Clean Samish Initiative
Quarterly Progress Report
January - March 2013

1. WATER QUALITY MONITORING UPDATE

Skagit County continued its ambient sampling in the Samish Basin (seven events) and conducted ten days of storm sampling during the first quarter of 2013. In addition, the Skagit Storm Team volunteers conducted six days of storm sampling. Three subbasins have been identified for additional sampling and PIC work – Bob Smith Creek, Skarrup Creek, and Swede Creek. These basins were sampled twice during the first quarter. Included in this report are a table of fecal coliform (FC) concentration, a FC loading graph, and an upstream/downstream comparison of sampling stations.

1.1 Fecal Coliform Concentration

State standards for fecal coliform are based on the designated use for a particular water body. The fecal coliform standards established for the Samish River are designed to protect recreationalists against exposure to pathogens during both primary (swimming) and secondary (fishing) contact recreation. For our purposes, the more stringent standard of ≤100 colonies forming units (cfu)/ 100ml (or < 10 % of samples exceeding 200 cfu/100 ml) used for primary contact activities is adopted to determine whether samples collected from our Thomas Rd sampling site meet state water quality standard for fecal coliform bacteria counts. For the last six years, the Samish River at Thomas Road has met the state fecal coliform standard only in winter and in the fall of 2010 and 2012 (Table 1).

Table 1. Fecal coliform counts from the Samish River at Thomas Road, 2008-2013

Water Year	Annual Fecal Coliform Geometric Mean (MPN/100ml)	Seasonal Fecal Coliform Geometric Mean (MPN/100ml)			
		Fall	Winter	Spring	Summer
*2008 (N=16)	209 (38%)	NA	NA	355 (43%)	139 (33%)
2009 (N=45)	134 (33%)	135 (22%)	27 (13%)	207 (43%)	212 (38%)
2010 (N=63)	132 (33%)	92 (32%)	66 (8%)	188 (37%)	255 (54%)
2011 (N=86)	105 (29%)	102 (29%)	66 (17%)	134 (14%)	158 (33%)
2012 (N=65)	111 (32%)	43 (11%)	74 (29%)	220 (50%)	102 (11%)
*2013 (N=30)	71 (27%)	110 (40%)	46 (13%)	NA	NA

Geometric means of fecal coliform bacteria counts at Thomas Rd during ambient and storm sampling events for the last six water years. Percentages indicate the proportion of samples exceeding 200 MPN/ml during the period sampled. N>5 for all seasonal geometric means. Asterisk (*) denotes incomplete water years. Washington State water quality standard for the Samish River requires a geometric mean value of < 100 cfu/100ml or not more than 10% of samples greater than 200 cfu/100ml.

Due to the inherent variation in fecal coliform counts from covariates such as precipitation and soil saturation, we also examined geometric means in fecal coliform counts by season. This preliminary look indicated that fecal coliform bacteria counts were higher in the spring and summer, which encompass the critical area period (March-June), during which we need to limit bay closures to one for fewer in order to upgrade Samish Bay shellfish beds.

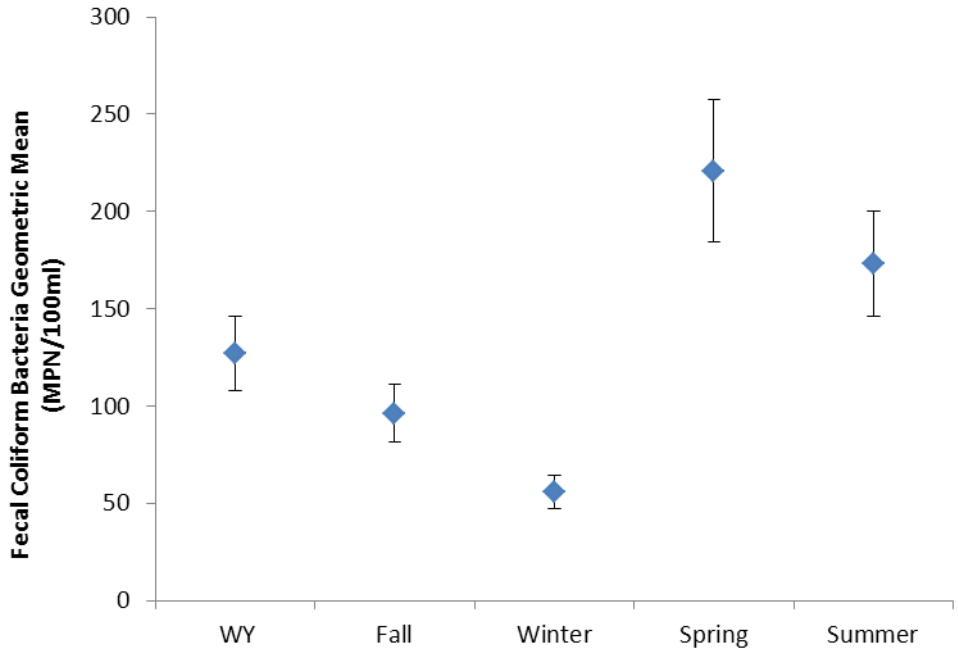

Figure1. Mean annual and seasonal geometric mean fecal coliform bacteria (± 1 SE) at Site 32 for the 2008-2013 period (N=5).

1.2 Fecal Coliform Loading

While Washington State standards for fecal coliform are based on concentration, the State Department of Health uses a regulatory level based on the daily loading of fecal coliform bacteria into Samish Bay. Loading is calculated using the average of two samples collected at the Samish River at Thomas Road and the discharge calculated using the USGS gage just below the mouth of Friday Creek.
In the past, we have relied on Storm Team data to supplement the County's monitoring efforts when timing constraints would not allow County personnel to sampling during storm events. To reduce instrument (due to different laboratory methods for measuring FC bacteria) and statistical errors, we have excluded Storm Team data from our current analysis until such discrepancies are resolved.

Turbidity can cause interference with the membrane filtration method used by the Storm Team volunteers, and because of that some of the higher count events they sample yield questionable results due to incubation and counting difficulties. County samples are analyzed using the Multiple Tube Fermentation (aka Most Probable Number) laboratory technique. This method does not rely on filtration and turbidity interference is therefore reduced.

Skagit County also conducts both ambient and storm sampling; increasing our sample size by combining these two datasets could translate into an improved ability to detect trends should they exist. However,

since the Samish system pollution is largely driven by rain events, data were analyses using only those sample dates involving 0.25 inches or more of rain in order to limit the variability in the dataset. We used the Pearson correlation analysis to determine if fecal coliform bacteria loading at Thomas Road varied with time. Loading data were log-transformed to meet normality assumptions associated with the Pearson correlation. Finally, because of previous observation of fecal coliform bacteria counts being higher during the spring and summer (Figure 1), and of bay upgrade depending on closures during the critical period, we also used the Pearson correlation to examine if there fecal coliform bacteria loading decreased during the critical period.

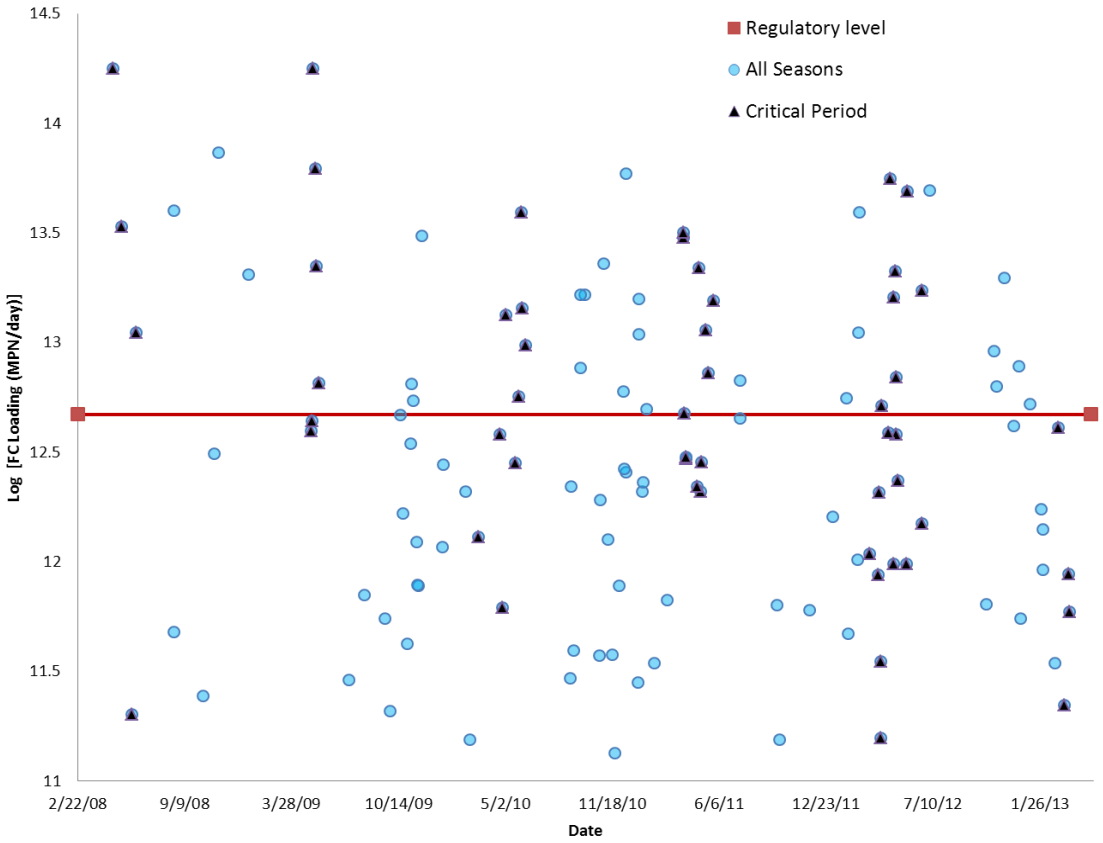

Figure 2. Fecal coliform loading [Log(MPN/day)] for the Samish River at Thomas Road bridge for rain events > 0.25 inches from April 2008-March 2013. Summary stats all seasons (Pearson's *r* = -0.118 *p* = 0.188) and for the critical period from March-June (Pearson's *r* = -.283 *p* = 0.0485).

There was no significant correlation between FC loading and time when all data (aggregated over all seasons from 2008 to 2013) were considered (Figure 2; *r*=-0.118 and *p*= 0.19). On the other hand, we detected a significant (albeit weak to moderate) negative trend in fecal bacteria loading during the critical period (Figure 2; *r*= -0.283 and *p*=0.05) for the period of time ranging from April 2008 to March 2013. While it is somewhat encouraging that the pollution levels appear to be slightly declining during the critical period, it is important to note that we are still exceeding state water quality standards in the river and shellfish closure criteria for the bay.

Figure 3 shows the yearly geometric mean fecal coliform for storm events at County monitoring sites on the mainstem Samish River, from upstream to downstream from 2010 to 2012. Because other analyses have already indicated that seasonality plays a role in FC counts and loading, and that spring and summer are higher than other seasons, only the critical period is used in Figure 3 per Ecology's recommendations. There were no samples days in the 2010 critical period where all mainstem sites were sampled, and there has only been one such sampling day during the 2013 critical period.

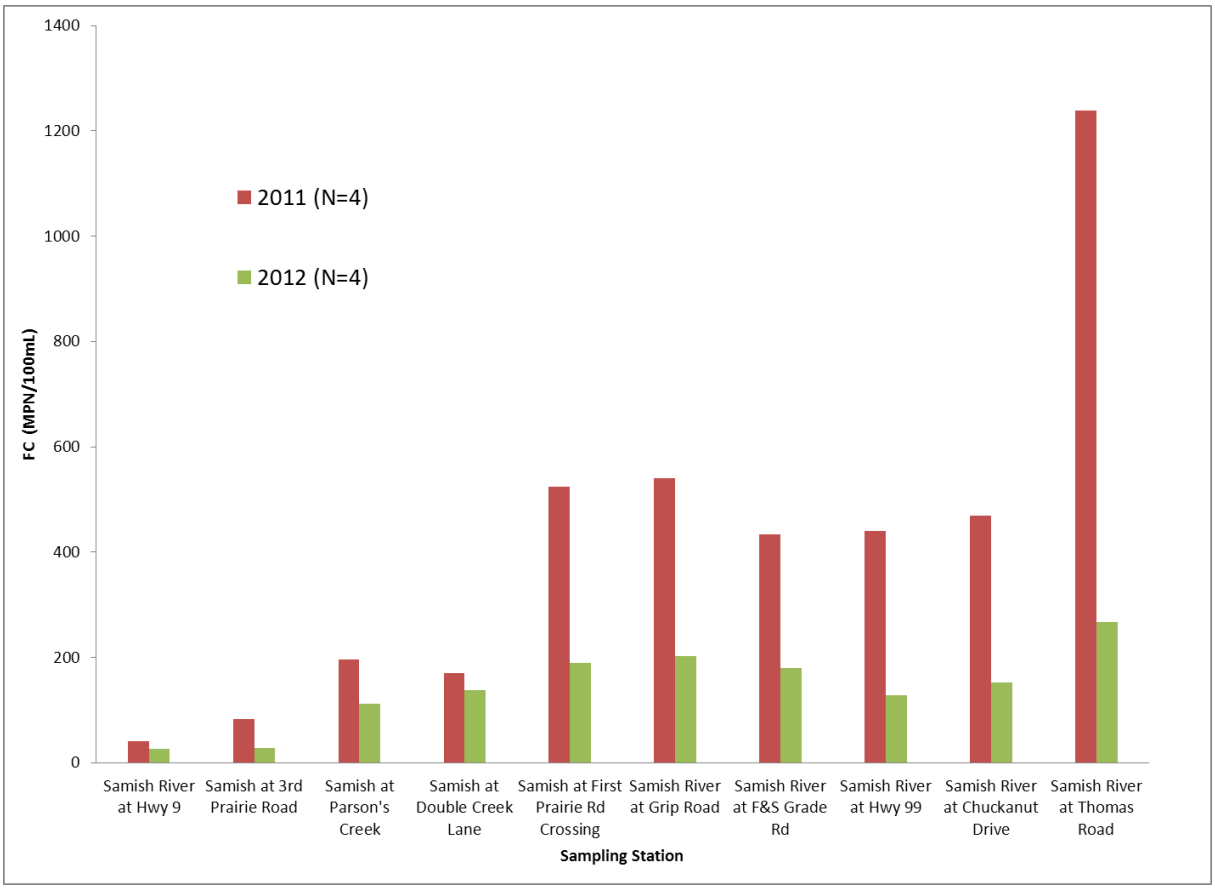

Figure 3. Geometric mean ("average") fecal coliform counts at Samish River stations from upstream to downstream, 2010-2012.

1.3 Samish Bay Growing Area Regulatory Regime

There were 2 pollution closures this quarter, both lasting two days. River rise criteria for bay closure during January was 300 cfs in a single rain event and March criteria was 200 cfs in a single rain event.

1.4 First Quarter 2013

First Quarter 2013 closures were as follows:
Flood Closures: none
CFS Closures: Qualifying Events: 8
Confirmed Closures: 2
Emergency Closures: none
Total Jan-March Pollution Closures: 2

2013 Samish Bay Growing Area Closures – 1th Quarter

January						
S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

February						
S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28		

March						
S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

CFS Rise Closure
Confirmed Bacteriological Closure
Flood closure

Figure 4. Samish Bay Growing Area Closures for the first quarter of 2013

1.5 Summary of progress

The first quarter of 2013 was encouraging in that the majority of the closures were not confirmed; however, two of the eight qualifying events had loading in excess of closure criteria for Samish Bay. This time frame last year also had eight qualifying events and two pollution related closures in addition to the weeklong flood closure during February 2012.

2. PROPERTY INSPECTION STATUS

2.1 Total Number of Inspections towards Goal:

While water quality monitoring continues to guide areas for inspection, Skagit County has also been tasked with evaluating all parcels in the watershed that may have a fecal coliform source. Areas of focus for the first quarter of 2013 included some of the lowland properties by Samish Bay as well as Edison and North Edison slough and Harrison and Whitehall Creeks. Skagit County evaluated 645 parcels in the first quarter including re-evaluating 360 parcels in the Edison area after continued high fecal coliform counts (See Figure 4).

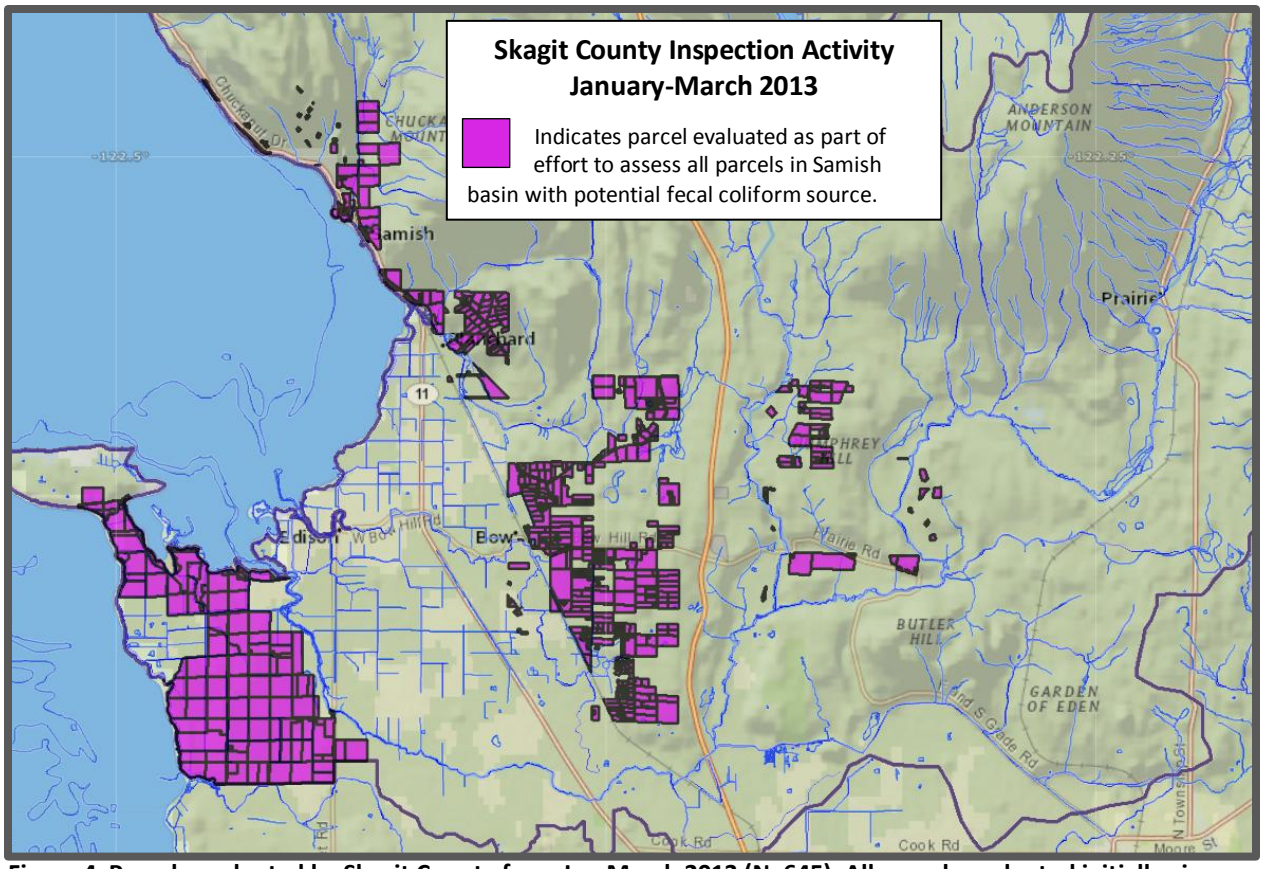

Figure 4. Parcels evaluated by Skagit County from Jan-March 2013 (N=645). All parcels evaluated initially via drive-by; some parcels also receive a site visit as needed based on initial observations (see 2.2).

2.2 Inspections Requiring Follow-up

Of the 645 parcels evaluated via drive-by between January and March, 40 owners received a site visit during this quarter to further assess conditions on their property. 27 of the properties visited were determined to be in compliance at the time of the site visit, 11 properties were either referred to another agency or program or noted as needing additional follow up, and 2 owners denied access. Additionally, the County had not heard back from 10 owners that were sent site visit request letters by the end of the 2012. These owners will be sent second letters and/or will receive an automatic site visit.

2.3 High Priority Areas

There are currently two properties in the basin that are considered very high priority. The statuses of these properties are as follows:

1) Owner's appeal of the Pollution Control Hearings Board's decision was dismissed by Superior Court due to incorrect filing procedures. Owner must now comply with Ecology enforcement requirements.
2) Owner is not following farm plan and is periodically allowing cattle to access Edison Slough.

Four other properties that were considered high priority previously have taken steps in the first quarter to come into compliance. One owner in considering signing up for CREP, one has implemented

necessary BMPs with the help of the SCD, one implemented BMPs on their own, and one continues to work with the SCD to fully implement their approved farm plan.

2.4 Penalties

Ecology did not issue any penalties in the first quarter. Ecology issued two penalties in December 2011. One of these owners completed the required best management practices in the first quarter. The other owner appealed the ruling by the Pollution Control Hearings Board though this appeal was thrown out by the Superior Court and therefore the owner is required to comply with Ecology's requirements. Skagit County started one Request for Investigation (RFIs) in the Samish watershed during the first quarter of 2013. Additionally, of the 13 RFIs that were open at the start of the year, 10 were closed in the first quarter 2013.

2.5 Summary of Progress

For the first quarter, the inspection rate was just over 215 parcels/ month. About 2% of the parcels visited required seasonal follow up and just over 6% required a site visit for further investigation.

3. EDUCATION & OUTREACH REPORT

Education and outreach activities during the first quarter of 2013 were as follows:

3.1 Education and Outreach Committee

Skagit County Public Works Activities:

- SCPW is running a TV ad during the critical period to remind Samish residents to follow appropriate measures to eliminate sources of fecal coliform pollution on their property. The cable spot runs in the WAVE Broadband Zone which includes LaConner, West Mount Vernon and the Alger, BayView, Bow, Edison area for a total of 4,795 households starting on April 1st 2013. The ad will run for 4 weeks on 17 different networks and during each of the Mariners Baseball Games.
- SCPW sent out mailers to livestock owners in the Samish Basin as part of our spring strategy to reduce Bay closures.
- SCPW has a weekly ad in the Skagit Valley Herald about good stewardship practices during the critical period. The ad will run for 6 weeks and is currently in its fourth week of running.

SCEA Activities:

- Participated in Storming the Sound North in La Conner on 1/31/13
- Prepared the next edition of the new print of "Waste Station Brochure"; Portable Toilet and Pet Waste Station (Facilities) Map/informational Brochures, now to include "Fecal Facts"
- Reviewed its outreach and education materials as well as displays.
- Reviewed Skagit County Clean Water, CSI, SCEA and Google for content, links, web service and possible improvements, with a projected date for launching social media campaign as soon as their social media correspondence position has been filled.

Skagit Conservation District Activities:

- Provided support to the Friday Creek Habitat Stewards who successfully submitted a $10,000 grant to the Rose Foundation's Puget Sound Stewardship Mitigation Funds: "Silver Creek

Habitat Enhancement Project – Phase II." The money will be used to enhance the NRSP stream restoration demonstration project at the Alger Hall including native plant demonstration gardens, interpretive signage, and observation areas.

- Held a volunteer training in Marine Biotoxin Volunteer on March 12th and March 28th. In addition to Paralytic Shellfish Poisoning (PSP), the CD is also monitoring for Diarrhetic Shellfish Poison (DSP). Three recreational shellfish harvesting beaches in the Samish (13 county-wide) are sampled during low tides April through September.
- Received a social marketing grant from Puget Sound Partnership's EcoNet Social Marketing Grant funds: "Using Social Marketing Techniques to Enhance and Stimulate the Adoption of Conservation Practices by Small Acreage Landowners in the Thomas Creek Sub-Basin Pilot Project."
- Hosted a pasture management workshop in partnership with Mount Vernon Country Store on 03/09/13.
- Scheduled two livestock workshops with Alayne Blickle (Make a Paddock Paradise: Fresh Ideas on Creating Winter Confinement Areas for Livestock on June 17th and Mud and Manure Management on September 30ththe Padilla Bay Research Reserve.
- Partnered with Bow Little Market, Friday Creek Habitat Stewards and Chuckanut Transition to host the annual Seed/Plant Swap & Arbor Day native tree give-away, which takes place at the Bow Hill Blueberry Farm on 4/27/13.
- Friday Creek Habitat Stewards website is now up and running – the site includes info and links to the Clean Samish Initiative: http://fridaycreekhabitatstewards.weebly.com/
- Coordinated a speaker's series, which will be held at the Alger Community Hall from 6:30 pm to 7:30 pm directly preceding the monthly Friday Creek Habitat Stewards.
- Next edition of the Clean Samish News is in progress and is expected to be mailed by the end of the month.
- Continues to monitor the Edison Slough drainages and Samish tributaries with the help of the Storm and Stream Teams.

Skagit Fisheries Enhancement Group Activities:

- SFEG resumed Junior Stream Stewards in January, and to date has completed the salmon life cycle unit and began the native plants and riparian areas unit with Allen and Edison Elementary schools. Planning has commenced on service-learning projects, which will occur in the Samish Watershed in March.
- SFEG also applied for a Citizen Action Training School (CATS) grant from the PSP to get private citizens more socially and publically involved in watershed-related issues.

4. SEPTIC INSPECTION UPDATE

Property owner mailings – Upper NE Samish, Upper Samish and Willard Creek MRAs

Owners of 1,297 on-site sewage systems were notified of the on-site sewage (septic) inspection requirement beginning Fall of 2012. This included 875 owners of OSS systems in the recently designated Marine Recovery Areas (MRAs); Upper NE Samish and Willard Creek. Data analysis throughout the summer determined that these property owners either had no operations and maintenance inspection or had an out-of-date inspection. Several hundred OSS owners in the Upper Samish watershed did not receive notices when we canvassed this MRA in 2011. These properties make up the difference between 875 and the total mailings. The first reminder letter went out October 1 and we are now issuing fines to the final 31 property owners who have not contacted the Health Department. As of today, 1029

residences have had their systems inspected and are confirmed to be operating satisfactorily. The current status of these mailings is as follows:

1029 inspections completed.
28 vacant parcels or unoccupied homes identified.
189 extensions granted. These are primarily so OSS owners can take the Septics 201 class to do their own inspection. Some are financially stressed residences needing more time, or they have had an inspection done and we are awaiting a report.

All Samish MRAs Statistics

Failure Rate:
23 failures were identified in the Samish Watershed, both through Operations and Maintenance Specialist reporting and owners who applied for repair permits. Of these:

2 repairs were completed
2 permits were issued
3 unoccupied houses were identified
7 have been sent notification
2 have contacted designers
7 are pending action (i.e., we have sent notification of repair needed and are waiting for replies. We usually allow 10 to 20 days to respond).

Location of Failures:
1 – near Joe Leary slough
1 – Willard Creek
9 – Thomas Creek
7 – Upper NE Samish
5 – Upper Samish

Table 1 - OSS inspections

First Quarter 2013 MRA	Jan	Feb	March	Total
Colony Creek	7	2	1	10
Willard Creek	44	2	1	47
Samish Island	14	0	1	15
Upper Samish	244	11	4	259
Upper NE Samish	174	6	2	182
Thomas Creek	18	2	1	21
Lower Samish	22	1	0	23
TOTAL	523	24	10	557

Septics Education

Septics 101 classes – 5 classes, 46 participants
Septics 201 classes – 6 classes, 137 participants
Septics on-line participants – 126

5. FARM PLAN IMPLEMENTATION: October-December 2012

Department of Ecology referrals to SCD: Two inspection reports on previous referral; two new referrals. The statuses of these referrals are as follows:

- One inspection of a previous referral involves the owner who recently had their appeal of the Pollution Control Hearings Board's decision thrown out by Superior Court; WQ samples collected indicate the property is still a source of pollution
- One inspection of a previous referral involves a property on Weir Creek. The owners have made some, but not all, of the recommended improvements.
- One needs a manure storage area
- One needs a manure storage area and heavy use protection area

Skagit County referrals to SCD: No new referrals. The statuses of the eight previous referrals are as follows:

- 2 in process of receiving farm plans
  - 1 has completed a heavy use protection area and planning for a manure storage structure
  - 1 has very wet property and may need to remove animals
- 1 has an approved farm plan and has completed a heavy use protection area and planning for a manure storage structure
- 1 has a completed plan awaiting signing by the CD's board: this owner has completed fencing on their own.
- 1 has removed animals and no longer needs a farm plan
- 1 is working with SCPW to use NEP funds for manure storage and fencing
- 1 is working with SCPW to use NRSP funds for fencing
- 1 has not contacted SCD and is not responding to SCPW

Voluntary Requests for SCD Assistance: Five Samish landowners have made voluntary requests for assistance with the Skagit Conservation District.

- Two owners are interested in the Conservation Reserve Enhancement Program
- Two owners have worked with the CD in the past and are interested in additional projects
- One owner is new to the district and has requested assistance with their property

6. NATURAL RESOURCE STEWARDSHIP PROGRAM

Skagit County's NRSP program is currently funded by two Department of Ecology grants and by the County's Clean Water Program. It is a County-wide program that provides grant funding to landowners to enhance their property with a benefit to water quality. This program has become a useful tool to get on-the-ground projects completed within the Samish basin, while not a formal component in the CSI effort. The County has also received some additional grant funding to implement BMPs in the Samish Basin and is working out the details on how these will be spent. It is expected that projects will continue to increase in this basin. These projects will be supported by a $300,000 Centennial Clean Water grant for a Samish Watershed Natural Resources Stewardship Program.

During the 1st quarter one landowner officially enrolled, and one landowner is still in the project planning phase.

Number of Properties Enrolled in 1st Quarter 2013: One

Work completed in the Samish Watershed since 2010:

Landowners Enrolled: 12
Linear feet of Streamside Enrolled: 18,719 feet
Plantings: 8,992 native plants installed; 3,453 scheduled for March 2013
Acres: 26.3 acres enrolled
Livestock-Exclusion Fence: 6,695 feet installed; 360 feet scheduled to be installed in January 2013.

7. GOALS FOR UPCOMING QUARTER

1. Re-examine sub basin focus to determine which properties still need improvements, whether a new sub basin focus is warranted, and if any sampling locations should be added or removed.
2. Complete evaluation of all Samish Basin parcels with potential fecal coliform sources.
3. Continue routine over flights.
4. Assess resource needs to efficiently implement best management practices on identified properties.