Water Year 15 (Oct. 2020 – Sept. 2021) Island County Surface Water Quality Report

ISLAND COUNTY PUBLIC HEALTH
DEPARTMENT OF NATURAL RESOURCES
SURFACE WATER QUALITY MONITORING PROGRAM

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Introduction

Island County is unique in the Puget Sound region for its exceptional scenery, abundant natural resources, and plentiful recreation opportunities. Monitoring water quality is essential for protecting public health, aquatic wildlife, and the overall health of the Puget Sound. Even small actions we take – installing rain gardens, maintaining our cars and septic systems, and cleaning up after our pets – all have the potential to decrease pollution levels in our surface waters which impact Puget Sound.

The overall goal of the Island County Surface Water Quality Program (SWQMP) is to protect critical areas, public health, and prevent pollution of Island County surface waters. Monitoring data is used to identify areas affected by bacterial pollution The SWQMP team then works to find pollution sources and correct them by providing education, technical assistance, and providing information for regulatory enforcement, when necessary. These corrective steps require collaboration with other County departments as well as with local and state partner organizations.

Whidbey and Camano Island encompass more than 200 watersheds that may contribute to surface water flow. The majority of the watersheds are small, and few contain perennial streams.

During Water Year 15 (WY15), Island County conducted core monitoring in 12 watersheds representing a range of land uses and ecological functions. Each core and rotational site were sampled once per month, except when surface flow was not present. Each effectiveness site was sampled once per month. Each site was assessed for temperature, pH, conductivity, dissolved oxygen, turbidity, fecal coliform bacteria, nutrients (nitrate and orthophosphate), and discharge.

This report provides descriptions of each site as well as site-specific results from WY15. Results are presented in terms of annual E. coli Geometric Mean (Geomean) because of recent changes of surface water quality standards Washington State Department of Ecology.

Washington State Water Quality Assessment

The federal Clean Water Act, adopted in 1972, requires that all states restore their waters to be "fishable and swimmable". Washington State Department of Ecology's Water Quality Assessment lists the water quality status for water bodies in the state. This assessment meets the federal requirements for a report under Sections 303(d) and 305(b) of the Clean Water Act, which is submitted to the federal Environmental Protection Agency (EPA). The assessment divides waterbodies into 5 different categories based on impairment. These impairments may result from high bacteria levels, increased temperature, and/or low dissolved oxygen. The most current assessment was finalized and approved by the EPA in December 2012, with the new assessment, including data analysis through 2016, to be finalized soon. Additional information about the State's assessment may be found at http://www.ecy.wa.gov/programs/wq/303d/index.html.

- Category 1: meets standard for clean waters
- Category 2: waters of concern (some evidence of problems)
- Category 3: insufficient data
- Category 4A: waterbodies that have an approved TMDL in place and are actively being implemented
- Category 4B: has a pollution control program other than a TMDL
- Category 5: polluted waters that require a TMDL; traditionally known as the 303(d) list

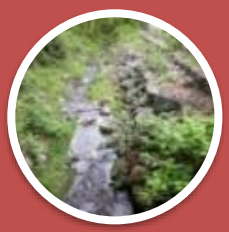
Site Selection

Several types of monitoring can be utilized to evaluate surface water quality. Core monitoring is intended to establish local trends in Island County and seasonal patterns necessary for interpretation of water quality data. The core sites are located at watershed pour points (the point where the surface water meets the Puget Sound). Core monitoring sites were established in 2006 during the development of the Surface Water Monitoring Program for Island County and were chosen to represent watersheds that were predominantly developed, agricultural or natural land uses (Adamus et. al., 2006). Figure 1 shows the core sampling locations for WY15 (October 1, 2020 - September 30, 2021).

Reconnaissance monitoring is conducted in areas based on risk of degradation of valuable resources. These resources include anadromous fish habitat, pocket estuaries, wetlands, swim-beaches, and shellfish beds. Over time, the goal is to conduct monitoring in every watershed in Island County and ensure that Washington State water quality standards are being met (Adamus et. al., 2006).

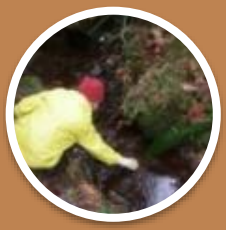
Source Identification Monitoring (SID) is utilized to identify sources of pollution within a target watershed. This is accomplished by bracketing up the watershed from a point of known fecal coliform exceedance to determine potential point sources. SID involves an increase in sampling frequency and/or additional sampling locations.

Effectiveness monitoring is conducted to evaluate the impact of infrastructure modifications (i.e., implementation of Best Management Practices, Island County Public Works project, or a septic repair) on water quality. Pre and post implementation samples are taken. This report focuses on core and rotational monitoring results because that was the primary type of monitoring conducted in WY15. Reconnaissance, source identification, and effectiveness monitoring conducted during WY15 are summarized in this report.



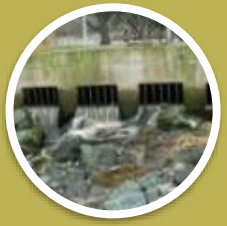
Core

- Background
- Trends
- Patterns



Reconaissaince

- Areas not monitored as baseline
- Resources at risk



Source ID

- Sampling upstream of a confirmed exceedence to determine pollution source(s)

Effectiveness

- Pre and Post-project
- Detect change in water quality

Sampling Sites Map Water Year 15

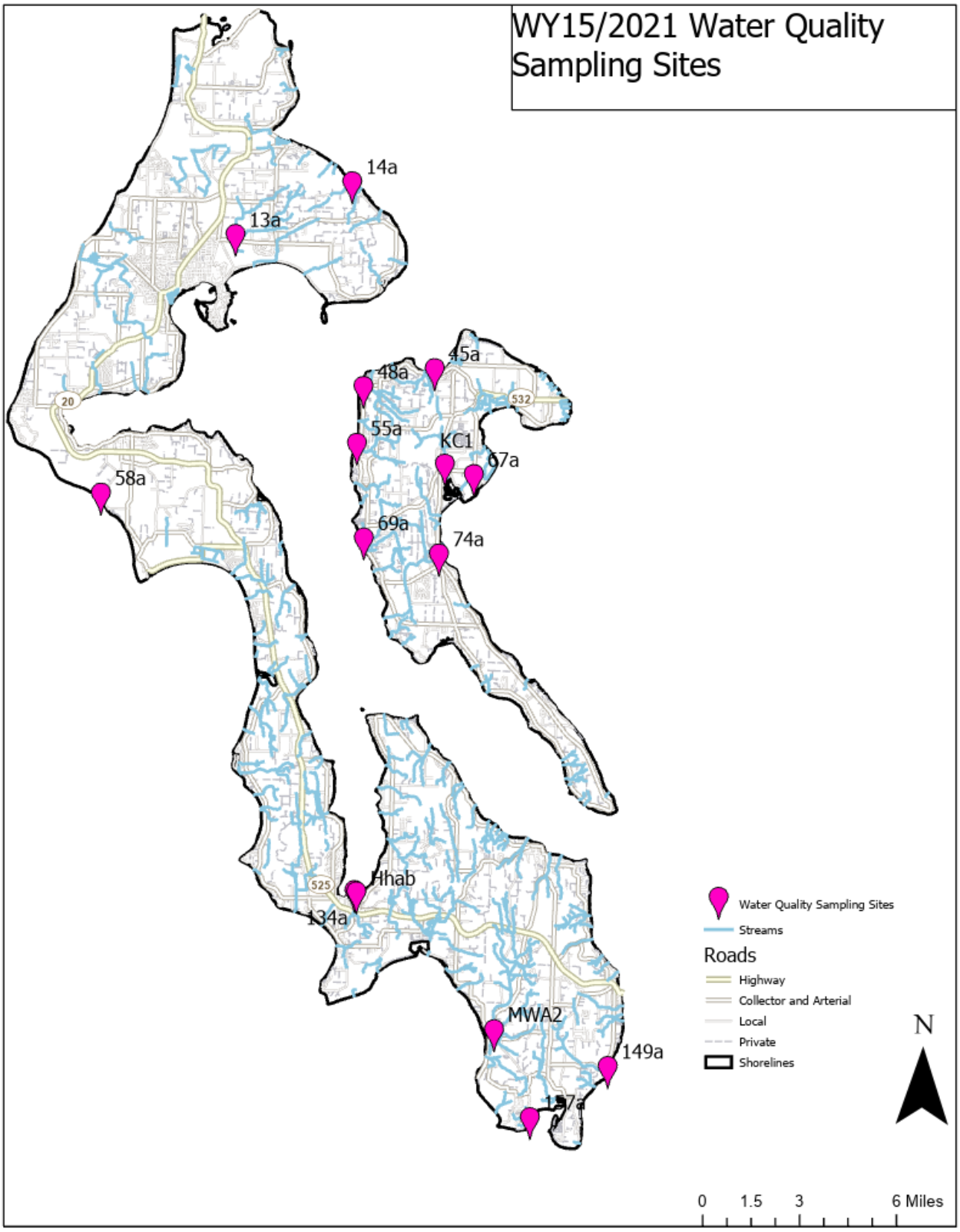


Figure 1. Water Year 2021 Water Quality Sample Sites

Methods

Geometric Mean

A site's annual Geometric Mean (Geomean) is calculated by multiplying monthly E. coli levels (n) and setting that product to the 1/nth power. The Geomean is a measure of the central tendency of E. coli levels (measured in colony forming units/100mL) at a site.

State Standards

The Washington State Department of Ecology (ECY) is required by the Clean Water Act to adopt water quality standards to provide protection from bacteria in water bodies sufficient for full-immersion swimming. The appropriate surface waters in Island County are assigned a designation for recreational use, to compare water quality monitoring results to these ECY surface water quality standards (See Table 1).

Designated Use	Parameter	Standard
Core summer Salmonid habitat	Temperature	7-day average of the daily maximum temperatures no greater than 16°C (60.8°F)
	Dissolved Oxygen (DO)	9.5 mg/L minimum*
	pH	Between 6.5 and 8.5
	Turbidity	Shall not exceed 5 NTU over background when background turbidity is 50 NTU or less
Salmonid spawning, rearing and migration	Temperature	7-day average of the daily maximum temperatures no greater than 17.5°C (63.5°F)
	Dissolved Oxygen (DO)	8.0 mg/L minimum*
	pH	Between 6.5 and 8.5
	Turbidity	Shall not exceed 5 NTU over background when background turbidity is 50 NTU or less
Primary Contact Recreation	E. Coli (Most Probable Number **MPN**)	E. coli organism levels within an averaging period must not exceed a geometric mean value of 100 CFU or MPN per 100 mL, with not more than 10 percent of all samples (or any single sample when less than ten sample points exist) obtained within the averaging period exceeding 320 CFU or MPN per 100 mL.

Table 1. Washington State Standards for surface water (WAC 173-201A-200).

Results

The following sections illustrate the results from data analysis of water quality parameters monitored at all the core and rotational sample sites for WY15. The fourteen monitored sites are broken up by geographic area: North Whidbey, South Whidbey, and Camano Island (Figure 1).

North Whidbey Area Results

Table 2 summarizes the North Whidbey monitoring results. Subsequent pages provide greater detail for each site within the North Whidbey area, including a brief description of the monitoring site.

Table 2. North Whidbey Results

Site	WY15 E. coli Geomean
13a – North Crescent	315 MPN/100mL
14a – Green Road	4 MPN/100mL
58a – Ebey's Landing	43 MPN/100mL

13a – North Crescent Bay

- Water quality was **moderate** based on data collected in WY15.
- Though the Geomean was not over state limits, the percentage of samples that exceeded the state limit was over 10%.

Samples taken for the North Crescent Bay site are pulled from the main channel that flows under Crescent Harbor Road, west of the intersection with Hunt Road about a half-a-mile east of Torpedo Road. The sample site is upstream of Crescent Harbor Road. The area immediately upstream from the sampling site is zoned for rural commercial agricultural use.

14a – Green Road

- Water quality was **good** based on data collected in WY15.
- The Geomean was not over state limits and the percentage of samples that exceeded the state limit was under 10%.

Samples taken for this site are on Green Road in North Whidbey, east of Oak Harbor. Creek flows directly into North Skagit Bay.

58a – Ebey's Landing

- Water quality was **good** based on data collected in WY15.
- The Geomean was not over state limits and the percentage of samples that exceeded the state limit was under 10%.

Surface waters are captured in roadside catch basins and field drain tiles then piped, subsurface, across agricultural fields before daylighting in a ravine where it forms a stream channel that outfalls on Ebey's Landing beach.

The area immediately upstream of the sampling location is zoned for commercial agriculture and is currently being used for agriculture.

South Whidbey Area Results

Table 3 summarizes the South Whidbey monitoring area results. Subsequent pages provide greater detail for each site within the South Whidbey area including a brief description of the monitoring site.

Table 3. South Whidbey Results

Site	WY15 E. coli Geomean
149a – Glendale	25 MPN/100mL
157a – Scatchet	28 MPN/100mL
MWA2 – French Road	23 MPN/100mL
Hhab – E Freeland Park	177 MPN/100mL

149a – Glendale

- Water quality was **good** based on data collected in WY15.
- The Geomean was not over state limits and the percentage of samples that exceeded the state limit was under 10%.

The sample location for Glendale Creek is located above the second driveway crossing up from Humphrey Road. This is a salmon bearing stream that is near roads and houses at certain points. The area immediately upstream of the sampling location is zoned rural designated for rural land use. In these areas with fewer buffers, the stream is more susceptible to pollution and thus residential and roadway practices likely have a more direct impact on the stream's water quality.

157a – Scatchet Head

- Water quality was **good** based on data collected in the WY15
- The Geomean was not over state limits and the percentage of samples that exceeded the state limit was under 10%.

This site location is a stream that runs through the Scatchet Head Community Park. It then enters a culvert under Driftwood Road before draining into Puget Sound. The area immediately upstream of the sampling location is zoned rural and its designated use is rural land.

MWA2 – French Road

- Water quality was **moderate** based on data collected in WY15.
- Though the Geomean was not over state limits, the percentage of samples that exceeded the state limit was over 10%.

This sampling location is on the north side of French Road. This site has extensive riparian vegetation cover and year-round flow. The area immediately upstream of the sampling location is zoned rural and designated to be rural lands.

Hhab – East Freeland Park

- Water quality was **poor** based on data collected in WY15.
- Though the Geomean was over state limits, the percentage of samples that exceeded the state limit was over 10%.

This sampling location is in a tidally influenced stream near the parking lot of Freeland Park. The area immediately upstream from the sampling site is zoned for rural residential and designated to be an urban area.

Camano Island Results

Table 4 summarizes the Camano Island monitoring area results. Subsequent pages provide greater detail for each site within the Camano Island monitoring locations and include a brief description of the monitoring site.

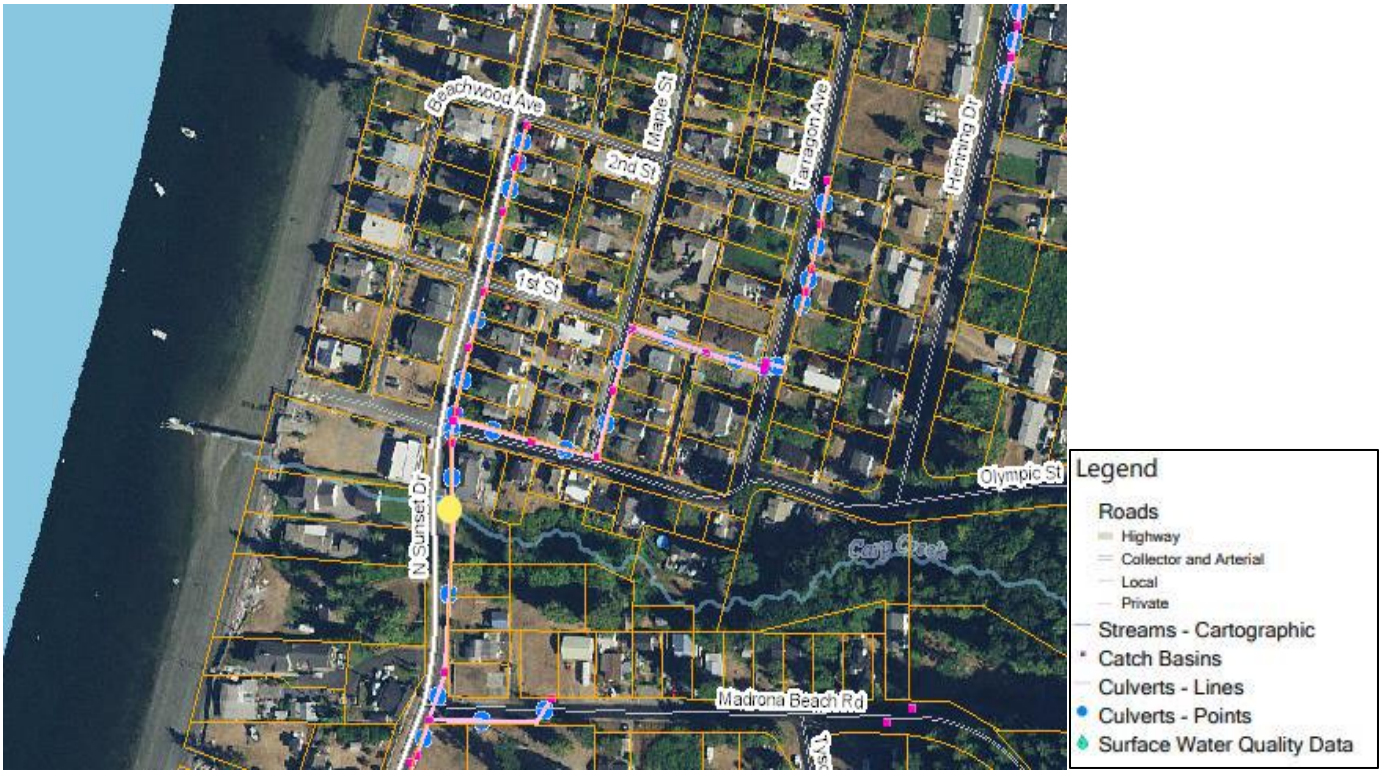
Table 4. Camano Island Results

Site	WY15 E Coli Geomean
55a – Carp	14 MPN/100mL
69a – Chapman	12 MPN/100mL
KC1 – Russell	6 MPN/100mL
74a – Cavalero	14 MPN/100mL
45a – Nellie	10 MPN/100mL
48a –North Sunset	9 MPN/100mL
67a - Iverson	13 MPN/100mL

55a – Carp

- Water quality was **good** based on data collected in the WY15
- The Geomean was not over state limits and the percentage of samples that exceeded the state limit was under 10%.

The sampling site for Carp Creek is located at the junction of streams that flow into ditches near Sunset and Olympic Road. The area immediately upstream from the sampling site is zoned for rural residential and designated use is a residential RAID.



69a – Chapman

- Water quality was **moderate** based on data collected in WY15.
- Though the Geomean was not over state limits, the percentage of samples that exceeded the state limit was over 10%.

This sampling site is located on the upstream (east) side of Sandy Beach Road, just before the stream flows into Saratoga Passage. The designated land use upstream from the sampling site is zoned for rural residential and designated use is to be a RAID.

KC1 – Russell

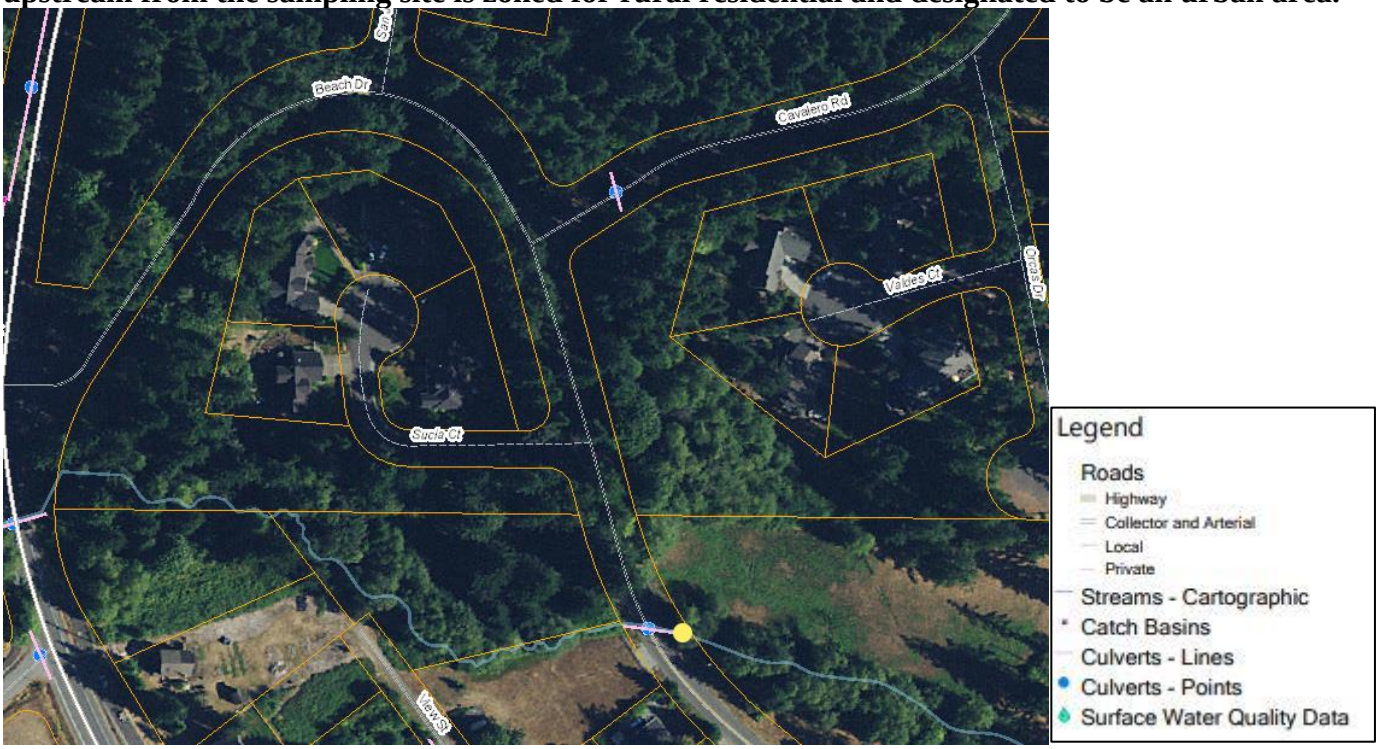
- Water quality was **good** based on data collected in the WY15
- The Geomean was not over state limits and the percentage of samples that exceeded the state limit was under 10%.

This site is on the north side of Russell Road at Kristoferson Creek main stem culvert. Due to the lack of flow, the SWQ team was unable to collect, September. The designated land use upstream from the sampling site is mixed use, zoned rural, and designated for agriculture and light manufacturing.

74a – Cavalero Creek

- Water quality was **good** based on data collected in the WY15
- The Geomean was not over state limits and the percentage of samples that exceeded the state limit was under 10%.

This perennial stream begins as a series of ponds then drops into a forested ravine between dense developments with two road crossings before discharging into Port Susan. The area immediately upstream from the sampling site is zoned for rural residential and designated to be an urban area.



45a –Nellie

- Water quality was **good** based on data collected in the WY15
- The Geomean was not over state limits and the percentage of samples that exceeded the state limit was under 10%.

This seasonal stream is one that drains into the Saratoga Pass. Zoned predominately rural. This is a rotational site.

48a –North Sunset

- Water quality was **good** based on data collected in the WY15
- The Geomean was not over state limits and the percentage of samples that exceeded the state limit was under 10%.

This seasonal stream is one that drains into the Saratoga Pass. Zoned predominately rural. This is a rotational site.

67a –Iverson

- Water quality was **good** based on data collected in the WY15
- The Geomean was not over state limits and the percentage of samples that exceeded the state limit was under 10%.

This seasonal stream is one that drains into the Saratoga Pass. Zoned predominately rural. This is a rotational site.

Discussion

In addition to core and rotational monitoring activities described above, the SWQMP staff also performs reconnaissance, source identification and effectiveness water quality monitoring, and coordinates public outreach activities. The following activities were carried out during WY15.

Reconnaissance

Reconnaissance monitoring is intended to explore water quality outside of the regular core watershed sample sites and identify areas with water quality impairments that may need further investigation. Reconnaissance monitoring will occur at sampling locations selected based on the presence of priority resources and estimation of current pollution risk, identified in the Adamus report. Water quality staff use results to determine whether a site merits addition to core, rotational, or source identification sample sites. Activities for WY15 include:

- Monitoring was conducted in the Penn Cove region of Whidbey Island where residential and commercial shellfish harvest and operations were threatened of being closed due to marine water quality impairment identified by the Washington State Department of Health (DOH). Private and commercial shellfisheries have been identified as a priority resource for Island County.
    - Monitoring revealed impairments that were corrected in conjunction with the Island County Onsite Septic Program.
    - Monitoring will continue through 2022 in conjunction with the Pollution Identification and Correction (PIC) program, which has secured DOH grant funding for 2019 and then expanded through 2022. The goals of the PIC program are to use water quality data to identify fecal coliform pollution, identify corrective action to be taken with other departments through education, outreach, and other corrective actions deemed necessary based on partnering department's procedures in Penn Cove, South Holmes Harbor, and the Maxwelton Valley.

- Investigating complaints of on-site septic failures on both Camano and Whidbey Islands in support of Island County's Onsite Septic Program and conducted dye testing, as appropriate.

Source ID

Source identification (Source ID) water quality monitoring is initiated when monitoring trends indicate areas with repeated exceedances of water quality standards. Source ID narrows down possible sources of pollution through:

- Monitoring intensification, which involves increasing the number and locations of monitoring points upstream and downstream from the original sample point until geographic pinpointing of the pollution source(s) is/are achieved; or increasing the frequency and/or timing of monitoring at the original sample point to pinpoint the activity in that location that may be influencing sample results; or Microbial Source tracking using alternative methods such as: chemicals of emerging concern (CECs), optical brightener detection (fluorometer or passive treatment test), caffeine or drugs as a septic tracer, dye testing, etc.
- Identifying impaired waterbodies and working with Island Counties On-site Septic program and planning department to pinpoint activity that could be influencing sample results.

Adaptive Management

The Island County Adaptive Management Team (AMT) includes: Island County Surface Water Quality staff, Island County Environmental Health Onsite Septic team, Whidbey Island Conservation District, staff and Island County Planning & Community Development Department staff. The AMT collaborates to use water quality impairment data to inform and direct prioritization of areas of overlapping concerns and potential Island County

code violations. Education and outreach is a vital piece of the AMT providing community members with resources, which help them address Federal, State, and Local Critical Areas Ordinance (CAO) violations. The water quality team collaborates with the Onsite Septic program team in using dye testing to investigate complaints of on-site septic failures on both Camano and Whidbey Islands. Land use analysis, in addition to water quality exceedances are investigated to target areas that are failing to meet CAO standards. Resources are shared amongst team members to come up with a plan to provide resources and education to community members.

Outreach and Education

The SWQMP prioritizes education and outreach as a vital part of our program to protect and improve water quality in Island County. Due to COVID-19 Pandemic most education and outreach events were cancelled and will be continued when the situation allows.

Conclusion

Year to year Island County will continue to see fluctuation in surface water quality conditions. It is important to look at the long-range scope of water quality improvements and understand that increasing pressures through climate change and population density increase will create new challenges. In watersheds that have remained the same, we plan to utilize the adaptive management strategy listed above into Water Year 15 to maintain continuous improvement of water quality in all of our streams, which in turn will help protect the Puget Sound.