Hood Canal Regional Pollution Identification and Correction

Five-Year Priority Area Work Plan

Hood Canal Coordinating Council
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Introduction

The Hood Canal Coordinating Council (HCCC) is a watershed-based council of governments. It was established in 1985 in response to community concerns about water quality problems and related natural resource issues. HCCC is comprised of Jefferson, Kitsap, and Mason Counties and the Port Gamble S'Klallam and Skokomish Tribes.

The Hood Canal Aquatic Rehabilitation program was created in 2005 by the Hood Canal Management Bill (ESHB 2097/RCW 90.88), designating the HCCC as the Local Management Board for Hood Canal. The Aquatic Rehabilitation Technical Advisory Committee (TAC) was formed to develop strategic actions to improve Hood Canal water quality. The TAC has two active workgroups: one for wastewater and onsite sewage systems (OSS) and another for stormwater and land use practices.

In 2010-2011, the TAC Workgroups developed a list of initial actions. The development of a Hood Canal Regional Pollution Identification and Correction program (HCPIC) was identified as a priority initial action by the workgroups.

HCCC was granted National Estuaries Program funding to develop a HCPIC program to enable efficient, prioritized, and coordinated water quality and habitat protection and restoration work. PIC work in Hood Canal will be guided primarily by six products:

1. Water Quality Trend Monitoring Results
2. Monitoring Plan
3. GIS Mapping Component
4. Priority Area Work Plan
5. Pollution Source Identification and Correction Guidance Document
6. Stormwater and Animal Waste Management PIC Strategy

Water quality trend monitoring results are summarized in the *Hood Canal Watershed 2005-2011 Pollution Identification and Correction Status Report* submitted February 28, 2013. (HCCC, February 28, 2013) GIS mapping work is summarized in the *Hood Canal Regional Pollution Identification and Program – Phase 1 GIS Mapping Component* submitted April 2013. (HCCC, April 2013) Monitoring recommendations were summarized in the *Hood Canal Regional Pollution Identification and Correction Monitoring Plan* submitted May 14, 2013. (HCCC, May 14, 2013) These documents can be found at http://hccc.wa.gov/AquaticRehabilitation/Regional+PIC/default.aspx

Purpose and Objectives

The purpose of the Hood Canal Regional PIC program is to assess Hood Canal Action Area surface waters impacted by fecal and nutrient pollution, and to rank and implement clean-up projects.

The purpose of the Hood Canal Regional Five Year Priority Area Work Plan is to identify high priority tasks based on water quality data, shellfish closures and advisories, local "areas of concern", and GIS OSS mapping analysis.

Methods

Fecal and nutrient pollution sources include: failing onsite sewage systems, leaking sewer lines, combined sewer overflows, pet waste, livestock and agricultural animal waste, outdoor feeding, garbage, food grease, yard waste, and fertilizers.
PIC uses water quality monitoring and shoreline surveys to identify pollution hotspots, water quality investigations to pinpoint hotspot drainages, and door-to-door surveys to locate pollutions sources. Sources are corrected through public education and enforcement if necessary.

PIC work will be guided by the PIC Guidance Document, this work plan, water quality monitoring data, and OSS GIS mapping data. This work plan lists and evaluates proposed PIC tasks for the Hood Canal Action Area. The first step in the process was to identify all proposed PIC tasks. The tasks were developed, evaluated, and edited by all five Hood Canal Action Area jurisdictions.

Work Plan Elements

The Hood Canal regional work plan is broken into nine elements: Organizational; OSS GIS mapping; Water Quality Monitoring; Shoreline Surveys; Nutrient Studies; Water Quality Investigations; Education; OSS Operation, Monitoring and Maintenance; and PIC Priority Work Areas.

Organizational

The Hood Canal regional team has identified the following work tasks as essential to the success of a regional PIC program:

- Develop Pilot Guidance Group
- Develop adaptive management/annual lessons learned process
- Develop strategies to Repair/Replace currently failing OSS
- Research and secure work list task funding
- Develop long term funding strategies

The pilot guidance group will be developed from local stakeholders and water quality experts to provide oversight to the regional PIC program and technical assistance to the jurisdictions. The pilot guidance group will develop strategies to assist jurisdictions to repair or replace failing OSS and other pollution sources. They will also develop strategies to fund work list tasks, PIC priority area work and long term regional PIC funding.

Adaptive management will be crucial to the regional program to effectively utilize resources and share lessons learned.

Onsite Sewage System (OSS) GIS Mapping

The HCCC Aquatic Rehabilitation TAC's Wastewater-OSS Workgroup developed the first phase of a project to create visual GIS representations of wastewater-OSS treatment in the Hood Canal watershed as a tool to assist assessing current wastewater treatment and inform future water quality and OSS management. This project was conducted in the fall - winter of 2010. The objectives of the project were to better understand the locations of wastewater infrastructure (OSS, sewers, planned sewers, and large OSS) and to map this information along with land use and watershed characteristics. Hood Canal jurisdictions provided all available OSS data.

Hood Canal jurisdictions continued to update OSS databases and the updated information was added into the 2013 Hood Canal Onsite Septic System GIS Mapping as part of Phase 1 of the Hood Canal Regional PIC project (HCCC, April 2013). In addition to OSS data, many land use and watershed characteristics were mapped, including parcel data, population densities, sewered areas, soil data, build-out analyses, water quality data (multiple sources), biosolids application sites, critical areas and sensitive areas. The combination of these data sets can help inform our understanding of water quality and OSS in the watershed.

Because existing fresh water monitoring data does not allow a robust comparison of Hood Canal fresh water quality and until a comprehensive fresh water monitoring program can be implemented, OSS GIS data, based on clusters of old or unpermitted OSS and marine monitoring data will be utilized to identify pollution areas of concern.

The following essential mapping work tasks were identified by the regional team:

- Update OSS GIS maps regularly as the jurisdictions update their databases
- Collect data for actual setbacks from OSS components to shorelines
- Map marine beach water quality data from the BEACH program
- Map other important potential fecal sources including: high priority farms, stormwater systems, commercial garbage and grease bins, and trash compactors

In the longer term, as a robust monitoring program is established, GIS mapping will include water quality monitoring data as well.

Water Quality Monitoring

The Hood Canal regional PIC program will utilize water quality monitoring data to assess Hood Canal Action Area water bodies to determine current fecal and nutrient contamination problems and short-term and long-term trends.

Marine Water

Washington State Department of Health (WSDOH) Shellfish Program monitors Hood Canal marine waters for fecal coliform (FC), temperature, salinity, and tidal conditions six times each year through the Puget Sound shellfish and water protection program. Their robust marine water data will be a useful resource for the Hood Canal Regional PIC team. Other useful resources include 303(d) listings and BEACH enterococcus monitoring.

Fresh Water

The majority of fresh water monitoring implemented in Hood Canal over the last decade has been short-term monitoring on selected streams due to funding sources. (Herrera, June 30, 2010). Although Hood Canal monitoring more than doubled between 2003 and 2010, only eleven of the twenty-five fresh water stream stations monitored had FC data for the entire 2005-2011 assessment period. (HCCC, February 28, 2013)

The Hood Canal Regional Pollution Identification and Correction Monitoring Plan recommends that ambient freshwater stream monitoring be implemented monthly at a list of proposed stream monitoring stations. (HCCC, January 31, 2014) The list was developed based on the WRIA 16/14B and WRIA 17 monitoring plans. (Herrera, June 23, 2010; Golder, June 30, 2003). Local jurisdictions may add additional upland monitoring stations on a rotating basis in order to proactively assess upland water quality. The proposed program will collect FC and temperature data that will be utilized to find and rank upland water quality problem areas.

Proposed essential fresh water monitoring tasks include:

- Identify local areas of concern to add to proposed fresh water monitoring stations
- Identify upland areas of concern to add to proposed fresh water monitoring stations
- Implement fresh water monitoring based on regional monitoring plan
- Develop data management standard operating procedures
- Implement data management system

Shoreline Surveys

A shoreline survey is the inventory and bacterial assessment of all flowing discharges to the project area shoreline. Dry season events, May 1 through Sept 30, can identify problems in areas where stormwater masks FC sources or where residences are only occupied in the summer. Wet season assessments, Oct. 1 through April 30, can identify OSS failures caused by high seasonal groundwater and surface water drainage issues. Wet weather conditions are met when water is flowing off parcels and stormwater is flowing in roadside ditches or storm systems.

Samples are collected at low tide to target the discharge of fresh groundwater versus the drainage of residual marine water. Detailed field notes, photographs and global

positioning system waypoints are collected in support of samples. Confirmation samples are collected in drainages with FC results at or above a predetermined threshold.

Shoreline surveys, inventory and bacterial assessment of flowing discharges, are the key approach for identifying and correcting bacterial pollution problems. The Hood Canal Regional Pollution Identification and Correction Monitoring Plan recommended that Hood Canal jurisdictions coordinate with WSDOH to enhance their marine sanitary survey program in Hood Canal to conduct shoreline surveys in between their sanitary surveys in shellfish growing areas.

Shoreline surveys are targeted to clean up closed shellfish growing areas and to protect open growing areas on a rotating basis. They will include the following elements:

- Conduct shoreline monitoring of discharges in shellfish growing areas to find fecal "hot spots," identify sources and correct them.
- Conduct shoreline monitoring during dry and wet weather conditions.
- Investigate potential fecal pollution sources identified in WSDOH sanitary surveys.
- Segment and investigate shoreline "hotspot" drainages and conduct OSS surveys and investigations to find and correct fecal sources impacting commercial and recreational shellfish growing areas and swimming beaches.
- Collect samples and conduct property surveys according to the Hood Canal regional PIC Guidance Document.
- Share monitoring data and survey results with WSDOH.
- Provide data and information to the public and all other stakeholders.

The monitoring plan included a proposed shoreline survey schedule. Since then, the regional team has developed Table 1, a list of proposed PIC shoreline project areas based on WSDOH shellfish closures, threatened areas, areas of concern and marine swimming beaches of concern; and local areas of concern.

Further assessment is planned to determine where additional nutrient monitoring should be considered in shoreline survey work.

Proposed essential shoreline survey tasks include:

- Coordinate with WSDOH to implement regional monitoring plan shoreline survey schedule during wet and dry seasons
- Determine locations of hotspot drainages for investigation

Water Quality Investigations

Water quality hotspots are confirmed during the dry or wet season by collecting a minimum of three FC or E. Coli (EC) samples for geometric mean calculation. A map of

the area within 200 feet of the hotspot drainage is created. If there are ten or less developed parcels in the mapped area, all the parcels are inspected.

Door-to-door PIC inspections are conducted to identify and correct fecal pollution sources. The purpose for the PIC survey is to provide education to the owner/occupant so that they may get the most life out of their septic system and to conduct an inspection of the OSS (walk over the drainfield, assess OSS condition, and rate the system based on the inspection) and identify and correct failures and other FC sources. The inspection is designed to help property owners and residents protect their OSS investment and prevent fecal pollution of surface waters and premature system failure by knowing how to operate and maintain the system.

If there are more than ten parcels in a hotspot drainage, a minimum of three segment sampling events are conducted. Parcels of concern are located in hotspot segments that are identified by calculating geomeans of segment sample results. Parcel investigations and surveys are conducted to find and correct fecal sources impacting water quality.

Agricultural and livestock fecal pollution sources will be addressed in detail in the animal waste strategy element of the Hood Canal regional PIC planning phase. Local conservation districts can conduct prioritized inventories of farms. High priority farms are investigated to determine whether anthropogenic activities are causing fecal pollution.

Stormwater fecal pollution sources will be addressed in the stormwater strategy element of the Hood Canal regional PIC planning phase. Stormwater systems can transport and/or accumulate fecal pollution. They can be easily assessed through water quality investigation during the dry weather season. The strategy will also address commercial garbage and grease storage and hauling, as they can be significant sources of fecal pollution because they attract "urban wildlife" and associated fecal waste.

Proposed essential water quality investigations tasks include:

- Investigate water quality hotspots to identify and correct anthropogenic fecal pollution sources
- Investigate potential fecal pollution sources identified in WSDOH sanitary surveys
- Share monitoring data and survey results with WSDOH
- Inventory and prioritize farms, investigate high priority farms and identify and correct anthropogenic fecal pollution sources
- Implement animal waste strategy elements
- Implement stormwater strategy elements
- Identify boat moorage and sanitation problem areas, develop and implement monitoring program, investigate pollution hotspots and identify and correct pollution sources

Pilot Nutrient Studies

Hood Canal is a nitrogen-limited system and experiences eutrophication predominantly due to marine nitrogen inputs. Eutrophication results in reduced dissolved oxygen concentrations, at times to very low levels that are harmful to marine life. Due to the low dissolved oxygen problems in Hood Canal, limiting additional nutrient contributions from human sources has been identified as a priority.

The Hood Canal Dissolved Oxygen Program and other studies have studied Hood Canal nutrient dynamics. Nutrient monitoring and pilot nitrogen studies will be conducted as the Hood Canal Aquatic Rehabilitation Technical Advisory Committee (TAC), working on dissolved oxygen issues in Hood Canal, determines next steps based on available science and the March 2013 publication "Review and Synthesis of Available Information to Estimate Human Impacts to Dissolved Oxygen in Hood Canal (Ecology, March 2013). They are currently in the process of making recommendations for needed nutrient monitoring. Targeted nutrient studies in Hood Canal between 2005 and 2011 provided important information in identifying shoreline nutrient contributions and additional studies may be conducted to address gaps or provide follow-up.

Proposed essential tasks include:

- Develop pilot nutrient study in conjunction with the TAC
- Implement pilot nutrient study
- Explore options and potential sites for field testing OSS nutrient reduction technologies in conjunction with the TAC

Education and Outreach

Non-point pollution resulting from landowner practices can be best addressed through community engagement, outreach and education. The power of consistent messaging, and coordinated information and resources from diverse and local outreach groups helps landowners adopt water quality improving practices.

The Hood Canal Action Area is fortunate to have an outreach network that has been active for more than a decade. The Hood Canal Water Education Network (HCWEN) is comprised of local agencies in the Hood Canal region including: WSU Extension, UW SeaGrant, local health departments, local public works, local conservation districts and non-profit groups such as the Hood Canal Coordinating Council and Hood Canal Salmon Enhancement Group. HCWEN provides a network for members, coordinates regional outreach messaging, and facilitates implementation of grant-funded outreach projects. HCWEN is one of the Puget Sound Partnership's Education, Communication and Outreach Networks (ECO Nets), twelve regional networks of professionals working to help save Puget Sound.

Successful education and outreach programs prevent pollution by developing approaches that result in measurable adoption of specific behaviors. The social marketing process uses marketing principles and techniques to influence public behaviors. This process has been effectively used to encourage behavior changes that protect and improve Puget Sound.

Regional partners will research and utilize existing outreach campaigns and behavior change measurements that were developed using social marketing, when possible, to realize cost efficiencies. A local education and outreach approach will be developed to identify priority audiences and behaviors and target behavior changes that prevent and reduce pathogen and nutrient pollution. The selected audiences and behaviors will be prioritized based on local water quality studies, research, prevalence and experience. A suite of priority behaviors will be chosen and a social marketing approach implemented to determine motivators and barriers for each priority behavior.

The idea is to develop a regional outreach campaign that incorporates motivators and addresses barriers for the priority audience to make the selected behavior changes. A pilot outreach campaign will be conducted in the region including measuring the adoption of the selected behaviors. The approach will be refined based on the degree of behavior change and will be implemented on a larger scale.

The refined education and outreach campaign will be utilized during PIC door-to-door surveys, and will determine outreach delivery methods.

Essential proposed education tasks include working with regional partners to:

- research and utilize existing outreach campaigns and behavior change measurements that were developed using the social marketing process;
- develop a local education and outreach approach to identify priority audiences and behaviors and target behavior changes that prevent and reduce pathogen and nutrient pollution;
- prioritize the selected audiences and behaviors based on local water quality studies, research, prevalence and experience;
- choose a suite of priority behaviors and implement a social marketing approach to determine motivators and barriers for each priority behavior;
- develop a regional outreach campaign that incorporates motivators and addresses barriers for the priority audience to make the selected behavior changes;
- develop regional templates for jurisdictions to use when producing materials like fact sheets for Hood Canal Action Area PIC work;
- conduct a pilot outreach campaign in the region including measuring the adoption of the selected behavior change;
- refine the approach based on the degree of behavior charge and implement on a larger scale.

OSS Operation, Monitoring and Maintenance

The Washington State Board of Health (WSBOH) passed new state OSS regulations in 1995 that paved the way for new, more technically advanced systems that have become the future for the OSS industry. In July 2005 the WSBOH required local health jurisdictions to develop a plan including:

- progressively develop and maintain an inventory of all known OSS;
- identify operation, monitoring and maintenance requirements commensurate with the risks posed by OSS in identified sensitive areas;
- facilitate education of homeowners regarding their responsibilities to provide operation and maintenance (O&M) for all OSS within the local health jurisdiction;
- remind and encourage homeowners to complete O&M inspections as required;
- enforce OSS permit application, O&M inspection, and repair requirements for failing OSS;
- describe the capacity of the LHJ to adequately fund the plan.

Washington state local health jurisdictions have developed OSS O&M programs to provide an adequate level of protection to public health and water quality through education and outreach, inspection and record keeping, permitting and enforcement and operation, monitoring and maintenance.

Pursuant to state and local regulations, all alternative OSS, which are defined as any system other than standard gravity system for a single-family residence, are inspected one time per year, at a minimum. Each time the alternative OSS is inspected, an OSS inspection report is submitted to the local health jurisdiction. Owners of standard gravity systems for single-family residences are required to have their system inspected and pumped, if necessary, every three years. The standard gravity system inspection and pumping information is to be furnished to the local health jurisdiction upon request.

Essential tasks for OSS Operation, Monitoring and Maintenance include:

- follow up on problem service events;
- implement time of sale inspections;
- implement homeowner education requirements;
- follow-up, track and audit homeowner inspections;
- develop and implement contractor quality inspection program.

PIC Priority Work Areas

The regional PIC team put together the following draft list of pollution problem areas that will be ranked for PIC work including water quality monitoring, shoreline surveys,

water quality investigations, and education and outreach (Table 1). These areas were identified based on the following elements:

- WSDOH Shellfish program data, particularly closure areas, threatened areas, and areas of concern;
- WSDOH BEACH program marine swimming beach closures;
- Local areas of concern identified by local jurisdictions;
- OSS GIS mapping data.

The work area list was developed cooperatively with the WSDOH Shellfish program. Local jurisdictions reviewed the proposed areas and added areas of concern. This list will be updated as water quality concerns are resolved and as new areas are identified. Additional areas will be added as the animal waste and stormwater strategies are implemented. The list will be ranked for implementation, as funding becomes available, by the following criteria:

- Public health risk (human illness potential)*
- Demonstrated water quality problem (results exceed state water quality standard)
- Demonstrated habitat problem (low dissolved oxygen – nutrients, erosion, stormwater runoff, toxics, invasive weeds contributing to dissolved oxygen and/or temperature problems)
- Resource risk (threat to commercial and recreational resources – shellfish, swimming, fishing)
- Proposed project has multiple benefits
- Builds on existing program (resource constraints and capacity to proceed)
- Public involvement or awareness
- Fits funding constraints and/or criteria

*Key criteria

An essential proposed PIC Priority Work Area task is to:

- Continue to update priority work area list with state and local areas of concern.

Table 1: Hood Canal Regional Potential PIC Project Areas			
Project Area	**County**	**Reason for Inclusion**	**WSDOH Details**
Hood Canal 1 (51) Driftwood Keys	Kitsap	WSDOH prohibited/unclassified	Prohibited based on marina
Hood Canal 1	Kitsap	WSDOH prohibited - Port Gamble WWTP (T46)	Prohibited based on WWTP outfall. LOSS wo remove Prohibited area.
Hood Canal 1 (38) Kinman Creek	Kitsap	WSDOH prohibited - due to Kitsap fw data	High bacteria in creek
Hood Canal 1 (24) Case Shoal	Jefferson	WSDOH prohibited	Prohibited based on marina
Hood Canal 1 (305) Lofall Creek	Kitsap	WSDOH prohibited - due to Kitsap fw data	High bacteria in creek
Hood Canal 1 (306) Vinland Creek	Kitsap	WSDOH prohibited - "see shoreline survey"	MW data shows lower bacteria. Closure to be removed based on lower MW bacteria and PI work.
Dabob Bay	Jefferson	WSDOH recommended	Head of Bay confined w FC sources, may be a upland
Chimacum	Jefferson	Jefferson County Public Health - known problem area	Based on Jefferson data, old OSS, many farms
Hood Canal 2 (84) Bangor	Kitsap	WSDOH prohibited	Located on Navy base - Prohibited based on contaminated soils
Hood Canal 2 Ioka Way	Kitsap	WSDOH prohibited "see shoreline survey"	Ioka drainage with high FC remains closed - failure repair pending
Hood Canal 2 (71) Big Beef Harbor	Kitsap	WSDOH prohibited	Prohibited based on no marine data in harbor could results in changing from Prohibited to Unclassified.
Hood Canal 2	Kitsap	WSDOH prohibited - Seabeck Marina	Prohibited based on marina

Hood Canal 2	Kitsap	WSDOH prohibited - Stavis Bay Beach	closure #175 drains to approved stations 80 & Prohibited based on no marine data in harbor project could result in changing from Prohibit Unclassified.
Hood Canal 3 (124) Brinnon	Jefferson	WSDOH restricted	Dosewallips River discharges into area & seal haulouts historically an issue. PIC project ma difficult on river with state park upstream. Sta 124 meets Approved water quality standards.
Hood Canal 3 (125, 126) Brinnon/ mouth of Dosewallips	Jefferson	WSDOH concern	See Hood Canal 3 (124) Brinnon
Hood Canal 3	Jefferson	WSDOH prohibited - Pleasant Harbor	Prohibited based on marina
Hood Canal 3 (137, 142) Duckabush	Jefferson	WSDOH concern	Marine water concern based on estimated 90tl percentiles in 20's. Shoreline development questionable, potential PIC.
Duckabush	Jefferson	Jefferson County Public Health - known problem area	Based on Jefferson data, old OSS
Kilisut Harbor (195) Indian Island	Jefferson	WSDOH prohibited	Prohibited based on superfund site on island
Irondale	Jefferson	Jefferson County Public Health - known problem area	Based on Jefferson data, old OSS
Oak Bay	Jefferson	WSDOH BEACH area of concern	Concern based on Jefferson fresh water data
Mats Bay (5, 7, 10, 14)	Jefferson	WSDOH concerns about high FC found by Jefferson (127, 130)	Marine water questionable during "closed" sea Jefferson just finished a project - needs follow- work
Port Ludlow	Jefferson	Jefferson County Public Health - known problem area	Clean Water District need data, old OSS, stormwater
Port Townsend	Jefferson	WSDOH prohibited - Port Townsend Ferry	Prohibited based on marina
Port Townsend	Jefferson	WSDOH prohibited - Port Townsend Boatyard	Prohibited based on marina
Port Townsend	Jefferson	WSDOH prohibited - Glen Cove WTP (T43)	Prohibited based on WWTP outfall

Port Townsend	Jefferson	WSDOH prohibited - Naval Undersea Warfare WTP (T44)	Prohibited based on WWTP outfall
Port Townsend (38, 39)	Jefferson	WSDOH prohibited - Skunk Island	Prohibited based on marina
Port Townsend	Jefferson	WSDOH prohibited - n end Indian Island	Prohibited based on superfund site on island a seal haulout on Rat Island
Port Townsend	Jefferson	WSDOH prohibited - Port Ludlow WTP (T45)	Prohibited based on WWTP outfall
Quilcene Bay (114)	Jefferson	WSDOH conditionally approved - Quilcene Boat Haven; **Fishing season concerns**	Prohibited based on marina; **Needs vault toil and dumpster service during fishing season**
Hood Canal 4	Kitsap	WSDOH recommended - Holly	Closure near Holly creek old OSS, dense shor
Hood Canal 5	Mason	WSDOH recommended - Ayock Point to Stetson's Beach	Permeable soils, old OSS, some shared OSS
Lilliwaup	Mason	Mason County Public Health - known problem area	Old OSS
Hood Canal 5	Mason	WSDOH recommended - s of Little Lilliwaup Creek	19 of 27 parcels identified as potential impacts
Hood Canal 5	Mason	WSDOH recommended - n of Hoodsport between Clark Ck & Sund Ck	Poor soils, old OSS, high density developmen
Hood Canal 6, Summertide Resort	Mason	WSDOH closed area	Potential resort OSS issues and WSDOH susp multiple unpermitted OSS, No repair documentation for mid 90s failure
Hood Canal 6	Mason	WSDOH recommended	Poor soils, old OSS, high density developmen
Hood Canal 6	Mason	WSDOH prohibited - Hoodsport	closure #229 Stormwater and OSS issues - nea several stormwater retrofit sites and near Finc Creek
Hood Canal 6	Mason	WSDOH closure zone - "see shoreline survey"	east of Browns Point near DOH station 231 - f OSS has been repaired.
Annas Bay (300)	Mason	WSDOH conditionally approved - Union Marina	Conditionally Approved based on marina
Hood Canal 6 (291)	Mason	WSDOH conditionally approved - e of Union	Conditionally Approved based on marina
Union	Mason	Mason County Public Health - known problem	Wet hillside, old OSS

		area	
Hood Canal 6 (292)	Mason	WSDOH threatened - e of Union	County identified and repaired issues in the a may still be ongoing problems.
Hood Canal 6	Mason	WSDOH recommended to protect classification	Dense shoreline development, old OSS, heavy summer use
Hood Canal 7	Mason	WSDOH recommended to protect classification	Dense shoreline development, old OSS, heavy summer use
Skokomish River mouth	Mason	Fishing season concerns	Needs vault toilet and dumpster service durir fishing season
Skokomish Valley	Mason	Skokomish tribe recommendation	High bacteria in creek, lack of shade.
Hood Canal 8 (east of 256)	Mason	WSDOH 200' closure zone - s shore "see shoreline survey"	15851 Hwy 106 Natural shoreline drainage wi high bacteria levels. Would be good, small PI project.
Hood Canal 8 (east of 254)	Mason	WSDOH 200' closure zone - s shore Forest Beach "see shoreline survey"	13801 Hwy 106 Natural shoreline drainage wi high bacteria levels. Would be good, small PI project.
Hood Canal 8 (west of 265)	Mason	WSDOH 200' closure zone - n shore "see shoreline survey"	8420 North Shore Natural shoreline drainage high bacteria levels. Would be good, small PI project.
Hood Canal 8 (267)	Mason	WSDOH conditionally approved - Twanoh State Park	Conditionally Approved based on boats and swimming
Hood Canal 8	Mason	WSDOH recommended to protect classification	Dense shoreline development, older OSS, hea summer use
Hood Canal 9	Mason	WSDOH recommended to protect classification	Dense shoreline development, older OSS, hea summer use

WWTP = Wastewater Treatment Plant
Numbers in parenthesis are station numbers

Work Plan Summary

This work plan was assembled by the regional PIC team to develop a list of tasks that are essential to a successful regional PIC program. The tasks include: organizational, OSS GIS mapping, water quality monitoring, shoreline surveys, water quality investigations, pilot nutrient studies, education and outreach, OSS operation, monitoring and maintenance, and PIC Priority Work Areas.

The regional PIC team is dedicated to protecting public health and resources in the Hood Canal Action Area. The work plan tasks, as summarized in the table below, are essential to this effort.

Table 2

HOOD CANAL REGIONAL POLLUTION IDENTIFICATION PROGRAM
DRAFT 5 YEAR PRIORITY AREA WORK LIST
WORK TASK SUMMARY
TASK
Organizational
Develop Pilot Guidance Group
Develop adaptive management/annual lessons learned process
Develop strategies to Repair/Replace currently failing OSS
Research and secure work list task funding
Develop long term funding strategies
OSS GIS Mapping
Update OSS GIS maps regularly as the jurisdictions update their databases
Collect data for actual setbacks from OSS components to shorelines
Map marine beach water quality data from the BEACH program
Map other potential fecal sources including: high priority farms, stormwater systems, commercial garbage and grease bins, and trash compactors
Water Quality Monitoring
Identify local areas of concern to add to proposed fresh water monitoring stations
Identify upland areas of concern to add to proposed fresh water monitoring stations
Implement fresh water monitoring plan based on regional monitoring plan
Develop data management standard operating procedures
Implement data management system
Shoreline Surveys
Coordinate with WSDOH to implement regional monitoring plan shoreline survey schedule during wet and dry seasons
Determine locations of hotspot drainages for investigation
Water Quality Investigations
Investigate water quality hotspots to identify and correct anthropogenic fecal pollution sources
Investigate potential fecal pollution sources identified in WSDOH sanitary surveys

Share monitoring data and survey results with WSDOH
Inventory and prioritize farms, investigate high priority farms and identify and correct anthropogenic fecal pollution sources
Implement animal waste strategy elements
Implement stormwater strategy elements
Identify boat moorage and sanitation problem areas, develop and implement monitoring program, investigate pollution hotspots and identify and correct pollution sources
Nutrient studies in priority areas
Develop pilot nutrient study in conjunction with Hood Canal Aquatic Rehabilitation Technical Advisory Committee (Hood Canal Aquatic Rehab TAC)
Implement pilot nutrient study
Explore options and potential sites for field testing OSS nutrient reduction technologies in conjunction with Hood Canal Aquatic Rehab TAC
Education
Research and utilize existing outreach campaigns and behavior change measurements that were developed using the social marketing process
Develop local education & outreach approach to identify priority audiences and behaviors and target behavior changes that prevent and reduce pathogen and nutrient pollution
Prioritize the selected audiences and behaviors based on local water quality studies, research, prevalence and experience
Choose a suite of priority behaviors and implement a social marketing approach to determine motivators and barriers for each priority behavior
Develop a regional outreach campaign that incorporates motivators and addresses barriers for the priority audience to make the behavior change
Develop regional templates for jurisdictions to use when producing materials like fact sheets for Hood Canal Action Area PIC work
Conduct a pilot outreach campaign in the region including measuring the adoption of the selected behavior change
Refine the approach based on the degree of behavior change and implement on a larger scale
OSS Operation, Monitoring and Maintenance
Follow-up on problem service events
Implement time of sale inspections
Implement homeowner education requirements
Follow up, track and audit homeowner inspections
Develop and implement contractor quality inspection program
PIC Priority Areas
Continue to update priority work area list with state and local areas of concern

References

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