

Graduate Internship Opportunity

Summer 2025

PROJECT TITLE

Rain Gardens for Headwaters: A Comparative Policy and Field Study of Barriers and Opportunities for Scaling Sustainable Green Stormwater Infrastructure (GSI) in the Capital Region

HOST ORGANIZATION

Peninsula Streams Society (PSS)

Project Overview

Background & Context

The "Rain Gardens for Headwaters" program, spearheaded by the Peninsula Streams Society, is dedicated to advancing green stormwater infrastructure (GSI) by promoting the installation of rain gardens and other aspects of sustainable hydrology in the Capital Region. These rain gardens play a crucial role in urban environmental resilience by enhancing natural stormwater retention, improving water quality, reducing runoff, and promoting biodiversity, especially important in this region for anadromous fish populations and habitat. However, despite the environmental benefits and community demand for GSI solutions, the development and expansion of rain gardens and other innovative structures are often hindered by inconsistent policies, varying municipal standards, and regulatory challenges.

Climate Action and Sustainability Aspects

This project aligns with regional climate action goals by targeting the issues urban flooding, pollution control, and ecological resilience. Rain gardens help capture and treat stormwater at its source, alleviating strain on municipal infrastructure and protecting aquatic ecosystems. They support carbon sequestration, mitigate urban heat, and create habitats for native flora and fauna, especially anadromous and

freshwater fish, making them a practical and accessible solution to mitigating urban development and climate change impacts.

Key Overarching Issues

Despite their numerous benefits, GSI practices like rain gardens are underutilized, partly due to inconsistencies in policies across jurisdictions and regulatory roadblocks. Municipalities within the Capital Region have developed different guidelines and requirements for rain garden implementation, creating barriers to widespread adoption. Understanding and addressing these discrepancies can facilitate policy alignment, enabling scalable, resilient infrastructure solutions that benefit the entire region.

Purpose and Contribution to Sustainability

This project will provide a comprehensive comparative study of local policies, standards, and perceived barriers to rain garden and GSI development in the Capital Region. By analyzing current requirements against best practice or goal standards, the project will help identify actionable recommendations for policymakers, municipal planners, and environmental organizations. Insights gained will help the Peninsula Streams Society, partners, and regional stakeholders build a consistent policy framework, ultimately promoting more sustainable urban development and contributing to the broader goal of environmental resilience.

Research Approach

A UVic Sustainability Scholar will conduct interviews with stakeholders across ten municipalities, examine policies, and visit existing rain gardens and other GSI projects. This approach will ensure the project is grounded in local context while identifying universal opportunities and challenges. Through this analysis, the scholar will support the development of a toolkit or guideline that can help streamline rain garden adoption, potentially creating a model for other regions facing similar urban resilience and stormwater challenges while working collaboratively with the Friends of Bowker Creek Sustainable Rain Garden Scholar.

Project Description

Project Overview

This project, led by the Peninsula Streams Society in collaboration with the UVic Sustainability Scholars Program and Friends of Bowker Creek, aims to assess the policy landscape and regional variations that affect green stormwater infrastructure (GSI) implementation in the Capital Region. Specifically, it will focus on rain gardens, an effective yet underutilized GSI practice that mitigates urban stormwater runoff,

improves water quality, and promotes biodiversity. By comparing policy requirements and standards across ten municipalities in the region, the project will identify gaps and recommend steps toward aligning policies to support rain garden scalability. This alignment would ease the process of rain garden development, ultimately supporting climate resilience and sustainable urban planning in the Capital Region.

Purpose

The primary purpose of this project is to evaluate the policies, standards, and regulatory barriers affecting rain garden adoption within the region. A UVic Sustainability Scholar will investigate the diverse requirements across municipalities, interview key stakeholders, and identify challenges and opportunities for a more unified policy framework. The project's insights will help Peninsula Streams Society and Friends of Bowker Creek, along with regional stakeholders, align their efforts with best practices, informing the development of a consistent set of guidelines for rain garden implementation across jurisdictions. This work will result in recommendations that advance sustainable stormwater solutions and allow for widespread GSI adoption.

- Conduct field research, including plant ecology assessments, maintenance coordination, and water quality monitoring.
- Evaluate existing rain gardens, including those from the 1000 Rain Garden Project and UVic campus installations, to identify species persistence, challenges (e.g., herbivory), and areas for improvement.
- Perform a literature review to identify best practices for rain garden design and management.
- Collaborate with the Bowker Creek Sustainability Scholar in areas of common focus such as the development of best practices and guidelines for municipal and private rain gardens
- Collaborate with municipal staff, volunteers, and other partner organizations such as the RUSH Initiative to develop a common approach for the promotion of rain gardens

Value of the Project

This project addresses a pressing need for urban infrastructure solutions that are both environmentally and economically sustainable. Climate change is intensifying the frequency and severity of urban flooding and water quality challenges, highlighting the need for adaptive, nature-based infrastructure solutions like rain gardens. However, disparate policy frameworks create barriers that prevent the effective scaling of GSI projects. By clarifying and aligning policies, this project will make GSI installations more feasible and accessible across communities, providing valuable ecological and socio-

economic benefits. These recommendations will not only support rain garden expansion in the Capital Region but could also serve as a model for other regions facing similar regulatory and environmental challenges.

Actionability and Timeline

The project's results are intended to be immediately actionable by the Peninsula Streams Society, municipalities, and policymakers in the region. Over the course of the study, a UVic Sustainability Scholar will:

- 1. Research and Analysis Phase (Month 1; starting May 1):**
Conduct policy reviews, interviews, and field visits across ten municipalities to gather data on current standards, practices, and stakeholder perspectives.
- 2. Comparative Analysis and Synthesis (Month 2):**
Analyze findings to identify common barriers and opportunities for rain garden development. This phase will include drafting a set of best practices and gap analyses between current policies and ideal standards.
- 3. Final Recommendations and Toolkit Development (Month 3, ending August 15):**
Develop a report detailing actionable recommendations, including a toolkit or guideline to streamline rain garden adoption. This toolkit will address best practices, standardization opportunities, and potential policy adjustments.

Upon completion, the project's toolkit will be ready for presentation to the Peninsula Streams Society, municipal leaders, and other stakeholders. These insights will be particularly valuable for informing policy adjustments during upcoming municipal planning cycles and could serve as a foundational resource for future GSI projects in the Capital Region.

Scope of Work

Project Scope

Working in collaboration with the Friends of Bowker Creek Sustainability Scholar, the Scholar will examine and compare municipal policies, regulatory standards, and practical barriers affecting the implementation of rain gardens and green stormwater infrastructure (GSI) across ten municipalities in the Capital Region. The Scholar will help identify gaps, opportunities, and alignment possibilities within regional policy frameworks to facilitate rain garden development and enhance climate resilience. By focusing on rain gardens, the project highlights a scalable and eco-friendly GSI practice

that could serve as a model for broader adoption of nature-based solutions in urban planning.

Primary Activities for the UVic Sustainability Scholar

1. Literature and Policy Review:

- In collaboration with Friends of Bowker Creek, conduct a thorough review of existing literature on rain gardens, green stormwater infrastructure, and climate-adaptive urban policies.
- Analyze local municipal policies, development guidelines, and relevant bylaws to understand the current regulatory landscape for GSI across the Capital Region.

2. Stakeholder Interviews and Engagement:

- Work with the Friends of Bowker Creek Scholar, identify and interview key stakeholders, including municipal planners, policymakers, environmental NGOs, and community advocates, to gain insights into the perceived challenges, successes, and potential improvements in rain garden policies.
- Collaboratively compile perspectives on the practical impacts of policies and any informal practices that support or hinder rain garden development.

3. Field Assessment and Comparative Analysis:

- Working with the Friends of Bowker Creek Sustainability Scholar, visit existing rain garden sites across municipalities to observe implementation practices, design variations, and how different policies manifest in physical infrastructure.
- Collaboratively compare findings to identify shared barriers, unique approaches, and opportunities for policy alignment.

4. Data Analysis and Reporting:

- Synthesize findings into a comparative analysis report that highlights the key policy discrepancies, successful models, and practical challenges identified during research.
- Develop a set of actionable recommendations and a toolkit for rain garden policy standardization that can guide municipal planners and policymakers working with the Friends of Bowker Creek Sustainability Scholar.

5. Toolkit and Presentation Preparation:

- Create a toolkit summarizing the best practices and guidelines for scalable rain garden implementation in alignment with regional goals.
- Present findings and recommendations to Peninsula Streams Society, municipal leaders, and other stakeholders to foster collaborative discussions on policy adjustments.

Key Research Questions

1. Current Policies and Standards

- What policies and regulations currently govern rain garden and GSI implementation across the ten municipalities?
- How do these policies vary, and what specific challenges or barriers do they pose to rain garden development?

2. Alignment with Regional Goals and Best Practices

- How do existing municipal policies compare to recognized best practices or goal standards for GSI?
- Are there successful regional or international models that could serve as examples for policy alignment in the Capital Region?

3. Barriers and Opportunities for Policy Standardization

- What are the primary regulatory and logistical barriers preventing consistent rain garden adoption?
- What factors (e.g., funding, community support, policy flexibility) could facilitate or hinder the standardization of rain garden policies?

4. Stakeholder Insights and Practical Considerations

- What insights do municipal planners, policymakers, and other stakeholders have on the feasibility of rain gardens as a GSI solution?
- What informal practices or “workarounds” are being used by municipalities or advocates to support rain garden implementation?

5. Recommended Actions for Policy Change

- What specific policy adjustments could enhance rain garden scalability and integration into urban planning?
- How can municipalities work together to create a unified, practical policy framework that aligns with regional climate resilience and sustainability objectives?

This structured approach will allow the Scholar to comprehensively assess regional policy needs, engage stakeholders, and provide Peninsula Streams Society with data-driven, actionable recommendations to advance the Rain Gardens for Headwaters program.

Key Deliverables

Throughout the internship, the Sustainability Scholar will produce the following:

1. **Project Proposal Outline** (*Month 1*)
 - A summary of objectives, scope, and research methods, including a preliminary review of green stormwater infrastructure (GSI) and rain garden standards.
2. **Policy Review & Stakeholder Plan** (*Month 2*)
 - Analysis of municipal policies, stakeholder interview plans, and field visit schedule.
3. **Interim Findings Report** (*Month 2.5*)
 - Key insights from policy analysis, interviews, and site visits, with early recommendations for improving rain garden policies.
4. **Draft Report & Toolkit** (*Month 3*)
 - Comprehensive draft report with analysis, policy comparisons, and a practical toolkit of best practices for municipalities.
5. **Final Report & Stakeholder Presentation** (*August 15*)
 - A final report summarizing findings and actionable recommendations, alongside a toolkit for rain garden implementation.
 - A presentation to Peninsula Streams Society and regional stakeholders.

This suite of deliverables will provide practical guidance for enhancing rain garden policies and advancing urban sustainability across the region.

Time Commitment

The *Rain Gardens for Headwaters* project runs from May 1, 2025, to August 15, 2025, and requires a total of 250 hours.

Project Phases and Key Milestones:

- **Phase 1: Project Planning** (May 1–15)
 - Develop project outline, conduct initial research, and identify stakeholders.
 - *Deliverable:* Project Proposal Outline
- **Phase 2: Policy Review & Stakeholder Engagement** (May 15–June 15)
 - Analyze municipal policies, conduct interviews, and visit rain garden sites.
 - *Deliverables:* Policy Review and Engagement Plan

- **Phase 3:** Draft Report & Toolkit Development (June 15–July 15)
 - Synthesize findings, identify barriers, and draft recommendations and toolkit.
 - *Deliverable:* Interim Report and Draft Toolkit
- **Phase 4:** Final Report Preparation (July 15–August 1)
 - Refine analysis, finalize recommendations, and complete toolkit.
 - *Deliverable:* Draft Report
- **Phase 5:** Wrap-Up & Presentation (August 1–15)
 - Present findings to stakeholders and submit the final report and toolkit.
 - *Deliverables:* Final Report, Toolkit, and Stakeholder Presentation

Key Dates:

- May 1: Project Kickoff/Orientation/Meeting with Partners (e.g. PSS, Friends of Bowker Creek)
- May 15: Project Proposal Outline Due
- June 15: Policy Review & Engagement Plan Due
- July 15: Interim Report & Draft Toolkit Due
- August 15: Final Report & Presentation Due

Preferred Skills & Background

- Excellent research and writing skills
- Demonstrated interest in environmental sustainability
- Experience conducting stakeholder engagement events, including facilitation
- Familiarity with research methodologies and survey techniques
- Statistical analysis
- Excellent public speaking and presentation skills
- Community engagement experience
- Familiarity conducting focus group research
- Strong analytical skills
- Ability to work independently
- Deadline oriented
- Project management and organizational skills
- Programming skills
- Familiarity with WordPress, or other website content tools
- Strong technical and drafting skills

- Demonstrated experience synthesizing diverse sources and types of research into a cohesive and comprehensive analysis.
- GIS training or experience
- Familiarity with benchmarking methods and tools
- Comfortable interacting with strangers to conduct public/in person surveys
- Familiarity preparing feasibility studies
- Experience with financial modelling and analysis
- Design and layout skills
- Criminal Record Check required *[note that the project partner is responsible for reimbursing the successful candidate's reasonable expenses to get a criminal record check done]*

Additional Information

1. **Background in Environmental Policy or Urban Planning**

- Familiarity with municipal policies and regulatory frameworks related to green stormwater infrastructure (GSI) or environmental planning would enable the candidate to quickly understand the context and challenges of rain garden implementation.

2. **Experience with Comparative Policy Analysis**

- A candidate with experience in conducting comparative studies, particularly in environmental policy or urban resilience, will be well-equipped to analyze and compare varying municipal policies and identify key opportunities for alignment.

3. **Stakeholder Engagement Skills**

- Strong interpersonal and communication skills are essential for conducting effective interviews with municipal planners, policymakers, environmental groups, and other stakeholders, ensuring thorough and representative data collection.

4. **Research and Data Synthesis Abilities**

- The project requires an individual who can gather and synthesize a variety of sources—policy documents, stakeholder insights, and field observations—into a cohesive analysis, with a clear summary of findings and actionable recommendations.

5. **Knowledge of Climate Resilience and Sustainability Solutions**

- Understanding the principles of climate adaptation, green infrastructure, and sustainability practices will allow the candidate to see the broader

implications of the project and contribute valuable, context-aware recommendations.

6. Interest in Applied Environmental Solutions and Community Impact

- An interest in nature-based solutions, community resilience, and practical, policy-driven environmental initiatives will help the candidate engage meaningfully with the project's goals and deliver useful, regionally relevant recommendations.

Additionally, the ideal candidate should be comfortable with field-based work, including site visits, and have strong project management skills to meet the project's deadlines and deliverable milestones.

Additional Requirements

To ensure the Scholar can effectively complete the project, the following resources and requirements will be necessary:

1. Transportation for Site Visits

- Access to a car would be beneficial for traveling between various municipalities across the Capital Region to visit rain garden sites and meet with stakeholders. Alternatively, Peninsula Streams Society can cover public transit expenses as needed for travel within the project scope.

2. Phone for Stakeholder Communication

- Access to a phone and a phone plan that includes local and long-distance calls, as the Scholar will need to arrange and conduct interviews with stakeholders across different municipalities. If needed, a stipend for long-distance calls can be provided by Peninsula Streams Society.

3. Specialized Software for Data Analysis

- If applicable, access to software such as NVivo or a similar qualitative analysis tool to help organize, code, and analyze interview data and policy documents. Peninsula Streams Society can arrange access to this software or cover associated costs if required.

4. Personal Protective Equipment (PPE) for Site Visits

- Depending on the condition and location of rain garden sites, the Scholar may require basic PPE such as gloves, boots, and safety vests. Peninsula Streams Society can provide or reimburse these materials if site-specific conditions necessitate them.

5. Potential Travel Reimbursements

- If the project requires travel beyond the Capital Region, accommodations, mileage, and per diem reimbursements can be arranged. However, this will only apply if visits to non-local sites become necessary for data collection.

These provisions will help the Scholar manage transportation, conduct stakeholder interviews, and perform fieldwork efficiently, supporting their success in achieving project goals.

Program Information

This position offers an opportunity for close collaboration with the Friends of Bowker Creek Sustainability Scholar.

- **Program Dates:** May 1—August 15, 2025
- **Compensation:** \$31.80/hr for 250 hours of work (aligned with UVic Research Assistant pay rates)
- **2nd Intake Deadline:** March 7, 2025
- **Application Instructions:** Visit www.uvic.ca/sustainability-scholars
- **Cover Letter:** Please customize your letter and address it to Peninsula Streams Society
- **Questions?** Contact Laurel Currie (sustainability-scholars@uvic.ca)