

Date: June 19, 2017 **File No.:** 6500-20 Watershed Management

To: Salt Spring Island Local Trust Committee: For the meeting of June 29, 2017

From: Justine Starke, Island Planner, Local Planning Services

Re: Watershed Management

RECOMMENDATIONS

1. It is recommended THAT the Salt Spring Island Local Trust Committee endorse the attached project charter V8.1 – dated June 19, 2017.
2. It is recommended THAT the Salt Spring Island Local Trust Committee contribute \$18, 000 of 2017-18 Salt Spring Island Watershed Management Project funding for a wells inventory and groundwater monitoring pilot program.
3. It is recommended THAT the Salt Spring Island Local Trust Committee request staff to apply for a grant from the Real Estate Foundation to fund the groundwater monitoring pilot program.

REPORT SUMMARY

The Salt Spring Island Local Trust Committee (LTC) has identified watershed management on Salt Spring Island as one of its top priorities. The Watershed Management Program involves a multi-jurisdictional approach to the protection and management of freshwater resources on Salt Spring Island.

The purpose of this report is to present a work program for the groundwater supply sub-project of the Integrated Watershed Management Program, which is being managed by the [master project charter](#) (Version 8) and undertaken in coordination with member agencies of the Salt Spring Island Watershed Protection Authority (SSIWPA).

The attached project charter in Appendix 1 is a “sub-project,” and presents a scope of work for a well inventory and groundwater monitoring program to be undertaken in collaboration with the Ministry of Forest Lands and Natural Resources (FLNRO) as part of the SSIWPA work program. Appendix 2 presents two (now slightly outdated) scopes of work that were presented to SSIWPA and endorsed on May 19, 2017.

Well Inventory

The well inventory is proposed to be undertaken in the short term with the award of a contract in July 2017. The contract will be managed by Islands Trust staff but the on the ground supervision and coordination will be handled by the SSIWPA coordinator and FLNRO staff. The project involves identifying priority areas for groundwater monitoring and then inventorying wells that are a) outside of water service areas and not registered in the provincial WELLS database and b) wells within service areas that are registered but may be unused. A first step in the inventory project will be to review any well reports that Islands Trust may have on file that offer information on wells within the priority areas of Salt

Spring Island. A subsequent step will be to survey well owners to determine if there are any unused wells that may be eligible for monitoring.

The LTC is being requested to use \$18 000 of its 2017-18 Watershed Management Project funding for this work. A budget breakdown and timeline are provided in the project charter (Appendix 1). A detailed description of the proposal is found in Appendix 2: Task 5(a)- Scope of Work.

Community Well Monitoring Pilot Program

The purpose of the community well monitoring program will be compile data and monitor ground water levels in unused wells located in priority areas of Salt Spring Island. The objective of the pilot project will be to establish a community well monitoring program that can supplement the provincial WELLS database and provide neighbourhood scale information about groundwater levels that can be used to inform land use planning considerations. An important deliverable of the project is to identify an agency to house and administer the program into the future. While the province manages the provincial WELLS data base as a joint project between the Ministry of Environment and the Ministry of Forest Lands and Natural Resources, it does not manage community well monitoring programs with test wells on privately owned land. The goal is for Salt Spring Island to establish on-going, locally managed well monitoring program.

The project is proposed to be jointly funded by SSIWPA member agencies and through a (successful) grant from the Real Estate Foundation. It is suggested that the Islands Trust apply for and administer the grant funding. There is an expectation that the grant application will be successful given the Real Estate Foundation’s previous support for similar initiatives.

The LTC is being requested to contribute \$18 00 of its 2017-18 Watershed Management Project funding to provide matching funds for the Real Estate Foundation grant. A budget breakdown and timeline are provided in the project charter (Appendix 1). A detailed description of the proposal is found in Appendix 2: Task 5(b)- Scope of Work.

BACKGROUND

The Salt Spring Island Local Trust Committee (LTC) endorsed an [updated “Master” project charter](#) on the Watershed Program at regular business meeting of December 01, 2016.

Since that time the Salt Spring Island Watershed Protection Authority (SSIWPA) has adopted a work plan for the Integrated Water Management Program and has been advancing this work. The LTC has supported this work program by passing a series of resolutions on February 9, 2017 which enabled:

- Funding \$2000 for the land use inventory of Salt Spring Island by the Ministry of Agriculture (2016-17 fiscal budget).
- Funding \$2750 (2016-17 fiscal) to conduct an independent hydrology review of the sustainable yield model developed by the Salt Spring Island Watershed Protection Authority Technical Working Group.
- Administering, through the Salt Spring Island Watershed Protection Authority coordinator, a partnership with students from Royal Roads University to investigate the potential for rainwater harvesting to offset or contribute to potable and/or non-potable consumption needs in specific Salt Spring Island scenarios.

Islands Trust Policy Statement:

The Islands Trust Policy statement requires that the Trust Area be self-sufficient in its water supply and that development not be accommodated in areas known to have a problem with the quantity or quality of fresh water. And yet, groundwater resources on Salt Spring Island have not been quantified in a way that is precise enough to allow the Local Trust Committee to make this determination. The attached project charter is part of the overall integrated water management program and proposes data compilation and analysis of well water levels in priority areas of the island. This will lead to better understanding of Salt Spring’s groundwater resources, enabling SSIWPA and its member agencies to come closer to making recommendations about what level of groundwater use is sustainable for Salt Spring Island.

Islands Trust Policy Statement:

4.4 Freshwater Resources

Commitment of Trust Council

4.4.1 It is Trust Council’s policy that islands in the Trust Area should be self-sufficient in regard to their supply of freshwater.

Directive Policies

4.4.2 Local trust committees and island municipalities shall, in their official community plans and regulatory bylaws, address measures that ensure:

- *neither the density nor intensity of land use is increased in areas which are known to have a problem with the quality or quantity of the supply of freshwater,*
- *water quality is maintained, and*
- *existing, anticipated and seasonal demands for water are considered and allowed for.*

Official Community Plan:

Salt Spring Island Official Community Plan policies require the Local Trust Committee to have a good enough understanding of the island’s groundwater resources to be able to make decisions about whether or not development proposals will negatively impact the Island’s groundwater supplies. The work program presented by this report will provide an inventory of wells, will identify priority areas of the island for groundwater monitoring, and it will develop a pilot monitoring program to enable understanding of groundwater resources in stressed areas. In combination with other tasks in the Integrated Water Management plan, this will begin to form the basis of land use planning recommendations and decisions.

Salt Spring Island Official Community Plan:

C.3.3.1.1 To avoid zoning changes that result in the depletion of existing wells or springs or water bodies used as water supplies.

C.3.3.1.2 To preserve known groundwater recharge areas.

C.3.3.2.1 To protect groundwater recharge areas, zones in the upland areas of the island will continue to allow only a low density of development. The Local Trust Committee may consider undertaking or supporting further analysis of groundwater recharge areas on the island, including the creation of a groundwater conservation strategy. The transfer of development potential to other parts of the island will be encouraged.

C.3.3.2.6 The Local Trust Committee should consider working with other agencies and stakeholders to development a groundwater conservation strategy for Salt Spring Island. The strategy would combine educational efforts with the creation of demand management measures.

Agencies

The Ministry of Forest Lands and Natural Resources (FLNRO) is an active partner in this work program. The groundwater science program (Ministry of Environment and FLNRO) has funded a two year program to revise the aquifer mapping (2016-17) and develop a groundwater budget (2017-18), with outcomes linked to the well inventory and monitoring pilot. This proposed work program will supplement and inform the water budget project that FLNRO is current undertaking with Golder and Associates.

Issues and Opportunities

This work program demonstrates the collaboration required for a comprehensive approach to managing water resources in Canada. The scopes of work in Appendix 2 were developed by the Technical Working Group (with leadership from FLNRO staff) and presented to the multi-agency SSIWPA for endorsement. In British Columbia, the Ministry of Forest Lands and Natural Resources and the Ministry of Environment are responsible for the protection of water resources and allocations. However, these provincial agencies necessarily have to take a broader, regional focus in the work. Community scale analysis for land use planning is not within the regular scope of FLNRO work programs. Coordination and participation in SSIWPA has given the LTC and Islands Trust staff the opportunity to have a much closer working relationship with staff at FLNRO. This has enabled coordination of a number of mutually supportive initiatives that will produce more refined, parcel level information for the LTC's land use planning programs. Participation by FLNRO in SSIWPA has made this possible. The project charter proposes a very collaborative approach to creating a well inventory and monitoring program. It was developed in consultation with the SSIPWA coordinator and staff at FLNRO, and reviewed by various senior staff members at Islands Trust. The challenge of effective collaboration between different levels of government, and even within individual bureaucracies, is on-going; success requires flexibility, clear communication, and an openness to iterative reporting and processes.

Rationale for Recommendation

This project addresses the need for neighbourhood-scale information about groundwater conditions that impact land use planning decisions and water resource management. It also addresses the provincial government's need for expansion of the long term record of groundwater conditions presently provided by the three current provincial observation wells. Using its land use planning function, the SSI LTC can support this work by coordinating the well inventory and monitoring, through contract and project management, matching funding, and making application for a Real Estate Foundation grant to create a locally managed groundwater inventory and monitoring pilot program.

Alternatives

1. Decide to not endorse the project charter

The LTC may decide to redefine its priorities or request a reallocation of funding to a different project.

2. Request further information

The LTC may request further information prior to making a decision. Staff advise that the implications of this would be to delay initiating work and risk missing the Real Estate Foundation

Grant deadline, as well as reducing the time available to complete the work in the current fiscal year.

Prepared and Submitted by:

Justine Starke

June 21, 2017

Justine Starke, Island Planner, Local Planning
Services

Date

Appendix 1: Project Charter 8.1 dated June 21, 2017

Appendix 2: Well Inventory and Groundwater Monitoring: SSIWPA Scopes of Work 5(a) and 5(b)

Integrated Watershed Management: Groundwater Supply

Project Charter v8.1

Salt Spring Island Local Trust Committee

Date: June 21, 2017

Purpose To create a locally managed well inventory and groundwater monitoring pilot program in coordination with the Salt Spring Island Watershed Protection Authority (SSIWPA) and member agencies. The project addresses the need for neighbourhood-scale information about groundwater conditions that impact land use planning decisions and water resource management. It also addresses the provincial government’s need for expansion of the long term record of groundwater conditions presently provided by the three current provincial observation wells. Using its land use planning function, the SSI LTC can support this work by coordinating the well inventory and monitoring, through contract and project management, matching funding, and making application for a Real Estate Foundation grant to create a locally managed groundwater inventory and monitoring pilot program.

Background The Salt Spring Local Trust Committee coordinates the [Salt Spring Island Watershed Protection Authority](#) (SSIWPA) as well as advances land use planning initiatives as a top priority. SSIWPA is an umbrella organization that coordinates the collaboration of government agencies/ improvement districts that have a role in managing water or watersheds. The SSIWPA Integrated Water Management work plan aims to quantify available freshwater and identify ways to maximize efficiency. Within this are objectives to understand Salt Spring Island’s groundwater and inform land use and resource management decisions. The Ministry of Forest Lands and Natural Resources (FLNRO) is an active member of SSIWPA also modeling groundwater resources and working on a groundwater budget for Salt Spring Island. The groundwater science program (Ministry of Environment and FLNRO) has funded a two year program to revise the aquifer mapping (2016-17) and develop a groundwater budget (2017-18), with outcomes linked to the well inventory and monitoring pilot.

Objectives

- Understand groundwater quantity and quality constraints to inform land use planning decisions.
- Identify priority areas for the wells inventory and monitoring program.
- Supplement the existing Provincial WELLS inventory.
- Inventory and review well reports on file at Islands Trust and survey targeted private well owners.
- Receive Real Estate Foundation grant for a locally managed groundwater monitoring pilot program.
- Establish a community well monitoring program to supplement provincial observation well network.
- Should the pilot be successful, identify an agency to house and administer the program into the future.

In Scope

- Coordination with various Islands Trust staff, FLNRO staff and SSIWPA coordinator.
- Procurement and contract management for well data review, inventory, and well-owner survey.
- Map project results; cross reference well data to WELLS database and enter new records.
- SSI LTC application to Real Estate Foundation.
- Pilot program to monitor changes in groundwater level for 4-6 new test wells in defined priority areas.
- Establish on-going, locally managed well monitoring program.

Out of Scope

- Quantification of groundwater use or demand.
- No consumption or metering
- Surface water monitoring program
- Monitoring wells outside of identified priority areas.

Project Team		Budget		
Justine Starke, IT Island Planner	Islands Trust Project Manager	Budget Source: SSI LTC Watershed Management - 4014		
William Shulba, IT Freshwater Specialist	Role to be determined	Fiscal	Item	Cost
Mike Richards, IT Grants Administrator	Grant Administrator and REF BC contact	2017-18	Well inventory and survey	16 000.00
Mark Van Bakel, IT GIS Coordinator	Mapping	2017-18	Advertising for contractor	200.00
Contractor	Data collection & collation/ surveys/analysis/field work	2017-18	REF BC—Matching Funds for Groundwater Monitoring	1 800.00
Shannon Cowan, SSIWPA Coordinator	Project coordinator	2017-18	Total	18 000.00
Sylvia Barroso, FLNRO staff/TWG member	FLNRO/TWG Project Lead	RPM Approval:		LTC Endorsement:
		Name of RPM		Resolution #:
		Date:		Date:

Work plan Overview

Deliverable/Milestone	Lead	Planner Time	Target Date
Process to issue contract the well inventory/survey.	Justine Starke, William Shulba, Nancy Roggers, Islands Trust; Shannon Cowan, SSIWPA; Sylvia Barroso, FLNRO; .	14 hours	July 2017
Project management, coordination between leads.	Justine Starke, Island Planner and Shannon Cowan, SSIWPA.	35 hours	On-going
Identify priority areas for inventory and monitoring.	Justine Starke, Islands Trust; William Shulba, Islands Trust; Shannon Cowan, SSIWPA; Sylvia Barroso, FLNRO	2 hours	July 2017
Wells Inventory: Review of Islands Trust well reports, survey of well owners, data gathering and compilation.	Contractor, supervised by Sylvia Barroso, (FLNRO); coordinated by Shannon Cowan (SSIWPA), IT file orientation by SSI Staff.	2 hours (SSI Staff)	Summer-Fall 2017
Final well inventory and report to Local Trust Committee	Contractor with assistance from: Justine Starke, Islands Trust; William Shulba, Islands Trust; Shannon Cowan, SSIWPA; Sylvia Barroso, FLNRO	14 hours	January 2018
Facilitate Real Estate Foundation Grant Application	Justine Starke/Shannon Cowan (SSIWPA) /Mike Richards (Islands Trust)	5 hours	September 9, 2017.
Evaluate List of Potential Monitoring Locations.	Justine Starke, Islands Trust; William Shulba, Islands Trust; Shannon Cowan, SSIWPA; Sylvia Barroso, FLNRO	1 hour	January - March, 2018
Establish agreements with well owners to utilize wells for monitoring.	Justine Starke, Islands Trust; William Shulba, Islands Trust; Shannon Cowan, SSIWPA; Sylvia Barroso, FLNRO	7 hours	
Fieldwork to install monitoring equipment.	Contractor	N/A	
Data collection, transfer and analysis.	Contractor	N/A	Spring 2018—2019
Process and interpret data.	Contractor supervised by: Shannon Cowan, SSIWPA Sylvia Barroso, FLNRO	N/A	After 4-6 months of data collection at regular intervals.
GIS Data Input and Analysis	Islands Trust GIS Staff in consultation with Sylvia Barroso, FLNRO	Freshwater specialist : 7 hrs	December 1, 2018 - March 10, 2019
Identification of local agency to house and manage monitoring program over time.	Justine Starke, Island Planner	21 hours	January 2018-March 2019.
Final Project Report and presentation of work result to Salt Spring Island Local Trust Committee.	Justine Starke, Islands Trust; William Shulba, Islands Trust; Shannon Cowan, SSIWPA; Sylvia Barroso, FLNRO	7 hours	Update before March 31 2018; Final before March 31 2019.
		TOTAL: 115 hours	

MEMORANDUM

To: SSIWPA, Steering Committee
Date: April 24, 2017
Subject: Work scope for Objective 1: safe supply from groundwater – Wells Inventory
Project: SSIWPA TWG, Task 5aWork Plan
Submitted by: SSIWPA Contact: Shannon Cowan; TWG Lead – Sylvia Barroso

Purpose: To improve the inventory and verify the status of use of wells on Salt Spring Island, including within areas of known data gaps identified via mapping of existing information.

Reason: For use in overall IWM work plan (merging with Tasks 4c, 4d and development of a hydrogeologic (GIS-based) database and quantification of sustainable water yield for the island).

Scope of Work: The project will be jointly managed by the project lead and the SSIWPA Coordinator. Field work, data gathering and processing will involve a contracted staff person under supervision of the project lead and Coordinator. The project leads and/or contractor will report out to the TWG subcommittee at regular intervals and a final report will be submitted to the Steering Committee.

- 1) Mapping exercise to identify well data gaps.
 - a. Identification of land parcels that do not currently have a well mapped/registered within the Provincial WELLS database, that are likely to utilize a groundwater source. This includes cadastral lots outside of water service areas, that are non-vacant (based on BC Assessment data) and that do not have either a well or a water licence point of diversion (POD). The current estimated number of lots that meet these criteria is 1124.
 - b. Identification of land parcels where more information on the status of use of mapped/registered wells could be obtained. This would include, for example, land parcels located within serviced areas that have a mapped/registered well in the WELLS database. These would be the locations to seek additional information from the property owners, to verify if there may be wells that are:
 - i. currently not in use and that could possibly be used as monitoring locations to expand the local groundwater monitoring network (task 5b);
 - ii. currently in use to augment supplies provided from water systems, and therefore of interest to to gather more information on groundwater use at the location;
 - iii. presently unused and unusable, and therefore the wells may require deactivation or decommissioning in order to help ensure protection of the aquifer source.
- 2) Develop a “Well Inventory Survey” project. The project could be undertaken in two phases. The first phase would be to improve knowledge of wells in areas identified as potentially utilizing a groundwater well that is not currently registered in the WELLS database (item a) above). The second phase would be to improve understanding of the location and status of use of wells within areas serviced by a water system (item b) above).

The objectives of the project would be to:

- i. Improve understanding of the location and status of use of wells within areas identified as data gaps through the data mapping exercise, and from the initial results of the (Phase 1) Salt Spring Island aquifer mapping study. Note: This is not intended to be for quantification of groundwater use, for example, in domestic wells;
- ii. Add to the number of registered wells in the WELLS database for Salt Spring Island;

- iii. Provide information to well owners regarding well head and aquifer protection;
 - iv. Identify locations of unused wells or other wells that could be suitable for inclusion in an expanded groundwater monitoring network.
- 3) Complete the proposed work plan as follows:
- Identify areas of data gaps via mapping exercise;
 - Compile budget and determine funds available for hiring of a student/intern. Identify and apply for sources of funding;
 - Hire intern or student to undertake well inventory survey. Resource materials including forms for data collection, notes/talking points, resources for outreach and dissemination to well owners, will be developed and identified by the project manager(s) and provided to the individual during the initial training phase. The SSIWPA Coordinator will be the local contact for day to day supervision and support. Training and oversight of the individual will be completed by staff from Ministry of Forests, Lands and Natural Resource Operations (FLNRO) groundwater protection officer and regional hydrogeologist with respect to completion of site visits and Ministry of Environment (ENV) with respect to standards for well data collection, cross-referencing and wells data entry); The student or intern will ideally be based on Salt Spring Island and be involved within a hydrogeology, geography or engineering, undergraduate level, educational program (e.g. Camosun College, Royal Roads, University of Victoria, Vancouver Island University, University of British Columbia, etc.);
 - Contact well and property owners within areas of known data gaps. This could include door-to-door inquiries, dropping off fact sheets on the project, mailouts, posters and information disseminated in the community, including possibly via advertising within the local newspaper and at local events such as the Well Owner Workshop (June 30, 2017);
 - Complete site visits to properties where well owners agree to participate in the survey program. Phase 1 field component to be completed from May – September 2017. Data entry component could be completed by October 2017. The Phase 2 field component and data entry could possibly be undertaken in summer 2018;
 - Compile information collected within the well inventory program including well inspection forms, well construction records, site photos, etc.;
 - Complete data entry to WELLS. Data could include correction of well locations, entry of new well records, and changes to status of use of a well. It will not include changes to well owner name which typically remains as the original owner name within the WELLS database. Referrals will be made, as appropriate, to the FLNRO groundwater protection officer if there is a compliance concern or violation of the *Water Sustainability Act*, Groundwater Protection Regulation identified at an individual well or property. Collection and protection of private information is governed under the *Freedom of Information and Protection of Privacy Act*;
 - Compile statistics and summary of work completed during well survey. This could include progress report to TWG and Steering Committee during critical project stages, to link with other work plan task areas such as monitoring program development, and to help guide next steps.
- 4) Prepare revised maps, utilizing data layers modified as a result of the well inventory program. (WELLS layer is publicly available and downloadable for use from GeoBC and could be combined with other data sources to develop the hydrogeologic database).

Deliverables:

	Date	Description	Responsibility
1	May 2017	Map and statistical summary describing known well inventory from WELLS database and combined with other data sources to highlight groundwater data gaps (e.g. number of wells in specific service areas and locations).	FLNRO (work plan lead)
2	October 2017	Entry of data to WELLS database. WELLS layer will be utilized as a source of primary data for SSI hydrogeologic database utilized in SSIWPA projects and programs, such as development of the sustainable yield model	Student/intern
3	October 2017	Report by student and TWG outlining survey results including number of sites visited, outcome of well inspections, and data entry completed during Phase 1. The report could also identify or list wells that may be evaluated for inclusion within a monitoring network (task 5b).	Student/intern
4	October 2017	Revised well inventory map (using similar methodology to deliverable 1).	FLNRO
5	December 2017	Objectives work plan for Phase 2 data collection	TWG

Resources required: (see table on next page)

TWG Task Manager: Sylvia Barroso, 250-751-3265 sylvia.barroso@gov.bc.ca

Time frame: May 2017 – December 2017

Costs for Resources Task 5a							
	Agency	Individual	Item	hours	\$/hr	Cash Cost	In Kind Cost
Labour (In kind)	FLNRO	S. Barroso	Project supervision, some travel	24	\$ 80.00		\$ 2,120.00
Labour (in kind)	FLNRO	R. Lalla	GIS support	10	\$ 60.00		\$ 600.00
Labour (In kind)	FLNRO	B. Robinson	Training (fieldwork)	30	\$ 60.00		\$ 1,800.00
Labour (in kind)	Islands Trust	S. Cowan (Coord)	Coordination, student local supervisor	36	\$ 48.00		\$ 1,728.00
Labour (cash)	Islands Trust	Student	Data collection, well inspection service	480	\$ 25.00	\$ 12,000.00	
Equipment							200
Computer		own computer				\$ -	
Data requirements	FLNRO	E. McGinnis		10	\$ 60.00		600
Expenses			Student on-island travel			\$ 1,500.00	
			Student off-island travel			\$ 500.00	
Grant opps	BC Summer Work Experience Program		Too late for 2017 but perhaps for phase 2			\$ -	
	Canada Federal Work Experience Program		Too late for 2017 but perhaps for phase 2				
	First Nations and Inuit Summer Work Expe		Too late for 2017 but perhaps for phase 2				
Total Cost						\$ 14,000.00	\$ 7,048.00

MEMORANDUM

To: SSIWPA, Steering Committee
Date: April 24, 2017
Subject: Work scope for Objective 1: safe supply from groundwater – Groundwater monitoring program pilot
Project: SSIWPA TWG, Work Plan Task 5b
Submitted by: SSIWPA Contact: Shannon Cowan; TWG Lead – Sylvia Barroso

Purpose: To improve understanding of groundwater conditions within different aquifers on Salt Spring Island by expanding the groundwater monitoring network. The project will involve a pilot to establish monitoring in 4 to 8 new sites that will add to the long-term record of groundwater conditions presently provided by monitoring of three active Provincial Observation wells.

Reason: For use in overall IWM work plan (merging with Tasks 4c, 4d and development of a hydrogeologic (GIS) database.

Scope of Work: The groundwater monitoring program expansion project will be managed by a contracted staff person under supervision of the project lead and Coordinator. The contractor or project leads will report out to the TWG subcommittee at regular intervals and a final report will be submitted to the Steering Committee.

1. Write grant application for BC Real Estate Foundation (deadline for first draft June 15, 2017). (During the planning phases, potential project partners will be approached including Ministry of Forests, Lands and Natural Resource Operations (FLNRO), SSIWPA, Islands Trust, CRD or others.) (*Coordinator and Project Lead*);
2. A monitoring project manager/technician will be hired to undertake the logistical aspects of the pilot monitoring program. The pilot project duration will be approximately 1 year after which the program will be re-evaluated. The project manager will work under supervision of the SSIWPA Coordinator and project lead. The primary tasks will include:
 - a. Determining priority areas for groundwater monitoring. These could include areas identified within aquifer mapping and water budget program (tasks 7a and 7b), and previous studies, such as SFU hydrogeology of SSI (Laroque, Allen and Kirste, 2015) and saltwater intrusion risk assessment (Klassen, Allen and Kirste, 2015), taking into account locations of active Provincial Groundwater Observation Well Network wells, and existing monitoring associated with community water systems (identified within task 4a survey of community water systems). The priority areas would include locations in both recharge and discharge zones, and areas of varying well density in order to develop an understanding of the effects of groundwater development on aquifer conditions (water levels or quality).
 - b. The new monitoring locations will be established initially through use of existing well sites identified through the well inventory program (task 5a). In future, funding applications may be prepared to establish purpose built dedicated monitoring wells in priority areas (i.e. phase 2).
 - c. Evaluate list of potential monitoring sites will be evaluated for suitability for addition to the monitoring network using an established set of criteria including location, accessibility, well lithology, yield and capacity, and physical condition, reason for not being in use, ownership, etc. A short-list of pilot areas for monitoring will be created.
 - d. Writing and establishing agreements with private well owners to utilize the wells for monitoring

- e. Purchasing suitable monitoring equipment: pressure transducers that measure water depth (pressure) and temperature. A subset of locations in coastal areas could involve monitoring using conductivity-temperature-depth transducers to understand saltwater intrusion impacts.
 - f. Working with contractors to prepare wells for equipment installation. Wells that are in use with an active pump will require installation of a conduit in the well into which monitoring equipment will be able to be installed. Installation of equipment within inactive wells without a pump may not require a monitoring conduit reducing initial setup costs.
 - g. Install equipment in the wells, revisit the sites within the initial monitoring period to verify that the equipment is working, and quarterly thereafter to download the data. Training may be provided by FLNRO staff (observation well technician and regional hydrogeologist).
 - h. Process and interpret the data and report out to well owners and to SSIWPA on a quarterly to bi-annual basis.
3. Progress report to Steering Committee after 6 months of data collection – *Program manager with Project Lead, Groundwater Committee*
 4. Develop “Derived” data to account for trends in primary data (hydrographs) at each available monitoring well. Share derived data with Islands Trust GIS and FLNRO (by TWG under Barroso lead supervision). – *Lead, Groundwater Committee*

Deliverables:

Deliverables:

	Date	Description	Responsible
1	June 2017	Grant application for financial support. Submit September 1, 2017 for grant competition.	FLNRO (work plan leads) and Coordinator
2	October– November 2017	Determine priority areas for 4-6 well monitoring sites and list of potential monitoring locations from 5a well inventory.	Project manager/technician with project leads
3	January– March 2018	Establishment of agreements with well owners and equipment installation at 4-6 sites.	Project manager
4	September 2017	TWG report on data interpretation and summary for initial monitoring period	FLNRO
5	December 2017	Recommendations for project continuation or expansion (Phase 2).	TWG

Resources required:

Draft budget under development.

TWG Task Manager: Sylvia Barroso, 250-751-3265 sylvia.barroso@gov.bc.ca

Time frame: May, 2017 – December 2018

Costs for Resources Task 5b							
Revenue							
Real Estate Foundation	Islands Trust		Freshwater Sustainability Grant			\$ 9,180.00	
Expenses							
	Agency	Individual	Item	hours	\$/hr	Cash Cost	In Kind Cost
Labour (In kind)	FLNRO	S. Barroso	Project supervision, some travel	120	\$ 80.00		\$ 9,800.00
Labour (in kind)	Islands Trust	M. Van Bakel	GIS data management	10	\$ 60.00		\$ 600.00
Labour (in kind)	Islands Trust	S. Cowan (Coor	Coordination, communications	60	\$ 48.00		\$ 2,880.00
Labour (cash)	Islands Trust	Trust Staff and	installation of dataloggers			\$ 1,800.00	
Labour (cash)	Islands Trust or CRD	Contractor	Data collection, well inspection service	216	\$ 35.00	\$ 7,560.00	
Equipment			Datalogger and cable (transducer) (6)			\$ 9,000.00	
Computer						n/a	
Data requirements	Islands Trust		Data Sharing agreement from FLNRO (primary) to Islands Trust (primary, derived for GIS database)			n/a	
Total Cost						\$ 18,360.00	\$ 13,280.00
Per Well Cash Cost						\$ 3,060.00	