Hornby Island Local Trust Committee

Regular Meeting Addendum

Date:	May 21, 2021
Time:	10:00 am
Location:	Electronic Meeting

Pages

9. LOCAL TRUST COMMITTEE PROJECTS 10:50 AM - 11:20 AM

9.2. Hornby Drinking Water and Watershed Protection Project - Staff Report - for discussion *2 - 7*

STAFF REPORT

File No.: 6500-20 Freshwater

DATE OF MEETING:	May 21, 2021
TO:	Hornby Island Local Trust Committee
FROM:	William Shulba, P.Geo, Senior Freshwater Specialist Local Planning Services
COPY:	Regional Planning Committee Hornby Water Stewardship Narissa Chadwick, Senior Island Planner
SUBJECT:	Hornby Island Drinking Water and Watershed Protection Project

REPORT SUMMARY

The purpose of this staff report is to introduce to the Hornby Local Trust Committee (LTC) to the Hornby Drinking Water and Watershed Protection Project under the Islands Trust Freshwater Sustainability Strategy.

BACKGROUND

Freshwater networks are unique amenities in the Islands Trust Area that support ecosystem health and overall hydrological function of watersheds. With vulnerabilities of seasonal precipitation and temperature changes, recharge area alternations, saltwater intrusion, and biological contamination, freshwater resources are a metric of land-use and climate change, whereby island communities must adopt adaptation strategies to ensure sustainability.

In the Islands Trust Area, watershed health is intricately linked to the quality of freshwater networks that support healthy drinking water, thriving ecosystems, and safe recreation. Land-use changes in densely populated areas impacts the potential of watershed ecosystems to promote aquifer recharge, naturally treat water quality, and provide sufficient environmental flow needs. Flooding and erosion from increased winter stormwater and low water flows in the summer have short- and long-term impacts on water supplies.

Hornby Island residents and ecosystems rely entirely on direct precipitation to recharge watersheds and aquifers for their water supply. With the projected long-term fall in summer rainfall, increase in overall temperatures, and increase in precipitation intensity in winter, B.C.'s Coastal Douglas-fir and Garry oak-arbutus ecosystems are facing accelerating ecosystem health risks that impact the ability of watersheds to filter biological contaminants from various natural and anthropogenic sources. If left unaddressed, negative feedback loops will accelerate, precious watersheds will be critically damaged, and the source of potable water will continue to be impacted on Hornby Island. Jurisdictional complexity is a defining feature in the protection of unique watershed ecosystems that define the Hornby Island and jurisdictional limitations in existing legislation have created a situation in which no single agency has either the capacity or the legislated responsibility to develop drinking water and watershed protection strategy to protect these watersheds and aquifers. Therefore, a coordinated approach from Islands Trust, Comox Valley Regional District, the Province, and local water champions like the Hornby Water Stewardship is paramount for water sustainability.

The degree to which watershed ecosystems are affected by stormwater influences on freshwater networks depends on several factors, the most notable of which are the type and condition of the surrounding forested ecosystems and the history of land use. It is important to identify the source, pathway, and receptor of water quality risk by understanding, monitoring, and mitigating conditions associated with identified issues.

Hornby aquifers and watersheds have a legacy of land stewardship and conservation, however these freshwater systems are at high risk of water quality impacts from historic land use, agriculture, over densification of residential properties, transportation corridors, and forestry practices. These risks are now exacerbated by climate change. Water quality risk has direct implications for the endangered Coastal Douglas-fir forest ecosystems and for the communities that inhabit them.

Water quality risks are already being observed in receiving environments on Hornby Island and other islands in the Islands Trust Area, with coliform and e.coli identified in groundwater wells and at the tap of other drinking water sources. Given that rural islanders rely entirely on surface and groundwater supplies that are supported by Coastal Douglas-fir systems, protecting these forests is of importance not only because of their global rarity, but also because they will be central to future water supplies.

Drinking Water and Watershed Protection Project and the Healthy Watershed Initiative Funding

The Healthy Watersheds Initiative is a program created by the Province of BC intended to improve the health of watersheds, create economic and skills development opportunities, generate new learning, and strengthen relationships with First Nations and Indigenous-led organizations in ways that support reconciliation. The Real Estate Foundation in partnership with WatershedsBC manages the program.

This initiative will improve the health of watersheds, create economic and skills development opportunities, generate new learning, and strengthen relationships with First Nations and Indigenous-led organizations in ways that support the implementation reconciliation. The fund encourages advancement of employment opportunities to create inclusive work experience, specifically for equity seeking group such as Indigenous and racialized people, women, youth, LGBTQ2S+ communities, and persons with disability.

In late 2020, Islands Trust Staff retained a consultant to undertake the first phase of the Islands Trust Freshwater Sustainability Strategy (FWSS). The FWSS is a program of the Regional Planning Committee sponsored by the Director of Local Planning Services, managed by a Senior Island Planner, and under technical advisory of the Senior Freshwater Specialist. The FWSS, along with a number of related “shovel ready” projects were available for funding by the Healthy Watershed Initiative, which placed the Islands Trust in a position to be able to meet the grantor deadlines and deliverable requirements.

Islands Trust received confirmation in early 2021 from WatershedsBC of the potential to receive the $180,000 from the Healthy Watershed Initiative program created by the Province of BC intended to improve the health of watersheds, create economic and skills development opportunities, generate new learning, and strengthen relationships with First Nations and Indigenous-led organizations in ways that support reconciliation. The program is managed by the Real Estate Foundation in partnership with Watersheds BC. Discussions with Trust Areas Services, the Senior Freshwater Specialist, the Senior Intergovernmental Policy Advisor and the Local Planning Services management team were had to determine possible options.

The Freshwater Sustainability Strategy project team have identified the Hornby Water Stewardship as one of the few implementation projects in response to the continued dedication to water sustainability and watershed protection provided to the community over many years. This partnership project between the Hornby Water Stewardship and Islands Trust is in line with the intention of the Healthy Watersheds Initiative fund to support British Columbia's economic recovery through investments in community-driven watershed conservation and restoration projects.

The Hornby Island Drinking Water and Watershed Protection project was provided an initial $25,000 as part of the Healthy Watershed Initiative fund for the fiscal year 2021/22. The Islands Trust Freshwater Sustainability Strategy with the Healthy Watersheds Initiative will provide essential funding to undertake the Hornby Island Drinking Water and Watershed Protection Project in addition to several hundred hours of in-kind support.

ANALYSIS

Policy/Regulatory

The Islands Trust Policy Statement (ITPS) and Hornby Island Official Community Plan (OCP) contain numerous statements in support of this project.

Issues and Opportunities

This project is supported directly by Islands Trust Senior Freshwater Specialist through the Islands Trust Freshwater Sustainability Strategy. As the freshwater expert of the Islands Trust, the position is responsible for providing expert technical advice, education, and advocacy to elected officials, planners, program managers, ministry staff, communities, and other government agencies to ensure that the Islands Trust preserve and protect mandate is upheld.

The primary function of this Senior Freshwater Specialist is to develop, lead and implement planning associated with the Islands Trust Strategic Plan priorities for freshwater management and objectives. This occurs through advisory roles on freshwater policy and initiatives through partnerships with agencies, local governments and other organizations. Since this position leads the development of innovative management tools and technologies on a variety of freshwater initiatives and programs, this project is well suited to be supported by Islands Trust with on-island management by the Hornby Water Stewardship.

The Hornby Water Stewardship produced a water plan in 2016 and the Hornby Local Trust Committee has a top priority of Watershed Protection since 2017 enabling the Senior Freshwater Specialist to provide an advisory role in their projects. In 2018 an on-island pilot testing project was undertaken to collect groundwater quality samples from ten volunteer groundwater wells (risk receptors) from across the island to test for coliform bacteria and E.coli using an affordable on-island methodology. The sampling service is now located in the Hornby Spark, a community driven maker-space. The on-island testing service is being re-imagined as part of the Hornby Island Drinking Water and Watershed Protection project to identify water quality risk in freshwater drainage networks (risk pathways) as a proxy to identify specific problematic areas (risk sources) and to potentially mitigate risk in the receiving environment.

Project Purpose

On Hornby Island, freshwater networks are comprised of water pathways such as ditches, streams, wetlands and fractured bedrock and receptors such as groundwater wells, aquatic life, and marine foreshore environments. Waterborne illnesses, biological and chemical contaminates are sometimes difficult to identify and monitor. Biological contaminants such as coliforms and Escherichia coli (e.coli) have been found in several freshwater receptors such as groundwater wells and in freshwater pathways such as stormwater ditches over several years.

Water quality risk is determined by the source of contaminant, the pathways, and ultimately the receptor of the risk. There is a need to understand and mitigate the source of contaminants however this process can take significant resources and many years to complete. Treating the receiving environment is often a targeted, short-lived fix of a contamination issue. Addressing the pathways of contaminants is often undertaken for mitigation as many sources may use one pathway and one pathway may interact with many receptors. Due to the limited nature of the available funding and the severity of the biological and geochemical nature of the waters in the receiving environment and users, a pathway mitigation approach is taken with this project.

Watersheds and aquifers of Hornby Island are solely recharged by precipitation. Due to the lack of surface water, nearly all residents, with the exception of few who collect rainwater, are reliant on groundwater wells as their drinking water source. A on-island water quality-testing pilot was completed by the Hornby Water Stewardship as well as water quality testing by the Province and researchers, that identified that many groundwater wells on the island are impacted by bacteriological contaminants, specifically coliforms and e.coli.

It is imperative that groundwater is of high quality to ensure the health of groundwater dependent ecosystems such as wetlands, foreshore beaches, and ephemeral streams. Ditches and other freshwater pathways on Hornby Island have been suspected to transport significant loads of bacteriological contaminants. The Hornby Water Stewardship investigated this in a pilot project and installed natural-based mitigation measures in a demonstration ditch to successful and hopeful results.

Undertaking targets on-island bacteriological testing is very important, as the timing and cost of off-island testing for this remote community is cost prohibitive. This project will engage the pilot projects of the on-island testing service to test freshwater pathways such as ditches, creeks, wetlands, and other aquatic environments to target specific locations to focus the implementation of the nature-based mitigation measures that were demonstrated in the ditch pilot project.

The need for solutions to solve this bacteriological concern in watersheds and drinking water is dire.

Project Goals

- *Goal 1: Enhance watershed integrity and water quality through short-term freshwater pathways management*
- *Goal 2 : Enhance drinking water quality and watershed protection through medium-term freshwater source management*
- *Goal 3: Enhance drinking water quality and watershed protection through long-term engagement with freshwater users through education and outreach*

Project Phases

Phase 0 Data and Information Inventory of Watershed	*Collate and synthesize existing watershed information, data, references, correspondence, interviews, and regulatory requirements into a data stewardship platform providing access to information for a regulatory review.*
Phase 1 On-island Water Quality Testing Service	*Investigate historical and potential monitoring networks and analysis strategies to address how natural and anthropogenic changes impact watershed hydrological function and water users.*
Phase 2 Nature-Based Watershed Management Solutions	*Investigate strategies and regulatory solutions to ensure a sustainable freshwater supply to the Hornby community and to provide support for next steps for Hornby Water Stewardship.*
Phase 3 Evaluation and Sustainable Planning Actions	*Participate in community knowledge building initiatives and coordinate with Local Trust Committee, regional districts, improvement districts, community organizations, Island Health, and other Provincial ministries on watershed protection and water user preservation strategies.*

In Scope Measures

Goal 1	Phase 0	*Classify watershed-based water quality risk*
	Phase 1	*Visit, measure, and monitor biological and geochemical water quality risk in freshwater pathways, specifically drainage ditches, within key watersheds on Hornby Island.*
	Phase 2	*Identify and implement water quality risk reduction techniques including natural infrastructure enhancements in targeted freshwater pathways in key watershed areas as measured by documented watershed improvements and water quality risk reduction metrics.*
	Phase 3	*Using the site visits reconnaissance, data and photographs develop a comprehensive PowerPoint presentation to be presented to Hornby Island.*
Goal 2	Phase 0	*Investigate jurisdictional challenges and opportunities to support a coordinated effort to increase watershed protection and drinking water safety on Hornby Island.*
	Phase 1	*Training Workshop for Hornby residents, elected officials, students, and visitors to learn how to implement nature-based watershed quality risk reduction treatments.*
	Phase 2	*Implement and monitor natural-based solutions over a two-year period*
	Phase 3	*Evaluate the effectiveness of the mitigation measures and develop long-term solutions.*
Goal 3	Phase 0	*Coordinate with Islands Trust, Regional District of Comox, Island Health, the Province, and Hornby islanders to develop knowledge strategies for water quality risk reduction resources*
	Phase 1	*Coordinate with collaborating agencies on the development of "Hornby Island Drinking Water and Watershed Protection Plan" to support watershed resiliency.*
	Phase 2	*Hornby Water Stewardship and Islands Trust to develop watershed protection and water quality risk reduction strategy for demonstration sites for long-term monitoring.*
	Phase 3	*Implement new or updated regulations in the Hornby Island Official Community Plan and Land-use Bylaw to enable watershed protection strategies Trust Area.*

Consultation

Staff will consult with Hornby Water Stewardship in the coming weeks to engage the Drinking Water and Watershed Protection project that aligns with the needs of the Hornby Water Stewardship, the Healthy Watersheds Initiative fund, and the Islands Trust Freshwater Sustainability Strategy.

Timeline

Staff will engage with the Freshwater Sustainability Strategy team and the Islands Trust administrative services to create a contract for undertaking this work with the Hornby Water Stewardship. Implementation of new or updated regulations in the Hornby Island Official Community Plan and Land-use Bylaw to enable watershed protection strategies Trust Area is out of scope at this time.

NEXT STEPS

Staff will engage the Drinking Water and Watershed Protection Project with the Freshwater Sustainability Strategy team, Islands Trust administrative staff, and the Hornby Water Stewardship.

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