Drayton Harbor

SHELLFISH RECOVERY AND PROTECTION PLAN

Whatcom County Public Works- Natural Resources
Recommendations from Drayton Harbor Shellfish Protection District Advisory Committee
| FINAL DRAFT March 2024 |

EXECUTIVE SUMMARY

The Drayton Harbor Shellfish Protection District (DHSPD) was established in 1995 in response to the downgrade of shellfish growing areas in a portion of the harbor. As required by the Revised Code of Washington (RCW) Chapter 90.72, an initial closure response strategy was developed and adopted by the Whatcom County Council. Following a decade of work in the watershed, the Drayton Harbor Shellfish Protection District Advisory Committee (Advisory Committee) developed updated recommendations for the Drayton Harbor Shellfish Recovery Plan, which was adopted by the County Council in 2007. The Advisory Committee continues to meet on a regular basis. This 2024 update to the 2007 plan describes progress towards shellfish growing area recovery, emerging issues, and current Advisory Committee recommendations on actions and operations to restore water quality in the district so that remaining shellfish harvest restrictions are removed and areas approved for year-round harvest are maintained.

Since the last plan update in 2007, substantial water quality improvements have been observed in both the marine and freshwater portions of the system. In 2009, the City of Blaine Lighthouse Point Water Reclamation Facility replaced the Blaine waste water treatment plan. This facility has reduced wastewater loading to Drayton Harbor through sewage overflows. Agricultural runoff has been reduced by ongoing outreach and incentive programs to assist the agricultural community in implementing best practices to manage manure and protect riparian habitat. On-site sewage systems throughout the watershed have been evaluated more frequently, resulting in improved maintenance and replacement of failing systems that can discharge to surface waters. Improvements in stormwater infrastructure, engagement in stewardship actions, and compliance with water quality and critical areas regulations have reduced the impacts of nonpoint source pollution. All of these efforts have been expended at great cost over the past 20 years.

Extensive water quality monitoring of freshwater and marine waterbodies in Whatcom County has shown improvement and where we now need to focus our efforts. While there are still challenges at marine monitoring stations during the wet season, water quality improvements demonstrate the feasibility of safe shellfish harvest in Drayton Harbor with continued engagement of community members.

Downgrades to shellfish classifications in 2021 and 2022, however, show that these improvements require long-term stewardship and consistent review of progress, identification of emerging issues, and adaptive management. All the efforts of the past 30 years to protect and restore marine resources and shellfish recovery areas could be undone by the triple threat of:

- Aging or inadequate sewer and stormwater infrastructure in urban centers.
- Population growth and development in urban centers, urban growth areas (UGAs), and unincorporated areas.
- The effects of climate change on precipitation, flooding, elevated water temperature, and coastal sea level rise.

A comprehensive review and update of all county, state, local and federal regulatory programs and resources are needed to ensure that there are adequate tools in place over the next 25 years to prevent or mitigate the effects of these threats. Moving forward, work will need to not only focus on remaining actions to improve water quality but also consider proactive actions to address a growing population and climate change. Continued engagement of community members and visitors will be critical to long-term stewardship of this resource.

The 2024 Drayton Harbor Shellfish Recovery and Protection Plan (shellfish recovery plan) includes Advisory Committee recommendations organized into eight sections that focus on the variety of fecal bacteria sources and strategies to improve and protect water quality. Each of these elements is an integral part of the strategy to recover and maintain a sustainable shellfish resource safe for tribal, commercial, and recreational harvest. Recommendations should be referenced and incorporated into the 2025 Whatcom County Comprehensive Plan Update.

1. Program Coordination
2. Water Quality Monitoring
3. On-Site Sewage Systems and Human Waste
4. Urban Areas
5. Agriculture
6. Boats and Marinas
7. Land Development, Protection and Restoration
8. Community Outreach and Engagement

The Advisory Committee identified four emerging issues and overarching priorities to guide the upcoming work in this watershed.

- **Population Growth** - Recognize the pressure of a growing community and new development. Encourage new development to occur outside sensitive areas.
- **Climate Change** - Develop community resiliency to climate change and sea level rise to protect water quality. Consider more extreme weather patterns.
- **Inadequate Infrastructure** - Aging and/or inadequate sewer and stormwater infrastructure is vulnerable to failure during extreme weather events or with sea level rise.
- **Community Engagement** - Integrate community outreach and engagement into all elements of shellfish recovery and protection plan.

For the purposes of this plan, sensitive areas are defined as Shoreline Management Areas (WCC Title 23) and critical areas (WCC 16.16) that are most likely to impact water quality in Drayton Harbor.

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GLOSSARY

Classification or Shellfish growing area classification	The Washington State Department of Health (DOH) classifies shellfish growing areas as Approved, Conditionally Approved, Restricted, or Prohibited.
CREP	Conservation Reserve Enhancement Program
critical areas	Whatcom County's Critical Areas are environmentally sensitive natural resources that have been designated for protection and management in accordance with the requirements of the Growth Management Act.
DHSPD	Drayton Harbor Shellfish Protection District
DOE	Washington State Department of Ecology
DOH	Washington State Department of Health
FDA	United States Food and Drug Administration
geometric mean	Geometric mean is a mean or average which indicates a central tendency of a finite set of numbers by using the product of their values (as opposed to the arithmetic mean which uses their sum).
Marine Recovery Area	Areas adjacent to Puget Sound that have pollution problems linked to on-site sewage systems (OSS).
MRC	Whatcom County Marine Resources Committee
nonpoint source pollution	Water pollution that comes from many smaller sources, rather than a few large sources.
NSSP	National Shellfish Sanitation Program
O&M	Operation and Maintenance
OSS	On-site sewage systems or septic systems
PIC	Pollution Identification and Correction
point source pollution	Water pollution that comes from a distinct, larger source.
RCW	Revised Code of Washington
sensitive area	As used in this plan, sensitive areas are Shoreline Management Areas (WCC Title 23) and critical areas (WCC 16.16) that are most likely to impact water quality in Drayton Harbor.
SMA	Shoreline Management Area – 200 feet from high water mark
TMDL	Total Maximum Daily Load
WCC	Whatcom County Code
WCWP	Whatcom Clean Water Program

RECOVERY & PROTECTION PLAN ELEMENTS

The 2024 Drayton Harbor Shellfish Recovery and Protection Plan (shellfish recovery plan) describes progress towards shellfish growing area recovery, emerging issues, and current Drayton Harbor Shellfish Protection District Advisory Committee (Advisory Committee) recommendations on actions and operations to restore water quality in the district so that remaining shellfish harvest restrictions are removed and areas approved for year-round harvest are maintained.

The background section includes an overview of the Drayton Harbor watershed and water quality challenges, the DHSPD, Advisory Committee, the Whatcom Clean Water Program (WCWP) partnership, changes to shellfish growing area classifications over time, and water quality patterns.

Advisory Committee recommendations include a discussion of emerging issues and overarching goals. Recommendations are organized into eight sections.

1. Program Coordination
2. Water Quality Monitoring
3. On-Site Sewage Systems and Human Waste
4. Urban Areas
5. Agriculture
6. Boats and Marinas
7. Land Development, Protection and Restoration
8. Community Outreach and Engagement

Recommendations are summarized in Appendix A. Appendix B includes an overview of the 2007 plan objectives, status of the 2007 recommendations, and additional projects and programs implemented under each of these categories.

BACKGROUND

The Drayton Harbor watershed is located in the northwest corner of Whatcom County and straddles the international border with Canada (Figure 1). The watershed is approximately 57 square miles and includes the City of Blaine and a portion of the Ferndale Urban Growth Area. California and Dakota Creeks are the primary freshwater discharges into the harbor, draining over 90 percent of the watershed. Many other small drainages discharge directly into Drayton Harbor. The harbor itself covers 1,600 acres, and is quite shallow, with approximately 60% of the bottom exposed during low tides.

The Drayton Harbor watershed includes significant agriculture and open space land use. The City of Blaine is located around the perimeter of the harbor with urban residential and commercial land uses. A portion of City of Ferndale UGA falls in the upper portion of the California Creek sub-watershed. Much of the remaining portions of the watershed can be described as rural residential. As the population in Whatcom County grows, higher-density residential and other urban areas continue to expand.

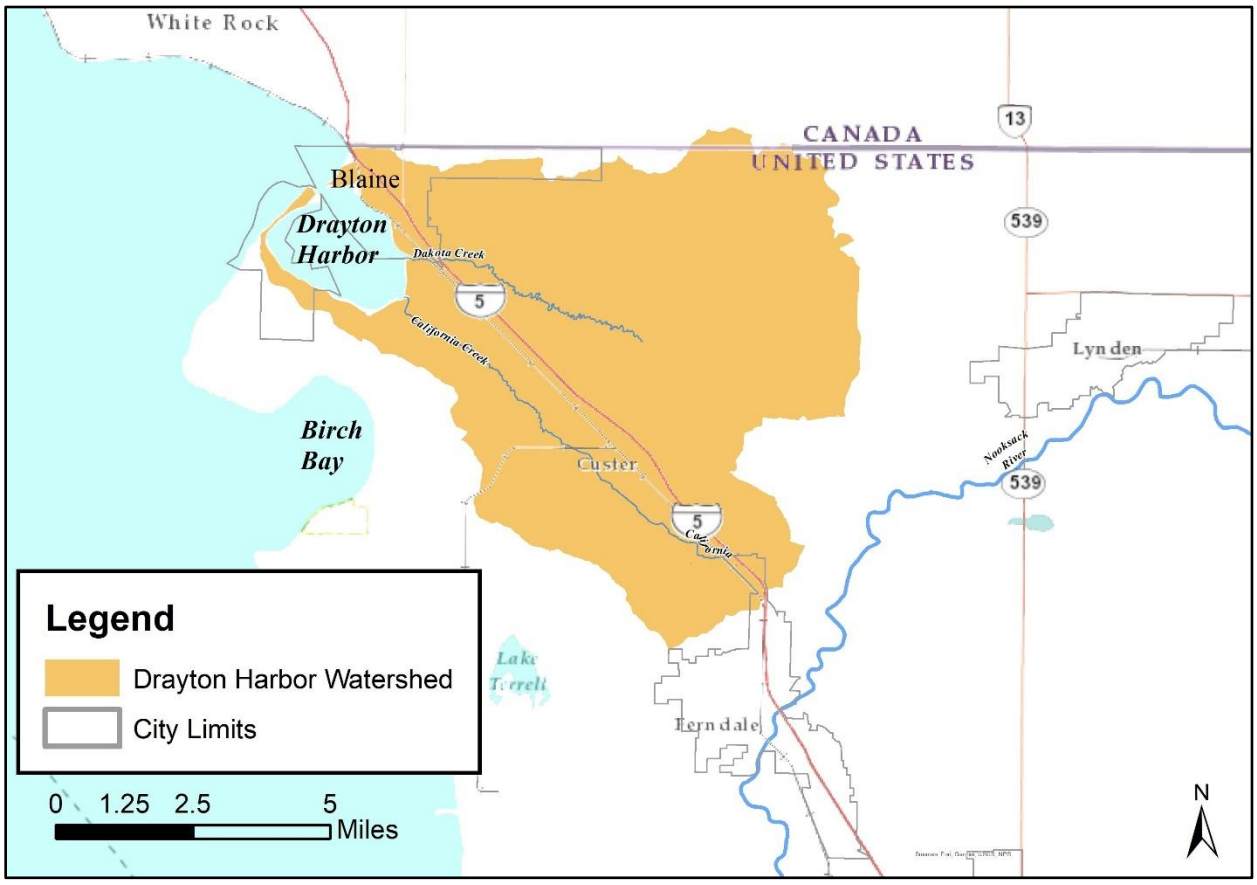


Figure 1. Drayton Harbor watershed map.

Drayton Harbor historically supported tribal commercial, ceremonial, and subsistence harvesting; commercial harvesting; and recreational shellfish harvesting. The Washington State Department of Health (DOH) monitors shellfish growing areas in the state to ensure shellfish are safe to eat. DOH

classifies growing areas as Approved, Conditionally Approved, Restricted, or Prohibited. Shellfish growing areas in Drayton Harbor were downgraded to Prohibited by DOH in 1995 and 1999 due to degraded water quality. Since the initial downgrades, significant community efforts and the associated water quality improvements resulted in adjustments to shellfish harvest restrictions in the harbor.

The primary cause of pollution in Whatcom County's creeks and marine waters is nonpoint source pollution. Nonpoint source pollution is the term used to describe pollutants that come from many smaller sources, rather than a few large sources. This accumulation of pollutants often results from common activities in both urban and rural areas.

Although there are many types of water pollutants, Whatcom County focuses on fecal bacteria as the primary indicator of surface water quality. Fecal bacteria are associated with the gastrointestinal systems of human and other warm-blooded animals. While most fecal coliform strains do not cause human illness, detection in a creek or bay do indicate that human and/or animal wastes and the associated harmful pathogens are polluting the water. Examples of pathogen-related illnesses are giardia, salmonella, viral gastroenteritis, hepatitis, and cholera. People are exposed to these pathogens through direct water contact, such as swimming, wading, or eating shellfish from waters with high fecal bacteria levels.

The key potential sources of fecal bacteria that have been identified in Whatcom County coastal drainages are (1) **animal waste** from agricultural operations, domestic pets, waterfowl, and urban wildlife, and (2) **human sewage** from failing on-site sewage systems (OSS or septic systems), leaking sewers, cross-connections, or homeless encampments. When sources of fecal bacteria move into surface water (e.g., animal or human waste getting into a roadside ditch), surface water carries the bacteria pollution downstream and into Drayton Harbor.

SHELLFISH PROTECTION DISTRICT AND ADVISORY COMMITTEE

RCW Chapter 90.72 requires that the county legislative authority create a shellfish protection district within 180 days after the DOH closes or downgrades a shellfish growing area due to a degradation of water quality. The Drayton Harbor Shellfish Protection District (DHSPD) was established in 1995 in response to the downgrade of shellfish growing areas in a portion of the harbor. At this time, the Advisory Committee was created to advise council on proposed actions and operations relating to the restoration of water quality in the district. An initial closure response (i.e., initial shellfish recovery plan) was developed by the Washington State Department of Ecology (DOE) to guide short-term actions to improve water quality. An updated Drayton Harbor Shellfish Recovery Plan was developed by the Advisory Committee and adopted by the Whatcom County Council in 2007. This 2024 plan is an update to the 2007 Drayton Harbor Shellfish Recovery Plan.

The DHSPD Advisory Committee currently meets jointly on a regular basis with the Portage Bay Shellfish Protection District Advisory Committee. Advisory Committee meetings are public meetings with a hybrid option for virtual attendance. During these public meetings, committee members receive updates on water quality and program status, provide feedback to staff and council on key issues and projects, and identify emerging issues and concerns. Outside of meetings, committee members network

with community members to share information on Drayton Harbor water quality status and the importance of watershed stewardship. This plan includes a recommendation to combine all Whatcom County shellfish protection districts to improve efficiency and effectiveness in the future.

The DOH reviews water quality data, other environmental data, and on the ground actions to determine classification status of shellfish growing areas around the state following National Shellfish Sanitation Program (NSSP) guidance under the United States Food and Drug Administration. Shoreline surveys, sanitary surveys, and growing area reports are completed by DOH and used to inform shellfish growing area classifications and guide locations within the district for focused water quality improvements.

Shoreline surveys characterize pollution sources that may impact growing areas. DOH completes shoreline surveys for shellfish growing areas on approximately a 12-year cycle. Potential pollution sources evaluated in shoreline surveys include wastewater treatment plants, on-site sewage systems, agricultural operations, drainage systems, and wildlife.

Sanitary surveys include the evaluation of the shoreline survey, fecal bacteria data from marine sites, and other environmental factors that could affect the distribution of pollutants. Sanitary surveys are used by DOH to determine the appropriate classification of the shellfish growing area.

Growing area reports are completed annually by DOH to review shellfish growing area classifications and any changes to conditions. Whatcom County submits annual shellfish protection district reports to DOH outlining freshwater water quality status and completed on-the-ground actions which can help inform the growing area report. Changes identified in the growing area report can result in an upgrade or downgrade of classification and are documented through an update to the area's sanitary survey. Drayton Harbor has experienced a number of changes to shellfish harvest classifications over the years (Figure 2).

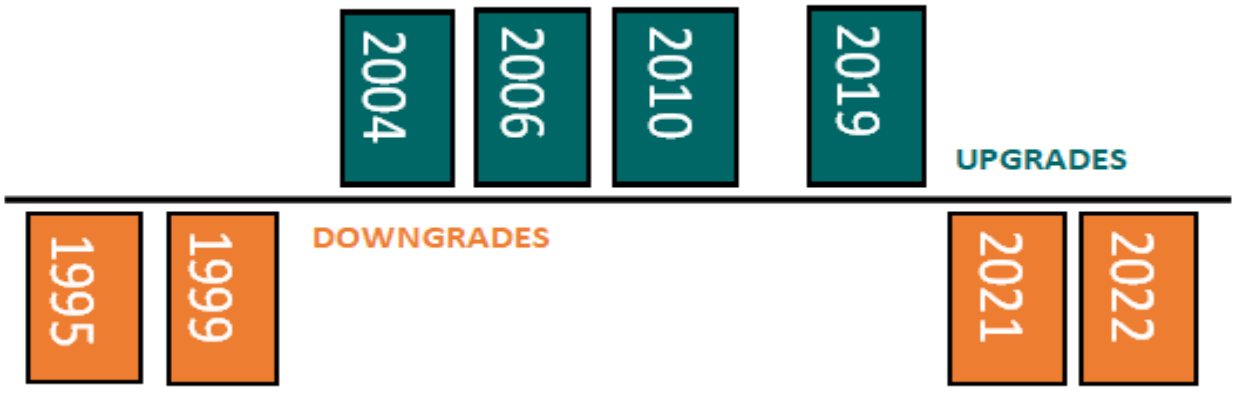


Figure 2. Changes to Drayton Harbor shellfish growing area classifications over time. Years listed below the line experienced downgrades and/or increased shellfish harvest restrictions. Years listed above the line experience upgrades and/or decreased shellfish harvest restrictions.

Drayton Harbor Shellfish Growing Area Classification Timeline

- **1995** Approximately 1,000 acres of Drayton Harbor shellfish growing areas were downgraded to Prohibited and closed to all shellfish harvest due to declining water quality.
- **1999** The remaining portion of Drayton Harbor (approximately 920 acres) was downgraded to Prohibited.
- **2004** 575 acres in the central portion of Drayton Harbor were upgraded to Conditionally Approved. This portion of the harbor was closed for a 5-day period following a ½ inch of precipitation in 24 hours.
- **2006** The Conditionally Approved Area Management Plan was adjusted from a temporary closure following ½ inch of precipitation in 24 hours to a temporary closure following ¾ inch of precipitation in 24 hours.
- **2010** 345 acres along the southwest shoreline of Drayton Harbor were upgraded to Conditionally Approved. The Conditionally Approved Area Management Plan was adjusted from a rainfall closure to a seasonal closure. The Conditional Approval areas were closed to harvest during November, December, January, and February.
- **2019** 765 acres were upgraded to Approved and 450 acres were reclassified from Prohibited to Unclassified. Stations 413, 378, and 379 met the NSSP standards for Approved commercial classification. The area east of 378 and 379 had not been identified for commercial harvest and thus was Unclassified.
- **2021** Approximately 695 acres downgraded from Approved to Conditionally Approved and 450 acres were reclassified from Unclassified to Prohibited. The Conditionally Approved areas were closed to harvest during November, December, and January.
- **2022** 42 acres were reclassified from Approved to Conditionally Approved near station 413 due to declining water quality in the wet season. These 42 acres are also closed to harvest during November, December, and January.

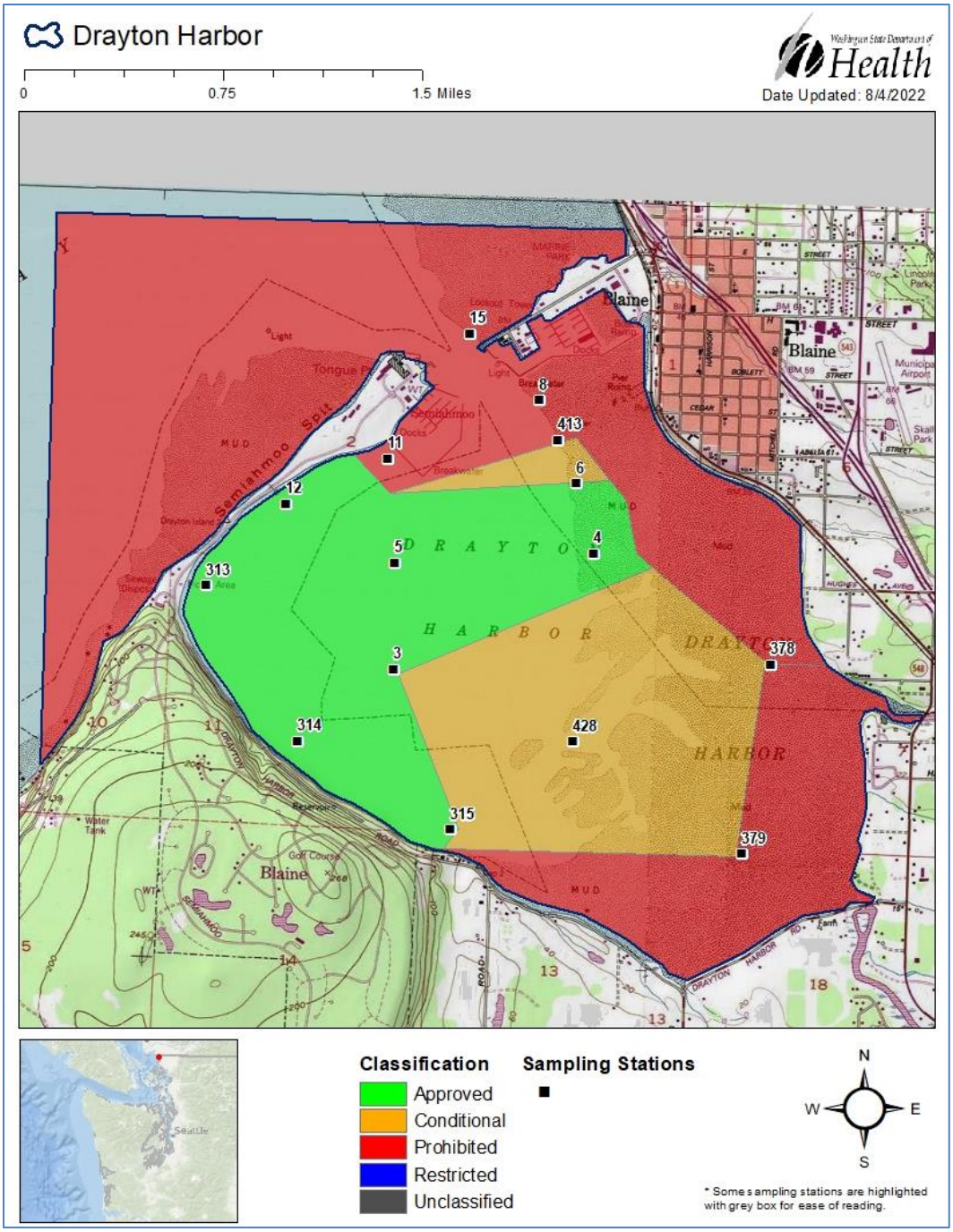


Figure 3. 2023 Drayton Harbor shellfish growing area classifications. The green area is classified as Approved and is open to year-round harvest for tribal, commercial, and recreational harvest. The orange areas are classified as Conditional and are managed with a seasonal harvest closure from November through January each year. These are the current marine areas of focus for water quality improvements. Additionally, the southeastern shoreline of Drayton Harbor is an area of focus for restoring recreational shellfish harvest. The red areas are classified as Prohibited and are closed to all shellfish harvest. Some areas in the red zone are permanently closed due to the Lighthouse Point Water Reclamation Facility outfall (Blaine's waste water treatment plant) and marina zones. The outside of Semiahmoo Spit is another area of focus for reducing the closure zone and restoring access to safe tribal and recreational shellfish harvest.

WHATCOM CLEAN WATER PROGRAM

The Whatcom Clean Water Program (WCWP) is a partnership of local, state, tribal, and federal organizations working to reduce fecal bacteria pollution in surface waters and reopen shellfish harvest in Whatcom County shellfish growing areas. The partnership was established in 2012 and prioritizes water quality improvement efforts in Drayton Harbor and Portage Bay. It has become an integral part of implementing recommendations identified in the shellfish recovery plan since its establishment. Techniques applied under this program are often referred to as Pollution Identification and Correction or PIC. Under the WCWP, partners provide an integrated and multi-faceted approach to water quality improvement, which includes:

- Monitoring water quality, analyzing data, and communicating results.
- Contacting landowners to offer help to find and fix preventable fecal bacteria pollution sources.
- Offering technical and financial assistance programs to help facilitate stewardship actions.
- Offering educational opportunities and working with residents to put in place and maintain water quality protection measures.
- Providing a regulatory backstop for egregious violations or discharges.

Through the development, review, and adaptation of the program, specific roles have been identified for each organization and are described in Figure 4. The partnership works together under three primary tiers: Core Team, PIC Managers, and Field Staff. Additionally, the team works with Advisory Committees (e.g., Drayton Harbor Shellfish Protection District Advisory Committee) and community groups to seek feedback on strategies, materials, and work in focus areas.

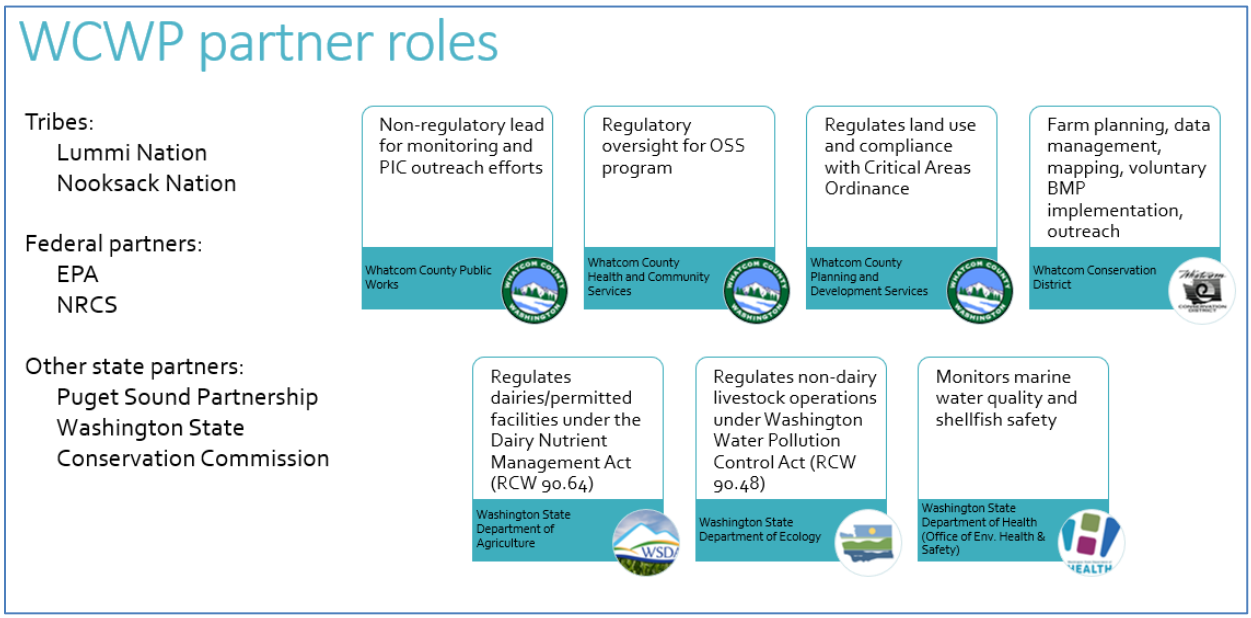


Figure 4. Whatcom Clean Water Program partners and organization roles.

In 2014, the Whatcom County Council adopted resolution 2014-044 outlining the Whatcom County PIC Program. This is the Whatcom County component of the WCWP. With the adoption of this resolution and grant funds that supported building staff capacity, enhanced water quality monitoring and direct landowner contacts in focus drainage areas were initiated in the Drayton Harbor watershed. Whatcom County Public Works, Planning and Development Services, and Health and Community Services continue to fill key roles in the WCWP through implementation of these PIC techniques.

WATER QUALITY PATTERNS

Marine

Water quality is one of the key elements evaluated to determine shellfish growing area classification and to protect public health. Marine water quality standards are set by the NSSP and establish thresholds for determining when and where shellfish can be harvested. Rivers, creeks, stormwater systems, and smaller swales discharge into marine systems creating a connection between marine and freshwater systems. Freshwater benchmarks for the Drayton Harbor watershed were established based upon previous water quality standards for fecal coliform bacteria. Work under prior versions of the shellfish recovery plan have demonstrated value in using these benchmarks for fecal bacteria source tracking and prioritizing areas for water quality improvements in the watershed. However, it is important to note that DOE has determined through analysis for the Drayton Harbor Total Maximum Daily Load (TMDL) that lower benchmarks will need to be established for tidally influenced sites in California and Dakota Creeks to protect marine water quality and recover shellfish growing areas. Table 1 outlines the marine standards for shellfish growing areas and the freshwater benchmarks guiding water quality improvement and protection efforts in the Drayton Harbor watershed.

Table 1. Fecal coliform bacteria standards and benchmarks for protection of shellfish growing areas.

Marine Water Standards (NSSP)	**Freshwater Benchmarks***
• Geometric Mean-14 MPN/ 100mL • Estimated 90th Percentile- 43 MPN/100mL	• Geometric Mean-100 cfu/ 100mL • Not more than 10% exceed 200 cfu/100mL

* The Drayton Harbor TMDL study that is under development by DOE has determined that water quality benchmarks at the tidally influenced sites in California and Dakota Creeks will need to be lower to protect marine water quality and recover shellfish growing areas.

Water quality improvements in both the marine and freshwater portions of the system are often not linear in the short-term. It is helpful to evaluate the long-term patterns of water quality status to illustrate progress and identify the long-standing trouble spots. Figure 5 provides a comparison of estimated 90th percentiles at Drayton Harbor marine stations between 2007 and 2023. The presented 90th percentiles are calculated using the last 30 samples collected throughout the year. This year-round data illustrates the clear improvement in marine water quality, particularly in the western portion of the harbor over this time period (figure 5). This comparison also illustrates the long-term water quality challenges near the mouth of the harbor at the two northern sites (8 and 15). The sites near the mouths of California and Dakota Creeks were established after 2007, so water quality in this area is not able to be compared between the years.

Figure 5. Comparison of estimated 90th percentiles at Drayton Harbor marine stations between 2007 and 2023 (last 30 samples). These maps depict the status of the estimated 90th percentile at marine stations in Drayton Harbor in January 2007 and December 2023. Theses 90th percentiles were calculated for the last 30 samples collected throughout the year. Red dots are greater than 43 MPN/100mL, orange dots are 30-43 MPN/100mL, yellow dots are 20-30 MPN/100mL, green dots are 10-20 MPN/100mL, and blue dots are less than 20 MPN/100mL. The gray dot indicates a site with less than 30 samples collected to date.

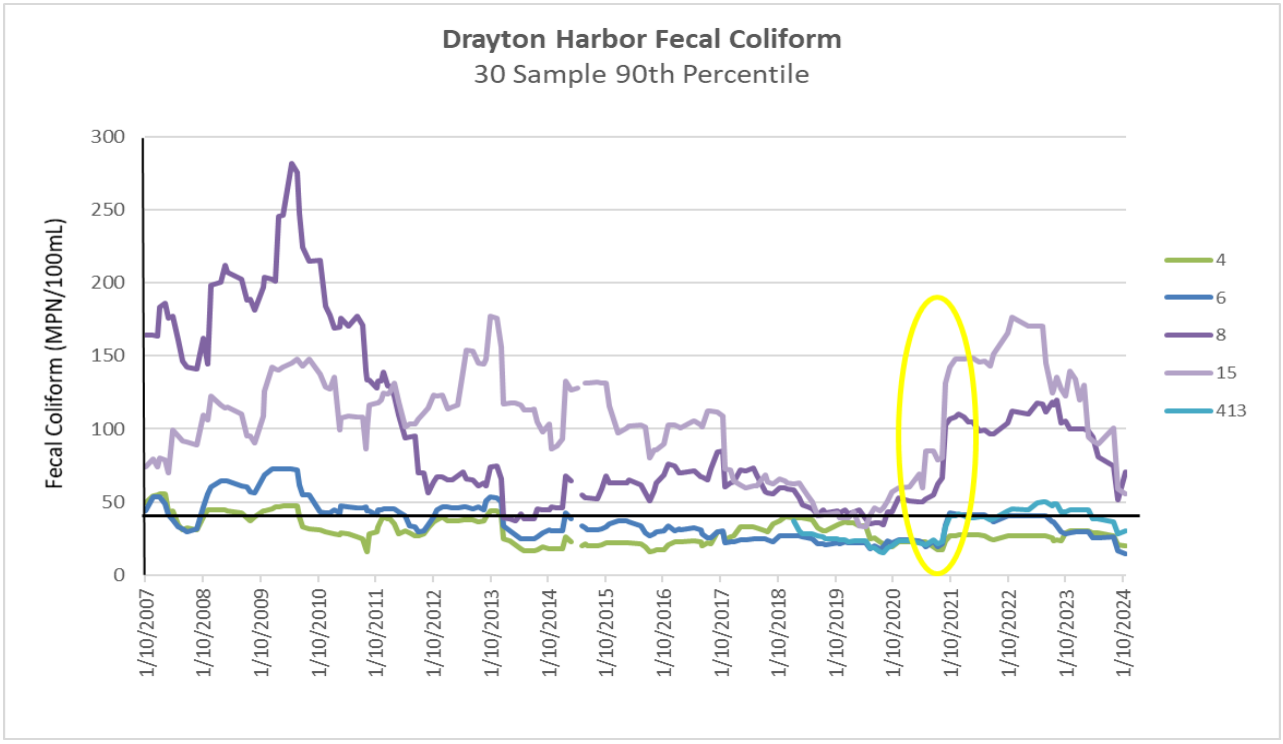


Figure 6. Rolling 30 sample 90th percentile at subset of Drayton Harbor marine sites from 2007 to 2024. This figure illustrates the pattern of water quality improvement at sites near the mouth of the harbor (stations 8 and 15) and adjacent to commercial growing areas (4, 6, and 413) between 2007 and 2020. The black line indicates the marine water quality standard. The yellow oval highlights the impact of a large rain event in December 2020 which resulted in extremely elevated fecal bacteria concentrations. While some elevated results have been observed at these sites since the December 2020 event, they have been significantly lower resulting in the recent decline at these sites.

Figure 6 illustrates water quality patterns at a subset of the marine sites from 2007 through early 2024. While 90th percentiles at sites 8 and 15 remain over 43 MPN/100mL, there had been a steady decline from 2007 to 2020. A significant rain event in December 2020 led to extremely elevated fecal bacteria results. Similar results had not been observed since December 2010. Since December 2020, elevated results have been observed at these sites during the wet season, but not at this scale. While 90th percentiles showed steady improvement in 2023, there continue to be intermittent elevated results that require additional follow up and source tracking.

Freshwater

Figures 7 through 9 demonstrate how three-year geometric means at freshwater stations have changed from 2010 through 2023. Consistent freshwater sampling throughout the Drayton Harbor watershed began in 2008, shortly after the 2007 shellfish recovery plan was adopted. Three years of freshwater data provides a similar timeframe to 30 samples of marine data. Starting in 2010, there was a sufficient dataset to evaluate results over a three-year period. During this period (2008-2010), 11 of 30 freshwater sites were over the fecal coliform geometric mean water quality benchmark. Four of the sites were over two times the benchmark (Figure 7).

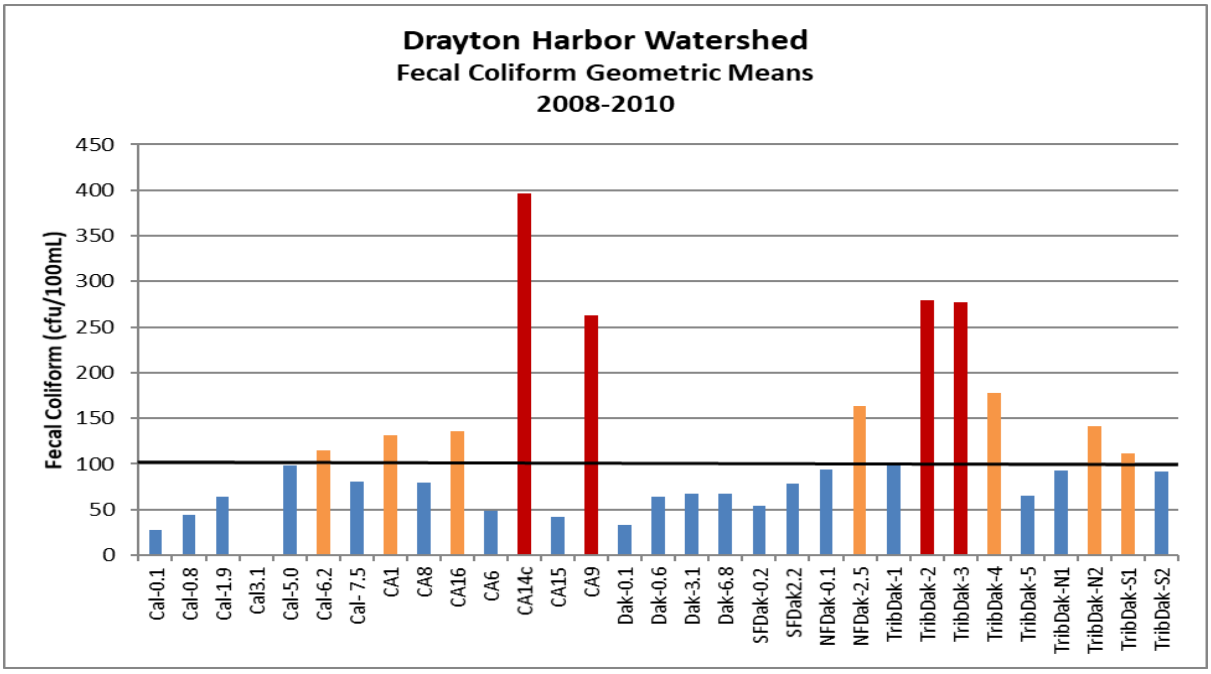


Figure 7. Fecal coliform three-year geometric means at Drayton Harbor watershed freshwater routine sites (2008-2010). Routine sampling was expanded in 2008 with the Total Daily Maximum Load technical study. The black line indicates the freshwater benchmark at 100 cfu/100mL. Sites with blue bars met the benchmark, orange bars were between 1 and 2 times the benchmark, and red bars were over 2 times the benchmark.

The enhanced PIC program was initiated at the end of 2014 with focus areas established in areas of the Drayton Harbor watershed with the highest fecal coliform concentrations. This lead to enhanced monitoring and direct landowner contacts in the Drayton Harbor watershed. In 2014, fecal coliform benchmarks were still not being met at a number of freshwater sites. In fact, 14 of 30 sites did not meet the benchmark and six sites were over two times that threshold (Figure 8). As of August 2023, nearly nine years after the PIC Program was adopted, only one freshwater site is not meeting the geometric mean benchmark for fecal coliform (Figure 8). This site is a long-term focus area and the geometric mean at this site has also been decreasing.

The Drayton Harbor Community Oyster Farm played a key role in building awareness, engaging the community, and jumpstarting efforts to reopen the shellfish growing areas to year-round harvest in the mid-2000s. The formation of the WCWP in 2012 facilitated greater coordination and integration of programs between agencies and increased staff capacity to monitor water quality, identify focus areas for improvements, and provide technical and financial assistance to landowners. The marked water quality improvements in both the marine and freshwater portions of the systems since 2007 demonstrates the success of the approaches outlined in the shellfish recovery plan and focused attention on drainages with water quality hot spots through PIC and WCWP.

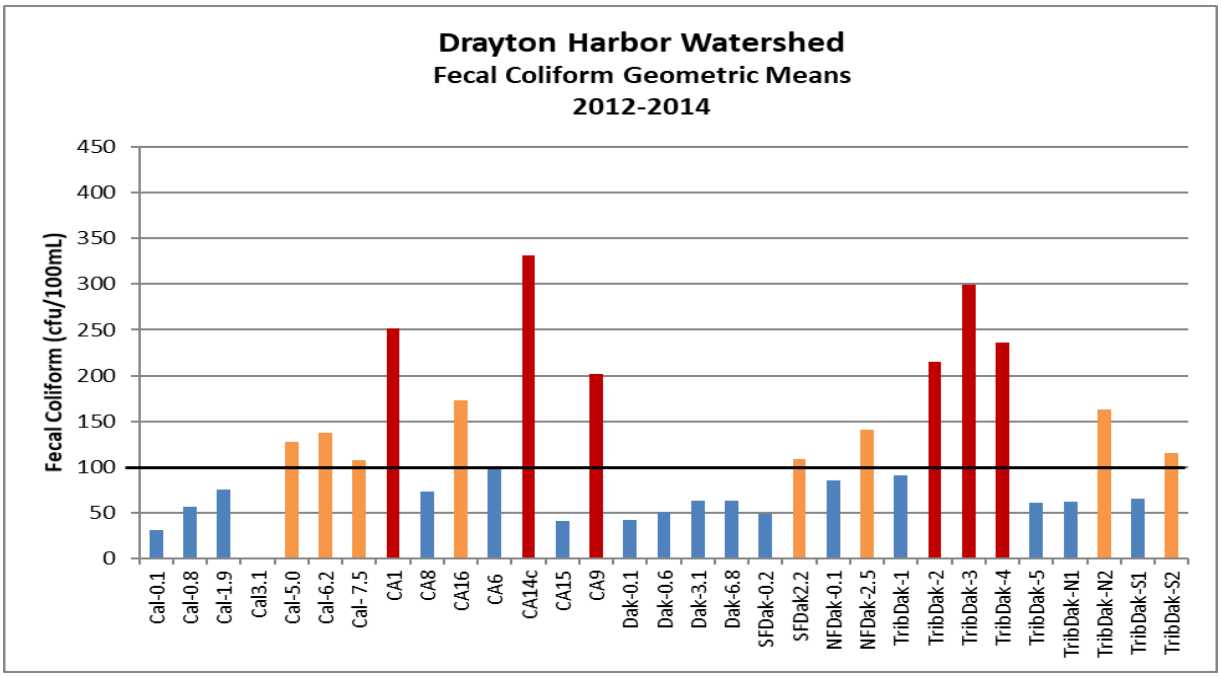


Figure 8. Fecal coliform three-year geometric means at Drayton Harbor watershed freshwater routine sites (2012-2014). The enhanced pollution identification and correction (PIC) program was initiated at the end of 2014 with focus areas established in areas of the watersheds with the highest fecal coliform concentrations. The black line indicates the freshwater benchmark at 100 cfu/100mL. Sites with blue bars met the benchmark, orange bars were between 1 and 2 times the benchmark, and red bars were over 2 times the benchmark.

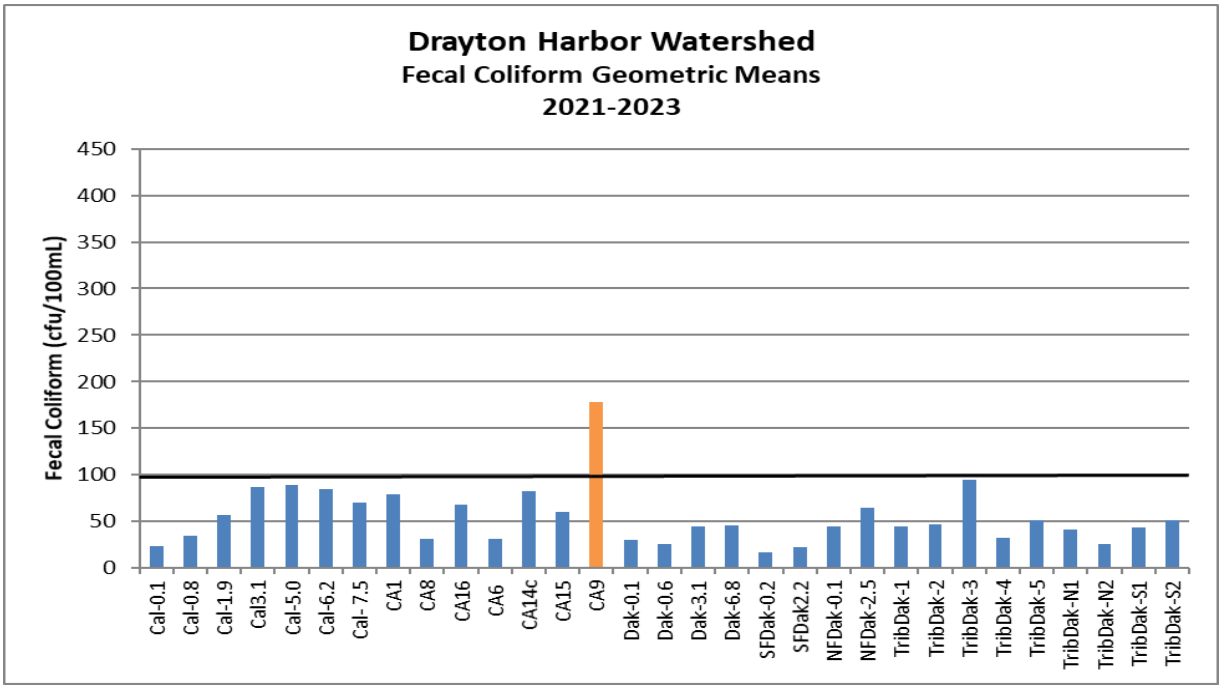


Figure 9. Fecal coliform three-year geometric means at Drayton Harbor watershed freshwater routine sampling sites (2021-2023). The black line indicates the freshwater benchmark at 100 cfu/100mL. Sites with blue bars met the benchmark, orange bars were between 1 and 2 times the benchmark, and red bars were over 2 times the benchmark. As of December 2023, only 1 of the routine sites continued to have a 3-year geometric mean over the water quality benchmark.

2024 DRAYTON HARBOR RECOMMENDATIONS

Since the last plan update in 2007, substantial water quality improvements have been observed in both the marine and freshwater portions of the system. While there are still challenges at marine monitoring stations during the wet season, and at the entrance to Drayton Harbor, water quality improvements demonstrate the feasibility of continued and increased safe shellfish harvesting areas in Drayton Harbor as well as the need to continually engage community members in watershed stewardship. There is also an opportunity to restore valuable recreational shellfish habitat outside Semiahmoo Spit by addressing current regulatory closures related to sewage outfall. Moving forward, work will need to not only focus on remaining actions to improve water quality but also consider proactive actions to address a growing population, aging stormwater and sewage infrastructure, and the effects of climate change. Continued engagement of community members and visitors will be critical to long-term stewardship of this resource.

EMERGING ISSUES & OVERARCHING PRIORITIES

Efforts to improve water quality and protect shellfish growing areas in Drayton Harbor began over thirty years ago. Throughout this time, the diversity of fecal bacteria sources has been recognized and management plans have included elements to address both point and non-point sources. Elements of particular focus over the years have included evaluating on-site sewage systems and fixing associated failures, upgrading the City of Blaine wastewater treatment plant to a water reclamation facility, working with agricultural operations to improve management practices, and building outreach and incentive programs to help landowners adapt practices to protect water quality.

For this plan update, the Advisory Committee highlighted four overarching management priorities: population growth, climate change, inadequate infrastructure, and community engagement. These priorities capture emerging issues and overarch all elements of the shellfish recovery plan. Failure to adequately address these issues has the potential to undo or reverse all the progress to-date. They will guide proposed work to improve and protect water quality and restore year-round shellfish harvest. For the purposes of this plan, sensitive areas are defined as Shoreline Management Areas (WCC Title 23) and critical areas (WCC 16.16) that are most likely to impact water quality in Drayton Harbor.

- **Population Growth** - Populations in Whatcom County and the City of Blaine are growing. Urban population growth, particularly in coastal areas, has the potential to have a deleterious effect on shellfish growing areas if growth is not managed properly to protect water quality. In Washington State, counties and cities must periodically update comprehensive plans and development regulations to meet the requirements of the Growth Management Act. A portion of the comprehensive plan update is a review of Urban Growth Areas. Current plans for community growth should guide new development away from sensitive areas and consider additional services. Planning efforts should include protection of natural systems in these sensitive areas. Additional challenges related to population growth include limited affordable housing and attendant effects on homelessness and increased risk of illicit discharge from unmanaged human waste from encampments or people living illicitly on boats.

- **Climate Change** - More extreme weather patterns have been experienced in Whatcom County in recent years and this pattern is expected to continue. Increased storm intensity will increase fecal bacteria flushing into freshwater and marine systems if current practices continue status quo. Warmer water temperatures have the potential for increasing freshwater and marine Harmful Algae Blooms. Coastal flooding and seawater rise can increase water tables and lead to failure of Onsite Septic Systems. Plans and policies should address improving community resiliency to climate change and sea level rise. This will be necessary to protect water quality and shellfish growing areas in the long-term. Shellfish recovery and protection efforts should be coordinated with other climate action planning.
- **Inadequate Infrastructure -** Aging and/or inadequate sewer and stormwater infrastructure is vulnerable to failure during extreme weather events or with sea level rise. Failures in these systems can lead to sewage overflows or polluted stormwater runoff.
- **Community Engagement** - Nonpoint source pollution is a key contributor to high fecal bacteria levels and reduced water quality in Drayton Harbor. Reducing impacts of nonpoint source pollution requires many small actions by all community members and visitors. Community outreach and engagement should be integrated into all elements of the shellfish recovery and protection plan.

This section describes specific Advisory Committee recommendations for this multi-faceted plan. Work under all elements of this plan will be necessary to maintain and improve sustainable opportunities for tribal, commercial, and recreational shellfish harvest in Drayton Harbor.

SECTION 1: PROGRAM COORDINATION

The Drayton Harbor Shellfish Recovery and Protection Plan describes a multi-faceted approach to fecal bacteria reduction in surface waters to recover and maintain year-round shellfish harvesting.

NEW PRIORITY

1.1 Joint Shellfish Protection District: Combine individual shellfish protection districts (Drayton Harbor, Portage Bay, Birch Bay) into one Whatcom County Shellfish Protection District with subcommittees for each geographic area. A combined district will support consistent and effective strategies for common water quality concerns and bacteria sources across all drainages with shellfish growing areas, make it easier to fill Advisory Committee positions, and make more efficient use of limited staff support for district administration.

CONTINUED PRIORITY

1.2 Broad Representation of Stakeholders: Encourage Advisory Committee representatives from key stakeholders in the Drayton Harbor watershed.

SECTION 2: WATER QUALITY MONITORING

Marine water quality data help determine shellfish growing areas classifications based upon public health risk. Water quality monitoring and data analysis are the backbone of efforts to improve water quality and support year-round shellfish harvest in Drayton Harbor. Nonpoint pollution sources are incredibly difficult to track and identify in a watershed. Greater integration of sampling and tracking methods will facilitate the identification and correction of nonpoint pollution sources and more efficiently use public resources to meet water quality health benchmarks.

NEW PRIORITIES

2.1 Enhanced Monitoring at Mouth of Harbor: Conduct additional monitoring near the mouth of Drayton Harbor where the highest fecal bacteria results are consistently measured. Coordinate this work with recommendations 2.5, 2.6, and 2.7 below.

2.2 Marina Monitoring: Work with the Port of Bellingham and Semiahmoo Marina to collect water samples within the marinas to identify potential fecal bacteria sources and seasonal patterns. Encourage source tracking tools (e.g. bracketing, environmental DNA, etc.) to help narrow source identification for improved management. Coordinate sampling with results of wildlife surveys.

CONTINUED PRIORITIES

2.3 Marine Monitoring (Shellfish Classification): Continue to support Washington State Department of Health (DOH) ambient marine monitoring for shellfish growing area classification.

2.4 Long-Term Ambient Freshwater Monitoring: Continue routine monitoring in Drayton Harbor watershed with keystone freshwater sites identified for tracking long-term water quality patterns. Complete statistical analysis to evaluate results in relationship to bacteria sources and other critical environmental factors, including the Drayton Harbor Total Maximum Daily Load study. Improve relevance of statistical models and baseline studies to Drayton Harbor conditions for more reflective and appropriate decision-making.

2.5 Short-Term Ambient Monitoring (Focus Areas): Continue focus area monitoring in areas with consistent elevated bacteria concentrations or isolated hot spots to help track, identify, and address bacteria sources. Focus areas include Cain Creek and Drayton Harbor shoreline areas. Create criteria to guide establishment of new sampling sites and consider loading estimates to help prioritize areas.

ADDITIONAL RECOMMENDATIONS

2.6 Wet-Season Monitoring: Conduct special project wet season monitoring at key freshwater and marine sites to better characterize water quality patterns following rain and dry periods. Results will

be used to help identify bacteria sources specific to the wet season, refine management related to sources, and better define critical conditions for temporary shellfish harvest closures.

2.7 Transboundary Monitoring and Data Sharing: Continue coordination with BC Shared Water partners to collect complementary water quality samples. Pursue improvements in data sharing, particularly during critical wet season.

2.8 Wildlife Surveys at Marinas: Conduct surveys of birds, marine mammals, and other wildlife at Blaine and Semiahmoo Marinas to sufficiently characterize populations and areas used. Coordinate survey data with water quality sampling to determine potential impact on elevated bacteria concentrations near the mouth of Drayton Harbor. Promote community science and university research options to assist with data collection.

2.9 Community, Academic, and Technical School Science: Expand opportunities for community members to be involved in water quality sampling or other data collection efforts (e.g. Stream Team, wildlife surveys, boat anchoring, Drayton Harbor HAB Hunters, SoundToxins, derelict vessel removal, etc.). Collaborate with the Whatcom County Marine Resources Committee, local colleges and universities, and other local organizations.

SECTION 3: ON-SITE SEWAGE SYSTEMS & HUMAN WASTE

Properly functioning on-site sewage systems (OSS or septic systems) effectively treat wastewater and the associated disease-causing bacteria and viruses. Regular evaluations and maintenance are required to ensure issues are identified and fixed to avoid water quality impacts. OSS located near Drayton Harbor or drainages to the watershed could be threatened by sea-level and water table rise. In situations where sewer or OSS are not available, other sewage management and disposal options are necessary to protect public health.

NEW PRIORITIES

3.1 OSS in Sensitive Areas within Drayton Harbor Watershed: Prioritize implementation of the OSS Operation and Maintenance (O&M) Program in Shoreline Management Areas (SMA, typically <200 feet from ordinary high-water level) and Critical Areas of Drayton Harbor watershed to increase compliance rates. Reduce the risk of sewage contamination through OSS failures and other improper on-site sewage discharge in Drayton Harbor SMAs. These sensitive areas along marine shorelines, larger streams, and riparian areas present a greater risk to bacterial contamination in adjacent marine and surface waters. Healthy and intact riparian areas and wetlands provide critical ecosystem functions that mitigate water quality.

3.2 Sewage Management in Sensitive Areas: Review OSS regulations and staff resources available for permit review and regulatory compliance to ensure adequate water quality protections in SMA and Critical Areas that are most likely to impact water quality in Drayton Harbor. Support connections to

sewer when feasible and approved by the City of Blaine or Birch Bay Water and Sewer District. These sewer connections are not intended to encourage increased density of growth, rather reduce risk of pollution from failing OSS.

3.3 Unmanaged Human Waste: Build resources and capacity to address unmanaged human waste from unsheltered community members. Increase Whatcom County Health and Community Services' ability to provide services that result in reduced water quality impacts from unmanaged human waste, especially in sensitive areas along marine shorelines and streams.

ADDITIONAL RECOMMENDATIONS

3.4 OSS Operation and Maintenance (O&M) Program: Continue implementation of the OSS O&M Program in the Drayton Harbor watershed according to the OSS O&M Local Management Plan. Continue requirement of all OSS to be evaluated in the Drayton Harbor watershed, a Marine Recovery Area, every 1 to 3 years (depending on system type).

3.5 Property Transfers: Increase confirmed OSS evaluations associated with property transfers through partnerships and education programs. Reduce barriers and fragmentation between ordinance requirements and property transfer processes. Track new development with OSS, particularly in sensitive areas and unincorporated areas without sewer service areas. Inform the Advisory Committee of new development in the watershed in order to ensure Advisory Committee contributions are received during planning and the public commenting period.

3.6 Homeowner Trainings and Technical Assistance: Enhance access to OSS homeowner trainings and program assistance. Establish ambassador or similar program to assist community members from diverse populations with the OSS O&M program. Encourage community engagement in septic education program through social media and peer to peer communication.

3.7 Financial Assistance: Continue and increase financial assistance programs available to homeowners for OSS evaluations, maintenance, repairs, replacements, and upgrades. Consider incentives for landowners that are consistently in compliance with O&M requirements and emphasize assistance tools for low/fixed income populations.

3.8 Climate Change and Sea Level Rise: Build community resilience to climate change and sea level rise impacts to OSS in SMAs. Identify and evaluate susceptible areas and options for system updates and/or future sewage management in these areas. Partner with other efforts under the Whatcom County Climate Action Plan. Collaborate with modeling to evaluate sea level rise and vulnerability risk assessment in coastal areas.

SECTION 4: URBAN AREAS

Urban areas reduce the effectiveness of natural water filtration mechanisms and so must compensate for this by incorporating engineered controls. Although progress has been made since the last plan update, aging urban center infrastructure, such as sewage conveyance and stormwater facilities, continue to result in sewer overflows during heavy rain events, which leads to emergency shellfish harvesting closures. Reducing impacts of sewage overflows and nonpoint pollution requires continued and increasing investment in stormwater and sewer facilities. Progress needs to continue, or accelerate, to mitigate the remaining aging infrastructure and plan for growth.

NEW PRIORITIES

4.1 Lighthouse Point Water Reclamation Facility Outfall: There is an opportunity to restore access to 260 acres for tribal and recreational shellfish harvest on the outside of Semiahmoo Spit. These areas are currently closed due to proximity to the Lighthouse Point Water Reclamation Plant outfall. The plant discharges Class A reclaimed water. Work with the Washington State Department of Health and City of Blaine to explore the feasibility of reducing the shellfish closure zone on the outside of Semiahmoo Spit and identify actions needed.

CONTINUED PRIORITIES

4.2 Sewer Collection and Treatment System: Continue to support City of Blaine efforts to evaluate and make improvements to the municipal sewer system. This includes identifying problem locations and reducing inflow and infiltration.

ADDITIONAL RECOMMENDATIONS

Retrofit Stormwater Outfalls: Work with the City of Blaine to identify potential stormwater retrofit projects and provide support to seek funds for implementing the priority project(s).

SECTION 5: AGRICULTURE

Utilizing agricultural best management practices (BMPs) allows working agricultural lands in the Drayton Harbor watershed and the protection of downstream aquatic resources for the purposes of working aquaculture and shellfish harvesting.

CONTINUED PRIORITIES

5.1 Connect with Landowners in Focus Areas: Continue to use water quality data and windshield surveys (observing properties from public road rights-of-way) to identify potential problems and

bacteria sources associated with agricultural operations. Consider additional water quality measures (beyond fecal bacteria grab samples) to help characterize problem areas. Connect landowners and operators with agricultural operations with technical and financial assistance programs to address problems (see 5.2 below). Focus on using collaborative approaches to working with landowners to support adoption of enhanced management processes.

5.2 Non-Dairy Technical Assistance and Incentive Programs: Provide adequate and consistent funding for farm planners to provide technical assistance to landowners and operators with agricultural lands. Provide site-specific farm assessments and options for management practices that protect water quality (e.g., manure storage, exclusion fencing, nutrient management, roof water management, cover crops, vegetated filter strips). Provide incentives for participation in farm planning services.

5.3 Financial Assistance for Agriculture Management Practices: Continue and expand financial assistance programs for agriculture management practices that are protective of water quality (large and small-scale farms). These may include local, state, and federal cost-share programs and rebate programs. Enhance financial assistance programs for stream/riparian restoration and cover crops.

5.4 Critical Areas Ordinance Compliance: Continue seasonal farm plan monitoring letters as a part of the Conservation Program on Agricultural Lands. Require that farm plans be updated on an ongoing basis when there are changes on the site to ensure continued protection of water resources. Continue to use a tiered process to gain compliance beginning with outreach and technical assistance. Continue regulatory backstop for violations that are not addressed through incentive-based program.

5.5 Water Quality Compliance: Encourage the Washington State Department of Ecology to continue water quality compliance program (under state law) for non-dairy operations with water quality concerns. Continue tiered approach offering technical assistance with initial landowner contact. Continue regulatory backstop with warning letters and escalation to formal compliance for operators with clear water quality problems who do not voluntarily make improvements.

ADDITIONAL RECOMMENDATIONS

5.6 Climate Change Resiliency / Sustainable Farming Practices: Build community resilience to climate change in agricultural operations considering increased flooding, more wet winters, and drier summers. Identify management options and resources to help agricultural operations adjust to climate changes. Encourage restorative agriculture practices and other sustainable practices.

SECTION 6: BOATS & MARINAS

Drayton Harbor has always been a no-discharge zone for marine waste, and the entire Puget Sound has been designated a no discharge zone since 2018. Drayton Harbor has two marinas near its mouth: The Port of Bellingham public marina to the north and the Semiahmoo private marina to the south. Enhanced marine sanitation practices reduce the risk of sewage contamination through accidental or illicit discharge to marine waters. Marinas provide onshore restrooms and pump out stations for moorage customers. Anchored vessels must use mobile pump out stations or travel to marinas to meet no discharge requirements. The Washington State Department of Natural Resources (DNR) restricts vessels anchoring in Drayton Harbor to 30 days at a time, or up to a maximum of 90 days if moved every 30 days. However, illegal anchoring of vessels in Drayton Harbor has been an increasing concern. These vessels pose a risk of illicit discharge, or of becoming derelict or abandoned vessels and causing risk to commercial shellfish operations and private property.

NEW PRIORITIES

6.1 Voluntary No-Anchor Zone: Research and evaluate options for and implement a voluntary no-anchor zone in portions of Drayton Harbor adjacent to shellfish growing areas. Programs in other communities should be considered to identify successes, challenges, and mechanisms for engaging the community. Collaborate with the Whatcom County Marine Resources Committee and other organizations.

6.2 Trespass Anchoring: Monitor and report illegal anchoring (WAC 322-52-155) to DNR Derelict Vessel program. Work with Whatcom MRC, NW Straits and DNR and other organizations to increase awareness of anchoring rules, no discharge rules, and programs for disposal of unwanted vessels.

6.3 Maximize Available Resources: Encourage jurisdictions and agencies to maximize the resources and authority already available to them and implement existing regulations and programs that are intended to promote safe and sustainable marina traffic and surrounding water quality.

CONTINUED PRIORITIES

6.4 Boat Pump Out Stations: Support and encourage continued provision and maintenance of boat pump out stations at Blaine and Semiahmoo Marinas. Evaluate options to reach boats mooring in Drayton Harbor through increased use of pump out boat or increased outreach about location of pump out stations. Support and encourage marinas to ensure pump out stations function during freezing temperatures.

6.5 Moorage Customers: Support and encourage continued lease language to prohibit release of black and gray water into marine waters. Encourage and support marinas to adopt additional practices to ensure leaks and discharges do not contribute to bacteria pollution in the harbor. Encourage marinas to evaluate liveaboards and identify unauthorized liveaboards as needed.

ADDITIONAL RECOMMENDATIONS

6.6 Visiting Boaters: Provide additional information to visiting boaters about sensitivity of shellfish growing areas in Drayton Harbor, no discharge regulations, and locations of pump out stations to reduce the risk of sewage contamination through discharge in the harbor. Encourage Port and Semiahmoo Marinas and publishers of marine directories and cruising guides to include this information in their publications.

6.7 Marina Tenants: Support and encourage continued site visits to marina tenants to evaluate and enhance practices to protect water quality, with a particular emphasis on fecal bacteria sources. Work with the Port to review seafood processor permits, confirm appropriate connections to the municipal sewer system, and emphasize that best management practices to control rats, mice, and scavenging birds should be a high priority.

SECTION 7: LAND DEVELOPMENT, RESTORATION, & PROTECTION

Land development, restoration, and preservation is a new section of the shellfish recovery plan. Whatcom County is within the Cascade Technology Corridor between Vancouver and Portland. This area could see accelerating growth over the next 25 years, which could fundamentally change the rural character of Whatcom County. Population growth and development could threaten to reverse the progress made on water quality and shellfish recovery. Minimizing impacts of land development and protecting sensitive or critical systems in the Drayton Harbor watershed reduces risk to shellfish growing areas with the growing population.

NEW PRIORITIES

7.1 Protect and Restore Riparian Areas: Continue to support the Conservation Reserve Enhancement Program (CREP) to replant riparian areas. Support regulatory disincentives for removing existing riparian vegetation (Critical Areas Ordinance) and consider incentives for re-establishing riparian vegetation. Foster partnerships with other groups working to protect and restore freshwater and marine riparian areas in the Drayton Harbor watersheds.

7.2 Preserve and Conserve Eelgrass Meadows: Work with the Whatcom County Marine Resources Committee (MRC) and other interested partners to protect eelgrass beds in Drayton Harbor. Encourage future aquaculture operations to use off bottom techniques. Eelgrass provides critical habitat for a variety of marine species and is a beneficial organism with a mutualistic relationship to shellfish that supports a healthy ecosystem and sustainable shellfish harvest.

ADDITIONAL RECOMMENDATIONS

7.3 Preserve Agricultural Lands: Support programs that preserve agricultural lands in the Drayton Harbor watershed. Promote the Whatcom County Conservation Easement Program. Consider partnerships with other groups working to preserve agricultural lands.

7.4 Harmful Algal Blooms and Invasive Species: Partner with other organizations (e.g. Whatcom County Marine Resources Committee) to support and implement programs that monitor harmful algal blooms and invasive species to protect and support aquaculture and shellfish harvest. Take steps to reduce invasive species (e.g. European Green Crab) that can complete with and damage both native species and shellfish being produced through commercial operations.

SECTION 8: COMMUNITY OUTREACH & ENGAGEMENT

Community outreach and engagement is a new section of the shellfish recovery plan. Community outreach supports increased knowledge of fecal bacteria sources and stewardship solutions for all community members to improve and protect water quality.

NEW PRIORITIES

8.1 Maximize Existing Partnerships: Determine authority of and clarify roles and responsibilities for organizations that manage and work in the shared resource.

CONTINUED PRIORITIES

8.2 Broad Community Outreach and Engagement: Continue outreach programs to support increased knowledge about bacteria sources and solutions to both the broad community and individual landowners, residents, visitors and/or operators. Use a variety of outreach tools such as mailers, newsletters, social media, websites, in-person events, videos, and newspapers to share messages, specific programs, and best management practices. Continue to provide spring and fall tips with outreach and compliance mailings. Expand audiences for existing outreach programs and increase community member action and involvement.

ADDITIONAL RECOMMENDATIONS

8.3 New Homeowner Program: Provide information to new homeowners in the Drayton Harbor watershed about water quality, natural resources and watershed stewardship. Highlight information about septic system evaluations and maintenance, farm planning and management practices, managing pet waste, and protecting sensitive areas. Build awareness and knowledge to help connect new homeowners with the challenges, rules, regulations, and resources (technical and financial) at an early stage.

8.4 Urban Stewardship Program: Develop a program to build awareness of best management practices related to urban sources of fecal bacteria (e.g. dog waste, urban wildlife, stormwater system maintenance). Encourage community members to participate through neighborhood stewardship programs, community ambassadors, and signs.

8.5 Schools and Internship Program: Continue to support water quality programs in schools (e.g. Garden of the Salish Sea, Nooksack Salmon Enhancement Association, Whatcom Conservation District, technical skills training) and explore opportunities to host interns to support the efforts of the shellfish recovery plan and outreach programs.

Appendix A: Summary of 2024 Recommendations

SECTION	CATEGORY	RECOMMENDATION
Emerging Issues & Overall Priorities	n/a	**Population Growth** - Recognize the pressure of a growing community and new development. Encourage new development to occur outside sensitive areas. ***Policy***
		Climate Change - Develop community resiliency to climate change to protect water quality. Consider more extreme weather patterns. ***Policy***
		Inadequate Infrastructure - Address vulnerabilities of aging and/or inadequate stormwater and sewer infrastructure. ***Policy***
		Community Engagement - Integrate community outreach and engagement into all elements of shellfish recovery and protection plan. ***Policy***
Program Coordination	New Priority	1.1 Combine individual shellfish protection districts. ***Policy***
	Continued Priority	1.2 Encourage broad representation of stakeholders in the Advisory Committee.
Water Quality Monitoring	New Priority	2.1 Conduct enhanced monitoring at mouth of Drayton Harbor.
		2.2 Conduct monitoring within the Blaine Harbor and Semiahmoo Marinas.
	Continued Priority	2.3 Continue to support Washington State Department of Health with ambient marine monitoring.
		2.4 Continue to conduct long-term ambient freshwater monitoring.
		2.5 Continue to conduct short-term ambient monitoring in freshwater focus areas with elevated fecal bacteria concentrations.
	Additional Recommendation	2.6 Conduct wet season monitoring at key freshwater and marine sites.
		2.7 Continue to coordinate monitoring and data sharing with British Columbia partners.
		2.8 Conduct wildlife surveys at marinas.
		2.9 Expand opportunities for community science and partnerships with academic institutions.

On-Site Sewage Systems (OSS) & Human Waste	New Priority	3.1 Prioritize OSS Operation and Maintenance Program in Shoreline Management Areas and Critical Areas to increase compliance. ***Policy***
		3.2 Review regulations and resources available to ensure adequate treatment of human sewage in Shoreline Management Areas and Critical Areas. Support connection to sewer where feasible and approved by service provider. ***Policy***
		3.3 Resources for unsheltered community members to reduce impacts to water quality in sensitive areas.
	Additional Recommendation	3.4 Continue to implement OSS Operation and Maintenance Program throughout the Drayton Harbor watershed (Marine Recovery Area).
		3.5 Increase confirmed OSS evaluations with property transfers.
		3.6 Enhance access to OSS homeowner trainings and program assistance.
		3.7 Continue to provide financial assistance programs for OSS evaluations, maintenance, and repairs.
		3.8 Build community resilience to climate change and sea level rise impacts to OSS in sensitive areas. ***Policy***
Urban Areas	New Priority	4.1 Explore options to reduce the shellfish harvesting closure zone around the Lighthouse Point Water Reclamation Facility outfall on the outside of Semiahmoo Spit.
	Continued Priority	4.2 Support City of Blaine continued efforts to evaluate and make improvements to municipal sewer system.
	Additional Recommendation	4.3 Retrofit stormwater systems and outfalls.
Agriculture	Continued Priority	5.1 Continue to connect with agriculture operations in focus areas through a collaborative process to support adoption of Best Management Practices (BMPs).
		5.2 Continue to provide technical assistance and incentives for non-dairy agricultural operations through Whatcom Conservation District farm planners.
		5.3 Continue to provide financial assistance programs for agricultural BMPs.
		5.4 Continue to implement tiered process to gain compliance with Critical Areas Ordinance for agricultural operations.

		5.5 Encourage continued implementation of water quality compliance program by Washington State Department of Ecology.
	Additional Recommendation	5.6 Build community resilience to climate change in agricultural operations. ***Policy***
Boats & Marinas	New Priority	6.1 Research and evaluate options for a voluntary no-anchor zone in portions of Drayton Harbor adjacent to shellfish growing areas. ***Policy***
		6.2 Monitor and report illegal anchoring in Drayton Harbor.
		6.3 Maximize available resources to implement existing programs and regulations that promote safe and sustainable marina traffic.
	Continued Priority	6.4 Encourage continued provision of pump out stations at Blaine Harbor and Semiahmoo Marinas.
		6.5 Encourage and support marina efforts to ensure no release of bacteria pollution from moorage customers.
	Additional Recommendation	6.6 Provide additional information to visiting boaters about sensitivity of shellfish beds.
		6.7 Encourage continued site visits to marina tenants to evaluate and enhance BMPs.
Land Development, Restoration, & Protection	New Priority	7.1 Protect and restore riparian areas (stream and marine). ***Policy***
		7.2 Preserve and conserve eelgrass meadows in Drayton Harbor. ***Policy***
	Additional Recommendation	7.3 Preserve agricultural lands. ***Policy***
		7.4 Collaborate with partner organizations to monitor for harmful or invasive species (e.g., Harmful Algal Blooms (HABs) and European Green Crab).
Community Outreach & Engagement	New Priority	8.1 Maximize community partnerships in work to protect shared natural and water resources.
	Continued Priority	8.2 Continue broad community outreach and engagement program to support increased knowledge about fecal bacteria sources and solutions.
	Additional Recommendation	8.3 Provide information to new homeowners about water quality, natural resources, and watershed stewardship.

		8.4 Develop or enhance a program to build awareness of best management practices related to urban sources of fecal bacteria.
		8.5 Continue to support water quality programs in schools including internship opportunities.

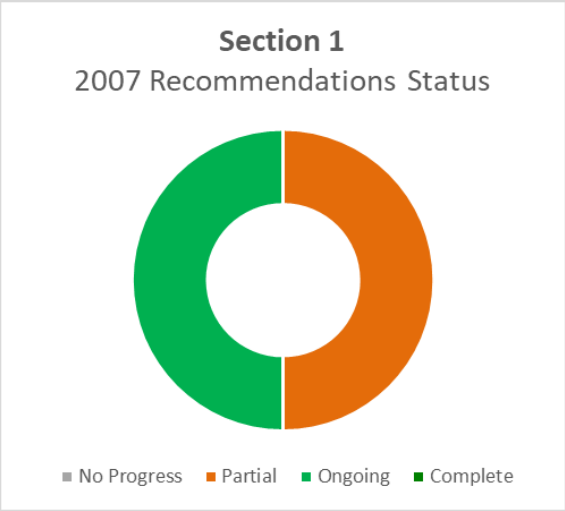
Appendix B: Progress and Status Report

The 2007 update to the Drayton Harbor Shellfish Recovery Plan identified recommendations under seven objectives to fully restore shellfish harvest. This appendix provides an overview of each of the seven objectives, status of the 2007 recommendations, and additional projects and programs implemented under each of these categories. For each section, recommendations are listed with the status of progress (complete, ongoing, partial, or no progress) and priority assigned in the 2007 plan.

OBJECTIVE 1: ESTABLISH COORDINATED PROGRAM FOR DRAYTON HARBOR

Status Update

The 2007 Drayton Harbor Shellfish Recovery Plan recommended securing funds for implementation of the recovery plan through the Shellfish Protection District, grants, loans, or other means. Progress on these recommendations is summarized below. Coordination between partner agencies through the Whatcom Clean Water Program is further described in the Background section and transboundary partnerships are described under recommendation 8E below.



2007 RECOMMENDATIONS

● ★ **1A: Secure dedicated funds for plan implementation (Partial, High Priority):** The Advisory Committee recommended identifying a dedicated and sustainable source of funding such as a fee through the shellfish district authority. Local funding for water quality programs to help upgrade shellfish beds has increased substantially since 2007. As of 2023, the county dedicated approximately $500,000 per year to these countywide programs. Within Whatcom County Public Works Natural Resources Division, local funds support 2 FTEs (monitoring, program coordination and implementation), lab analysis for water samples, community outreach programs for fecal bacteria sources, and an agricultural cost-share program. This funding is included in the annual budget for the Flood Control Zone District. Additionally, Whatcom County Health and Community Services assesses an annual fee to all parcels with on-site sewage systems (OSS) to support the OSS Operation and Maintenance Program.

● ★ **1B: Pursue grant and loans (On-Going, Low Priority):** Almost $5 million in grant funds have been secured by Whatcom County since 2007 to support shellfish protection district program implementation to reduce fecal bacteria in surface waters and reduce shellfish harvest restrictions in the county. Grant funds have supplemented local funding to expand staff capacity for data coordination, farm planning, community outreach, and regulatory backstop. Grants have also supported individual landowner contacts, financial incentive programs, focused outreach campaigns, and multi-agency coordination.

These funds supported the development and coordination of the Whatcom Clean Water Program in 2012. This partnership of local, state, tribal, and federal organizations continues to implement integrated responses to areas with high fecal bacteria results to find and address problems.

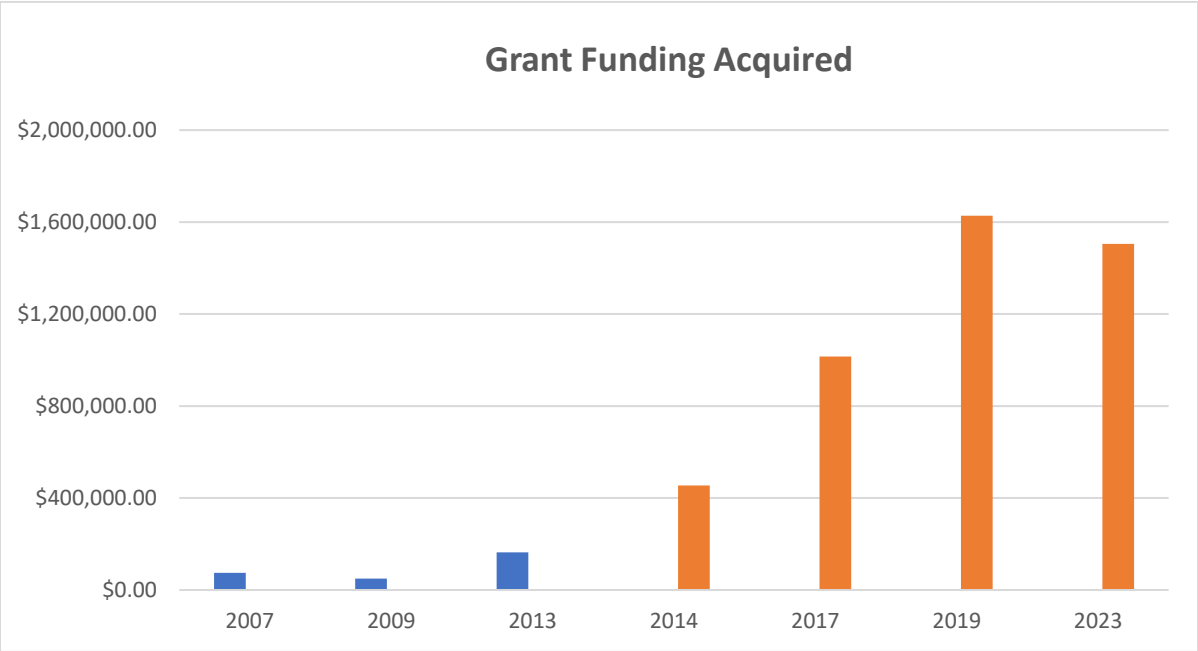


Figure 1. Drayton Harbor specific (blue) and combined shellfish district grants (orange) received by Whatcom County from 2007 through 2023. Additional grant funds have been received by partner agencies to support specific projects in the Drayton Harbor watershed and roles within the WCWP.

OTHER PROGRAMS

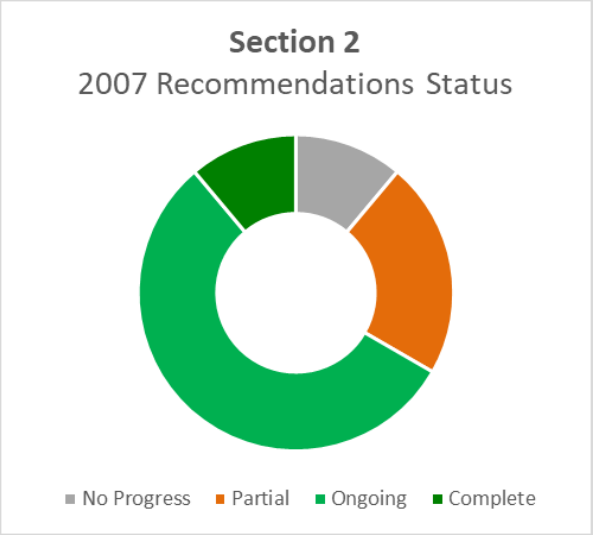
The Whatcom Clean Water Program was established in 2012. This partnership of local, state, tribal, and federal agencies are coordinating and integrating efforts to evaluate fecal bacteria pollution, sources, and resources to fix problems. Through this partnership staff capacity has increased to provide consistent monitoring, community outreach, and follow up with landowners in drainages with fecal bacteria hot spots. www.whatcomcounty.us/DocumentCenter/View/58528/Whatcom-Clean-Water-Program

The Whatcom County Pollution Identification and Correction (PIC) Program was adopted by the County Council (Resolution #2014-044) in 2014. Based upon recommendations from the county's three shellfish protection district advisory committees, the resolution outlined PIC program elements including water quality monitoring and annual review, comprehensive community outreach, direct landowner contacts, regulatory backstop, and reporting to the community. The resolution highlighted coordination with other agencies and organizations through the Whatcom Clean Water Program.

OBJECTIVE 2: IDENTIFY SOURCES & MONITOR WATER QUALITY

Status Update

The 2007 Drayton Harbor Shellfish Recovery Plan recommended developing a coordinated water quality monitoring program, increasing the frequency and locations of sampling in Dakota and California Creeks, microbial source tracking, wet-weather monitoring in the harbor, sampling within Blaine Harbor, and conducting circulation studies. Progress on these tasks, priority level, and water quality patterns is described below. Development of a comprehensive water quality monitoring program addresses several of the 2007 recommendations as a whole.



2007 RECOMMENDATIONS

● ★ **2A: Develop and Fund Coordinated Monitoring Program (On-Going, High Priority):** In 2007 and 2008, Whatcom County Public Works and Hirsch Consulting Services assisted the Washington Department of Ecology (DOE) with bi-monthly sampling at approximately 30 stations in the Drayton Harbor watershed to support a Total Maximum Daily Load (TMDL) study. In 2009, Public Works continued ambient sampling at these sites to further characterize water quality patterns throughout the watershed. Currently Public Works collects long-term ambient samples at 40 sites in the Drayton Harbor watershed on a monthly basis. These results are posted to an interactive, online map and water quality summaries are updated and posted to the website on a monthly basis. Routine freshwater sampling runs are coordinated with marine sampling runs to help characterize the relationships between the watershed and harbor. (https://www.whatcomcounty.us/2170/Water-Quality-Monitoring)

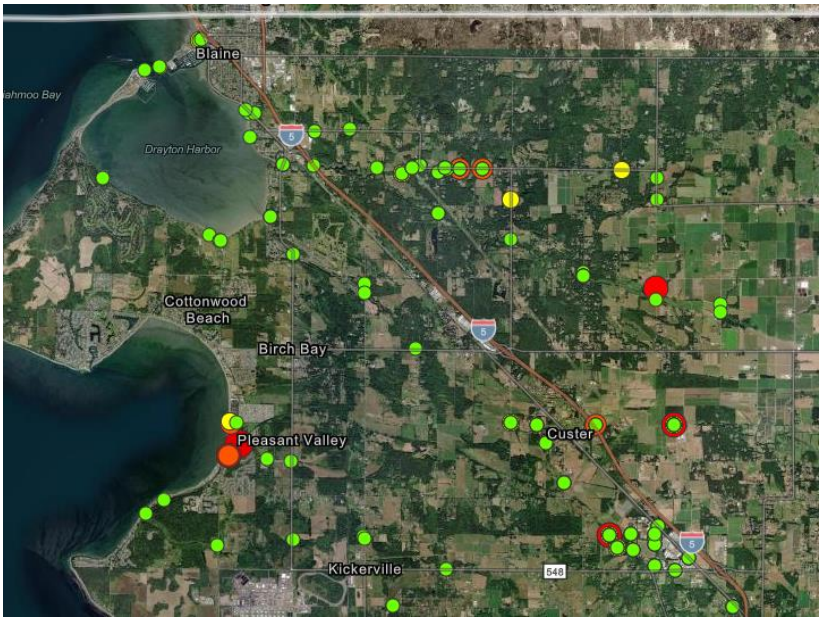


Figure 2. This map provides an example in time of the online, interactive map of preliminary water quality data. This tool is used to share data both between partner agencies and with community members. Data is typically posted within one week and includes ambient, storm, and source tracking sample results. Samples are collected by a variety of organizations.

● ★ **2B: Increase Capacity for Follow Up (On-Going, High Priority):** In 2007, a tiered response system was created to help guide agency response to high bacteria results. This system was used until approximately 2014 when the process was adapted to identify geographic areas with elevated fecal bacteria to increase efficiency and focus efforts to improve water quality. In 2015, focus areas were identified where there were consistent patterns of elevated fecal bacteria. A series of bracket sites were established in focus areas that were sampled two to four times per month. Whatcom Clean Water Program partners review data, drainage areas, and land uses to coordinate landowner contacts and resources provided to identify and address potential fecal bacteria sources. Staff capacity for follow up monitoring and landowner contacts in response to high results has expanded for Whatcom County, Washington State Departments of Ecology and Agriculture, and the Whatcom Conservation District since the Whatcom Clean Water Program was established in 2012.

● ★ **2C: Develop and Implement Long Term Monitoring Strategy (On-Going, High Priority):** In 2013, Whatcom County Public Works developed a Quality Assurance Protection Plan (QAPP) and Standard Operating Procedures (SOPs) for water quality monitoring in watersheds discharging to shellfish growing areas, including Drayton Harbor. This formalized the monitoring plan, sampling techniques, and data review for the long-term sampling program. The QAPP includes background information on historical monitoring, descriptions of geographic areas and monitoring sites for long-term and short-term ambient monitoring, methods for sampling and data analysis, and quality controls. Long- and short-term ambient, source identification, and storm event monitoring is coordinated with other agency and community partners. See Recommendation 2A for additional information.

● ★ **2D: Increase Frequency and Locations of Sampling in Dakota and California Creeks (On-Going, High Priority):** See recommendations 2A, 2B, and 2C above. In 2023, Drayton Harbor focus areas included Lower Dakota, Custer, and Upper California. In addition to the monthly Drayton Routine sampling run with 30 sites, a focus area sampling run is conducted three times per month and covers 29 sites. During the dry season, some of these sites are not sampled due to dry or low flow conditions.

● ★ **2E: Conduct Phase 2 Microbial Source Tracking Project (Complete, High Priority):** A pilot microbial source tracking project was completed in early 2008 using labs at the Environmental Protection Agency (EPA) and Institute for Environmental Health (IEH). A final report summarizing the methods and results was written by Hirsch Consulting Services in December 2008. The second phase of the pilot microbial source tracking project was completed in mid-2009. Samples were analyzed at the Environmental Protection Agency (EPA) Manchester lab. A final report summarizing the methods and results was written by Hirsch Consulting Services in September 2009. Human biomarkers were found in 16%, ruminants in 8%, general bacteriodes in 77% and no bacteriodes in 23% of samples.

● ★ **2F: Conduct Wet Weather Monitoring in Harbor (Complete, High Priority):** Whatcom County contracted with Puget Sound Restoration Fund (PSRF) in 2006/2007 to conduct water quality monitoring in Drayton Harbor during rain events to assist in the evaluation of the rainfall criteria for temporary closures under the DOH Conditional Approval classification. The DOH lab analyzed the samples for fecal coliform. This data was used to inform the conditional approval management plan for rainfall closures in the mid-2000's.

● ★ **2G: Encourage Continued Monitoring within Blaine Harbor (Partial, High Priority):** The Port continued water quality monitoring in the Blaine Harbor Marina in 2007 and 2008. Routine sampling in the marina has not been an on-going project.

● ★ **2H: Conduct Circulation Studies of Drayton Harbor (Partial, Low Priority):** The Pacific Northwest National Lab combined fecal bacteria loading data with the Salish Sea model in 2022 to help characterize circulation patterns and environmental conditions that may result in elevated bacteria results at marine monitoring sites.

● ★ **2I: Continue Updates to Tracking Reports and Projects of Potential Pollution Sources (No Progress, Low Priority):** This report has not been updated. Key reports completed for the Drayton Harbor Shellfish Protection District are posted on the Whatcom County website.

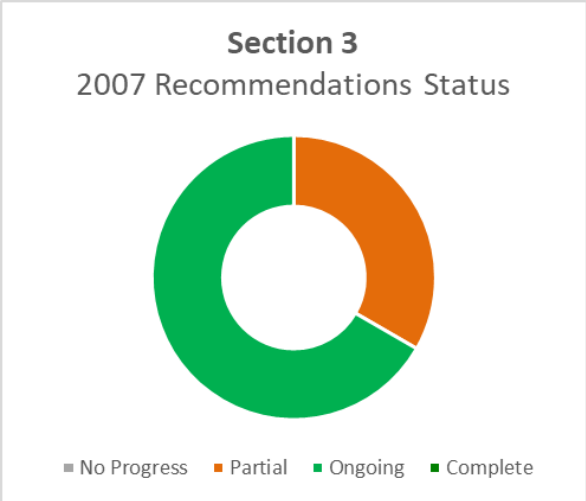
OBJECTIVE 3: ON-SITE SEWAGE SYSTEMS

There are approximately 3,200 on-site sewage systems (OSS), also known as septic systems, in the Drayton Harbor watershed. In portions of the county that are not served by municipal sewage systems, OSS are used to treat wastewater from household plumbing fixtures (e.g. bathrooms, kitchens, laundry) on site. While there are several types of systems, they typically include a septic tank for settling solids and a drain field for treating wastewater in soils. Properly functioning OSS effectively treat wastewater and the associated disease-causing bacteria and viruses. However, systems need routine evaluations to identify maintenance, repair, and replacement needs to ensure effective treatment of wastewater and protection of surface waters.

The latest Shoreline Survey and Sanitary Survey of Drayton Harbor stated that 53 homes with OSS are located along the Drayton Harbor shoreline. One of these 53 sites was considered high risk due to age, proximity to shoreline, and construction over the drain field. However, due to the Health Department's O&M Program, it was determined that the system does not impact the growing area (DOH 2022a, DOH 2022b). This system was evaluated in 2023 and reported as satisfactory.

Status Update

The 2007 Drayton Harbor Shellfish Recovery Plan recommended the establishment of a comprehensive OSS operation and maintenance (O&M) program, prioritization of investigating OSS complaints, and ensuring evaluations with property transfers. Progress on these recommendations and several other programs that help reduce fecal bacteria sources associated with OSS is summarized below:



2007 RECOMMENDATIONS

● ★ **3A: Establish an Inspection and Operation and Maintenance Program for Drayton Harbor (On-Going, High-Priority):** Several steps were taken to establish and implement an OSS Operation and Maintenance (O&M) Program for Whatcom County. The Drayton Harbor watershed was identified as a priority watershed for this program and was an initial area of implementation. Steps have included adoption of regulations, adoption of a local management plan, and program implementation.

- **Regulations:** In 2006, the Whatcom County Council adopted additional operations and maintenance requirements for local management and regulation by Ordinance #2006-354 as required by Washington Administrative Code 246-272A. See Whatcom County Code 24.05, On-Site Sewage Rules and Regulations, for current regulations.
- **Local Management Plan:** In 2008, the Whatcom County Council adopted the OSS Local Management Plan by Resolution # 2008-015. This plan both designated the Drayton Harbor watershed as a Marine Recovery Area and outlined the notification and compliance process to for routine evaluations of OSS (every 1 to 3 years based upon the type of system).
- **Implementation of O&M Program:** The Whatcom County Health Department began implementing the OSS O&M Program in the Drayton Harbor watershed in 2008. Landowners in the watershed were notified of the OSS evaluation requirements and provided a deadline for completing an evaluation. Initially, the first evaluation was required to be completed by an OSS Specialist and subsequent evaluations could be completed by a certified homeowner (depending upon the type of system). In April 2008, certified landowners became eligible to complete all evaluations (Ordinance # 2008-015). Since 2007, approximately 9,300 Reports of System Status (ROSS) have been completed. Figure 3 illustrates the number of evaluations completed each year. Years with a greater number of evaluations correspond with years that the Health Department sent letters notifying landowners in the Drayton Harbor watershed that their OSS was due for an evaluation. Prior to 2019, the cycles of notification letters were driven by geographic area. The current system focuses on distributing notification letters to landowners with the most out-of-date evaluations in all designated Marine Recovery Areas and Sensitive Areas.

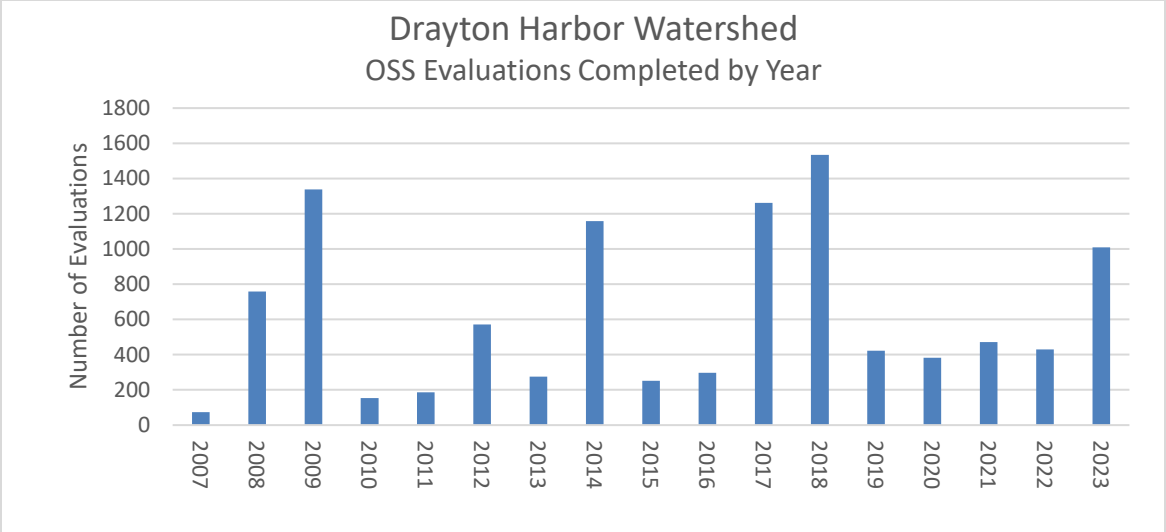


Figure 3. Number of OSS evaluations and Reports of System Status (ROSS) completed by year. Years with the largest number of evaluations completed coincide with Health Department O&M letters to landowners.

● ★ **3B: Place High Priority on Complaints Filed in Drayton Harbor Watershed (On-Going, Moderate Priority):** In addition to routine OSS O&M mailings, the Health Department continued to respond to specific complaints from community members and referrals from partner agencies. Since 2015, the Whatcom Clean Water Program has referred sites to the Health Department for review and follow up when water quality hot spots are identified. OSS records are reviewed and if an evaluation is past due or other concerns are noted, an evaluation of the system will be requested by the Health Department. If a failure is identified, sewage is contained until a repair or replacement can be completed.

● ★ **3C: Develop Annual Summary of OSS Inspection Reports and Property Transfers (Partial, High-Priority):** The 2006 OSS regulation updates required landowners to have a current evaluation on file at the time of a property transfer (Ordinance #2006-354). Property transfers completed with a bank loan include verification of current OSS evaluations, however, this has been more difficult to track with property transfers completed without bank loans. Property transfer evaluations have fluctuated over time. Over the past 5 years, evaluations specific to property transfers have remained at 15%-16% with a peak of 24% in 2021. However, 2023 saw a dramatic decrease in evaluations related to a property transfer with 5%.

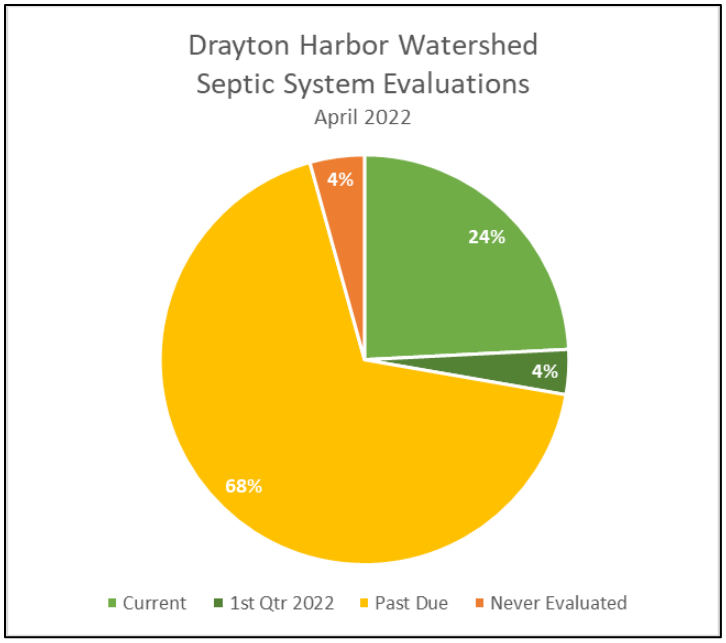


Figure 4. Status of OSS evaluations in the Drayton Harbor watershed as of April 2022. The number of OSS with out-of-date evaluations changes continuously based upon the date of the last evaluation or date of system installation. As of January 2024, 45% of systems were compliance.

OTHER PROGRAMS

- **Financial Assistance Programs:** Two types of financial assistance programs have been established including rebate and low-interest loan programs.
    - A septic maintenance rebate program was established in 2014. This program provides rebates for evaluations, septic tank pumping, or maintenance equipment (e.g. risers and lids, baffles, etc.) to landowners that have completed the homeowner training and have work completed by an O&M Specialist. Since 2014, 137 rebates have been provided in the Drayton Harbor watershed. The largest number of rebates processed for the Drayton Harbor watershed coincide with years the Health Department sent notifications letters to landowners (Figure 5). An option for repeat rebates (after a three-year period) was established in 2018.
    - In 2023, the septic rebate program was expanded to include a “septic assistance rebate” for homeowner with a Whatcom County Assessor tax exemption for seniors and people with disabilities. This assistance rebate provides a higher-level rebate.
    - A low interest loan program was initially administered by Whatcom County Health in the mid-2000’s. An established regional program (Craft3) was found to be more efficient and effective and is currently offered to landowners for repairs and replacements of failing systems.

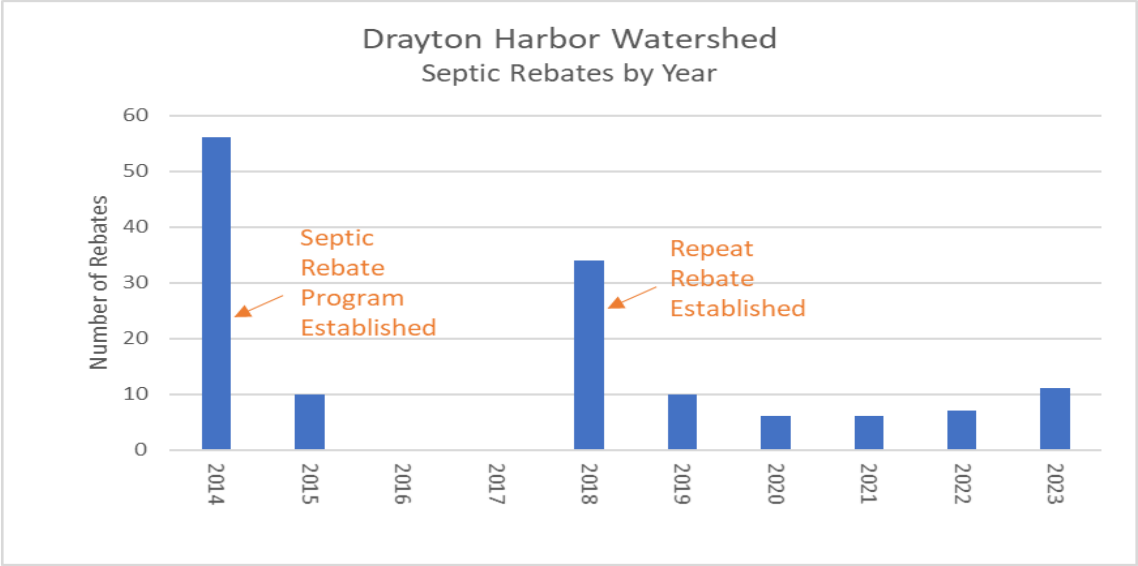


Figure 5. Number of septic rebates processed by year. Similar to evaluations, years with the largest number of rebates processed coincide with Health Department letters to landowners. Additionally, in 2018, an option for receiving a repeat rebate was established for landowners with septic systems in Marine Recovery Areas.

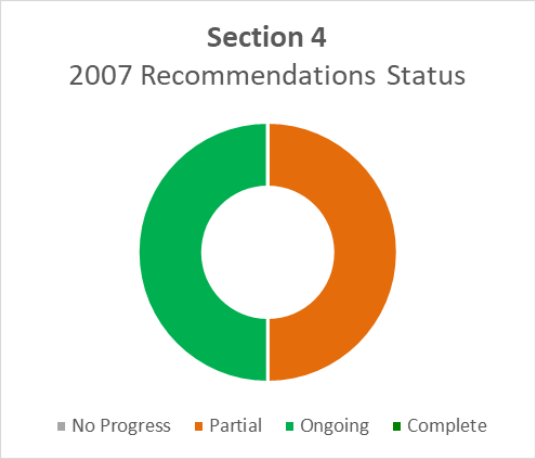
- **Outreach Programs:** Along with the establishment of an OSS O&M Program, community outreach and education programs were enhanced. Homeowner trainings were established through both in-person workshops and online materials. The value of routine evaluations and maintenance was shared through the development of the "Evaluate" campaign, websites, newsletters, displays at community events, and social media posts. Educational materials, homeowner evaluation forms, and rebate materials were translated into Spanish, Russian, and Punjabi and provided on the County website to help reach underserved populations.

Figure 6. The ***Evaluate*** campaign provided a series of messages about routine evaluations of OSS focusing on family health and saving money. The campaign included mailings, bus ads, electronic billboards, website upgrades and social media posts.

OBJECTIVE 4: CONTROL URBAN STORMWATER SOURCES

Status Update

The 2007 Drayton Harbor Shellfish Recovery Plan included two recommendations for managing stormwater in urban areas. These recommendations were developing a pilot stormwater retrofit project and monitoring water quality in west Blaine. Progress is summarized below:



2007 RECOMMENDATIONS

● ★ **4A: Pilot Stormwater Retrofit in East Blaine (Partial, High Priority):** Project designs were completed for a pilot stormwater retrofit in 2009. The pilot project was a constructed wetland to be sited in BNSF Railroad easement adjacent to the recreational boat launch. However, the City of Blaine was unable to gain approval from BNSF so the project was not implemented. The city has completed several of other stormwater retrofits in East Blaine associated with road improvement projects. These treat stormwater prior to discharge to Cain Creek or Drayton Harbor. Letters of support for funding have not been requested to date.

● ★ **4B: Monitor Water Quality in West Blaine (On-Going, Moderate Priority):** The Marine Resources Committee and Whatcom County Public Works initiated monthly sampling at five sites in West Blaine in 2006. Similarly, Public Works initiated monthly sampling at six sites in East Blaine in 2018. Currently, a shoreline sampling run is conducted monthly which includes 4 West Blaine and 6 East Blaine sites, as well as the mouths of California and Dakota Creeks. These sites help characterize fecal bacteria in urban and residential drainages that discharge directly to Drayton Harbor. Additionally, these sites have been sampled during storm events to help characterize fecal bacteria concentrations during critical environmental conditions. Routine monitoring results indicated that these shoreline sites are well within the geometric mean benchmark for fecal coliform (Figure 7), with the exception of Cain Creek and Cain Creek outfall. Five East Blaine sites, including Cain Creek, exceed the 90th percentile threshold while all West Blaine and creek mouth sites meet both benchmarks (Figure 8). Ongoing recommendations for water quality monitoring are included under **Section 2**.

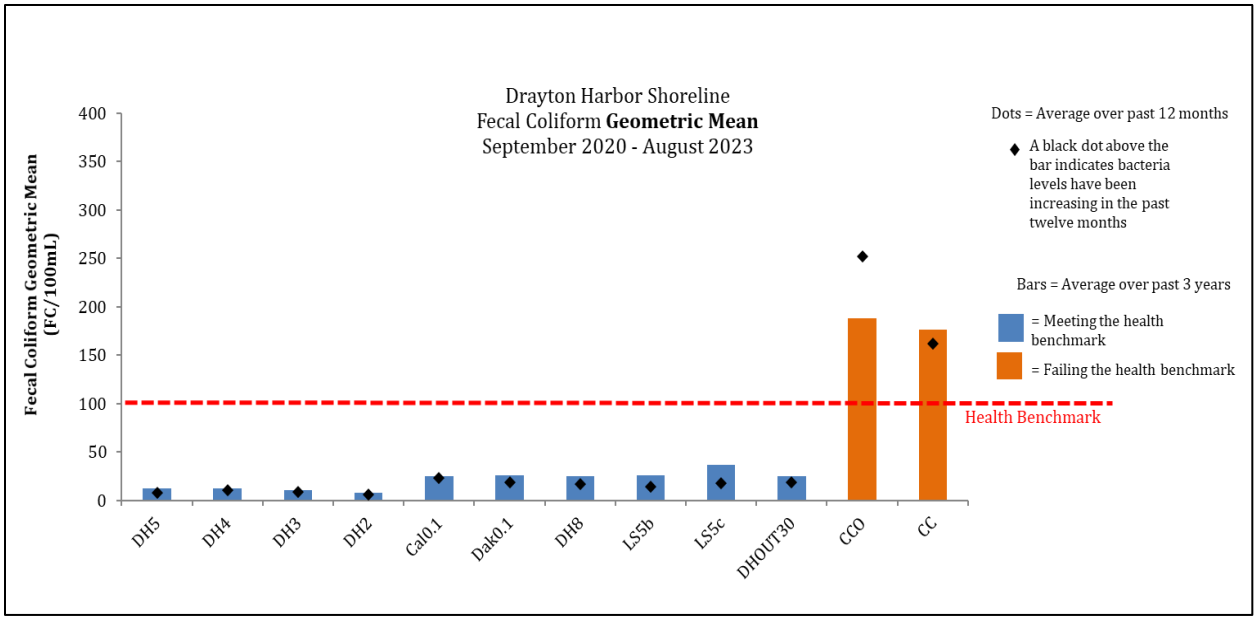


Figure 7. Fecal coliform geometric means at Drayton Harbor shoreline sites in East and West Blaine. The bars indicate 3-year geometric means and black diamonds represent 12-month geomeans. Cain Creek and the adjacent stormwater outfall sites have substantially high fecal bacteria concentrations than the other shoreline sites and are nearly two times the water quality benchmark to protect public health.

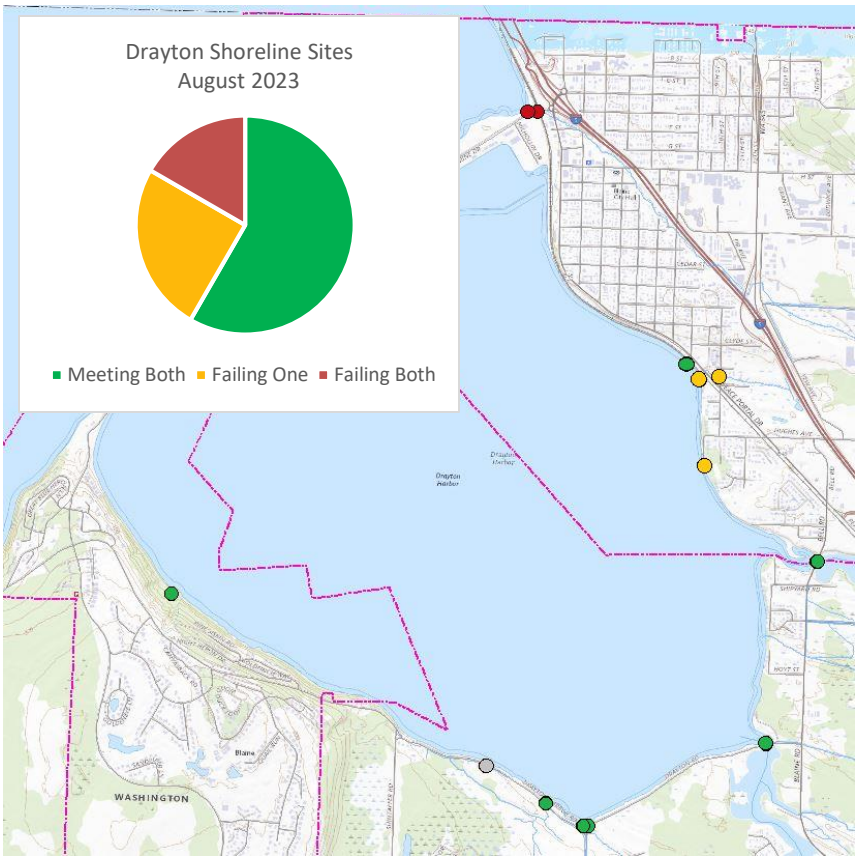


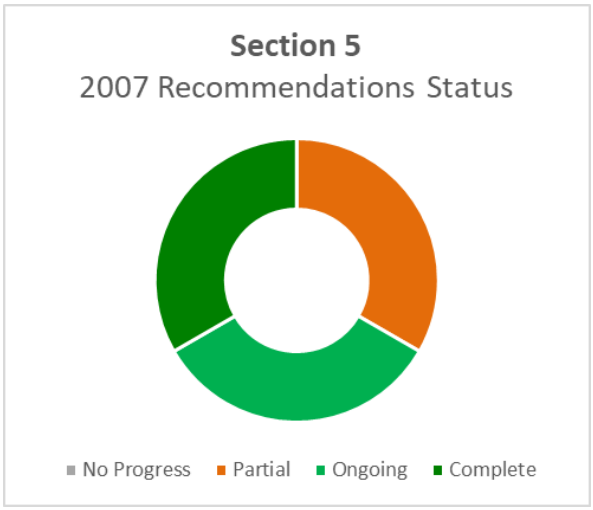
Figure 8. Status of shoreline sites in August 2023 in comparison to water quality benchmarks for fecal bacteria. There are two benchmarks for fecal bacteria including 1) geometric mean less than 100 cfu/100mL and 2) less than 10% of samples exceeding 200 cfu/100mL. Red sites fail both benchmarks, yellow sites fail one benchmark, green sites meet both benchmarks, and the gray site is no longer sampled. The pink line indicates the city limits.

OBJECTIVE 5: BLAINE MUNICIPAL SEWAGE SOURCES

Most properties along the Drayton Harbor shoreline have sewer service through the City of Blaine. The system has ten pump stations and sewage is conveyed to and treated at the Lighthouse Point Water Reclamation Facility, Blaine's wastewater treatment plant. The facility had two large sanitary system overflows in 2021 which resulted in temporary closures of the shellfish growing area. The largest risks of overflows are typically associated with large rain events. (DOH 2022a, DOH 2022b)

Status Update

The 2007 Drayton Harbor Shellfish Recovery Plan recommended supporting improvements to sewer collection and treatment, supporting efforts to reduce inflow and infiltration, and supporting the evaluation of effluent dilution and dispersion rates at the Blaine wastewater treatment plant outfall and associated shellfish closure zone. Progress on these recommendations to help reduce fecal bacteria associated with urban sources is summarized below:



2007 RECOMMENDATIONS

● ★ **5A: Support Improvements to Sewer Collection and Treatment (Complete, High Priority):** In 2007, the City of Blaine completed installation of a 400,000-gallon permanent equalization tank under Marine Drive. This tank replaced the temporary bladders that were being used to avoid sewage overflows in this area during large rain events. In 2008, the city began construction of the new Lighthouse Point Water Reclamation Facility (LPWRF) to replace the previous wastewater treatment plant. The LPWRF was completed in 2010. The new facility was designed to treat sewage for a growing population and uses an upgraded treatment system, a biofilter membrane. Reclaimed water, processed through the plant, is of high quality and used for irrigation during the dry season rather than discharged to Boundary Bay from the effluent outfall. The wastewater plant upgrade resulted in higher sewer charges for community members receiving City services. Following CSO discharges during large rain events in 2021, the City installed temporary bladders to provide additional capacity during rain events. Further steps to address inflow and infiltration (I/I) issues are also being implemented.

● ★ **5B: Support Efforts to Reduce Inflow and Infiltration (On-Going, Moderate Priority):** The City of Blaine is implementing upgrades to approximately 7,500 feet of sewer line in 2023/2024 to help address inflow and infiltration (I&I) issues as well as expand capacity for expected growth. The City was also awarded a grant in 2023 to assist with continued evaluation and improvements to address I&I issues.

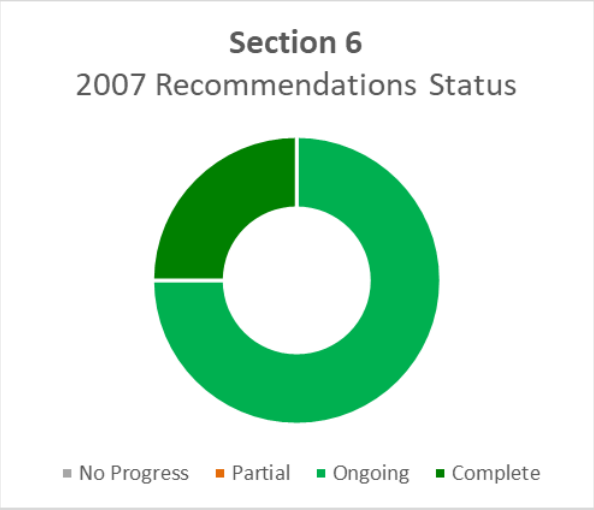
● ★ **5C: Support Evaluation of Effluent Dilution and Dispersion Rates (Partial, Low Priority):** In 2007, the State Department of Health worked with the Nooksack Tribe and City of Blaine to complete an

evaluation of effluent dispersion and dilution rates with consideration of changes that would occur with the upgrade of Blaine's wastewater treatment plant. A 2011 DOH review of the facility stated that based upon the 2007 evaluation the closure zone could be reduced to a 300-yard radius with the upgrade of the facility. However, in 2014, the Food and Drug Administration (FDA) changed the dilution criteria requirements for determining wastewater treatment closure zones. Based upon this dilution and the findings of a 2021 dye study conducted by DOH and FDA, this new dilution threshold was met near the mouth of the harbor. Thus, the reduced closure zone was not able to be implemented (DOH 2022b). In 2023, the City of Blaine was awarded a grant to evaluate options for the effluent pipe to potentially reduce the closure zone.

OBJECTIVE 6: AGRICULTURE

Status Update

The 2007 Drayton Harbor Shellfish Recovery Plan recommended emphasizing compliance and enforcement of the Critical Areas Ordinance, supporting an adaptive management program for nutrient management plans, improving communication and coordination between agencies working with agricultural activities to resolve livestock pollution from non-commercial farms, and continuing implementation and inspection of nutrient management plans for commercial dairies. Progress on these recommendations and associated activities is summarized below.



2007 RECOMMENDATIONS

● ★ **6A: Emphasize Compliance with Critical Areas Ordinance (On-Going, High Priority):** The Conservation Program on Agricultural Lands (CPAL) is a part of the Whatcom County Critical Areas Ordinance (CAO) and provides an alternative to the standard buffer requirements for ongoing agriculture. Eligible agricultural operations can participate in the CPAL program by developing, getting County approval, and implementing a conservation farm plan. There are three types of farm plans determined by the size and type of agricultural operation. These plans review current operations, operational constraints, and identify opportunities to prevent or reduce pollution entering surface waters by using best management practices. After a farm plan has been approved by the County, biennial monitoring reports are required to demonstrate that the farm plan continues to be implemented. One FTE was established at Whatcom County Planning in 2015 to implement and support the CPAL Program and initiate landowner contact and compliance support following a referral or complaint. This staff also assists landowners with farm plans associated with permit requirements and coordinates long-term monitoring of farm plans. The CAO provides a regulatory backstop and enforcement actions may be taken with egregious violations.

● ★ **6B: Support WCD and NRCS Launch of Adaptive Management Program (Complete, High Priority):** Research to support an adaptive management program began in 2001. In 2014, the Application Risk Management (ARM) program became more widely available. This program provides resources to farmers in real-time to help evaluate risk management for applying manure. The tool provides flexibility for winter applications in site-specific locations with a plan. Separate research projects continue, such as evaluation of buffer distances and application rates (i.e. edge of field monitoring). The ARM tool is based upon existing setback distances, soil type, forecasted precipitation, and application rate (agronomic rate for what is being grown). A text alert system for the associated Manure Spreading Advisory (MSA) is supported by WCD. Links to this tool are also provided on the WCD website.

● ★ **6C: Improve Communication and Coordination between Agencies (On-Going, High Priority):** The Whatcom Clean Water Program was established in 2012. This program includes regular communication between Washington State Departments of Ecology, Agriculture, and Whatcom County Planning and Development Services. The Whatcom Conservation District provides technical and financial assistance programs to support agricultural operations. This program is reviewed and adapted on a regular basis to address water quality hot spots, identified discharges and violations, and coordinate landowner contacts.

● ★ **6D: Coordinate with WCD and WSDA for Implementation and Inspection of Dairy Nutrient Management Plans (On-Going, Moderate Priority):** WSDA regularly inspects dairies (18 to 26-month routine schedule) with 8 on-site inspections in the last 2 years. WSDA refers operators to WCD or other farm planners for assistance with concerns or to update their plan. Since 2013, NEP grant funds have assisted with increased staff capacity. This increased capacity has supported coordination with partners, proactive sampling, sharing data with public to increase transparency and encourage dairy self-correction, and additional on-site investigations as follow up to high results. There has been a substantial decline in the number of dairies in the watershed since 2007, especially in the Dakota drainage. As of 2023, there are 6 dairies remaining in the Drayton Harbor watershed (3 Dakota, 3 California). Only one of these dairies has had a documented discharge in the last five years.

OTHER PROGRAMS

Tiered Approach to Landowner Contacts: As a part of the Whatcom Clean Water Program and PIC Program, a tiered approach to landowner contacts is used. Water quality data and field observations are used to determine landowners with potential non-dairy operations in areas of concern. All landowners in focus areas are sent an introductory letter describing water quality problems, potential sources of fecal bacteria, and resources available to assist landowners. Introductory letters are followed by technical assistance letters which provide more site-specific information and resources available to assist landowners. Landowners are encouraged to contact the WCD for technical and financial assistance. When there is no response to repeated attempts to contact a landowner with outreach and incentive programs, a regulatory agency will attempt to gain compliance initially through technical assistance. A regulatory backstop will be implemented if there is an egregious violation or discharge. Since the establishment of the enhanced PIC program in 2014, PIC letters have been sent to 271 landowners with potential non-dairy agricultural operations in the Drayton Harbor watershed. 127

landowners responded (e.g. CAO compliant, working with WCD, no livestock, management practices reviewed) and 92 farm plans have been completed.

Long-Term Monitoring of Farm Plans: One component of the CPAL program, described above, is long-term monitoring of farm plans. With dedicated staff funded through the enhanced PIC Program, PDS staff began implementing consistent monitoring of farm plan status. Letters requesting a report on farm plan status are mailed to landowners with farm plans every two years. Farm plan reporting can be completed by the landowner, with the assistance of a farm planner, or partially reviewed through windshield surveys. Monitoring helps remind landowners of the farm plan BMPS and ensures they are still being implemented as described.

Incentives and Financial Assistance: There are a variety of state and federal assistance programs available to agricultural operations. However, many of these are less suitable for smaller operations or hobby farms. Whatcom County and WCD have partnered to create assistance programs that help address this gap.

- Whatcom County and the Whatcom Conservation District have partnered to develop and offer two financial assistance programs for non-dairy agricultural operations. In 2009, a small-scale and grant-funded cost share program was piloted and supported three farms in exclusion fencing, heavy use areas, and off-channel watering for animals. Materials and procedures created through this pilot project were adapted in 2015 to establish a locally-funded, small-scale cost share program. Eighteen cost share projects have been completed in the Drayton Harbor watershed.

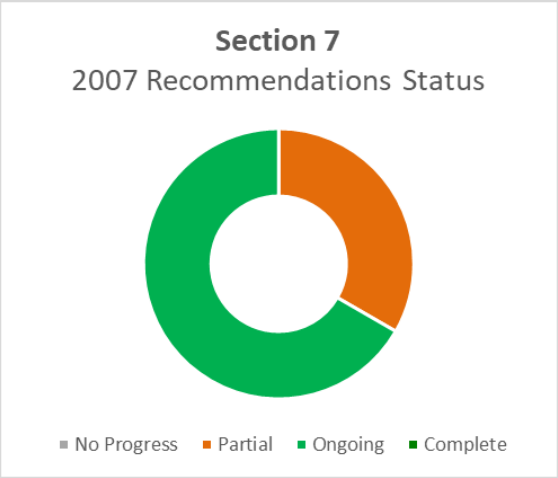
  A small farm rebate program was created in 2018, using the septic maintenance rebate program as a model. Residents with non-dairy agricultural operations in the Drayton Harbor watershed that attend a WCD farm series workshop or have a site visit with a WCD farm planner are eligible for the program. Rebates are available for heavy use area footing materials, barn gutters and outlets, and fencing. Nine rebates have been awarded in the Drayton Harbor watershed.

Figure 9. Outreach postcards, inserts, and social media posts were created to build awareness about the small farm rebate program. In 2023, the rebate amount was increased to $300 to adjust to rising supply costs.

OBJECTIVE 7: BOATS & MARINAS

Status Update

The 2007 Drayton Harbor Shellfish Recovery Plan recommended establishing routine reporting on marine sanitation devices in Blaine Harbor, continuing distribution of educational materials through marina newsletters and signs, and continued work with seafood processors to address water quality issues associated with operations and discharge. Progress on these recommendations and associated activities is summarized below.



2007 RECOMMENDATIONS

● ★ **7A: Reporting on Marine Sanitation Devices (Partial, Moderate Priority):** There is currently no formal accounting of all of the marine sanitation devices (MSDs) in the Blaine Harbor Marina. Port staff verify that all live-aboard vessels have proper MSD best management practices (BMPSs) to prevent discharge of black water. This is reinforced in the moorage agreement, Blaine Harbor BMPs, rules and regulations, marina newsletter, pamphlets, and regular interactions with the live-aboard community.

● ★ **7B: Distribution of Educational Materials at Marinas (On-Going, Low Priority):** The Port provides a regular newsletter to all clients. The Port moorage agreement includes information and requirements about the no discharge zone and BMPs associated with black and greywater management to avoid discharges. Updated "No Discharge" signs were installed at Blaine Harbor Marina in 2014.

Whatcom County Public Works developed outreach materials that provide stewardship tips for boaters to minimize fecal bacteria pollution. These tips include proper pump out of holding tanks, using facilities provided at the marinas, and scooping pet's poop. These are distributed through social media, newsletters, and outreach materials at community events. The County has partnered with the Port on the pet waste campaign described in Section 8.

● ★ **7C: Seafood Processor Operations and Discharge (On-Going, Low Priority):** The Port has an Environmental Compliance Assessment Program (ECAP) that performs periodic site visits to all Port tenants with environmental risks. The ECAP considers stormwater and process water in its evaluation of risk level and in its site visit criteria. The highest risk tenants are visited on a 3-year cycle. Suspected process water or contaminated stormwater discharges in Blaine are investigated by Port staff. As of 2023, there are significantly less seafood processing operations occurring at Blaine Harbor than in the early 2000's.

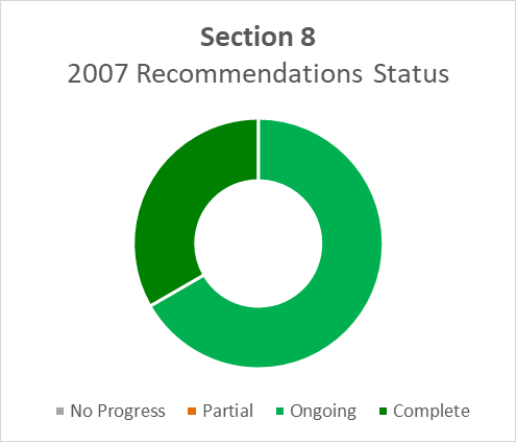
OTHER PROGRAMS

Boat Pump Out Stations- There are pump-out stations at both Blaine Harbor and Semiahmoo Marinas. Semiahmoo Marina hosts a pump-out boat, however, recent reports have indicated that the pump out boat has minimal use. The Port tracks the use of the pump out stations, reports estimated volume pumped annually, and conducts inspections to ensure the systems are functioning properly. In 2020, two pump-out stations were added for a current total of 6 marine holding tank pump-out stations at Blaine Harbor. Each station has a mobile pump-out cart and a portable toilet dump station. In the 2020 water year, an estimated 302,000 gallons of sewage was pumped from the stations to the sanitary sewer. In 2021, Port staff completed an inspection of the in-water lines servicing the pump-out stations by conducting a dye-test to check for leaks. No leaks were discovered.

OTHER RECOMMENDATIONS

Status Update

The 2007 Drayton Harbor Shellfish Recovery Plan included a final section with a mix of recommendations related to community outreach, critical area and habitat restoration and protection, land development, and transboundary partnerships. Progress on these recommendations and associated activities is summarized below.



2007 RECOMMENDATIONS

● ★ **8A: Continue Community Involvement and Education in Priority Drainages (On-Going, High Priority):** Initial community outreach materials created focused on water quality in specific drainages. This included drainage facts sheets and surveys of community members in areas where the highest bacteria results were observed. As the enhanced PIC Progam was established, community outreach and engagement efforts expanded. Outreach positions were created at the WCD and Whatcom County Public Works and new community outreach campaigns were developed. Key messages of the program include: (1) there are diverse sources of fecal bacteria and diverse solutions to reduce fecal bacteria pollution, (2) all community members can play a role in clean water, and (3) water connects us (Figures 10 and 11). Community engagement programs have focused on building relationships, transparency, and confidence and providing meaningful resources and incentives to help community members and visitors adopt behavior changes. Information is shared through newsletters, direct mailings, websites, social media, community meetings and events, and one-on-one support.

Figure 10. This infographic (right) describes the connections between fecal bacteria sources, rain events, downstream impacts on shellfish, and that this is a solvable problem. This graphic is used for displays, newsletters, webpages, direct mailings, and social media. In particular, this graphic is used with outreach materials to support the fall strategy and fall tips for landowners.

Figure 11. Watershed infographic (left) illustrates the diverse sources of fecal bacteria pollutions and the mix of actions individuals can take to help improve and protect water quality. This is a key graphic used in outreach materials, displays, and presentations. The goal is to show community members that there isn't just one source of concern and that everyone can play a part in clean water.

● ★ **8B: Identify Critical Areas for Potential Restoration and Conservation (Complete, High Priority):** Several projects have been completed by local organizations since 2007 to both identify and act upon conservation and restoration opportunities in coastal watersheds and shoreline areas, including the Drayton Harbor watershed.

In 2010, Whatcom County Public Works contracted with Anchor Environmental to complete a riparian vegetation inventory and function assessment in Dakota and California Creeks as well as the marine

shoreline between the international border and Point Whitehorn. This project characterized existing riparian function and restoration priorities for buffers, wildlife corridors, and habitat structure.

In 2013, the City of Bellingham contracted with Coastal Geologic Services to complete a nearshore and estuarine assessment and prioritization for WRIA1. There were a number of restoration, protection, and enhancement opportunities identified for marine shorelines in Whatcom County, including Drayton Harbor.

In 2014, the City of Blaine prepared a restoration plan as a part of the shoreline master program update. This plan includes restoration opportunities organized by reach. It also identifies potential partners and funding sources. In 2022, the City of Blaine initiated a shoreline repair and enhancement project in Marine Park along the shoreline of Semiahmoo Bay. This project includes removal of concrete armoring, bank stabilization, placement of clean rock materials, revegetation, and trail repair.

● ★ **8C: Update Stream Enhancement Projects Annually (On-Going, Low Priority):** While the Nooksack Recovery Team dissolved, local organizations that are involved in stream enhancement projects coordinate efforts through the WRIA 1 Salmon Recovery Program. Since 2007, projects in the Drayton Harbor watershed have been completed by organizations such as the Nooksack Salmon Enhancement Association (NSEA), Whatcom Land Trust (WLT), and WCD. The County (on behalf of the Shellfish Protection District) has not taken a leading role on stream enhancement projects.

● ★ **8D: Enhance and Update Website (On-Going, Low Priority):** Whatcom County Public Works provides webpages with information about the Drayton Harbor Shellfish Protection District and Pollution Identification and Correction Program. These provide links to data, reports, and resources to assist landowners with watershed stewardship. These pages also provide links to resources on Whatcom County Health and Community Services, Whatcom County Planning and Development Services, and Whatcom Conservation District webpages.
https://www.whatcomcounty.us/1101/Shellfish-Protection-Districts

https://www.whatcomcounty.us/1072/Water-Quality

● ★ **8E: Continue Involvement in Cross-Boundary Water Quality and Shellfish Restoration (On-Going, Low Priority):** Shared Waters Alliance is a transboundary group working to improve water quality in Boundary Bay. This area contains historic shellfish growing areas both in the US and Canada. The program was placed on hold from approximately 2011 through 2018. In 2018, Shared Waters was re-initiated and staff from the WCWP, Advisory Committee members, and Drayton Harbor Oyster Company representatives participated in Roundtable and the Water Quality Technical Team meetings. Water quality samples are collected at three stations at Semiahmoo and Blaine Marina piers in coordination with BC partner monitoring. Whatcom County representatives have provided several presentations at Shared Water meetings and shared data and information about water quality source tracking and improvement projects. Current Shared Water efforts are guided by work to restore shellfish harvest for members of the Semiahmoo First Nation near the mouth of the Little Campbell River. Water quality improvements in this area may also help improve water quality near the mouth of Drayton Harbor.

● ★ **8F: Discourage Urban Levels of Development in South Drayton Harbor (Complete, No Priority):** In 2009, urban zoning in south Drayton Harbor was removed as a part of a countywide update to urban growth areas through Ordinance #2009-071. The City of Blaine submitted a proposal to reduce its UGA by over 2,000 acres, particularly reducing urban density in the most sensitive areas around Drayton Harbor. At that time, zoning was changed from four houses per acre to one house per 10 acres. Analysis of the Blaine UGA had found that it was oversized for the projected population in 2029. In 2011, Whatcom County amended the zoning map for this area to one house per 5 acres (Ordinance #2011-039). These changes were found to retain the rural character of the area, not require a change to services, and was similar to a 2010 rezone to mitigate substantial hardship from a downzone from UR4 to R10A in Birch Bay.

OTHER PROGRAMS

The Whatcom County Conservation Easement Program is a voluntary program that protects working lands such as agriculture and forest lands. This program compensates landowners for development rights and protects the land through permanent conservation easements. Eight conservation easements have been established in the Drayton Harbor watershed.
https://www.whatcomcounty.us/573/Conservation-Easement-Program