Soil Removal and Deposit Bylaw, 2017, No. 1800** regulates the deposit and removal of soil and specifies that any area of excavation or soil to be deposited shall be covered with not less than four inches of topsoil, graded and sown with grass or other protective vegetation cover to control water or wind erosion. The **City of Langford Tree Protection Bylaw No. 2206** (2017) also regulates the

	ability to alter, cut, damage or remove protected trees. Additionally, the **Langford Zoning Bylaw No. 300, 1999** specifies that, to protect and conserve native species, snags and dead trees will be conserved for habitat where safe. The **City of Langford Official Community Plan Bylaw No. 1200** (2024) suggests that there is further collaboration with developers to ensure that vegetation is retained.
4. Drainage Requirements	Langfords **Subdivision and Development Servicing Bylaw No. 1000** (2025) specifies that all subdivisions and developments must maintain the quality of site water and minimize erosion. Additionally, it specifies that water quality improvements are encouraged to be achieved through a combination of engineered wetlands and ponds to meet water quality and runoff rate requirements. Langford's **Zoning Bylaw No. 300** (1999) outlines some potential on-site stormwater management techniques through its Green Development Checklist, which is required for some rezoning but is otherwise optional. These suggestions include rain gardens, detention ponds, and green roofs, as well as promoting the use of a minimum of 50% of all hard surfaces to utilize permeable paving materials.
5. Development Requirements	Langford's **Zoning Bylaw No. 300** (1999) has a Green Development Checklist that creates a sustainability standard for development projects within Langford. The city requires all comprehensive development projects to obtain either LEED certification or the minimum rating set out in the Green Development Checklist as a condition of rezoning; however, the checklist is optional for all other new development projects. Langfords **Building Bylaw No. 1160, 2008,** also specifies that an applicant for a subdivision or building permit may be required to submit a storm water management report by a professional engineer. Langfords **Subdivision and Development Servicing Bylaw No. 1000** (2025) also requires that a site mitigation plan be submitted with the application to subdivide or develop any land if there are reasonable grounds to anticipate any discharge of materials into any watercourse or municipal waterways. Additionally, Langford's **Zoning Bylaw No. 300** (1999) specifies that drainage systems should be designed such that there is no increase in stormwater discharge from sites, and that all industrial developments incorporate approved equipment to remove oil wastes and sediments from stormwater.
6. Grey Infrastructure Alternatives	The Langford **Subdivision and Development Servicing Bylaw No. 1000** (2025) allows the city engineer to allow or require the use of on-site storm water infiltration and detention methods if soil conditions are deemed suitable for storm water infiltration. It also permits that if a stormwater management plan for a development or subdivision requires bioswales, parallel to the road, flat concrete curbs are permitted.
7. Allowance for Permit-Exempt Small-Scale Integration	This study did not find any allowance for permit-exempt small-scale integration of green stormwater infrastructure in Langford.
8. Ongoing Monitoring and Assessment	Langford's **Soil Removal and Deposit Bylaw No. 1800** (2017) holds a fine of no more than $10,000, and its **Bylaw No. 550, 2001,** which prohibits the pollution and obstruction of watercourses, holds a fine of no

Requirements/ Penalties	more than $10,000, where each day an offence occurs is considered a separate offence. Additionally, the **City of Langford Tree Protection Bylaw No. 2206 (**2024) holds a fine of no more than $5,000, where each day an offence occurs is considered a separate offence.
9. Financial Incentives	The **City of Langford Official Community Plan Bylaw No. 1200** (2024) promotes the use of integrated wastewater management technologies that provide social, economic, and environmental benefits.

6.3.6 North Saanich

The District of North Saanich's website includes a page on water, sewage, and drainage. This page includes information about the district's drinking water source, sewage and septic maintenance, and drainage and stormwater management. The drainage section outlines the various streams and creeks present in the district, as well as some information about outfalls and other system specifics (*Water Sewage and Drainage*, 2025). The stormwater section links to the municipality's drainage master plan, the CRD's Bylaw No. 2922, which regulates the discharge of waste into sewers, as well as the CRD's rainwater management and harvesting resources (*Water Sewage and Drainage*, 2025).

The District of North Saanich Official Community Plan Bylaw No.1587 (2025) specifies that the district intends to further develop the necessary bylaws to better manage stormwater and that, if council wishes, the district may develop informal education programs to encourage environmental protection and awareness about major watercourses and sensitive ecosystems. It also outlines the district's intention to work collaboratively with various government bodies, including the CRD and the Ministry of Transportation (*Water Sewage and Drainage*, 2025). Table 8 provides a rating and breakdown of the district's stormwater bylaws.

Table 8

District of North Saanich Stormwater Bylaw Rating

Standard Criteria	Rating and Summary of how Municipality meets the Criteria
1. Integrated Stormwater Management Plan	North Saanich's **Integrated Stormwater Management Plan** (2023) focuses on the Tseycum Creek and McDonald Park road drain watersheds in conjunction with the district's **Drainage Master Plan** (2023). The plan proposes long-term strategies and improvements for drainage and water quality through bylaw, policy, and best practice recommendations.
2. Watercourse Protection Provisions	North Saanich is included in the CRD's **Core Area Stormwater Quality Management Extended Service Establishment Bylaw No. 1, 1997,** which controls pollution in stormwater runoff by investigating, monitoring,

	and reporting on stormwater quality. While the **District of North Saanich Building and Plumbing Bylaw No. 1150** (2007) requires some basic specifications around setbacks, the **Integrated Stormwater Management Plan** *(*2023) outlines that this should be expanded to further establish streamside protection and enhancement areas (SPEA) to expand protections in the district.
3. Minimizing Disruption to Natural Vegetation and Soil	The **District of North Saanich Bylaw No. 255** (1978) regulates the removal of soil in the region that would impact a stream, creek, waterway, water course, waterworks, ditch, drain or sewer. It also specifies the requirements for stripping and grading. The **District of North Saanich Tree Protection Bylaw No. 1548** (2022) requires permits for the removal of trees and protected trees, particularly when removal could have detrimental effects on watercourses.
4. Drainage Requirements	In their **Subdivision and Development Control Bylaw No. 246** (1991), there are minor mentions of the District of North Saanich's drainage requirements and standards. The **District of North Saanich Official Community Plan Bylaw No.1587** (2025) highlights the need for more environmentally sensitive drainage approaches, while the North Saanich **Integrated Stormwater Management Plan** *(*2023) highlights the potential for drainage through ditches, detention ponds, rain gardens and other approaches.
5. Development Requirements	District of North Saanich **Subdivision and Development Control Bylaw No. 246** (1991) contains minimal requirements for developers concerning rainwater management. Additionally, the **Integrated Stormwater Management Plan** (2023) highlights a number of improvements to be made. These include setting standard expectations for developments, giving developers the information and tools needed to successfully implement best management practices, restoring a natural water balance by returning to pre-development flows, and having more strict development requirements for riparian areas.
6. Grey Infrastructure Alternatives	In their **Subdivision and Development Control Bylaw 246** (1991), North Saanich requires piped storm drainage for subdivisions in most instances, but also allows for open drainageways. The **District of North Saanich Official Community Plan Bylaw No.1587** (2023) highlights that much of North Saanich utilizes open ditches along road rights-of-way and natural drainage courses, and that, where possible, they aim to avoid closing off watercourses and instead integrate green drainage methods.
7. Allowance for Permit-Exempt Small-Scale Integration	This study did not find any allowance for permit-exempt small-scale integration of green stormwater infrastructure in North Saanich.
8. Ongoing Monitoring and Assessment Requirements/ Penalties	The **Subdivision and Development Control Bylaw 246** (1991) has a fine of $100 - $500 for infractions on this bylaw, as well as a further penalty not exceeding $100 for any day the infraction occurs. The **District of North Saanich Tree Protection Bylaw No. 1548** (2022) has a penalty of up to $50,000 for each offence, and the **District of North Saanich Bylaw No. 255** (1978) holds a fine of no more than $500 for each day the offence occurs, or a term of imprisonment not exceeding six

	months, or both. The CRD also conducts water quality tests on an ongoing basis through the **Core Area Stormwater Quality Management Extended Service Establishment Bylaw No. 1, 1997.**
9. Financial Incentives	This study did not find any financial incentives in place for the development of green stormwater infrastructure alternatives in the District of North Saanich.

6.3.7 Oak Bay

The District of Oak Bay website does not have a page dedicated to stormwater management; however, the District of Oak Bay Official Community Plan Bylaw No. 4620 (2014) highlights collaboration and participation in regional planning approaches as an important action for the district. The OCP outlines that the region plans to participate in the CRD Regional Sustainability Strategy, Integrated Watershed Management Program and Inter Municipal Group to protect ecosystems and improve water quality. The district also participates in the Bowker Creek Initiative, which is a collaboration between local government, community members, and organizations with the goal of protecting and enhancing the overall health of the Bowker Creek watershed (*Bowker Creek Initiative,* n.d.).

The District of Oak Bay Official Community Plan Bylaw No. 4620 (2014) also suggests that the region work with other organizations and initiatives in order to support public awareness and education initiatives that support stewardship and protect sensitive, rare and threatened ecosystems. Table 9 provides a rating and breakdown of the district's stormwater bylaws.

Table 9

District of Oak Bay Stormwater Bylaw Rating

Standard Criteria	Rating and Summary of how Municipality meets the Criteria
1. Integrated Stormwater Management Plan	This study did not find an integrated stormwater management plan for the District of Oak Bay
2. Watercourse Protection Provisions	The District of Oak Bay is included in the CRD's **Core Area Stormwater Quality Management Extended Service Establishment Bylaw No. 1, 1997,** which controls pollution in stormwater runoff by investigating, monitoring, and reporting on stormwater quality. Oak Bay also has a **Pesticide Use Bylaw No. 4518** (2011), which restricts the use of pesticides through permit requirements and a **Building and Plumbing Bylaw No. 4247** (2005), which requires some basic specifications around setbacks from natural boundaries. The **Zoning Bylaw No. 3531** (2025) restricts any development from being erected within 7.62 m of the high water mark of any stream as set out in the BC Riparian Areas

	Regulation under the Fish Protection Act. The **District of Oak Bay Official Community Plan Bylaw No. 4620** (2014) also urges the region to develop a Watercourses Development Permit area in order to better implement Riparian Area Regulations to preserve and protect aquatic environments.
3. Minimizing Disruption to Natural Vegetation and Soil	The District of Oak Bays **Bylaw No. 4742** (2005) regulates the ability to alter, cut, damage or remove protected trees and sets out replanting requirements. The **District of Oak Bay Official Community Plan Bylaw No. 4620** (2014) also advocates for the renaturalization and preservation of the land's natural condition by retaining existing vegetation, topography and hydrology wherever possible.
4. Drainage Requirements	The **District of Oak Bay Official Community Plan Bylaw No. 4620** (2014) promotes the maximization of absorbent soils and the reduction of impervious surfaces to increase natural infiltration. It also promotes the use of green drainage techniques such as rain collection, bioswales, rain gardens, and other techniques.
5. Development Requirements	This study did not find any green development requirements for the District of Oak Bay.
6. Grey Infrastructure Alternatives	The **Oak Bay Public Sewer Bylaw 3891,1996** states that any property in which water is being discharged must be connected to the public sewer system unless an engineer or geoscientist is satisfied that the soil perviousness, lot size, and grade allow storm water run-off to infiltrate naturally or through the installation and maintenance of an onsite stormwater management system. Additionally, the **District of Oak Bay Official Community Plan Bylaw No. 4620 (**2014) promotes the use of more permeable materials where possible, such as permeable pavers and permeable asphalt.
7. Allowance for Permit-Exempt Small-Scale Integration	This study did not find any allowance for permit-exempt small-scale integration of green stormwater infrastructure in Oak Bay.
8. Ongoing Monitoring and Assessment Requirements/ Penalties	The District of Oak Bay's **Pesticide Use Bylaw No. 4518** (2011) holds a fine not exceeding $10,000 for contravening the bylaw. The Oak Bay **Tree Protection Bylaw No. 4742** (2020) also holds a fine of no more than $10,000 for failing to comply with the bylaw. The CRD also conducts water quality tests on an ongoing basis through the **Core Area Stormwater Quality Management Extended Service Establishment Bylaw No. 1, 1997**. Additionally, the Oak Bay **Public Sewer Bylaw 3891, 1996,** holds a fine of no less than $200 and no more than $2,000, or to a term of imprisonment not exceeding six months, or to both.
9. Financial Incentives	This study did not find any financial incentives in place for the development of green stormwater infrastructure alternatives in Oak Bay.

6.3.8 Saanich

The District of Saanich website has a page on stormwater management that offers information on flooding, erosion, water quality, natural assets, GSI, and stormwater

management systems. This page also offers information on the district's current infrastructure configurations and provides links to all of the municipalities' bylaws and policies pertaining to stormwater management, and provides a number of resources from the CRD and the City of Vancouver resources for planning and guidance for GSI implementation (*Stormwater Management,* n.d.c). The website also highlights that the district is currently in the process of developing an ISMP.

The Saanich Official Community Plan Bylaw 2023, No. 10000, highlights how the district plans to continue working with the CRD and the Vancouver Island Health Authority in monitoring water quality in the region's significant streams and lakes. Saanich is also involved in the Bowker Creek Initiative, which is a collaboration between local government, community members, and organizations with the goal of protecting and enhancing the overall health of the Bowker Creek watershed (*Bowker Creek Initiative,* n.d.). Table 10 provides a rating and breakdown of the district's stormwater bylaws.

Table 10

District of Saanich Stormwater Bylaw Rating

Standard Criteria	Rating and Summary of how Municipality meets the Criteria
1. Integrated Stormwater Management Plan	This study did not find an integrated stormwater management plan for the District of Saanich.
2. Watercourse Protection Provisions	Saanich is included in the CRD's **Core Area Stormwater Quality Management Extended Service Establishment Bylaw No. 1, 1997,** which controls pollution in stormwater runoff by investigating, monitoring, and reporting on stormwater quality. The Saanich **Watercourse and Drainage Regulation Bylaw, 1996, No. 7501** also restricts the pollution of any watercourse and restricts any building within 7.5 m of any natural watercourse. Saanich also has a **streamside development permit area** (SDPA), which protects lands next to streams from new development by requiring permits for any changes being made to the land or vegetation within 30m of any stream (*Stormwater Management,* n.d.c). The **Pesticide Bylaw, 2010, No. 9054** and the **Integrated Pest Management Policy** (2025) also restrict the use of pesticides through permit requirements and recommend other management approaches in Saanich. The Saanich **Official Community Plan Bylaw 2023, No. 10000,** recommends that the region further support the daylighting of channelized or culverted watercourses wherever possible.
3. Minimizing Disruption to Natural Vegetation and Soil	Saanich's **streamside development permit area** limits the ability to change major components of any soil or vegetation within 30m of any stream (*Stormwater Management,* n.d.c). Saanich also has **Bylaw No. 9842,** which limits the deposit and removal of soil, and a **Tree Protection Bylaw, 2014, No. 9272,** which regulates the ability to alter, cut, damage or remove protected trees.

4. Drainage Requirements	Saanich's **Subdivision Bylaw No. 7452** (1995) outlines how impervious area for building should be calculated and requires this to be considered in stormwater planning. Additionally, the region's **Stormwater Management Development Permit Area** applies to institutional properties, increasing their impervious surface by 250 m² or more (*Stormwater Management,* n.d.c). This permit aims to reduce impervious cover and encourage the implementation of onsite practices that replicate natural runoff, such as storage in ponds or constructed wetlands, sand filtration, or creative road/curb configurations.
5. Development Requirements	The Saanich **Subdivision Bylaw, 1995, No. 7452** allows for the water from a subdivision to cross over privately owned land outside the subdivision as long as the owner obtains consent from the owner of the land. Additionally, the **Surface Stormwater Management Development Guidelines** (SSMDG) allow the parklands and lands dedicated for parklands to be used as surface stormwater management facilities, including engineered wetlands, where approved; however, manmade subsurface stormwater management facilities require special approval from Saanich Council in order to be constructed under parklands (*Stormwater Management,* n.d.c). The Saanich **Official Community Plan Bylaw 2023, No. 10000**, also encourages improvements to be made to encourage onsite stormwater infiltration and groundwater recharge through redevelopment.
6. Grey Infrastructure Alternatives	The **Saanich Building Bylaw, 2019, No. 9529**, allows buildings to be disconnected from the district's stormwater drainage system as long as the owner obtains approval from the District to utilize alternative stormwater drainage or detention systems.
7. Allowance for Permit-Exempt Small-Scale Integration	This study did not find any allowance for permit-exempt small-scale integration of green stormwater infrastructure in Saanich.
8. Ongoing Monitoring and Assessment Requirements/ Penalties	Saanich's **Soil Deposit and Removal Bylaw No. 9842** (2022) holds a fine of no more than $50,000, and its **Tree Protection Bylaw No. 9272** (2014) holds a penalty of not less than $1,000, ranging to $5,000 depending on the offence. The **Subdivision Bylaw No. 7452** also outlines that the district is responsible for watering and maintaining trees for the first year after planting. After this year, the tree enters the district's annual tree maintenance program. The CRD also conducts water quality tests on an ongoing basis through the **Core Area Stormwater Quality Management Extended Service Establishment Bylaw No. 1, 1997.**
9. Financial Incentives	Saanich's **Official Community Plan Bylaw 2023, No. 10000,** recommends that the region explore alternative stormwater funding models to support integrated systems.

6.3.9 Sidney

Sidney's Official Community Plan Bylaw No. 2240 (2022) discusses how green stormwater management should be integrated across various initiatives within the town. The plan not only outlines the town's approaches to developing an environmentally sensitive management plan, but also the collaborative nature in which these plans and initiatives should be developed (*Official Community Plan*, 2022). The plan specifies that the town intends to work collaboratively with the District of North Saanich, the District of Central Saanich, W̱SÁNEĆ Nations, the CRD, and the Victoria Airport Authority. To do this, the Official Community Plan (2022) proposes that these bodies work together to improve jurisdictional collaboration, data sharing, and collaboration with local organizations and community groups. Through these relationships, the plan proposes a peninsula-wide approach to identifying and managing natural assets. It also proposes long-term projects to support knowledge sharing and public education to increase environmental awareness (*Official Community Plan*, 2022). Table 11 provides a rating and breakdown of the town's stormwater bylaws.

Table 11

Town of Sidney Stormwater Bylaw Rating

Standard Criteria	Rating and Summary of how Municipality meets the Criteria
1. Integrated Stormwater Management Plan	This study did not find an integrated stormwater management plan for the Town of Sidey.
2. Watercourse Protection Provisions	Sidney is included in the CRD's **Core Area Stormwater Quality Management Extended Service Establishment Bylaw No. 1, 1997,** which controls pollution in stormwater runoff by investigating, monitoring, and reporting on stormwater quality. The Town of Sidney also has a **Watercourse and Drainage Regulation Bylaw No. 1318, 1997,** which restricts any pollution or impeding streamflow. It also aims to remove human-made barriers to fish passage and ensure no open watercourses are enclosed in drains or culverts. Sidney also has its **Zoning Bylaw No. 2275** (2024), which specifies that all properties abutting a natural boundary shall be constructed at least 15m away from the natural boundary. Additionally, the **Official Community Plan Bylaw No. 2240** (2022) highlights the district's aim to protect creeks and streams in their natural state and ensure the protection of riparian areas.
3. Minimizing Disruption to Natural Vegetation and Soil	Sidney's **Tree Preservation Bylaw No. 2138** (2017) permits the removal of protected trees without a permit and has specifications for replacement trees based on size and species. The district's **Official Community Plan Bylaw No. 2240** (2022) also highlights that new developments should retain vegetation whenever possible, and excavation during construction should impact the smallest possible area of the property. It also highlights that vegetation used in replanting should

	be native to the area, suitable for soil conditions, and should be selected for erosion control whenever possible.
4. Drainage Requirements	Sidney's **Official Community Plan Bylaw No. 2240** (2022) highlights the need for nature-based approaches to stormwater management where feasible and site conditions allow. They expand on the importance of landscaping and planting species resistant to climate change, and reviewing and evaluating the impacts of developments in environmentally sensitive areas.
5. Development Requirements	Sidney's **Building Regulations Bylaw No. 2016** (2012) requires paved or impervious motor vehicle parking to have oil and grease interceptors installed to intercept the stormwater run-off from the parking lot before it reaches the Municipal drainage system. Additionally, the **Official Community Plan Bylaw No. 2240** (2022) states that excavation during construction should impact the smallest possible area of the property, and best practices for identifying slit runoff should be identified pre-construction.
6. Grey Infrastructure Alternatives	Sidney's **Official Community Plan Bylaw No. 2240** (2022) outlines that permeable surface materials and appropriate surface water retention should be incorporated when possible, and impervious surfaces are discouraged. They also highlight that driveways and other accesses should be limited to the amount required for safe access and state that any hard surfacing should not affect more than 10% of the property area located between the natural boundary and a line running parallel 10m inland from the natural boundary.
7. Allowance for Permit-Exempt Small-Scale Integration	This study did not find any allowance for permit-exempt small-scale integration of green stormwater infrastructure in Sidney.
8. Ongoing Monitoring and Assessment Requirements/ Penalties	Sidney's **Zoning Bylaw No. 2275** (2024) requires dense developments to register a restrictive covenant acknowledging the details and maintenance schedule required for the on-site storm water management system. The **Watercourse and Drainage Regulation Bylaw No. 1318, 1997** states that a person who contravenes the bylaw is guilty of an offence and is punishable under the Offence Act of British Columbia. The **Tree Preservation Bylaw No. 2138** (2017) carries a fine of no less than $1,000, and not greater than $50,000 and/or imprisonment for not more than 6 months. The CRD also conducts water quality tests on an ongoing basis through the **Core Area Stormwater Quality Management Extended Service Establishment Bylaw No. 1, 1997.**
9. Financial Incentives	This study did not find any financial incentives in place for the development of green stormwater infrastructure in the Town of Sidney.

6.3.10 Victoria

The City of Victoria's website provides a small overview of stormwater management and GSI, and provides links to the city's stormwater utility and rainwater rewards program *(Stormwater Management,* n.d.b). The city's Sanitary Sewer and Stormwater Utilities Bylaw,

Amendment Bylaw No. 12 (2024), also highlights that the rainwater management credit program was established not only to provide a reduction in fees for those improving their stormwater management systems, but also to provide educational programs to meet the objectives and requirements set out in the program. The City of Victoria is also involved in the Bowker Creek Initiative, which is a collaboration between local government, community members, and organizations with the goal of protecting and enhancing the overall health of the Bowker Creek watershed (*Bowker Creek Initiative,* n.d.). Table 12 provides a rating and breakdown of the city's stormwater bylaws.

Table 12

City of Victoria Stormwater Bylaw Rating

Standard Criteria	Rating and Summary of how Municipality meets the Criteria
1. Integrated Stormwater Management Plan	This study did not find an integrated stormwater management plan for the City of Victoria.
2. Watercourse Protection Provisions	The City of Victoria is included in the CRD's **Core Area Stormwater Quality Management Extended Service Establishment Bylaw No. 1, 1997,** which controls pollution in stormwater runoff by investigating, monitoring, and reporting on stormwater quality. Victoria's **Pesticide Use Reduction Bylaw No. 07-094** (2008) restricts the use of pesticides through permit requirements, and the **Sanitary Sewer and Stormwater Utilities Bylaw No. 14-071** (2019) as amended in **Bylaw No. 12 (2024),** restricts the pollution of any watercourse, the enclosure of any watercourses, or the removal of vegetation, trees, and soil.
3. Minimizing Disruption to Natural Vegetation and Soil	Victoria's **Tree Protection Bylaw No. 21-035** regulates the ability to alter, cut, damage or remove protected trees and sets out replanting requirements. Additionally, the **Sanitary Sewer and Stormwater Utilities Bylaw No. 14-071** (2019), as amended in **Bylaw No. 12 (2024),** restricts the removal of trees, cutting or removing vegetation, and removing or depositing soil within an area within the municipal stormwater system without approval if it is likely to impair the quality of stormwater.
4. Drainage Requirements	The City of Victoria's **Sanitary Sewer and Stormwater Utilities Bylaw No. 14-071** (2019), as amended in **Bylaw No. 12 (2024),** states that stormwater that is directed to onsite stormwater management systems designed by a qualified professional and approved by the city is not required to drain into a stormwater sewer system. The city also has **Rainwater Management Standards** *(Stormwater Management,* n.d.b) in both a do-it-yourself format and a professional version, which outline various green rainwater management practices to meet the city's rainwater management targets while educating developers and owners on how properties can be designed to be eligible for the city's Rainwater Rewards program. Some of the practices outlined include rain barrels

	and cisterns, rain gardens, permeable paving, cisterns, and green roofs.
5. Development Requirements	The **Sanitary Sewer and Stormwater Utilities Bylaw No. 14-071** (2019), as amended in **Bylaw No. 12 (2024),** requires that stormwater must not drain from one parcel of land to another without an agreement permitting the drainage from the land owner. Additionally, Victoria's **Official Community Plan Bylaw No. 12-013** (2023) outlines the need to provide more direction for adaptation through an integrated stormwater management plan that includes improvements to the city's stormwater system, more green infrastructure on public lands, and more natural features in city facilities. The **Rainwater Management Standards** also outline best practices for development *(Stormwater Management,* n.d.b).
6. Grey Infrastructure Alternatives	The City of Victoria **Sanitary Sewer and Stormwater Utilities Bylaw No. 14-071** (2019), as amended in **Bylaw No. 12 (2024),** states that stormwater that is directed to onsite stormwater management systems designed by a qualified professional and approved by the City is not required to drain into a stormwater sewer system. The City's **Rainwater Management Standards** also outline best practices which incentivize the use of green stormwater infrastructure *(Stormwater Management,* n.d.b).
7. Allowance for Permit-Exempt Small-Scale Integration	The City of Victoria's **Rainwater Management Standards** do-it-yourself version permits low-density residential areas with an impervious surface area of less than 300 m² to install their own rainwater management systems as long as they meet key criteria and follow the city's design standards (*Stormwater Management,* n.d.b).
8. Ongoing Monitoring and Assessment Requirements/ Penalties	The city's **Sanitary Sewer and Stormwater Utilities Bylaw No. 14-071** (2019), as amended in **Bylaw No. 12 (2024),** holds a fine not exceeding $10,000 for contravening the bylaw, with each day the offence takes place counting as a separate offence. Additionally, the City of Victoria's **Tree Protection Bylaw No. 21-035** (2021) holds a fine of no less than $500 and no more than $50,000 for offences, and the **Pesticide Use Reduction Bylaw No. 07-094** (2008) holds a fine of no less than $250 and no more than $10,000 for offences. The CRD also conducts water quality tests on an ongoing basis through the **Core Area Stormwater Quality Management Extended Service Establishment Bylaw No. 1, 1997.** The **Rainwater Management Standards** also require assessments to happen every 5 years in order to continue rainwater rewards (*Stormwater Management,* n.d.b)..
9. Financial Incentives	The City of Victoria's **Sanitary Sewer and Stormwater Utilities Bylaw No. 14-071** (2019), as amended in **Bylaw No. 12 (2024),** outlines that the owner of any premises must pay a stormwater user fee, based on an impervious surfaces factor, calculated based on the total area of all impervious surfaces on the parcel. If property owners integrate green design principles to minimize impervious surfaces based on the city's **Rainwater Management Standards**, they are eligible to enter a **Rainwater Management Credit Program,** which reduces their stormwater utility bill *(Stormwater Management,* n.d.b).

6.3.11 View Royal

The Town of View Royal has a page on their website on sewage and drainage. This page gives some basic information about the city's sewage system and drainage. View Royals Official Community Plan Bylaw No. 881 (2011) goes into more detail on the town's intentions to collaborate with adjacent municipalities, the CRD, and other agencies to establish a flood strategy for major storm events and to protect local and regional watersheds. Table 13 provides a rating and breakdown of the town's stormwater bylaws.

Table 13

Town of View Royal Stormwater Bylaw Rating

Standard Criteria	Rating and Summary of how Municipality meets the Criteria
1. Integrated Stormwater Management Plan	The Town of View Royal has a **Master Drainage Plan** (2017)**,** which addresses the current and future needs of drainage infrastructure in the town. The plan recommends that a future Master Drainage Plan be replaced by an Integrated Stormwater Management Plan (ISMP).
2. Watercourse Protection Provisions	View Royal is included in the CRD's **Core Area Stormwater Quality Management Extended Service Establishment Bylaw No. 1, 1997,** which controls pollution in stormwater runoff by investigating, monitoring, and reporting on stormwater quality. View Royal's **Storm Water Regulation Bylaw No. 902, 2015,** requires site plans outlining setbacks to natural boundaries and restricts the pollution or enclosure of any watercourse. View Royals **Soil Deposit/Removal Bylaw, No. 869, 2013,** also restricts the pollution of any watercourse, and the **Zoning Bylaw No. 900** (2014) requires a 30m setback from any Natural Watercourse.
3. Minimizing Disruption to Natural Vegetation and Soil	The Town of View Royals **Tree Protection Bylaw No. 1069, 2022**, regulates the ability to alter, cut, damage or remove protected trees and sets out replanting requirements, while the **Soil Deposit/Removal Bylaw, No. 869, 2013,** regulates the deposit and removal of soil. The View Royal **Official Community Plan Bylaw No. 881** (2011) also outlines that construction planning and design should include specifications around the protection of natural vegetation and soil.
4. Drainage Requirements	View Royal's **Storm Sewer Bylaw No. 902** (2015) specifies that all stormwater on a premises must be disposed of in the ground or to the municipal drainage system in such a way that does not cause a nuisance or interference with the municipal drainage system or watercourse. The **Municipal Drainage Plan** (2017) also outlines that the city's **Land Use Bylaw, 1990, No. 35,** has some basic guidelines around service connection design and installation. The Towns **Building Bylaw No. 1111, 2023** also requires that any proposed subdivision or development have a stormwater management plan prepared by a consulting engineer addressing all of the site's drainage requirements.
5. Development Requirements	The **Subdivision and Development Servicing Bylaw No. 985, 2017** requires that post-development drainage levels match pre-development

	levels to the satisfaction of the director of engineering. It also has a few stipulations around the necessary grading for slopes, accumulation of water, and meeting other standards and requirements, including meeting the performance targets specified in the town's **Storm Water Regulation Bylaw No. 902, 2015**. Additionally, the **Building Bylaw No. 1111, 2023** stipulates that soil, dust, and water runoff must be managed during construction.
6. Grey Infrastructure Alternatives	View Royals **Building Bylaw No. 1111, 2023** outlines that in the case that storm runoff is not directed to a municipal drainage system, it must drain to a natural watercourse by means of sheet flow only, and not by artificial means.
7. Allowance for Permit-Exempt Small-Scale Integration	The **Storm Sewer Bylaw No. 902** (2015) specifies that a director may allow some written reports to be waived if the director of the proposed works deems them minor enough.
8. Ongoing Monitoring and Assessment Requirements/ Penalties	The CRD conducts water quality tests on an ongoing basis through the **Core Area Stormwater Quality Management Extended Service Establishment Bylaw No. 1, 1997**. Additionally, View Royals **Storm Sewer Bylaw No. 902** (2015) holds a penalty of up to $10,000, where each day that the offence occurs constitutes a separate offence. It also requires that the owner of any premises maintain all stormwater facilities. The **Master Drainage Plan** (2017) also suggests that a maintenance plan be developed that inspects and maintains drainage infrastructure on a regular basis. The Town's **Tree Protection Bylaw No. 1069, 2022** also holds an offence of no less than $1,000 and no more than $50,000.
9. Financial Incentives	This study did not find any financial incentives in place for the development of green stormwater infrastructure in View Royal.

7. Conclusion

The findings of this project show that while most municipalities in the CRD have begun taking steps towards adopting more mandated stormwater infrastructure requirements in their policies and bylaws, much more can be done to expand these actions. Current challenges, such as limited funding, unclear regulations, and divided responsibilities, continue to slow progress. At the same time, opportunities such as increasing collaboration and developing accessible tools for developers and homeowners can help improve stormwater management in the region.

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Langford, *Soil Removal And Deposit Bylaw,* No. 1800 (2017)

Langford, *Subdivision and Development Servicing*, Bylaw No. 1000 (2025)

Langford, *Tree Protection*, Bylaw No. 2206 (2024)

Langford, *Zoning Bylaw*, Bylaw No. 300 (1999)

North Saanich, *Building and Plumbing Bylaw*, Bylaw No. 1150 (2007)

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North Saanich, *Soil Removal and Fill Deposit Bylaw,* Bylaw No. 255 (1978)

North Saanich, *Subdivision and Development Control*, Bylaw No. 246 (1991)

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View Royal, *Building Bylaw*, Bylaw No. 1111(2023)

View Royal, *Land Use Bylaw*, Bylaw No. 35 (1990)

View Royal, *Master Drainage Plan* (2017)

View Royal, *Official Community Plan*, Bylaw No. 881 (2011)

View Royal, *Storm Water Regulation*, Bylaw No. 902 (2015)

View Royal, *Soil Deposit/Removal Bylaw*, No. 869 (2013)

View Royal, *Tree Protection*, Bylaw No. 1069 (2022)

View Royal, *Zoning Bylaw*, Bylaw No. 900 (2014)

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Appendix

Municipal Bylaw Rating Results Simplified

Table 1A

Bylaw Rating Results Averaged Across All Municipalities

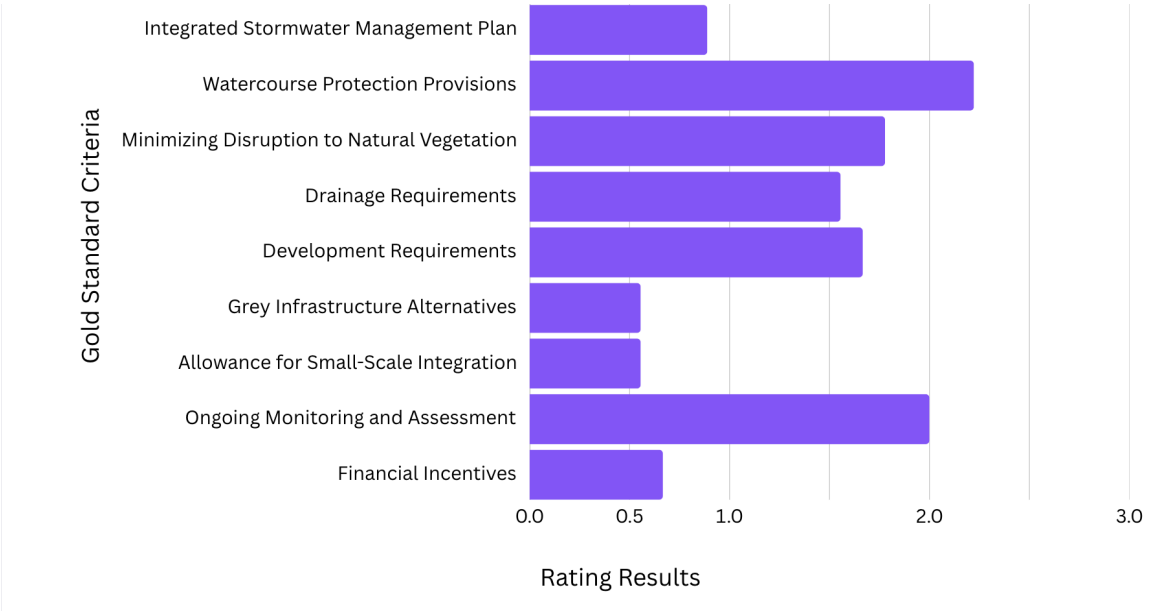
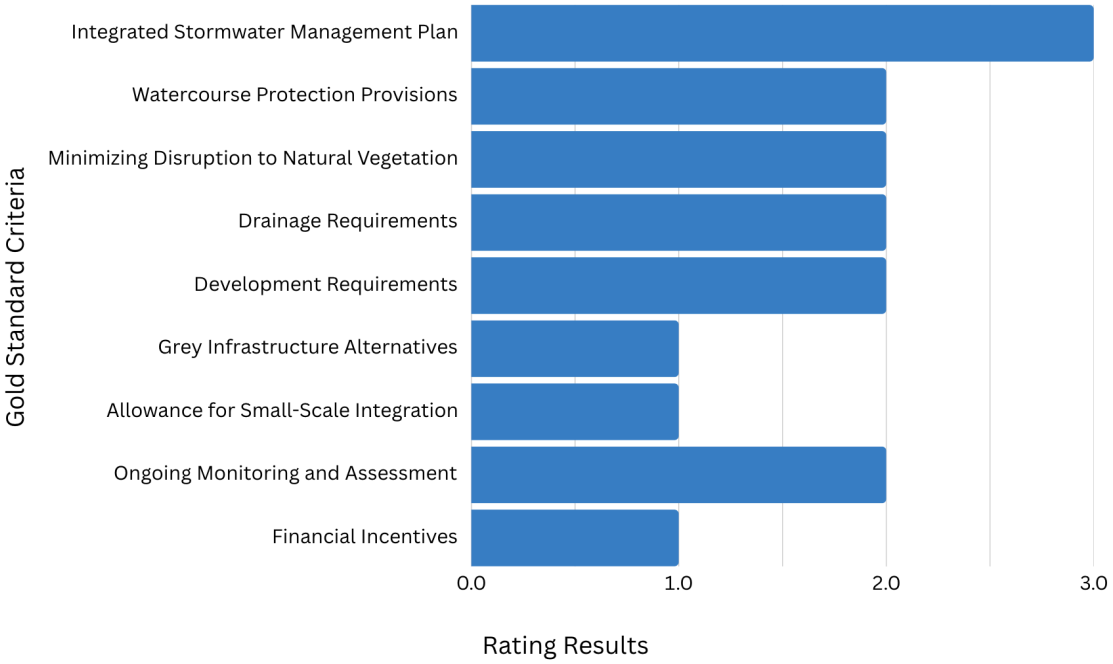


Table 2A

Central Saanich Bylaw Rating Results



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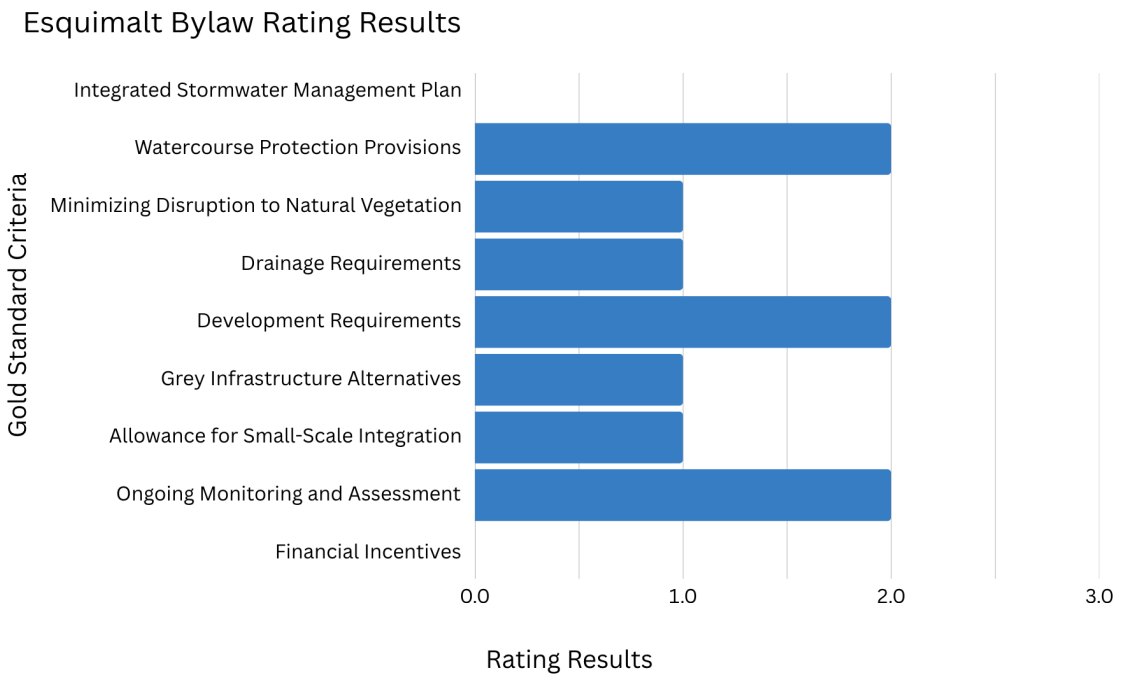

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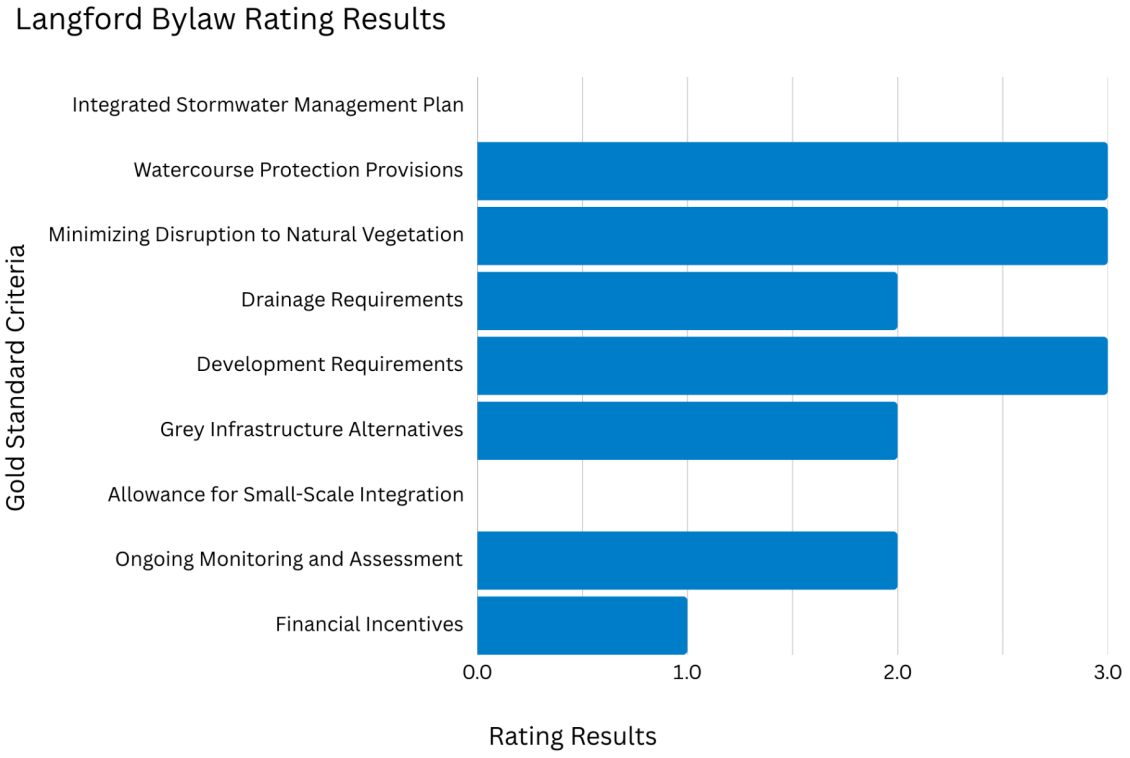

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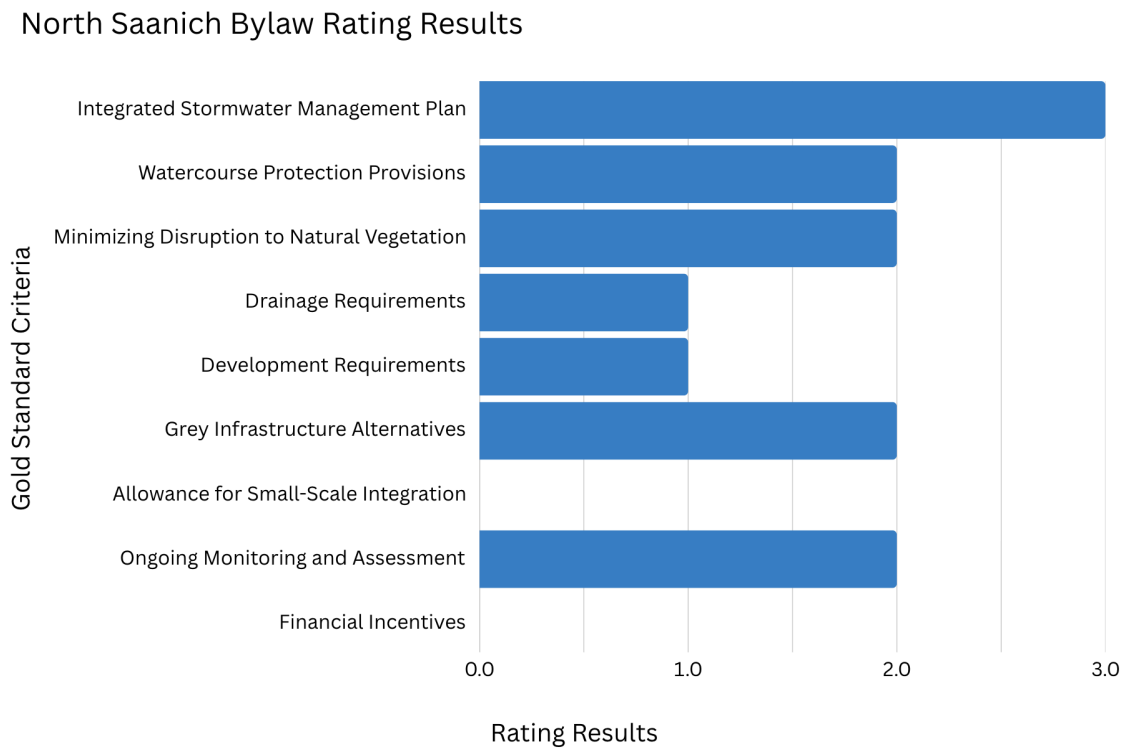

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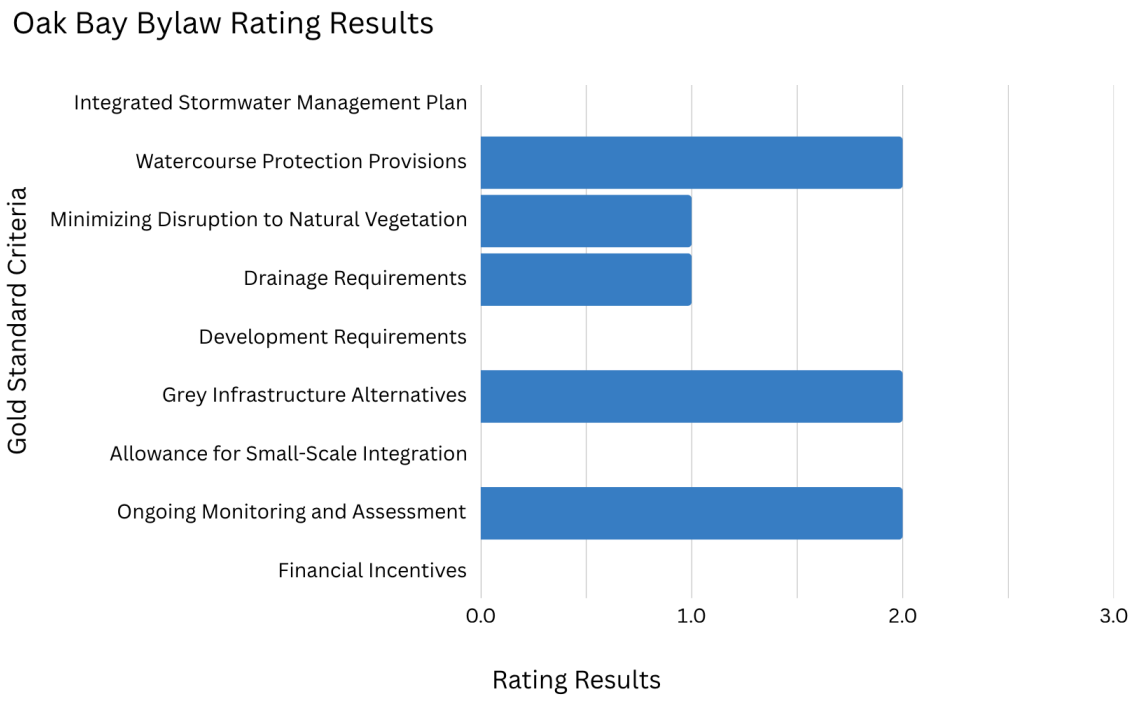

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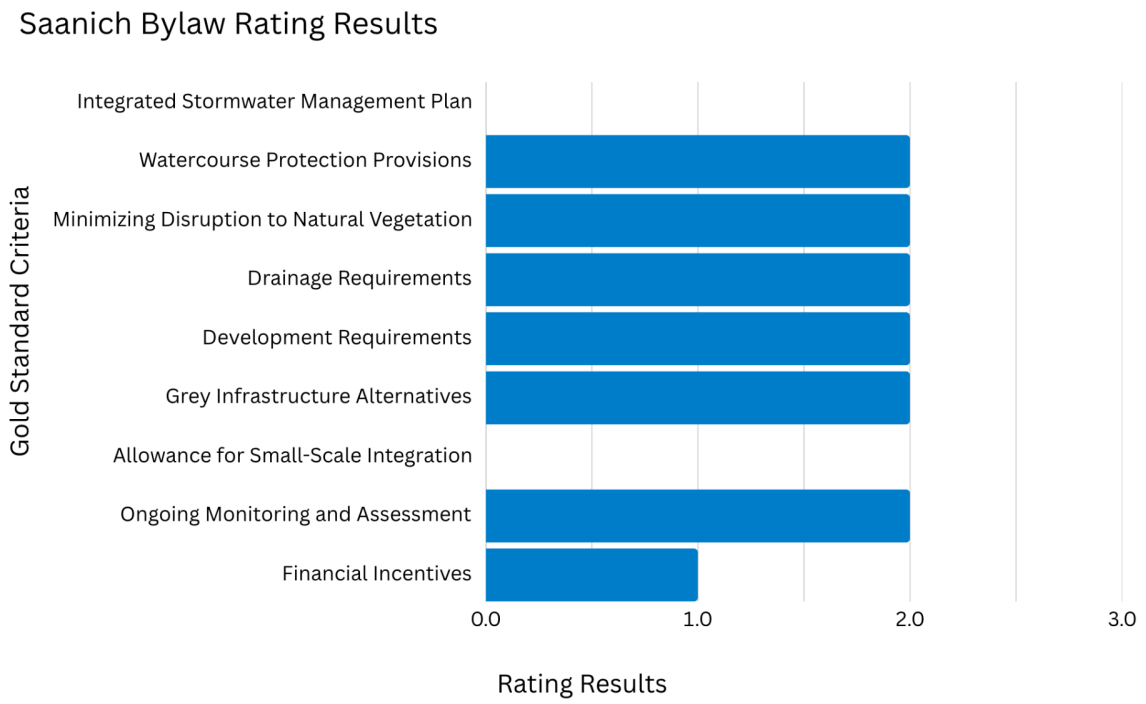

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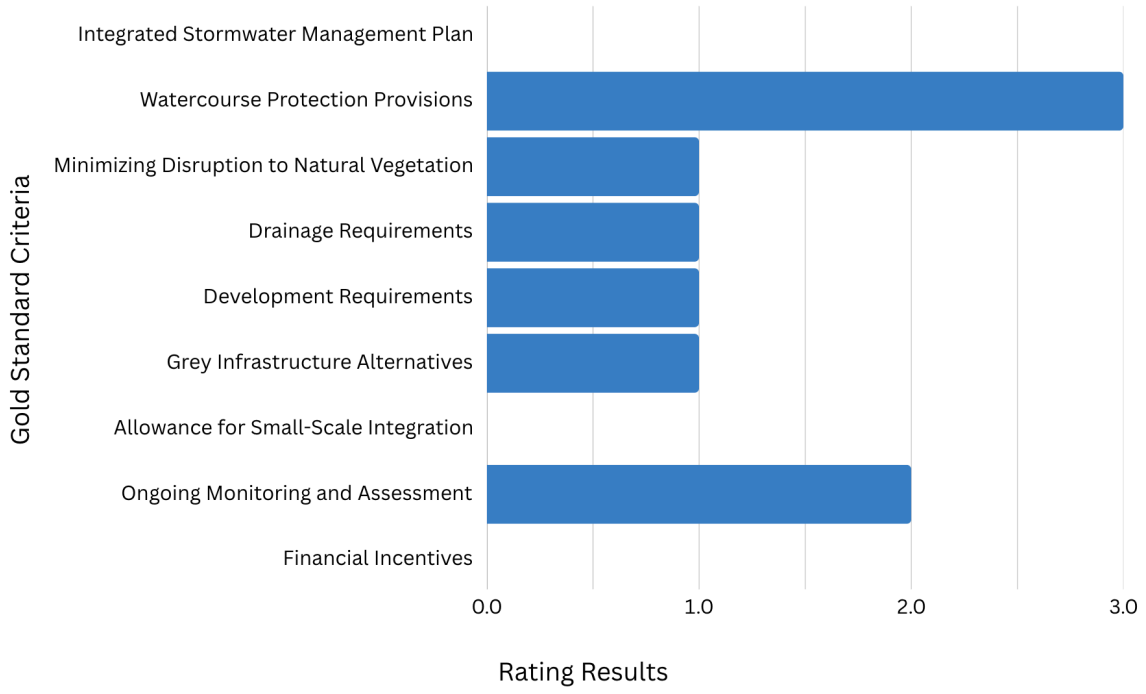

Table 9A

Table 10A