

The 2014/2015 Action Agenda for Puget Sound



The Puget Sound Action Agenda is the plan for cleaning up, restoring, and protecting Puget Sound by 2020

May 2014

PugetSoundPartnership

LEADING PUGET SOUND RECOVERY

PLACEHOLDER FOR REVISED LETTER

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Acronyms and Abbreviations

Alliance	Alliance for a Healthy South Sound
BEACH	Beach Environmental Assessment, Communication, and Health
BMP	best management practice
BPA	bisphenol A
CAP	chemical action plan
CERCLA	federal Comprehensive Environmental Response, Compensation, and Liability Act
Commerce	Washington State Department of Commerce
Corps	U.S. Army Corps of Engineers
CSOs	combined sewer overflows
DMRs	daily monitoring records
DNR	Washington State Department of Natural Resources
DOD	U.S. Department of Defense
DOH	Washington State Department of Health
ECB	Ecosystem Coordination Board
ECO Net	Education, Communication and Outreach Network
Ecology	Washington State Department of Ecology
EPA	U.S. Environmental Protection Agency
ERN	Ecosystem Recovery Network
ESRP	Estuary and Salmon Restoration Program
FEATS	Financial and Ecosystem Accounting Tracking System
FEMA	Federal Emergency Management Agency
GF-S	state general fund
GIS	geographic information system
GMA	Washington State Growth Management Act
GMAP	Government Management Accountability and Performance
gpd	gallons per day
GSI	green stormwater infrastructure
HB	House Bill
HC	Hood Canal Action Area
HCCC	Hood Canal Coordinating Council
HCP	habitat conservation plan

HGMP	hatchery genetic management plan
HSC	Harbor Safety Committee
I&I	inflow and infiltration
IC2	Interstate Chemicals Clearinghouse
ISL	Island County Watershed
IUCN	International Union for Conservation of Nature
IWP	Integrated Watershed Plan
lands group	Habitat and Recreation Lands Coordinating Group
Leadership Council	Partnership's Leadership Council
Legislature	Washington State Legislature
LIO	local integrating organization
MPA	marine protected area
MRA	marine recovery area
MSC	male specific coliphage
NAAQS	National Ambient Air Quality Standards
NEPORT	National Estuary Program Online Tool
NMFS	National Marine Fisheries Service
NO ₂	nitrogen dioxide
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NW AIRQUEST Consortium	Northwest International Air Quality Environmental Science and Technology Consortium
OSS	onsite septic system
PAHs	polycyclic aromatic hydrocarbons
Partnership	Puget Sound Partnership
PBDEs	polybrominated diphenyl ethers
PBT	persistent, bioaccumulative, and toxic
PCBs	polychlorinated biphenyls
PDR	purchase of development rights
PSNERP	Puget Sound Nearshore Estuary Restoration Program
PSSRC	Puget Sound Salmon Recovery Council
RCO	Washington State Recreation and Conservation Office
RCW	Revised Code of Washington
Recovery Plan	Puget Sound Salmon Recovery Plan
RITT	Recovery Implementation Technical Team
RMAP	road maintenance and abandonment plans

Salmon Recovery Plan	Puget Sound Salmon Recovery Plan
SB	Senate Bill
SC	South Central Puget Sound Action Area
SCI	sediment chemistry index
SJI	San Juan County Watershed
SMPs	Shoreline Master Programs
SNST	Snohomish-Stillaguamish Watershed
SO ₂	sulfur dioxide
South Central Caucus Group	South Central Action Area Caucus Group
SquareONE	Watershed Stewardship Resource Center
SS	South Puget Sound Action Area
STORM	Stormwater Outreach for Regional Municipalities
STRT	Strait of Juan de Fuca Action Area
Superfund	Comprehensive Environmental Response, Compensation, and Liability Act
SWIF	system-wide improvement framework
TDR	transfer of development rights
TMDL	total maximum daily load
TRI	Toxics Release Inventory
USDA	U.S. Department of Agriculture
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UW	University of Washington
VSP	voluntary stewardship program
VTRA	vessel traffic risk assessment
WAC	Washington Administrative Code
WC	West Central Puget Sound (North Central Puget Sound Action Area)
WDFW	Washington Department of Fish and Wildlife
WH	Whatcom County/Nooksack Watershed
Work Group	Cross Partnership Oil Spill Work Group
WOSS	Watershed Open Space Strategy
WQI	water quality index
WRIA	Water Resource Inventory Area
WSCC	Washington State Conservation Commission
WSDA	Washington State Department of Agriculture
WSDOT	Washington State Department of Transportation
WSU	Washington State University
WUI	Non-wildland urban interface



INTRODUCTION

The 2014/2015 Action Agenda is the result of over a year of work with state and federal agencies, tribal governments, local governments, representatives of the business and environmental caucuses, and other interested partners. It builds on the 2012/2013 Action Agenda, and progress since then, to create a complete picture of the work needed to protect and recover Puget Sound. The Action Agenda is not a regulatory document; it does not establish regulatory requirements. It is a leadership and coordinating document, meant to focus the region around a shared agenda for Puget Sound recovery.

The 2014/2015 Action Agenda is organized into five Sections.

Section 1, *Recovery Context*, describes the recovery planning process for the Action Agenda. The section provides a broad overview of the legislative mandate, science in the Action Agenda, the relationship among the goals, indicators, pressures, and recovery targets. It summarizes the strategies, actions, and local planning efforts, introduces the strategic initiatives and cross-cutting issues, and, finally, directs the reader to performance management tools found on the Partnership’s website.

Section 2, *The Strategic Initiatives*, describes the three Strategic Initiatives, adopted as part of the 2012/2013 Action Agenda, which are listed below.

- **Prevention of pollution from urban stormwater runoff**—we have many of the tools we need to do this but need the capacity to ramp up efforts; we must stop contaminating Puget Sound.
- **Protection and restoration of habitat**—we must save the best of the habitat that we have left.
- **Recovery of shellfish beds**—shellfish health begins on land through reduction of pollution from rural and agricultural lands and maintenance and repair of failing septic tanks.

Section 3, *Strategies and Actions*, is the heart of the Action Agenda. It describes the strategies, sub-strategies, ongoing program activities, and near-term actions needed to protect and recover Puget Sound, as well as future opportunities. Strategies and Actions are divided into five categories.

- Freshwater and Terrestrial** includes strategies and actions related to land development and restoration, stewardship of working forest and agriculture lands, floodplains, salmon recovery, and freshwater flows.
- Marine and Nearshore** includes strategies and actions related to shoreline protection, alteration, and restoration; marine area protection and restoration; working waterfronts and public access; and biodiversity and invasive species.
- Pollution** includes strategies and actions related to reducing toxic threats, polluted runoff from urban and rural lands, wastewater management, shellfish bed restoration, and oil spill preparedness and clean up.
- Strategic Leadership and Collaboration** includes much of the core work of the Puget Sound Partnership, as well as some partners, including strategies and actions related to setting priorities, performance management, science and ecosystem monitoring, and promoting stewardship.
- Funding Strategy** describes how increased financial capacity to implement priority ongoing and new actions in the Action Agenda can be achieved through identifying new sources of funding, using existing funding more strategically and efficiently, and developing innovative, market-based programs.

Section 4, *Local Recovery Actions*, describes how local areas are working to protect and recovery Puget Sound. It contains profiles of each local area, which summarize local integrating organizations structure, planning process, locally significant pressures, and near-term actions.

Section 5, *References*, contains the references for the 2014/2015 Action Agenda.

The following appendices are included for additional information.

- **Appendix A, *Puget Sound National Estuary Program Management Conference Overview***, provides an overview of the Puget Sound National Estuary Program Management Conference.
- **Appendix B, *Science Basis for the 2012/2013 Action Agenda***, describes the scientific inputs to the 2012/2013 Action Agenda content and process.
- **Appendix C, *Results Chains***, contains two sets of figures. The first set of figures presents graphical depictions of how the strategies (and related sub-strategies) contribute to reducing pressures related to a single recovery target. The second set of figures depict how each individual strategy in the Action Agenda (and its related sub-strategies) reduces pressures and contributes to achieving numerous recovery targets.
- **Appendix D, *Near-Term Actions***, provides a consolidated table of all near-term actions (Soundwide and local) and their associated performance measures and owners.
- **Appendix E, *Action Agenda Sub-Strategy Rankings***, presents ranked lists of sub-strategies by each of the Strategic Initiatives.
- **Appendix F, *Federal Response—Habitat Matrix***, contains a matrix of actions that federal agencies are taking related to habitat.



SECTION 1

RECOVERY CONTEXT

This section describes the recovery planning process for the Action Agenda. It provides a broad overview of the legislative mandate, science in the Action Agenda, the relationship among the goals, indicators, pressures, and recovery targets. It summarizes the strategies, actions, and local planning efforts, introduces the Strategic Initiatives and cross-cutting issues, and, finally, directs the reader to performance management tools found on the Partnership’s website.

Recovery Planning

Understanding the recovery planning context requires an understanding of the following terms and concepts used throughout the Action Agenda. The relationship of these terms to each other and to work products and milestones is displayed in the figure at the end of this section.

Goals. The Action Agenda is driven by six goals mandated by the Washington State Legislature (Legislature) to restore the health of Puget Sound by 2020.

Open Standards for the Practice of Conservation. The Open Standards (The Conservation Measures Partnership 2013) are a science-based performance management tool used to develop the adaptive management framework, planning tools, and specific actions. The work products (e.g., results chains) related to the terms defined in this section were developed using the Open Standards.

Vital signs and indicators. Detailed indicators for 21 vital signs of ecosystem health and desired outcomes provide for more precise tracking of the goals.

Recovery targets. Recovery targets articulate the conditions expected to be achieved by 2020 with respect to each of the indicators.

Interim targets. Interim targets provide shorter time frames for measuring progress towards achieving the recovery targets. The interim targets are aligned with the goals, indicators, and recovery targets and inform adaptive management of the overall Action Agenda. Interim targets focus on both output and outcome. *Output interim targets* identify specific actions or program implementation milestones that must be completed to help reach recovery targets. *Outcome interim targets* articulate conditions that would need to be achieved within a specified period in order to achieve the recovery targets.

Pressures. Forty-one pressures identify human activities that may affect the physical, structural, and ecological processes and functions in the ecosystem. The pressures inform the recovery targets, strategies, sub-strategies, near-term actions, and ongoing programs required to achieve the goals.

Guiding Principles for Ecosystem Management in Puget Sound. The Guiding Principles were used to develop the strategic priorities and actions that were formalized as the strategies, sub-strategies, near-term actions, and ongoing programs.

Strategies. Twenty-nine strategies describe the overall, long-term directions and approaches that are needed to achieve the recovery targets.

Sub-strategies. One hundred and six sub-strategies provide a narrower focus for the strategies and the development of near-term actions.

Near-term actions. Near-terms actions are trackable and measurable activities and initiatives intended to reduce pressures and contribute to achieving the recovery targets. Near-terms actions are developed at the Soundwide and local scale and are designed for implementation within a 2-year window. Implementation of near-terms actions is tracked via the *Puget Sound Action Agenda Report Card*.

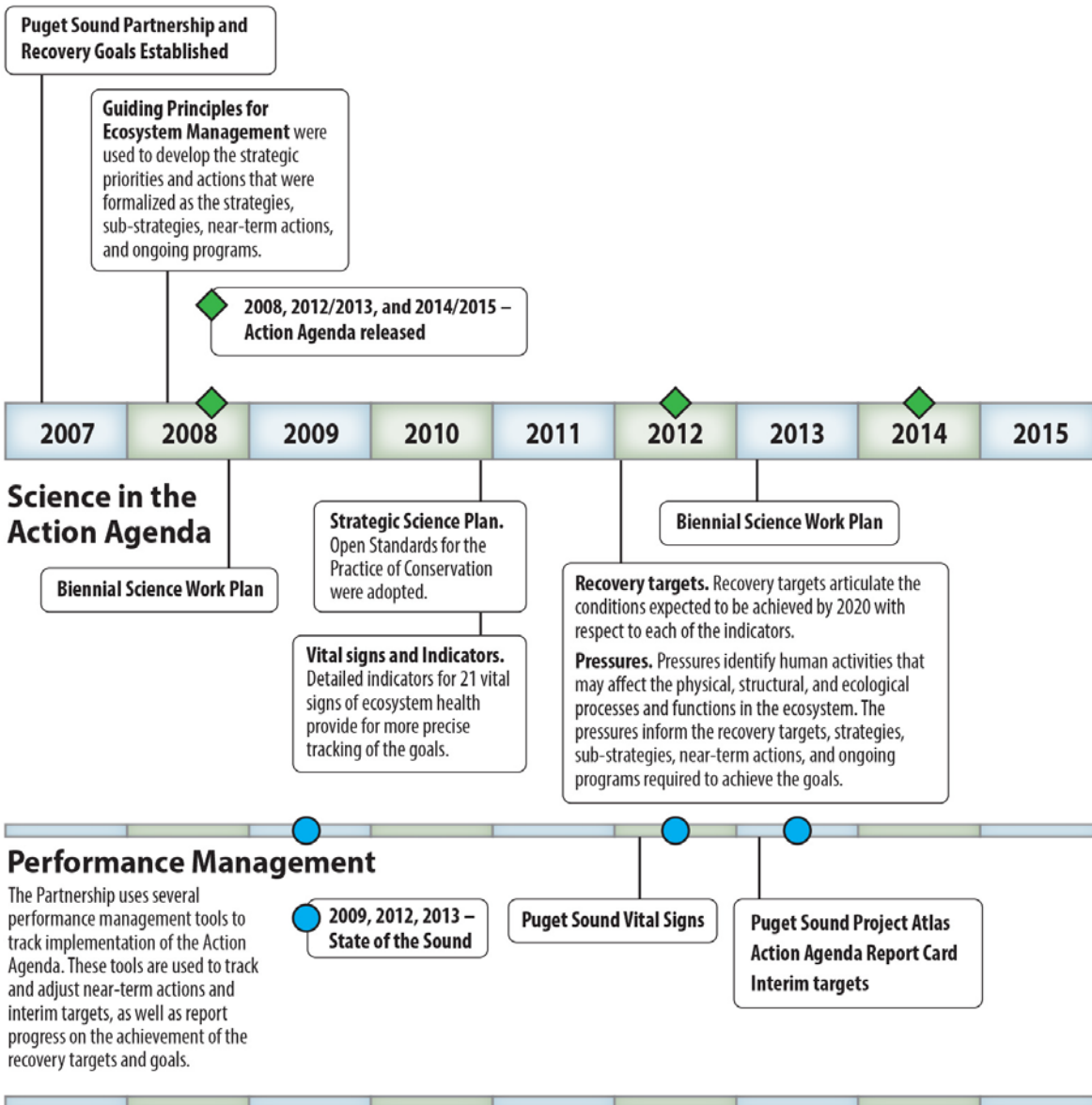
Ongoing programs. Ongoing programs are existing soundwide recovery efforts that have a longer time scale than the near-term actions. Most of the ongoing programs considered in the Action Agenda are state agency programs; they are examples and are not intended to be a complete inventory.

Strategic Initiatives. Three Strategic Initiatives prioritize implementation and funding of near-term actions. The Strategic Initiatives are prevention of pollution from urban stormwater runoff; protection and restoration of habitat; and recovery of shellfish beds.

Cross-cutting issues. The Action Agenda provides closer analysis of issues that affect multiple aspects of Puget Sound recovery and have implications across the Action Agenda that emerge over time. These cross-cutting issues have been integrated into the strategies and actions and their significance called out in text boxes where applicable. They also provide a focus for development of new near-term actions in the context of the recovery targets, strategies, sub-strategies, and the Strategic Initiatives

Performance management. The Partnership uses several performance management tools to track implementation of the Action Agenda. These include the *Puget Sound Vital Signs*, *Puget Sound Project Atlas*, *Action Agenda Report Card*, *State of the Sound*, and *Open Standards for the Practice of Conservation*. These tools are used to track and adjust near-term actions and interim targets, as well as report progress on the achievement of the recovery targets and goals.

Puget Sound Partnership and the Action Agenda *



* The Action Agenda contains the following elements:

Strategies. Describe the overall, long-term directions and approaches needed to achieve the recovery targets.

Sub-strategies. Provide a narrower focus for the strategies and the development of near-term actions.

Near-term actions. Trackable and measurable activities and initiatives intended to reduce pressures and contribute to achieving the recovery targets.

Ongoing programs. Existing soundwide recovery efforts that have a longer time scale than the near-term actions.

Cross-cutting issues. The Action Agenda is a living document, as such, cross-cutting issues emerge over time that may require closer analysis and the development of new near-term actions. These cross-cutting issues are used as a target focus for development of new near-term actions in the context of the recovery targets, strategies, sub-strategies, and strategic initiatives.

Strategic Initiatives. Three strategic initiatives—prevention of pollution from urban stormwater runoff, protection and restoration of habitat, and recovery of shellfish beds—prioritize implementation and funding of near-term actions.

GUIDING PRINCIPLES FOR ECOSYSTEM MANAGEMENT IN PUGET SOUND

Input from the topic forums and action area meetings in 2008 led to the development of the following principles for ecosystem management. The principles, refined by the Leadership Council, Science Panel, and Ecosystem Coordination Board (ECB), were used to develop the strategic priorities and actions. They were reviewed by the Science Panel in 2011 and reflect only modest additions related to human communities.

- A. Address threats and choose opportunities with the highest potential magnitude of impact.
 - B. Address threats with the highest level of urgency. (How imminent is the threat? Will it result in an irreversible loss? How resilient are the resources that are affected?)
 - C. Use strategies that have a reasonable certainty of effectiveness and reflect a balanced precautionary and adaptive approach.
 - Actions should have a realistic expectation that they will be effective in addressing the identified threat.
 - Actions and decisions about the use of resources should err on the side of caution to avoid irreversible ecological consequences.
 - Actions should be designed so they can be measured, monitored, and adapted.
 - D. Use scientific input—about the importance, urgency, and reversibility of threats; opportunities for management impact; effectiveness of actions; and monitoring and adaptation—in designing, implementing, and evaluating strategies.
 - E. Use strategies that are cost effective in making efficient use of funding, personnel, and resources with realistic expectations of achieving results.
 - F. Address the processes that form and sustain ecosystems and increase ecosystem resiliency rather than focus narrowly on fixing individual sites. Consider the Salish Sea ecosystem perspective.
 - G. Attempt to address threats at their origin instead of reacting after the damage has been done. Anticipate and prevent problems before they occur, and plan for extreme events. (With more people coming to the region and a changing climate, a proactive strategy is increasingly important.)
 - H. Consider the linkages and interactions among strategies.
 - Address multiple threats and their interactions with strategies that work together. We cannot afford to look at problems or develop solutions in isolation.
 - Watch out for unintended consequences. Evaluate strategies so actions to address one problem do not cause harm to other ecosystem processes, functions, and structure, as well as social and economic considerations.
 - Integrate salmon recovery actions with ecosystem management actions.
 - I. Account for the variations in ecosystem conditions and processes in different geographic areas of Puget Sound. Some parts of Puget Sound are fairly intact while others are severely degraded, and rebuilding strategies need flexibility to encompass regional differences. Ensure that no region or economic sector bears the entire brunt of the responsibility for implementing solutions.
 - J. Account for human communities and values as fundamental, central elements of the Puget Sound ecosystem (i.e., the Puget Sound social-ecological system).
-

Legislative Mandate

In 2007, Democrats and Republicans created the Puget Sound Partnership to coordinate the regional effort to clean up Puget Sound. The Partnership connects citizens, governments, tribes, scientists, and businesses to set priorities, implement the *Puget Sound Salmon Recovery Plan* (National Oceanic and Atmospheric Administration 2007), and ensure accountability for results. The Partnership consists of a Leadership Council, Executive Director, ECB, and Science Panel (Appendix A, *Puget Sound National Estuary Program Management Conference Overview*). The work of the Partnership is guided by six goals set by the Legislature.

- Healthy people are supported by a healthy Puget Sound.
- Our quality of life is sustained by a healthy Puget Sound.
- Puget Sound species and the web of life thrive.
- Puget Sound habitat is protected and restored.
- Puget Sound rivers and streams flow at levels that support people, fish and wildlife.
- Puget Sound marine and fresh waters are clean.

Science in the Action Agenda

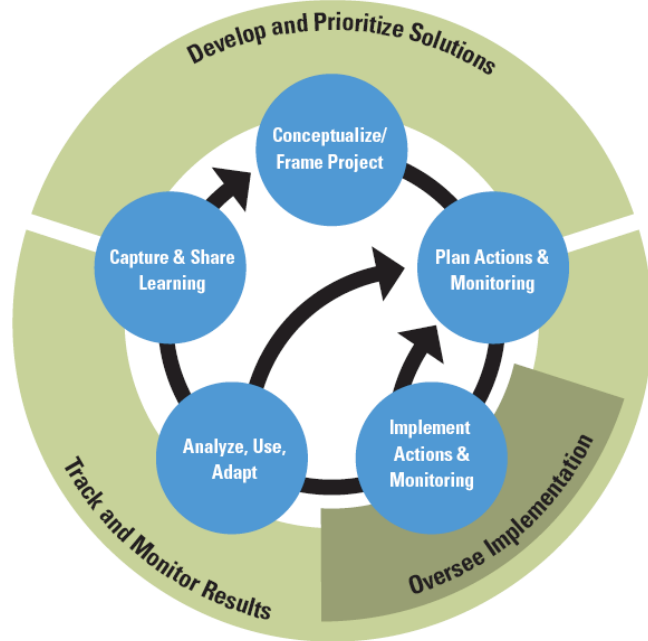
Scientific frameworks and information were used to develop the first Action Agenda in 2008 and continue to be used as the Action Agenda is updated (Appendix B, *Science Basis for the 2012/2013 Action Agenda*). After completion of the 2008 Action Agenda, the Partnership, including the Science Panel, embarked on identifying and building a more rigorous and systematic approach to future iterations of the Action Agenda. The Partnership adopted the *Open Standards for the Practice of Conservation* in 2009 as the adaptive management framework to use moving forward (The Conservation Measures Partnership 2007, Puget Sound Partnership 2010a).

The Open Standards process provides a common means of understanding and supporting the critical role of science through five steps that consider scientific, performance, and policy inputs (see text box below). These five steps help define recommendations for structured science and policy collaboration and clarify implementation roles made by the Partnership Leadership Council and ECB. The choices of what actions to take and their priority and sequencing are ultimately policy choices. These choices are grounded in scientific information so that decision-makers can make the most informed decisions possible, and understand the certainties and uncertainties associated with their choices. The Open Standards process was used by the Partnership to set recovery targets, revise strategies and actions, and develop results chains.

The results chains (Appendix C, *Results Chains*) are logic models that illustrate how the strategies and actions reduce pressures on the ecosystem and contribute to achieving recovery targets. Strategies and actions are identified that contribute to achieving the recovery target. Interim results, reduced pressures, and the ecological results expected to occur are identified as the outcomes required to obtain the recovery target. The basic elements of a results chain and a simplified example are displayed below.

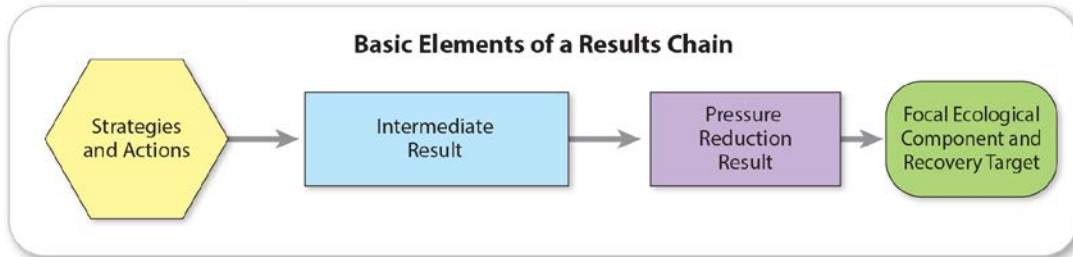
PUGET SOUND PARTNERSHIP’S USE OF THE OPEN STANDARDS TO ADAPT THE ACTION AGENDA

The Partnership coordinates a collective, long-term effort to restore the Puget Sound ecosystem, and the Partnership’s boards and executive director share three key responsibilities shown in the outer ring: develop and prioritize recovery solutions, oversee implementation of recovery actions, and track and monitor results relative to recovery goals and objectives. These responsibilities connect in an adaptive cycle as depicted in the inner loops. The adaptive cycle proceeds through a sequence of steps, proceeding clockwise from the top of the diagram, that build from one another to continuously adapt and improve recovery efforts. Updates to the Action Agenda occur in the first two steps:



conceptualize/frame project (scoping the extent of the update, content revisions, and processes) and plan actions and monitoring (process to develop the strategies and actions). Multiple other scientific inputs to the Action Agenda content and process are summarized in Appendix B, *Science Basis for the 2012/2013 Action Agenda*.

RESULTS CHAINS



Building on the Goals

Indicators, Pressures, and Recovery Targets

The Leadership Council adopted 21 vital sign indicators to more precisely track the goals and set 18 ecosystem recovery targets that articulate desired conditions for 2020. Vital sign indicators and recovery targets address both the condition of the Puget Sound ecosystem and pressures on the system. Human activities that may affect the physical, structural, and ecological processes and functions in the ecosystem are identified as pressures. Many human activities also provide direct and indirect benefits to the ecosystem or may be relatively neutral to the ecosystem but provide benefits for human quality of life. The goal is not to eliminate human pressures on Puget Sound, but to understand and manage them toward ecosystem protection and recovery.

The Action Agenda currently addresses 41 pressures (see text box). Progress toward achieving the recovery targets is charted via the *Puget Sound Vital Signs*, shown below.



The *Puget Sound Vital Signs* is the tool that tracks and communicates ecosystem conditions and progress toward achieving the recovery targets. The tool allows users to dig down into the vital sign indicators. By selecting a vital sign, the user can view the detailed indicator(s) for the vital sign, associated ecosystem recovery targets, and progress relative to baseline references and toward meeting these targets, as well as related data and maps. The tool also offers ways for the public to get involved, explains what Puget Sound Partnership partners are doing, and provides links to additional information.¹

¹ www.psp.wa.gov/vitalsigns/index.php

PRESSURES ADDRESSED IN THE ACTION AGENDA THROUGH THE OPEN STANDARDS PROCESS

These 41 Puget Sound Pressure Sources, grouped into eight source categories, have been developed as part of the Puget Sound Pressures Assessment project. They represent a modest revision to the Partnership’s 2012 Pressure Taxonomy and have been revised to better capture sources of stress in Puget Sound and for better alignment with the International Union for Conservation of Nature (IUCN) threat taxonomy. Sources are the cause of stressors that, in turn, are the causes of stressed conditions in the ecosystem.

1. Residential and Commercial Development

- 1.1 Housing and Urban Areas
- 1.2 Commercial and Industrial Areas (including ports)
- 1.3 Tourism and Recreation Areas

2. Agriculture and Aquaculture

- 2.1 Annual and Perennial Non-Timber Crops
- 2.2 Wood and Pulp Plantations
- 2.3 Livestock Farming and Ranching
- 2.4 Marine and Freshwater Finfish Aquaculture
- 2.5 Marine shellfish aquaculture

3. Energy Production and Mining

- 3.1 Oil and Gas Drilling
- 3.2 Mining and Quarrying
- 3.3 Renewable Energy

4. Transportation and Service Corridors

- 4.1 Roads and Railroads (including culverts)
- 4.2 Utility and Service Lines
- 4.3 Shipping Lanes and Dredged Waterways
- 4.4 Flight Paths

5. Biological Resource Use

- 5.1 Hunting and Collecting Terrestrial Animals
- 5.2 Gathering Terrestrial Plants
- 5.3 Logging and Wood Harvesting
- 5.4 Fishing and Harvesting Aquatic Resources

6. Human Intrusions and Disturbance

- 6.1 Recreational Activities
- 6.2 War, Civil Unrest, and Military Exercises
- 6.3 Work and Other Activities

7. Natural System Modifications

- 7.1 Fire and Fire Suppression
 - 7.2.1 Abstraction of Surface Water
 - 7.2.2 Abstraction of Ground Water
 - 7.2.3 Dams
 - 7.2.4 Freshwater Levees, Floodgates, Tidegates
 - 7.2.5 Marine Levees, Floodgates, Tidegates
- 7.3 Freshwater Shoreline Infrastructure
- 7.4 Marine Shoreline Infrastructure

9. Pollution

- 9.1.1.1 Domestic and Municipal Wastewater to Sewer
- 9.1.1.2 Domestic and Commercial Wastewater to Onsite Sewage Systems (OSS)
- 9.1.2 Runoff from Residential and Commercial Lands
 - 9.2.1 Oil Spills
 - 9.2.2 Seepage from Mining
 - 9.2.3 Industrial Wastewater
 - 9.2.4 Industrial Runoff
- 9.3 Agricultural and Forestry Effluents
- 9.4 Garbage and Solid Waste
- 9.5 Air-Borne Pollutants
- 9.6 Release of Excess Energy (light, heat, sound)

Strategies and Actions

The strategies and sub-strategies from the 2012/2013 Action Agenda are carried forward into the 2014/2015 Action Agenda. The work that interdisciplinary teams did to refine strategies and actions related to achieving the recovery targets for the following categories of pressures: land development, loss of floodplain function, shoreline alteration, urban stormwater runoff, and wastewater. The work of these interdisciplinary teams is retained and reflected in Section 3, *Strategies and Actions*.

This iterative process continued into 2014 as regional actions were considered and as the local integrating organizations (LIOs) developed actions to respond to the pressures significant to their local ecosystems. The results of the iterative process are summarized in Section 3, *Strategies and Actions*, and Section 4, *Local Recovery Actions*. All of the near-term actions are aligned with sub-strategies and identify owners (i.e., entities responsible for implementation) and performance measures (Appendix D, *Near-Term Actions*). As an outcome, the 2014/2015 Action Agenda reflects the following elements.

- 29 strategies to achieve the recovery targets.
- 106 sub-strategies to provide a narrower focus for the strategies and to develop near-term actions.
- 152 regional and 157 local total near-term actions (follow-up, revised, or continued).
- 42 completed regional and 4 local near-term actions.
- 5 regional and 19 local deleted near-term actions.
- 21 near-term actions that address ocean acidification, as recommended by the 2012 Blue Ribbon Panel on Ocean Acidification.

Local Planning

City and county governments are the primary implementers of many of the near-term actions described in the Action Agenda (Section 3, *Strategies and Actions*). Since adoption of the 2008 Action Agenda, the Partnership has supported the establishment of LIOs, which consist of local governments and other local stakeholders, to contribute to development of the Action Agenda. LIOs are established and recognized by the Leadership Council in nine of the 10 local areas that comprise Puget Sound².

Throughout 2013, Partnership staff worked closely with each LIO to develop an approach for identifying and prioritizing local near-term actions that help to restore Puget Sound to health. Local near-term actions are presented with Soundwide actions in Section 3, *Strategies and Actions*, by most relevant sub-strategy. Section 4, *Local Recovery Actions*, presents local area profiles, which summarize LIO structure, planning process, locally significant pressures, and near-term actions.

Setting Priorities

The Partnership is required to prioritize near-term actions to direct allocation of increasingly scarce federal, state, and local resources.³ Setting priorities involves balancing ecological and human well-being factors to make the greatest progress toward recovery for the time and resources spent. In 2012, the Partnership, working with the ECB and the Science Panel, undertook an unprecedented effort to create a science-based assessment of the expected ecological impact of each sub-strategy in the Action Agenda, and to gather associated information on implementation issues, including potential contributions to human well-being and economic vitality. The result of this initial effort is a preliminary

² It is important to note that work is ongoing in all local areas. Each area is at a unique point in the process of identifying its priorities and contributing to the Action Agenda. Most areas have prioritized strategies and actions with performance measures. Although the Skagit-Samish watersheds are not able to identify near-term actions at this time, it does not mean that actions and strategies are not important in that area; instead it reflects the differences between the local area processes. The Skagit-Samish watersheds continue to work toward establishing an LIO.

³ RCW 90.71 requires the Partnership to prioritize actions necessary to recover Puget Sound.

ranked list of sub-strategies based on expected ecological impacts (Appendix E, *Action Agenda Sub-Strategy Rankings*).

This sub-strategy ranking informed the development of the Strategic Initiatives in 2012 (Section 2, *The Strategic Initiatives*).

- **Prevent pollution from urban stormwater runoff.** This is an immense challenge, and, although we have many of the tools and technologies for stormwater, we need to make much fuller use of them if we are to stop contamination from flowing into Puget Sound.
- **Protect and restore habitat.** We must stop destroying habitat, protect what remains, and substantially restore the critical habitats that we have lost.
- **Recover shellfish beds.** Shellfish harvesting is both a treaty right for tribes and a vital industry in our region. It is also a treasured tradition for countless northwest families. Shellfish health begins on land, through reduction of pollution from rural and agricultural lands and maintenance and repair of failing septic tanks.

The Strategic Initiatives are described in detail in Section 2, *The Strategic Initiatives*. The near-term actions within each strategic initiative will be identified through a collaborative process involving members of the ECB once the 2014/2015 Action Agenda has been adopted by the Leadership Council. The Partnership will be convening and facilitating a series of meetings during the summer of 2014 to achieve this objective. The final list will be presented to the ECB and the Leadership Council for review and approval.

The Partnership continues to create a more systematic and replicable approach to prioritization. This includes creating a transparent, durable framework for the prioritization process—something that can be refined and used year after year if desired—and reaching out to technical experts to gather specific information on each near-term action to inform priority setting. The priority setting process will be information-based, transparent, and replicable, and will help illustrate where gaps in knowledge or uncertainty are particularly relevant to our understanding of what various actions might achieve.

PUBLIC REVIEW OF THE 2014/2015 ACTION AGENDA

2013

- LIOs held multiple public meetings as they developed their local actions within the local community. These processes are described in detail in each of the local profiles in Section 4, *Local Recovery Actions*.

2014

- April: 2014/2015 Action Agenda webpage was created and draft near-term actions and local profiles were released for public review and comments (April 8). An online public comment survey of the update was also provided on the website. Two public open houses were conducted in Tacoma and Edmonds. Upon the close of the public comment period on April 30, 6 comments via email and 12 survey responses were received. High-level concerns raised by commenters included:

Regional Comments:

- Specific comments from regional owners of near-term actions regarding their near-term actions: Prioritization of State Highways with Floodplain Impacts (A5.4.1); Steelhead Recovery – Salish Sea Marine Survival Project (A6.4.2); and No Discharge Zones (C1.5.1). The nature of these comments was primarily

updating and refinement. The No Discharge Zone action is still in progress, and additional milestones were added at the request of the owner—Washington State Department of Ecology (Ecology).

- There was also a more general comment from Ecology that noted halting decline and achieving positive trends on many/most of the vital sign indicators is an ambitious goal, and meeting the targets will be challenging.

Response: Comments related to specific near-term actions were incorporated into the document.

Local Comments:

- Comments received regarding the local area actions have been for the majority supportive of the overall integration of the LIO profiles and actions. Several specific comments have focused around the South Puget Sound Action Area proposed near-term action of restoring Deschutes Estuary (B2.2 SS9).
- Several other comments supported stronger actions to prevent oil spills by funding measures that address vessel traffic risks; increasing the Partnership’s advocacy for reducing risks of major oil spills from the existing and proposed fossil fuel transports/exports; and actions that achieve uniform regulation and enforcement that promotes spill prevention across U.S. and Canadian marine waters.
- Agency partner comments expressed a need for more consistent descriptors of local near-term actions to help compare, contrast, and prioritize actions across Action Areas and to help inform funding decisions. Suggesting less focus on tracking progress on specific local actions and more focus on programmatic measurement.

Response: Partnership staff has coordinated with the San Juan LIO on responses to the comments about shoreline and critical areas regulations – there is agreement that shoreline buffers and critical area buffers are important for protecting fragile resources. Site-specific permit conditions and monitoring the effectiveness of the regulations will provide a level of protection that should address the concerns raised. Regarding stronger actions to prevent oil spills and the need for funding, the Partnership is working with our partners in Canada on refining possible traffic risk mitigation measures. The Partnership made revisions to actions to incorporate the new understanding of potential vessel risks.

Ocean Acidification Near-Term Actions

- The Partnership received several comments about ocean acidification near-term actions from citizens and regional partners requesting expansion of near term actions addressing wastewater treatment and questioning advocacy of a comprehensive strategy to reduce carbon dioxide emissions on one hand without actively opposing all new and expanding fossil fuel export terminals.
- Agency partners recommended further developing the near term actions described in the draft.

Response: Comments related to near-term actions under sub-strategy C6.3 were incorporated into the document. The second comment about apparent policy inconsistencies between the Blue Ribbon Panel recommendations on ocean acidification and the construction of fossil fuel export terminals is acknowledged, but appears to be beyond the scope of this Action Agenda update. Provisional approval of the ocean acidification near-term actions will be sought from the ECB and Leadership Council pending the Marine Resources Advisory Council’s more detailed consideration.

- April and May: Public briefings held before the Science Panel, ECB, and Leadership Council.
- May 30: The ECB and Leadership Council unanimously approved the staff recommendation and adopted the 2014/2015 Action Agenda.

Integrating Cross-Cutting Issues

The 2014/2015 Action Agenda integrates several cross-cutting issues, issues that affect multiple aspects of Puget Sound recovery and have implications across the Action Agenda that emerge over time. These issues provide a focus for development of new near-term actions in the context of the recovery targets, strategies, sub-strategies, and the Strategic Initiatives. The cross-cutting issues were identified through

the various public review processes since 2008. The Partnership then partnered with an outside entity or established an internal sub-committee to identify how these issues could be addressed in the Action Agenda. An overview of the outcomes is provided in the following subsections. Section 3, *Strategies and Actions*, calls out cross-cutting issues in text boxes to identify strategy, sub-strategy, and action alignment with these issues as applicable.

Climate Change

The Partnership has considered climate change in the Action Agenda since 2008. To develop and align near-term actions related to climate change into the Action Agenda, the Partnership worked with the University of Washington Climate Impacts Group and Ecology.

Ecology (2012a) released *Preparing for a Changing Climate: Washington State's Integrated Climate Response Strategy*. This report identified seven overarching, high-priority climate change response strategies.

- **Protect people and communities from climate change impacts.** This includes enhancing core public health capacity and enhancing emergency response capacity to address increasingly extreme floods and fires.
- **Reduce risk of damage to buildings, transportation systems, and other infrastructure.** This includes reducing flood damage by restoring floodplains and capturing more water, supporting local efforts to prepare for coastal flooding and storm surges, considering climate change impacts when siting new development and infrastructure, and planning for relocation if structures are damaged by floods or other events.
- **Reduce forest and agriculture vulnerability to climate change impacts.** This includes enhancing surveillance and eradication of pests and disease, promoting identification of and transition to plant species that are resilient to new climate conditions, conserving productive and adaptive farmland and forests, and reducing forest and wildland fire risk in highly vulnerable areas.
- **Improve water management to address climate-related supply reductions.** This includes promoting integrated water management in vulnerable basins, implementing enhanced water conservation and efficiency programs, ensuring sufficient cold water in salmon-bearing streams during critical seasons, and incorporating climate change realities into agency decision-making.
- **Safeguard fish and wildlife and protect critical ecosystem services that support human and natural systems.** This includes protecting and restoring habitat and improving the ability of species to migrate to more suitable habitat as the climate shifts, protecting sensitive and vulnerable species and their habitats, and reducing existing stresses on fish, wildlife, plants, and ecosystems.
- **Reduce the vulnerability of coastal communities, habitat, and species.** This includes preventing coastal habitat degradation and destruction and seeking opportunities for upland habitat creation as sea levels rise, and reducing shellfish vulnerability to ocean acidification by reducing land-based contributions of carbon and polluted runoff to the marine environment.
- **Support the efforts of local communities and strengthen capacity to respond to and engage with the public.** This includes identifying existing and new funding mechanisms to support adaptation work at the local level, developing an institutional structure to improve coordination and support an integrated approach, supporting information gathering on climate impacts and ensuring scientific

information is easily accessible, and engaging the public in determining appropriate responses to climate change.

These climate change response strategies were integrated into the 2012/2013 Action Agenda through alignment with strategies, sub-strategies, and near-term actions (Section 3, *Strategies and Actions*). The relationship between strategies/sub-strategies and the climate change impacts and related state strategies they address is described in text boxes throughout Section 3, *Strategies and Actions*. The next steps for addressing climate change are included under the *Emerging Issues and Future Opportunities* headings (Section 3, *Strategies and Actions*). In addition, the performance measures for near-term actions include a climate change step, as applicable.

Ocean Acidification

Washington's marine waters are particularly vulnerable to ocean acidification because of regional factors that exacerbate the acidifying effects of global carbon dioxide emissions. One of the most important regional factors is coastal upwelling, which brings offshore water that is rich in carbon dioxide and low in pH up from the deep ocean and onto the continental shelf. Other regional factors affecting ocean acidification in Washington include runoff of nutrients and organic carbon (such as plants and freshwater algae) from land, and local emissions of carbon dioxide, nitrogen oxides, and sulfur oxides, which are absorbed by seawater from the atmosphere. Ocean acidification has the potential to affect a wide range of organisms, from seagrasses to fish and shellfish. If conditions persist or worsen, it is evident that ocean acidification could have significant impacts on the Puget Sound ecosystem and aquaculture industry.

Recognizing the risks of ocean acidification to Washington, Governor Christine Gregoire created the Washington State Blue Ribbon Panel on Ocean Acidification to chart a course for addressing the causes and consequences of acidification. The panel developed 42 recommendations in the following areas.

- Reduce emissions of carbon dioxide.
- Reduce local land-based contributions to ocean acidification.
- Increase our ability to adapt to and remediate the impacts of ocean acidification.
- Invest in Washington's ability to monitor and investigate the causes and effects of ocean acidification.
- Inform, educate, and engage stakeholders, the public, and decision makers in responding to ocean acidification.
- Maintain a sustainable and coordinated focus on ocean acidification at all levels of government.

Ocean acidification is a new cross-cutting issue in the 2014/2015 Action Agenda. The Partnership was directed by Executive Order to "work with its partners to advance the implementation of the Panel's recommendations by incorporating the scientific findings, and strategies and actions into the Puget Sound Action Agenda, the Biennial Science Work Plan, and ecosystem monitoring programs, by December 1, 2014." The Partnership integrated the Blue Ribbon Panel recommendations into near-term actions for the 2014/2015 Action Agenda and the Biennial Science Work Plan. Text boxes in Section 3 describe the relationship of the state strategy to the Action Agenda strategies.

Salmon Recovery

The Partnership is charged with integrating the Puget Sound Salmon Recovery Plan (Recovery Plan) into the overall ecosystem recovery effort and the Action Agenda.⁴ In addition, Salmon recovery scientific needs are reflected in the Biennial Science Work Plan. The Leadership Council adopted a recovery target for Chinook salmon based on the Recovery Plan's long-term goal to achieve harvestable, self-sustaining levels of Puget Sound Chinook. For Chinook salmon recovery target, the Recovery Plan seeks to stop the overall decline and start seeing improvements in wild Chinook abundance in two to four populations in each biogeographic region.

Many strategies in the salmon recovery plan have other ecosystem benefits. Likewise, many of the strategies in the Action Agenda are essential for salmon recovery. Integration of the salmon recovery plan priorities is highlighted in text boxes throughout Section 3, *Strategies and Actions*. Each text box summarizes a salmon recovery priority and describes how it is integrated into the Action Agenda.

Tribal Treaty Rights

Puget Sound has been home to populations of the Coast Salish people for thousands of years. U.S. federal courts have established tribes as co-managers of fish and shellfish resources in Washington waters. As co-managers, tribal governments are on the front lines of implementation of protection and restoration activities. A healthy Puget Sound ecosystem is central to tribal culture and spiritual practices, and to tribal economic health.

Federal agencies in the Puget Sound region are undertaking a coordinated effort to contribute to Puget Sound habitat protection and restoration. This work is being driven by the federal response to Western Washington treaty tribes' concerns over declining habitat. Appendix F, *Federal Response—Habitat Matrix*, contains a description of that effort and a matrix of actions federal agencies are taking related to habitat. Section 2, *The Strategic Initiatives*, provides a summary of the coordination process and outcomes in the text box titled *Tribal Habitat Priorities*.

Performance Management

The Partnership uses several performance management tools to track its progress in reaching the recovery targets by 2020. All of these resources are found on the Partnership website.⁵ These tools are used to track and adjust near-term actions and interim targets, and to report progress on the achievement of the recovery targets and goals.

State of the Sound. This performance report, which is updated every 2 years, reviews the ecological health of Puget Sound, the funding for the Sound, and the status of the Action Agenda implementation. Near-term actions are tracked for implementation progress and funding to help identify where additional regional support and resources are needed. This report is not intended to grade implementers on their work.

⁴ On January 1, 2008, The Puget Sound Partnership Act, Section 49(3), Revised Code of Washington (RCW) 77.85.090(3) designated the Partnership to serve as the regional salmon recovery organization for Puget Sound salmon species, except Hood Canal Summer Chum.

⁵ <http://psp.wa.gov/>

Puget Sound Vital Signs. The status of progress toward achieving the recovery targets is charted on the *Puget Sound Vital Signs* online tool and updates are incorporated in the *State of the Sound* report.

Action Agenda Report Card. This online tool provides an up-to-the-minute status on near-term actions. It allows the user to track near-term action performance and funding status, corrective actions, and ownership. Alignment with vital signs, recovery strategies, and Action Agenda strategies and sub-strategies is provided.

Puget Sound Project Atlas. This online tool provides updates on project implementation. It identifies the project location on an interactive map and allows the users to filter projects by vital sign, fiscal year, and status.

Open Standards. *Open Standards for the Practice of Conservation* (The Conservation Measures Partnership 2013) is a science-based performance management tool used to develop the adaptive management framework, planning tools, and actions. The recovery planning work products are developed using the Open Standards.



SECTION 2

THE STRATEGIC INITIATIVES

The role of the Action Agenda is not only to lay out all of the work that must be done. It also has to prioritize those critical areas where we know we have the opportunity, and the need, to act now to make meaningful progress. The Strategic Initiatives, listed below, direct our action where it can address the most significant problems, with viable solutions, in a way that will create meaningful improvements for Puget Sound.

- **Prevent pollution from urban stormwater runoff.** This is an immense challenge, and, although we have many of the tools and technologies for stormwater, we need to make much fuller use of them if we are to stop contamination from flowing into Puget Sound.
- **Protect and restore habitat.** We must stop destroying habitat, protect what we have left, and substantially restore the critical habitats that we have lost.
- **Recover shellfish beds.** Shellfish harvesting is both a treaty right for tribes and a vital industry in our region. It is also a treasured tradition for countless northwest families. Shellfish health begins on land, through reduction of pollution from rural and agricultural lands and maintenance and repair of failing septic tanks.

The Strategic Initiatives will be the focus of Partnership spending and resources, and of our efforts to increase funding, seek changes in policy, report success and challenges, and educate and engage citizens in the recovery effort.

Setting priorities involves balancing ecological, economic, and human well-being factors to make the greatest progress toward recovery for the time and resources spent. In 2012, the Partnership, working with the Ecosystem Coordination Board (ECB) and the Science Panel, undertook an unprecedented effort to create a science-based assessment of the expected ecological impact of each sub-strategy in the Action Agenda, and to gather associated information on implementation issues including potential contribution to human well-being and economic vitality. The result of this initial effort is a preliminary ranked list of sub-strategies based on expected ecological impacts (Appendix E, *Action Agenda Sub-Strategy Rankings*). This sub-strategy ranking informed the development of the Strategic Initiatives.

The framework and content of the Strategic Initiatives were developed collaboratively by subcommittees of the ECB that consisted of representatives of local, state, and federal governments, the Puget Sound Science Panel, tribes, salmon recovery watershed leads, environmental groups, and the business community. The Leadership Council adopted the Strategic Initiatives as part of the 2012/2013 Action Agenda.

The near-term actions most critical to achieving the Strategic Initiatives over the next 2 years will be identified through a collaborative process involving members of the ECB once the 2014/2015 Action Agenda has been adopted by the Leadership Council. The Partnership will convene and facilitate a series of meetings during the summer of 2014 to achieve this objective. The final list will be presented to the ECB and the Leadership Council for review and approval and will be published as an addendum to the 2014/2015 Action Agenda in late 2014.

Success of the Strategic Initiatives individually and collectively depends on the following overarching strategies.

- **Funding.** We need to increase the financial capacity of our partners across Puget Sound to implement the Strategic Initiatives. We need a comprehensive strategy that addresses federal, state, local, and private funds—through both more efficient, directed use of current funding sources and the generation of new funds.
- **Outreach.** We must have a clear, effective strategy for reaching the relevant stakeholders and the general public to ensure that people are willing to take the necessary actions.
- **Watershed-based implementation.** Every watershed in Puget Sound has different needs and a different context. Actions must be designed to be effective at the local watershed scale.

The Strategic Initiatives—including the challenges they are designed to address, the sub-strategies they are aligned with, and the vital sign indicators and recovery targets that will be used to track progress toward their achievement—are described below.

STRATEGIC INITIATIVE

Prevent Pollution from Urban Stormwater Runoff

The Challenge

Polluted stormwater runoff carries toxic chemicals, nutrients, sediment, and bacteria and is the primary pollution threat to Puget Sound surface water. The problems from polluted stormwater runoff began generations ago and continue today; however, we now understand the problems better and we have a suite of tools that can be used at a variety of scales (individual and regional) to address problems. We cannot recover Puget Sound by 2020 or sustain areas that we restore and clean up without addressing polluted stormwater runoff.

Extensive research shows that the location of development, the amount of development, and practices are used greatly affect our streams, rivers, and marine waters. Developing land can increase impervious cover, roads, and stream crossings and can involve land-clearing practices that carry pollutants harmful to aquatic life and public health into Puget Sound waters. When stormwater is not properly managed, the result is excessive stormwater that the land cannot absorb, resulting in the scouring of rivers and streams. Without a reserve of water in the ground and wetlands to feed streams, fish are left with little or no water during dry summer months. Declining snow pack and loss of natural water storage, changes in precipitation timing and seasonal stream flow, and severe winter flooding combined with more frequent and extreme storm events will strain our stormwater systems and increase the amount of polluted runoff flowing to Puget Sound.

The Clean Water Act was adopted in 1972. At that time, point sources of pollution, such as wastewater and industrial discharges, were the largest component of the water pollution problem. Significant progress has been made since the 1970s in controlling those sources of pollution. That success was achieved through unprecedented coordination and collaboration among all stakeholders and major investments at the federal, state, and local levels.

With solutions to point sources well under way, non-point sources of pollution, such as stormwater runoff, now represent the biggest remaining threat to water quality in the Puget Sound region. These sources are more difficult and more costly to control than point sources and will require even greater coordination and commitments to funding, as well as action by individuals, businesses, and governments.

Given that runoff is a major contributor of pollution to Puget Sound, without a significant increase in stormwater funding in 2012 and beyond, the statutory goal of recovery of Puget Sound by 2020 is not achievable.

—*ECB Stormwater Committee
Policy Statements (April 2011)*



WHAT REALLY WORKS FOR STORMWATER

A substantial load of sediment has accumulated over the years in our stormwater management system. Much of this sediment was deposited before current controls on stormwater and, therefore, often contains high levels of pollution—a “legacy load.” The best and most recent local data on legacy loads is from the City of Tacoma for the Thea Foss and Wheeler-Osgood Waterways (City of Tacoma 2011). Contaminated bottom sediments in these waterways were cleaned up under the U.S. Environmental Protection Agency’s Superfund Program at a cost of \$105 million. After the cleanup, the city engaged in a source control and stormwater monitoring strategy to provide long-term protection of sediment quality in the waterways; however, these source controls did not do the job. The city then undertook an intensive basin-wide cleaning program of the storm sewer lines discharging to the waterways to remove legacy loads. In 2007, over a 2-month period, the city cleaned 80,000 feet of 8- to 56-inch-diameter lines and removed 220 cubic yards of stormwater sediments from the conveyance lines, laterals, and catch basins, at a cost of \$300,000. This achieved a 30% reduction in lead in some areas and a 40 to 60% reduction in polycyclic aromatic hydrocarbons. In the parts of the system that were cleaned, levels continue to decline for 20 chemicals of concern.

Link to Relevant Vital Signs and Recovery Targets

This strategic initiative contributes to achieving the recovery targets for the vital signs listed below and shown in color in the Puget Sound Vital Signs graphic at right.

- Summer stream flows
- Marine water quality
- Freshwater quality
- Marine sediment quality
- Toxics in fish
- Swimming beaches
- Shellfish beds
- Chinook salmon
- Orcas
- Birds



Strategies and Actions

The strategies and actions for this strategic initiative are organized into five themes: take a watershed approach to management, prevent new problems, fix existing problems, control sources of pollution, and educate. These themes are described below. The figure below presents the relevant sub-strategies by theme. Section 3, *Strategies and Actions*, provides descriptions of all strategies and sub-strategies, and the ongoing programs and near-term actions that support them.

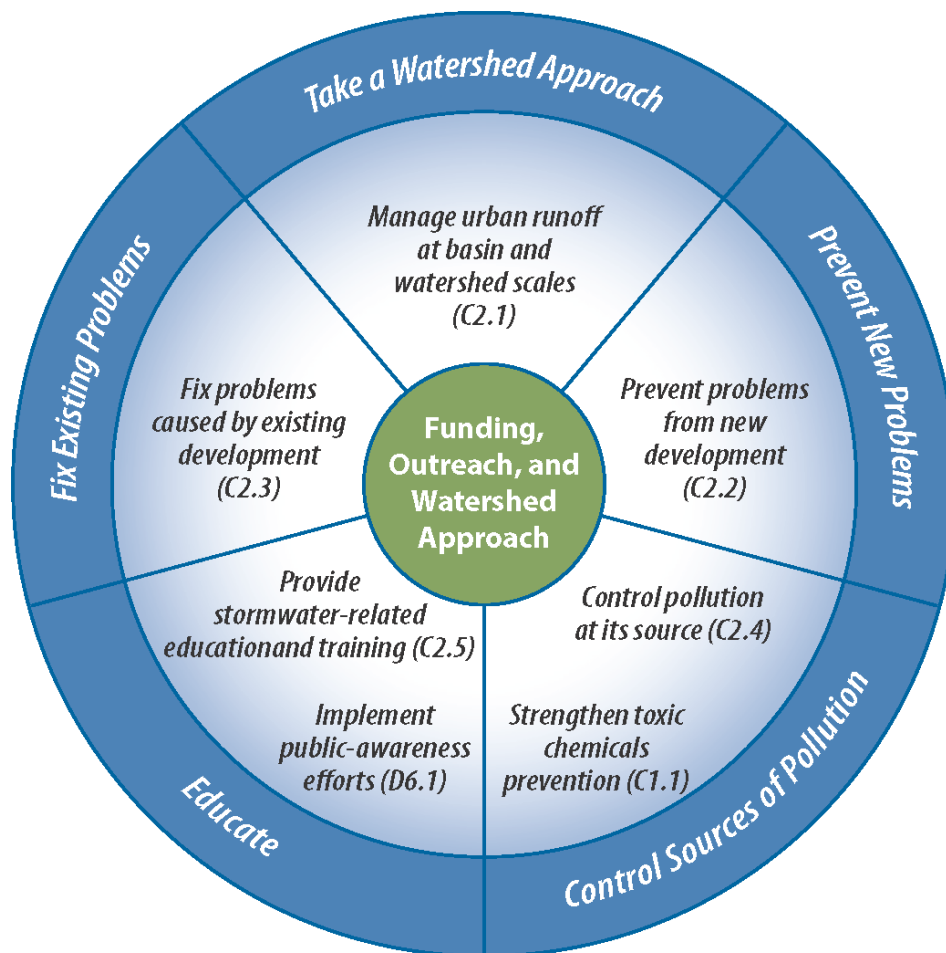
Take a watershed approach to management. Urban runoff cannot be fully managed at the site and parcel levels alone—it is necessary to manage runoff at the broader basin and watershed scales. Local land use decisions directly affect urban runoff quantity and quality within watersheds.

Prevent new problems. The implementation of National Pollutant Discharge Elimination System (NPDES) permits, which control water pollution by regulating point sources (e.g., industrial, wastewater, stormwater), is considered one of several cost-effective ways to prevent pollution from reaching Puget Sound. With an increase in annual investment local governments could do an even better job. But they need financial help from the state and federal government to reflect the shared responsibility to recover Puget Sound.

Fix existing problems. To readily seek capital retrofit funds, we need more detailed and comprehensive information about the highest priority existing problems, conceptual designs, and project-specific cost estimates.

Control sources of pollution. One of the most cost-effective ways to prevent toxins and other pollutants from getting into Puget Sound is to prevent them from being introduced into the environment in the first place. Taking proactive steps now to address stormwater runoff will help reduce the risk of damage to infrastructure, as well as safeguard fish, wildlife, and habitats.

Educate. We need to continue to educate individuals and communities about ways that they can become part of the solution. In addition, we must help stormwater managers at the local level learn to implement low impact stormwater management measures, and ensure that we have an educated workforce that has the tools to eliminate the threat to Puget Sound from polluted stormwater runoff.



STRATEGIC INITIATIVE

Protect and Restore Habitat

The Challenge

Puget Sound is home to more than 200 species of fish, 100 species of seabirds, 26 species of marine mammals, hundreds of plants, and thousands of invertebrates. Puget Sound is also home to more than 4 million people, and the population is expected to grow to more than 5 million by 2020 (Washington State Department of Ecology 2014a). As more people continue to arrive in Puget Sound, our challenge is to help our communities live on the land and enjoy the waters in a way that will not only accommodate people but will allow the continued survival of Puget Sound native species and habitats that enhance our quality of life and provide economic benefits.

Key indicators tell us that important habitat for Chinook salmon is still declining.

—*National Marine Fisheries Service, Puget Sound Chinook Salmon Recovery Plan, 2011 Implementation Status Assessment Final Report*

Our considerable investment in habitat restoration has not been able to turn the powerful tide of loss and degradation...If salmon are to survive, we must begin to achieve real gains in habitat protection and restoration. The path we are on leads to the extinction of the salmon resource and our treaty-reserved rights.

—*Treaty Rights At Risk—A Report from the Treaty Indian Tribes in Western Washington, July 2011*

As people live on the land we make changes to it—remove trees, construct buildings, add pavement, build dikes and levees to control where rivers and streams flow, and use concrete or rocks to harden the shorelines. Each of these changes degrades native habitat and makes it more difficult for native species to find places to feed, rest, hide from predators, reproduce, and survive. These changes also diminish the values that people derive from native habitats, such as protection from flooding and coastal storm surges, food that sustains us and is exported around the world, and outdoor recreation that directly supports more than 227,000 jobs and provides \$22.5 billion to Washington’s economy. When we lose native species and habitats we also lose our natural heritage and a quality of life that makes Puget Sound an attractive place to live, work, and play.

The signs are everywhere that these changes to Puget Sound are having negative effects. Four Puget Sound salmonid populations are listed as threatened with extinction under the Endangered Species Act. Every major river in Puget Sound has at least one listed stock; many have multiple stocks and species listed as threatened. More than half of the 19 stocks of Puget Sound herring are currently classified as

depressed, critical, disappeared, or unknown. Fourteen out of 17 species of rockfish in the North Sound and 11 out of 15 species in the South Sound are at risk. Three of these Puget Sound rockfish species are listed as either threatened or endangered. Many marine bird species in Puget Sound have declined in population by 50 to 95% during the past 20 years. Marine bird populations that feed on fish that live near the surface or in open water have declined by 80 to 95% in numbers. And in 2005, Puget Sound orcas were listed as an endangered species.

It is clear from these trends that Puget Sound and its species are at serious risk.

Shorelines have been hardened and altered. Loss of habitat is a primary contributor to species declines. More than 700 miles of Puget Sound’s 2,500 miles of shorelines have been hardened by the construction of concrete or rock bulkheads, and that mileage is increasing by 1 to 2 miles each year. This shoreline hardening interrupts the natural process of erosion that creates and maintains beaches. One example of how this can affect Puget Sound species is the impact on forage fish—small species of fish that are an important source of food for marine mammals, birds, and larger species of fish. Some types of forage fish, including surf smelt and sand lance, need sandy beaches to lay their eggs. The loss of forage fish numbers affects the whole food web of Puget Sound because forage fish are such an important food source for so many other species.

Estuaries have been filled and lost. There are 16 major rivers and many other smaller streams that flow into Puget Sound. Where each river or stream enters the Sound—and the salt water and fresh water mix—is a unique place called an estuary. Estuaries provide critical habitat for many species. Salmon need estuaries to feed, rest, and grow strong as they make the physiological change from a freshwater fish to a saltwater fish. Scientists have found that Puget Sound salmon that leave the estuary before they reach a certain size have a much higher risk of dying before returning to their natal streams. As the amount of estuary habitat is reduced, more salmon leave at a smaller size because there is not enough room or food for them to stay. Across Puget Sound we have lost almost 60% of our historical estuarine wetland habitat.

Rivers have been channelized and floodplains altered. Upstream of Puget Sound, many of the floodplains of our rivers and streams have been significantly altered. In many places levees have been constructed to narrow channels, prevent movement of the rivers in their floodplains, and control flooding. Homes and businesses were built in the historical floodplain or the land was drained and converted for agriculture. Native trees were removed from the riverbanks and large fallen trees removed from the rivers. All of these changes significantly alter the natural processes that create instream habitat for fish and other aquatic life. Rivers that move back and forth naturally in their floodplain have a diversity of habitats. Slow-water side channels that provide refuge and rest stops for fish, sorted gravel beds for salmon to spawn, large trees that fall naturally into the river and cause the formation of deep pools, and overhanging vegetation that keeps the water cool and provides insects for fish to eat when they fall in the stream are all important elements of a healthy habitat for instream

HOW CAN I HELP?

Shoreline property landowners can remove aging bulkheads—evaluate whether replacement is really necessary—and, when appropriate, replace armoring with more natural, soft shore alternatives.

For more information go to:
www.pugetsoundstartshere.org

aquatic life. When vegetation is removed and rivers are narrowed and straightened, the rivers become fast-moving highways of water with no place for fish to rest or feed.

There is increasing competition for water and sometimes not enough water to go around. Natural processes of stream flow and water retention have been disrupted. One of the most fundamental and obvious things that aquatic life needs to survive is water—cool, clean water in the right amounts and at the right times. Sometimes, there is not enough water to go around. Other times, stream habitat is negatively affected by too much water flowing too quickly. In many rivers and streams across Puget Sound—where people divert surface flows or extract groundwater, and where land uses have damaged natural water storage capacity—fish and aquatic life are threatened.

We are threatened by oil spills. Significant threats to habitat include the possibility of a major oil spill in Puget Sound. Impacts of the Exxon Valdez spill in Alaska or the more recent Deepwater Horizon spill in the Gulf illustrate how one event can cause major, long-lasting impacts on habitat and the economic productivity of a region. More than 20 billion gallons of oil and other hazardous chemicals are transported through Washington State every year. With this much volume the threat of a major spill is very real if prevention measures are not implemented.

Habitat loss is a major threat to salmon and other species. The cumulative effect of the changes we have made to our floodplains, estuaries, marine shorelines, and stream flows has been a significant loss of habitat and declines in populations of the species that depend on those habitats and on one another for their survival. If we are to stop these declines and begin to recover these populations, we must immediately stop further habitat loss and significantly restore habitat that has already been lost.

Two papers released in 2011 pointed out that we are still losing critical habitat in Puget Sound. The first was a report released by the National Marine Fisheries Service (NMFS) that assesses the progress of Puget Sound Chinook Salmon Recovery Plan implementation since it was federally approved in 2007. Among other things, the paper concluded that important habitat for salmon was still being lost during the first 5 years of recovery plan implementation and that habitat protection efforts needed substantial improvement.

Closely following the NMFS report, the Treaty Tribes of Puget Sound and the Coast released a paper titled *Treaty Rights at Risk—Ongoing Habitat Loss, the Decline of the Salmon Resource, and Recommendations for Change*, in which the tribes point out that the right to fish that was reserved to them in the treaties is meaningless if there are no fish left to catch. They cite numerous examples from across Puget Sound of continued loss of habitat due to shoreline armoring, loss of forest, increase in paved lands, and filling and diking of estuarine wetlands. Their paper is a call to action,



Jerry Pearson and his grandson Dylan Pearson, 5, release salmon fry into Issaquah Creek under the Northwest Sammamish Road crossover with other Issaquah School District classroom students, teachers, and parents.

intended to galvanize and energize response by federal, state, local, and tribal governments and policy makers to reverse the downward slide of our salmon and their habitat.

For a number of reasons, much of the discussion around loss of habitat in Puget Sound has focused on the impacts on salmon. The loss of salmon in Puget Sound has significant social, cultural, and economic impacts. The value of the Puget Sound salmon fishery is estimated at more than \$60

million a year. However, salmon recovery is not important only to those who benefit economically from salmon harvest. Salmon are central to Pacific Northwest tribal cultural and spiritual practices. In addition, many non-tribal residents of Puget Sound also view salmon as an important part of our area's heritage and way of life—observing salmon spawning in the streams, fishing for salmon, or buying local salmon at their favorite restaurant or store. Salmon also play a unique role in the nutrient cycle of the ecosystem. As adult salmon return from their ocean journey, they bring marine nutrients back to Puget Sound rivers and streams. Research has shown that these marine nutrients are a critical part of the cycle that results in healthier wildlife and fish populations and even contribute to the growth of streamside forests. Salmon are also a key indicator of the health of Puget Sound as they travel from fresh water to salt water and back again, using all the different types of aquatic habitats that are important to other aquatic species as well. Salmon are our canary in the coal mine—and their declines signal a loss of the Sound's ability to support all life, not only salmon.

Now we have this jewel in the Sound for the people of this region to enjoy forever.

—Ryan Mello, Pierce County conservation director

WHAT REALLY WORKS TO PROTECT SALMON HABITAT

At the tip of Key Peninsula in South Puget Sound are 94 acres of forests and wetlands and 1 mile of undeveloped shoreline. Eroding bluffs feed the beaches with sand and gravel, creating habitat for shellfish, forage fish, and migrating juvenile salmon. This beautiful property known as Devil's Head, with views of the Olympic Mountains, Mount Rainier, the Nisqually delta, and nearby Puget Sound islands, was slated to be Puget Sound's next resort. However, a broad coalition of agencies, organizations, and individuals, including Pierce County Council members, county employees, Forterra, the Nisqually Tribe, the Greater Peninsula Conservancy, the Key Peninsula Parks District, and the Washington Water Trails Association, came together to help purchase the property for permanent protection.

Elected officials from Pierce County worked with Forterra to contribute local funds towards the project through the Pierce County Conservation Futures program. Funding from the state's Puget Sound Acquisition and Restoration fund also played a major role. The five different watershed citizen committees that received the Puget Sound Acquisition/Restoration funds all agreed to pool some of their funds and give up other projects in their local area to ensure this property could be protected. One more grant from the state's Wildlife and Recreation Program, managed by the Washington State Recreation and Conservation Office, put the final piece in place.

The Devil's Head project is a great example of how people and organizations can come together to find a way to protect valuable Puget Sound habitat now and for future generations.

Link to Relevant Vital Signs and Recovery Targets

This strategic initiative contributes to achieving the recovery targets for the vital signs listed below and shown in color in the Puget Sound Vital Signs graphic at right.

- Swimming beaches
- Shellfish beds
- Chinook salmon
- Orcas
- Pacific herring
- Birds
- Shoreline armoring
- Eelgrass
- Land development and cover
- Floodplains
- Estuaries
- Summer stream flows
- Marine sediment quality
- Toxics in fish



Strategies and Actions

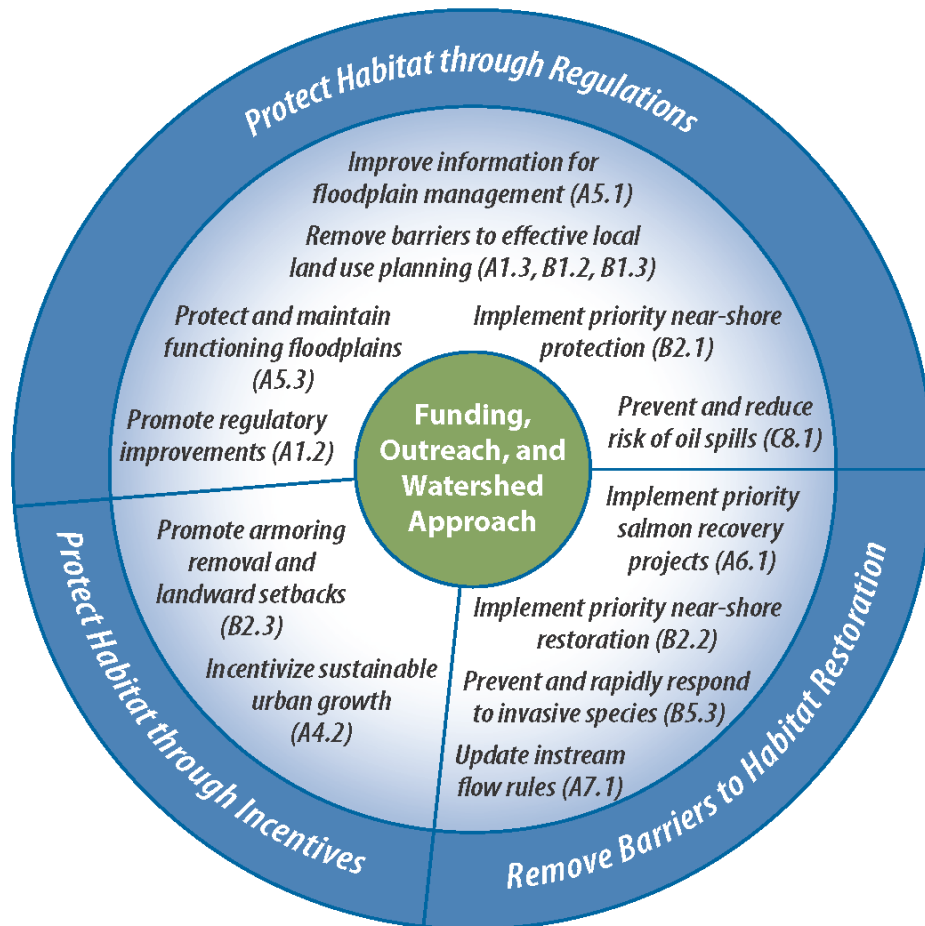
The strategies and actions for this strategic initiative are organized into three themes, described below: protect habitat through regulations, protect habitat through incentives (including acquisition), and remove barriers to restoration of habitat. The figure below presents the relevant sub-strategies by theme. Section 3, *Strategies and Actions*, provides descriptions of all strategies and sub-strategies, and the ongoing programs and near-term actions that support them.

Protect habitat through regulations and protect habitat through incentives. We must first stop the further loss of habitat. It is not effective or efficient to allow the continued loss of habitat while we try to repair the damage in other places. This strategic initiative brings forward strategies and actions that address both increasing regulatory protections for habitat and providing greater incentives for landowners to protect valuable habitat. Our biggest challenges in habitat protection are the lack of widespread public understanding of the significance of habitat loss, the lack of strong public support for the regulatory changes necessary to protect habitat, and the need for greater incentives for landowners to voluntarily protect valuable habitat. These challenges hindered previous attempts to strengthen protective regulations and to work with landowners on a voluntary basis. We must address regulatory exemptions that allow the continued degradation of habitat.

Two other critical elements of habitat protection are the prevention of oil spills and control invasive species.

Remove barriers to restoration of habitat. Without restoring critical habitat we will not be able to reverse the declines in salmon and other Puget Sound species. We must work to remove the following barriers to habitat restoration.

- Lack of funding for the large-scale, more expensive projects that are necessary to restore the whole Puget Sound ecosystem.
- Lack of local community support and landowner willingness.
- Inadequate stream flows.



TRIBAL HABITAT PRIORITIES

Puget Sound tribes engaged in an intensive coordination process to identify priority actions needed to address the continued loss of salmon habitat. Although there is close agreement between the Tribal Habitat Priorities and the Strategic Initiatives, more work is needed to ensure progress. The Partnership will work with tribes through the Partnership Tribal Comanagement Council to address additional items in the Tribal Habitat Priorities throughout the Puget Sound.

- 1) The Puget Sound Management Conference under the leadership of the PSP Leadership Council, the Ecosystem Coordination Board, and Salmon Recovery Council, supported by the PSP staff, will do the following to protect the ecosystem processes required to support the habitat necessary to meet salmon recovery goals of viable, harvestable populations.
 - a) Establish quantitative metrics for habitat at each life history phase for each population to ensure harvestable surplus and a viable salmon population.
 - b) Identify necessary changes to Federal, State, tribal and local statutes, regulations and policies that allow the continued loss of habitat including, but not limited to, eliminating the single family and agricultural activity exemptions from the Shoreline Management Act and the Growth Management Act.
 - c) Implement and fund the recovery plans for Puget Sound salmon and steelhead (all H's) including, but not limited to, Puget Sound Chinook salmon and Strait of Juan de Fuca/Hood Canal summer chum salmon to support viable, harvestable populations.
 - d) Modify Flood Control and Coastal Emergency Act (PL84-99) to provide funding for levee set-backs to enhance flood plain functions.
 - e) Require all affected agencies to clearly identify, define, implement and enforce quantitative metrics for essential habitat required under existing authorities.
 - f) Develop a comprehensive funding strategy for Puget Sound recovery with focus on new dedicated sources of funding.
 - g) Develop a comprehensive public outreach, awareness, and behavior change program to promote public stewardship of Puget Sound resources.
 - h) Prevent large oil spills and reduce the incidence of chronic oil spills through enforcement of existing rules and modify legislation where required to ensure protection.
 - i) Adequately fund and strengthen spill readiness and response capacity.
 - j) Update state water quality standards by ensuring promulgation of new human health criteria with an accurate fish consumption rate before undertaking implementation rule development and by developing numeric criteria of fine sediment.
 - k) Implement water resource management rules (establish instream flows) in critical watersheds.
- 2) Implement and improve consistency, coordination of enforcement and alignment of federal, state and local regulations for the protection of priority nearshore, estuary and floodplain habitat.
 - a) The appropriate entities shall ensure effective coordination and enforcement of existing regulations.
 - (1) EPA will enforce CWA and ensure that delegated responsibilities to WDOE are effectively discharged.
 - (2) WDOE will enforce Water Quality Standards and the State Water Pollution Control Act.
 - (3) NOAA will ensure that the conditions of the DNR HCPs are met.
 - (4) NOAA will monitor the implementation of the FEMA BIOP to ensure compliance.
 - (5) WDOE will enforce water right permits, beneficial use requirements and illegal withdrawal regulations.
 - (6) WDFW will enforce Hydraulic Code provisions.
 - (7) WDNR will enforce Forest Fish Rules and commitments under HCPs.
 - (8) Federal and State agencies will act to ensure that habitat held in trust to guarantee reserved treaty rights supporting the tribal way of life is not degraded to the point that additional restrictions are required.
 - (9) Ensure that best management practices result in meeting water quality standards.
 - b) Where inconsistencies exist between current regulations and the desired ecosystem protection and restoration, the affected agencies will consult and align their authorities to achieve this objective.
 - c) Develop strategy to achieve zero discharge of waste water into Puget Sound, including short-term targets by Action Area identifying specific facilities for conversion.

- d) Align Federal, State, and local agencies' resources and regulatory jurisdictions to implement large scale process restoring projects.
 - e) NOAA will develop a Biological Opinion on the impact of dikes/levees on Chinook production.
 - f) NOAA OCZM will ensure that the SMA protects shoreline processes essential to the productivity and capacity for harvestable viable salmon populations.
- 3) Increase opportunity, focus and effectiveness of incentive based approaches, including non-financial incentives, for the protection and restoration of priority floodplain, wetland, estuary and nearshore habitat.
- a) Identify and prioritize key habitat.
 - b) Protect key habitat through land purchase, conservation easements, purchase of development rights or tax incentives such as tax credits or reductions.
 - c) Develop measurable standards that must be met by those applying for or receiving incentives.
 - d) Develop regulations that allow continued land use consistent with protection and recovery targets, but make conversion to other uses prohibitive.
 - e) Develop programs that recognize good stewards of key habitat and help them identify efficiencies, new markets, etc.
- 4) Address key institutional, financial and community barriers to priority habitat restoration projects.
- a) Establish a sound wide taxing district to support actions, monitoring and adaptive management of Puget Sound protection and restoration projects.
 - b) Implement a program to illustrate the value of a healthy Puget Sound Ecosystem to Public Health and the economic well-being of the residents.
 - c) Streamline permitting requirements for ecosystem restoration projects with agreed long term beneficial results.
 - d) Overcome institutional barriers to align funding sources to implement large scale projects including implementation of projects identified by PSNERP.
 - e) ESA Listing Services will ensure that federal agencies consult on actions that impact listed species.
- 5) Hatchery production will augment harvest and supplement natural stock restoration in a manner that is compatible with habitat protection and restoration, as well as preserving and enhancing the genetic and life history diversity of natural production.
- a) WDFW and tribal fishery resource managers will develop hatchery management plans that recognize the requirements in each watershed, take into account habitat and harvest plans, and provide for sustainable production from both hatchery and natural sources.
 - b) WDFW and Tribal fishery resource managers will complete Hatchery Genetic Management Plans (HGMPs) for NOAA review and approval.
- 6) Develop and implement monitoring programs critical to the evaluation of viable salmonid population parameters, key indicators of freshwater and marine habitat and ecosystem response to salmon recovery efforts which will be comparable in detail to monitoring harvest and hatchery practices.
- a) Apply the RITT Adaptive Management Framework throughout Puget Sound.
 - b) Spawning ground abundance, smolt migration abundance and total abundance for natural and hatchery origin populations will be estimated.
 - c) Monitor key habitat status and trends indicators for floodplain, channel migration zone, wetland, estuary, nearshore and Salish Sea habitat including stream flow, temperature, habitat extent and condition, prey and predator abundance and associated species complexes.
 - d) Monitor effectiveness of restoration projects, best management practices and buffers.
 - e) Establish geographically appropriate measures to evaluate actions (reach, drift cell, etc.).
 - f) Monitor the implementation and effectiveness of regulations intended to protect salmon habitat and make changes as necessary.
 - g) Implement a comprehensive Puget Sound marine salmonid survival study focused on management needs for associating key habitat indicators with returning abundances.
-

STRATEGIC INITIATIVE

Recover Shellfish Beds

The Challenge

Shellfish play a significant role in the biology, culture, history, and economy of Puget Sound. But they are being threatened by pollution from various sources.

Pacific Northwest tribes have lived and harvested shellfish in Puget Sound for about 12,000 years, and archeologists have uncovered shell middens dating back as far as 5,000 years. Shellfish provide sustenance and figure prominently in tribal spiritual beliefs. Ceremonial and subsistence harvest of shellfish in Puget Sound and coastal waters is invaluable to tribes.

Shellfish are also critical to the health of Washington's economy. Washington leads the country in production of farmed clams, oysters, and mussels, which have an annual value of more than \$107 million. Washington shellfish growers directly and indirectly employ more than 3,200 people and provide an estimated total economic contribution of \$270 million.

Annually, tourists and residents purchase 160,000 licenses to harvest shellfish from Washington waters, providing more than \$1 million in state revenues. The Washington Department of Fish and Wildlife estimates that the 125,000 shellfish harvesting trips made each year to Puget Sound beaches provide a net economic value of \$5.4 million to the region.

In addition to the cultural, recreational, and economic contributions that shellfish make in Puget Sound, their filtering and recycling processes play a role in improving the water quality. Shellfish also contribute to Puget Sound's ecosystem diversity and complexity by adding structure to the nearshore and refuge and forage opportunities.



HOW CAN I HELP?

Regularly inspect and maintain your onsite septic system to ensure its proper operation.

Pick up after your dog: scoop the poop, bag it and throw it in the trash.

For more information go to:
www.pugetsoundstartshere.org

WHAT REALLY WORKS TO RECOVER SHELLFISH BEDS

In February 2010, the Department of Health reopened 240 acres of shellfish-growing tidelands for harvest without weather restrictions in Henderson Inlet in Thurston County. This was the first reopening of closed shellfish beds since the 1980s. In the face of increased development, and contrary to predicted trends, water quality in the inlet has improved, and these improvements have been maintained. This success was the result of concerted effort by Henderson Inlet area residents and strong coordination among stakeholders to identify and implement the following actions.

- Reach out to local opinion leaders and neighborhood groups and work locally, on the ground, to understand problems and develop solutions.
- Focus on actions that directly address local sources of water pollution, such as septic systems, stormwater, agriculture, and land use.
 - In Henderson Inlet, Thurston County developed a septic system operation and maintenance program, which reduced fecal coliform pollution from onsite sewage systems, and worked to reduce runoff locally and to Woodard Creek.
- Engage and educate the homeowners in the watershed with a dedicated outreach strategy and multiple venues for involvement, including public meetings, newsletters, and hands-on opportunities that invest people in taking action to maintain success.
 - In Henderson Inlet, among other things, they formed a community shellfish farm.
- Set goals and monitor progress.
 - Thurston County developed an action plan specifically targeted at reducing water pollution which includes performance measures to evaluate implementation success and provides clear annual reporting requirements for transparency.
- Involve a multi-stakeholder advisory group/committee in action plan development and implementation. Representatives should include local businesses and associations of varied interests, local citizens, and city, county, state, and tribal government.
- Secure multiple viable funding sources including conservation district grants, county and city resources, and public taxes.
- Establish and implement enforcement mechanisms.

These actions could be replicated elsewhere in Puget Sound. In fact, a similar cooperative model is currently being followed in Oakland Bay in Mason County and is already bearing results.

Shellfish beds require excellent water quality to ensure shellfish are safe to eat. However, water quality is threatened by numerous sources including onsite sewage systems, wastewater treatment plants, marinas, animal-keeping activities, and wildlife through direct discharges to Puget Sound and by stormwater runoff that flows to Puget Sound. The extent of approved shellfish harvesting areas in Puget Sound reflects the health of Puget Sound. Currently, shellfish harvest is prohibited in 7,000 acres of Puget Sound.

Polluted runoff from rural and agricultural lands must stop if we are to meet shellfish recovery targets. These targets include a net increase from 2007 to 2020 of 10,800 harvestable shellfish acres. However, the recent downgrade of the Samish Bay shellfish area is a reminder of the constant vigilance needed by landowners, businesses, and local, state, federal, and tribal governments to protect and restore shellfish beds.

Moreover, intensive shellfish aquaculture can put pressure on Puget Sound, and there are concerns that these activities may increase pollution, change the physical beach structure and substrate to the detriment of native species abundance and diversity, disrupt the food web, and affect other resource-based jobs such as fishing or crabbing.

Link to Relevant Vital Signs and Recovery Targets

This strategic initiative contributes to achieving the recovery targets for the vital signs listed below and shown in color in the Puget Sound Vital Signs graphic at right.

Vital Signs graphic at right.

- Shellfish beds
- Quality of life
- Land development and cover
- Marine water quality
- Freshwater quality
- Marine sediment quality
- Toxics in fish
- Onsite sewage
- Swimming beaches
- Chinook salmon
- Orcas
- Pacific herring
- Birds



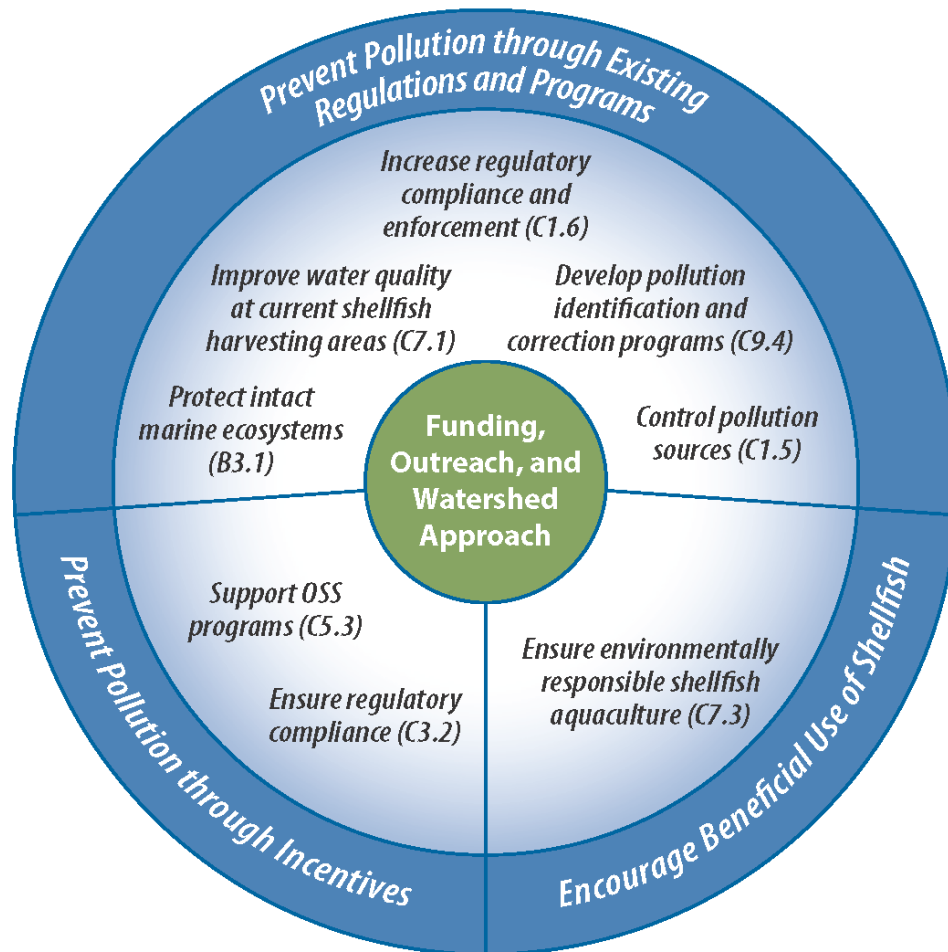
Strategies and Actions

The strategies and actions for this strategic initiative are organized by three themes, described below: prevent pollution through existing regulations and programs, prevent pollution through incentives, and encourage beneficial use of shellfish. The figure below presents the relevant sub-strategies by theme. Section 3, *Strategies and Actions*, provides descriptions of all strategies and sub-strategies, and the ongoing programs and near-term actions that support them.

Prevent pollution through existing regulations and programs. Numerous existing programs and regulations are in place to prevent pollution. These sub-strategies focus on increasing enforcement and compliance with and furthering the implementation of these programs and regulations

Prevent pollution through incentives. Incentives are intended to encourage and assist homeowners and agricultural users to prevent pollution on and from their properties.

Encourage beneficial use of shellfish. Continuing work is needed to clarify the potential impacts of shellfish aquaculture and to help communities build consensus on the role of shellfish aquaculture in Puget Sound.





SECTION 3
STRATEGIES AND
ACTIONS

The Action Agenda is made up of strategies, sub-strategies, ongoing programs, and near-term actions, which are organized into five broad categories.

- A. **Freshwater and Terrestrial** includes strategies and actions related to land development and restoration, stewardship of working forest and agriculture lands, floodplains, salmon recovery, and freshwater flows.
- B. **Marine and Nearshore** includes strategies and actions related to shoreline protection, alteration, and restoration; marine area protection and restoration; working waterfronts and public access; and biodiversity and invasive species.
- C. **Pollution** includes strategies and actions related to reducing toxic threats, polluted runoff from urban and rural lands, wastewater management, shellfish bed restoration, and oil spill preparedness and clean up.
- D. **Strategic Leadership and Collaboration** includes much of the core work of the Partnership, as well as some partners, including strategies and actions related to setting priorities, performance management, science and ecosystem monitoring, and promoting stewardship.
- E. **Funding Strategy** describes how increased financial capacity to implement priority ongoing and new actions in the Action Agenda can be achieved through identifying new sources of funding, using existing funding more strategically and efficiently, and developing innovative, market-based programs.

Within each of these broad categories, the strategies and actions are further organized into strategic topics. The following information is presented for each strategic topic.

- **The Challenge** describes the issue.
- **Recovery Targets** presents the relevant vital sign indicators and associated recovery targets.
- **Local Priorities** shows the local integrating organizations (LIOs) with near-term actions (by sub-strategy).
- **Strategies and Actions** presents the strategies and sub-strategies—the overall, long-term directions and approaches—and the ongoing programs and near-term actions that implement them.
 - **Ongoing Programs** describes existing Puget Sound recovery efforts that fit into the Action Agenda framework. Key actions that are expected to be completed within the timeframe for the 2014/2015 Action Agenda are highlighted at the end of the section.
 - **Near-Term Actions** presents Soundwide near-term actions followed by local near-term actions. Local actions are designated by local area abbreviations.
 - **Emerging Issues and Future Opportunities** provides a forward-looking discussion for each strategy, where appropriate.
 - Each **Target View** describes the recovery targets for specific vital signs and identify the strategies and sub-strategies that contribute to achieving the targets.

Additionally, cross-cutting issues—salmon recovery, tribal treaty rights, climate change, and ocean acidification—are highlighted in text boxes throughout Section 3 where they are relevant to the strategies and actions.



STRATEGIES AND ACTIONS

A: FRESHWATER AND TERRESTRIAL

The protection and restoration of upland and terrestrial systems is fundamental to the health of Puget Sound, yet land development and associated human land use activities have damaged many of the underlying processes that support these systems. The elements of a successful approach to upland and terrestrial systems must ensure that land use and land development practices are carried out in a sustainable fashion; flood hazards do not harm people, residences, and transportation; freshwater quality and quantity supports freshwater and terrestrial food webs and human uses; groundwater levels as well as river and streamflow levels are sufficient to sustain people, fish, and wildlife; salmon are abundant and populations are significantly increasing throughout Puget Sound; species are protected and biodiversity is enhanced; and non-native species do not impair the complex functions of the Puget Sound ecosystem.

The strategies in this section will contribute most significantly to achieving recovery targets for the following vital signs.

- Land development and cover
- Floodplains
- Summer stream flows
- Chinook salmon

THIS SECTION DESCRIBES SEVEN STRATEGIES—and associated sub-strategies, ongoing programs, and actions—that are essential to the protection and restoration of freshwater and terrestrial systems. The strategies and actions are organized under the following headings.

Land Development and Cover

- A1.** Focus Land Development Away from Ecologically Important and Sensitive Areas
- A2.** Protect and Restore Upland, Freshwater, and Riparian Ecosystems
- A3.** Protect and Steward Ecologically Sensitive Rural and Resource Lands
- A4.** Encourage Compact Regional Growth Patterns and Create Dense, Attractive, and Mixed-Use and Transit-Oriented Communities

Floodplains

- A5.** Protect and Restore Floodplain Function

Summer Stream Flows

- A6.** Protect and Recover Salmon

Chinook Salmon

- A7.** Protect and Conserve Freshwater Resources to Increase and Sustain Water Availability for Instream Flows
-

RECOVERY IN FOCUS



Freshwater and terrestrial strategies and actions contribute to achieving recovery targets for the vital signs shown in color in this *Puget Sound Vital Signs* graphic. The *Puget Sound Vital Signs* is an online tool that tracks and communicates ecosystem conditions and progress toward achieving recovery targets.

Land Development and Cover

The Challenge

Land development and cover are essential contributors to the health of both terrestrial and aquatic ecosystem processes and habitats. Due to land conversion from growth and development pressures, many Puget Sound habitats have been reduced in size, diminished in quality, and fragmented, and the ecosystem processes (e.g., water quality, flow, and retention) that form and sustain these habitats have been degraded and disrupted. During the past 50 years, Puget Sound has lost at least 67% of its remaining old growth forest, more than 90% of its native prairies, and 80% of its saltwater and freshwater marshes (Puget Sound Partnership 2008).

Essential to our ability to protect the resources that remain will be encouraging density in urban areas, protecting rural working lands, and avoiding sprawl. Population growth and residential and commercial development are elements of a healthy economy and are not per se what threatens Puget Sound health and recovery; rather, it is *where* and *how* the growth and development occur that can result in adverse pressures on ecosystem functions.

Tools to protect key ecosystem processes include regulatory programs, acquisition programs, partial acquisition of development rights or conservation easements, and conservation leasing. Special designations such as Wilderness, Wild and Scenic Rivers, and Outstanding Water Resources can be used to ensure long-term protection. Acquiring development rights from highly productive working resource lands, such as farms and forests, is an effective way to protect ecosystem processes/structures while ensuring long-term productivity of working landscapes and rural communities.

The National Estuary Program Watershed Grant has identified pilot projects to fund a number of sub-strategies identified in this section. Ecology and Washington State Department of Commerce (Commerce), the lead agencies of the grant, will continue to fund and provide technical support for pilot projects at the local level aimed at implementation of these sub-strategies.

CLIMATE CHANGE

Many climate change impacts have links to land cover and land development—particularly with regard to risks to fish, wildlife, and natural systems from habitat degradation and loss, as well as risks to the agriculture and forestry industries. *Preparing for a Changing Climate: Washington State’s Integrated Climate Response Strategy* (Washington State Department of Ecology 2012a) identifies several high-priority, overarching strategies with a connection to reducing pressures from land development, including the following.

- Reducing forest and agricultural vulnerability to climate change impacts. This strategy includes conserving productive and adaptive farmland and forests.
- Safeguarding fish and wildlife and protecting critical ecosystem services that support human and natural systems. This strategy includes protecting and restoring habitat.

The strategies and actions in this section directly implement the state climate response strategy.

Recovery Targets

The strategies and actions in this section will contribute more significantly to achieving the recovery targets for land development and cover listed below with their associated indicators.

Vital Sign	Indicator	Recovery Target
Land Development and Cover	Conversion of ecologically important lands, measured by the proportion of vegetated cover converted to developed cover on undeveloped lands identified as ecologically important and that are under high pressure from development for residential, commercial, and industrial uses	Basin-wide loss of vegetation cover on ecologically important lands under high pressure from development does not exceed 0.15% of the total 2011 baseline land area over a 5-year period.
	Growth in urban growth areas, measured by the proportion of population growth occurring in urban growth areas	The proportion of basin-wide growth occurring within urban growth areas is at least 86.5% (equivalent to all counties exceeding their population growth goals by 3%), with all counties showing an increase over their 2000–2010 percentage.
	Forest loss, measured by the number of acres of forest cover converted to development	The average annual loss of forested land cover to developed land cover in non-federal lands does not exceed 1,000 acres per year, as measured with Landsat-based change detection.
	Riparian vegetation restoration, measured by the amount of new vegetated cover delivered by restoration projects along riparian corridors	Restore 268 miles of riparian vegetation or have an equivalent extent of restoration projects under way.

Local Priorities

LIOs identified near-term actions that address land development and cover. These local actions are presented in the *Strategies and Actions* section along with Soundwide actions under the sub-strategy shaded below. The local action numbering contains the area abbreviation shown in parentheses after each LIO name. See Section 4, *Local Recovery Actions*, for detailed information about local planning.

Local Integrating Organization	Sub-Strategy											
	A1.1	A1.2	A1.3	A1.4	A2.1	A2.2	A2.3	A3.1	A3.2	A4.1	A4.2	A4.3
Hood Canal Coordinating Council (HC)						■						
Island (ISL)												
San Juan (SJI)												
Snohomish-Stillaguamish (SNST)			■			■						
South Central Caucus Group (SC)					■						■	
Alliance for a Healthy South Sound (SS)												
Strait ERN (STRT)		■										
West Central (WC)	■				■	■						
Whatcom (WH)						■						

Strategies and Actions

A1. Focus Land Development away from Ecologically Important and Sensitive Areas

Protecting high quality ecological areas is less expensive and more effective than trying to repair or restore damaged areas. In an effort to maintain a balance of development and protection, the sub-strategies recognize that population growth is an integral part of the regional economy, but aim to focus land development away from areas in the Puget Sound that are ecologically vulnerable and important to maintain. In the near term, the sub-strategies focus on identifying what lands are ecologically important and where they are located in Puget Sound, making this information available to local jurisdictions, and equipping them with information they need to make decisions consistent with this strategy.

A1.1 Identify and prioritize areas for protection, restoration, and best suitable for (low impact) development

Ongoing Programs

The Puget Sound Watershed Characterization’s assessment of water flow, water quality and biodiversity importance of Puget Sound basin lands and waters is an important tool used to identify ecologically sensitive areas. This assessment, when used in conjunction with other watershed information and data can help identify which areas should be protected from new development and those areas appropriate for low impact development. Applying the information in the assessment should direct land development away from ecologically important areas. The results are used in several of the sub-strategies in A1, A2, A3, and A4. The assessment incorporates many of the same data sets used in related regional analyses conducted by the Washington State Department of Natural Resources (DNR) (Aquatic Landscape Prioritization), The Nature Conservancy, Washington Department of Fish and Wildlife (WDFW), Washington Biodiversity Council, and Washington Habitat Connectivity Working Group. Therefore, it is an important and appropriate tool for identifying ecologically important lands for the purposes of this effort. In addition to the watershed characterization tool, use of the strategy assessment of the Puget Sound Nearshore Ecosystem Restoration Project, maps produced by the Washington Wildlife Habitat Connectivity Working Group, and the *Puget Sound Salmon Recovery Plan*

(Salmon Recovery Plan), with each of its 14 watershed chapters, should help to tailor information to each watershed and support decisions for what areas to protect.

The watershed characterization's spatially explicit water and habitat assessments provide information for regional, county, and watershed-based planning. It is a coarse-scale decision-support tool that will enable better land use decisions and more effective protection, restoration, and conservation of our region's ecologically sensitive areas. The assessments cover the entire contributing drainage area of Puget Sound and represent the physical, chemical, hydrologic, wildlife, freshwater and nearshore habitat, and human attributes of this landscape that support and interact with the structure and function of ecosystems in Puget Sound. Although based on generalized data, they provide a regional-scale perspective on the spatial distribution of these attributes and impacts that is not generally provided by other available tools. The intended audience is local planners and watershed managers, tribes, the Partnership and other state agencies, city and county governments, and other resource managers including non-governmental organizations.

The Puget Sound Watershed Characterization, which was a high-priority action in the 2008 Action Agenda, is a decision-support tool, not a decision-making tool. It is structured to provide an overview of likely conditions, problems, and opportunities based on geographic information system (GIS) data, organized and analyzed in accord with well-established scientific principles. These analyses can be refined to help support a variety of actions, such as final decisions on priority efforts, designations of changed urban growth areas, or specific on-the-ground actions, typically requiring further levels of local data and information and expertise not provided by the regional-scale maps or tables. The Watershed Characterization Technical Assistance Team is funded to develop solution templates and integrate these templates within a decision support framework for water flow, water quality, and habitat data and assessments (e.g., Watershed Characterization Project and Puget Sound Nearshore Ecosystem Restoration Project). To leverage local expertise, the Watershed Characterization Technical Assistance Team worked with the Partnership's "User Group" consisting of local government planners previously established to review and comment on the effectiveness and usefulness of Puget Sound Watershed Characterization products. The templates and decision support framework is designed to address specific solutions to known environmental

SALMON RECOVERY PLAN PRIORITY: HABITAT PROTECTION

Protecting our existing habitat that supports salmon recovery efforts is a key priority for the Recovery Plan. The habitat restoration components of the Plan are based on an assumption that the existing habitat, as of 2005, would be preserved. The Plan also identified more assessment needed to understand how and whether the existing habitat protection infrastructure (regulations, incentives, technical assistance, and education/outreach) is being successful. Two papers released in 2011 illustrated the need to do a better job in protecting and restoring critical salmon habitat in Puget Sound. The first was a report released by NMFS that assessed Puget Sound Chinook Salmon Recovery Plan implementation progress since it was federally approved in 2007. Closely following the NMFS report, the Treaty Tribes of Puget Sound and the Coast released a paper titled "Treaty Rights at Risk – Ongoing habitat loss, the decline of the salmon resource, and recommendations for change."

How is this priority integrated?

These two papers sparked a new intensive effort to respond to declining salmon runs. The federal agencies that have trust responsibilities to the tribes have been developing a new action plan to address the need to do a better job, and as that plan is developed, the Partnership's strategic priority to protect habitat may be expanded to incorporate the resulting actions.

problems, using refined knowledge of ecosystem processes, and initial field testing and monitoring to apply and adaptively manage proposed solutions. The goal is to achieve meaningful changes in the local regulations affecting development practices throughout Puget Sound, in concert with local government Growth Management Act review and update processes scheduled for completion in 2015 or 2016.

Stream typing maps, also part of the 2008 Action Agenda, were developed and are maintained by DNR for purposes of implementing the Forest Practices Act and Rules. The maps classify streams and other water bodies in terms of whether or not they are used by fish, and perennial or seasonal flow. They are provided as a starting point to help forest landowners identify and type streams on their property. Forest landowners are required to determine, in the field, the water types within their harvest area and include them on their forest practice application. While some local government entities also use these maps for land use regulation, DNR does not require their use nor do they maintain the maps specifically for local government entities.

The stream typing maps are updated through a concurrence process managed by DNR. Water types can be updated by following a specified protocol and the priority for water type updates is streams and other water bodies on forestland subject to the Forest Practices Act and Rules.

WDFW maintains a number of GIS databases that contain information on the known location of Priority Habitats and Species in Washington State. Priority Habitats and Species is a source of best available science that can inform local planning activities, development projects, conservation strategies, incentive programs, and numerous other land use applications. These data have also been used in several landscape assessments including The Nature Conservancy's eco-regional assessments, the Biodiversity Conservation Opportunity Framework Maps, and the Puget Sound Watershed Characterization. This database is available online in an interactive map and management recommendations to guide how to protect priority habitats and species is also available online.¹

DNR's Natural Heritage Program collects and manages statewide ecosystem data. The Natural Heritage database has spatial information about important native, intact, and rare ecosystems. The program has published a draft field guide to Washington ecological systems, available through the DNR website, and has key expertise in the state's ecosystems, including Puget Sound.

Many local communities at the watershed, city, or county level have detailed data and maps that help inform local planning. Much of this information is mapped at a finer scale than the Soundwide work.

Key Ongoing Program Activities

- Ecology and WDFW completed the Puget Sound Watershed Characterization in 2012 (Puget Sound Partnership 2012a). In a collaborative effort, Ecology, the Partnership, and WDFW are developing a regional-scale tool that highlights the most important areas to protect and restore those most suitable for development. The new beta-website and web map application is currently on line.²
- DNR, in consultation with Ecology, WDFW, and tribes, will continue to process stream typing updates for streams in the Puget Sound basin.³

¹ <http://wdfw.wa.gov/conservation/phs>

² <https://fortress.wa.gov/ecy/coastalatl/wc/landingpage.html>

³ www.dnr.wa.gov/businesspermits/topics/forestpracticesapplications/pages/fp_watertyping.aspx

- DNR, working with key partners, will seek to secure adequate and sustainable long-term funding for the Natural Heritage Program.

Near-Term Actions

The near-term actions identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

A.1.1 WC1 West Sound inventory of transportation infrastructure projects. The West Sound Watersheds Council and West Central LIO will develop a process for the review of transportation infrastructure projects that addresses environmental impacts and key fish passage barriers.

A1.2 Support local governments to adopt and implement plans, regulations, and policies consistent with protection and recovery targets, and incorporate climate change forecasts

Land use planning typically occurs on a jurisdiction-by-jurisdiction basis, with some coordination across cities and counties through countywide planning policies and occasionally on a multi-county scale through broader regional initiatives. Typically, a number of jurisdictions are involved in making land use and development decisions that affect a single ecosystem or watershed.

This sub-strategy is aimed at helping local governments act in ways that are consistent with Puget Sound recovery and at identifying and providing incentives to local jurisdictions for implementing, monitoring, and enforcing regulations and permits that are consistent with the broader recovery targets for Puget Sound. Material to be used for identifying and providing these incentives includes, but is not limited to, the San Juan Initiative⁴ recommendations, programs being implemented through the Salmon Recovery Plan, and material developed as part of the discussions around habitat protection at the federal, state, tribal, and local levels through the Salmon Recovery Council.

Local governments operate in a highly dynamic environment with various levels of laws and regulations governing planning for land development. They must balance economic and ecological pressures along with adherence to local, regional, and state laws and regulations. Further, local conditions, demographics, and preferences factor into local land use decisions. In our resource-constrained environment, the ability of local governments to implement and support the land development and cover strategies is both the single most important success factor and also the most challenging. State funding for Growth Management Act implementation, education, and training has been, as of 2012, nearly eliminated during state budget reductions.

Ongoing Programs

Three main legislative acts govern planning and land development in the Puget Sound region—the Growth Management Act, the State Environmental Policy Act, and the Shoreline Management Act. This Action Agenda builds off of these programs and identifies actions intended to accelerate, focus, and/or address gaps.

⁴ A public-private partnership to identify new regulatory and voluntary measures that would improve the marine ecosystem of San Juan County.

Currently, Ecology, WDFW, and Commerce provide ongoing technical assistance to local jurisdictions to develop and adopt planning goals and policies that incorporate ecosystem characterization information and protection strategies. Ecology and Commerce are also co-leads on the Watershed Protection and Restoration Grant, providing pass-through money to local jurisdictions to implement the Puget Sound Watershed Characterization. These goals and policies encourage compact urban growth patterns, increased density, strategic redevelopment, and resource and rural lands protection. Ecology and Commerce are also collecting permitting and planning data from local governments to compare planned growth with watershed characterization information. Over time, it may be appropriate for state and federal grant programs to expressly prioritize projects consistent with Puget Sound ecosystem recovery goals, including establishing priorities for projects that encourage compact growth patterns, density and redevelopment, and rural lands protection.

Regional-scale planning and coordination is facilitated by the Puget Sound Regional Council. This council provides the central Puget Sound counties (King, Pierce, Snohomish, and Kitsap), cities, towns, ports, tribes, transit agencies, and the state an opportunity to build a common vision for the region's future—which includes the well-being of people and communities, economic prosperity, and a healthy environment.

Near-Term Actions

The near-term actions⁵ identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

A.1.2.1 Land use planning barriers, best management practices, and example policies.

Commerce and Ecology, working with local governments, will identify the primary barriers to incorporating policies consistent with implementation of the Action Agenda into local land use planning and decisions and identify best practices and assistance needed to overcome these barriers. This will address implementation of protection strategies, encouraging compact growth patterns, increased density, water quality standards, redevelopment, and rural lands protection. Commerce and Ecology will distribute example growth policies that include best practices that are consistent with protection and recovery targets and the Growth Management Act and Shoreline Management Act.

A.1.2.3 Fund local Growth Management Act comprehensive plan updates. Commerce will seek funding to assist local governments in conducting Growth Management Act comprehensive plan updates.

A.1.2 STRT1 Assess vulnerabilities of local communities, tribes, and natural resources to the effects of climate change and concurrent human population increases.

- Identify adaptive mechanisms for consideration and possible incorporation into the next updates of Growth Management Act comprehensive plans and other local regulatory and planning processes and documents by the five local jurisdictions and other organizations.

⁵ Gaps in numbering reflect near-term actions that have been completed or otherwise retired.

- Assess the vulnerabilities of the five local jurisdictions and four tribes' usual and accustomed areas to the effects of climate change and concurrent increases in human population on land use, infrastructure, and natural resources. Identify specific adaptive mechanisms (i.e., policies, regulations, programs, and plans) for consideration and possible incorporation into the next updates of Growth Management Act comprehensive plans and other local regulatory and planning processes and documents by five local jurisdictions and other organizations.

A1.3 Improve, strengthen, and streamline implementation and enforcement of laws, plans, regulations, and permits consistent with protection and recovery targets

Local, state, and federal permitting programs all affect the type and kind of impact land development can have on the Puget Sound region. Identifying ways to strengthen and streamline elements of these permitting processes by making permitting decisions more predictable and efficient, and by making sure that information on where ecologically sensitive lands are located is considered, could help direct development to areas that are more ecologically resilient and encourage dense, compact growth patterns. Streamlining, in this case, is not intended to advocate the elimination of regulations, but rather efforts to help regulations be implemented more predictably and efficiently.

Near-Term Actions

The near-term actions identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

A.1.3.1 The Puget Sound Salmon Recovery Council addresses regulatory exemptions. The Salmon Recovery Council will address regulatory exemptions to provide effective oversight and mitigation sequencing for activities that impact the ecosystem.

A.1.3 SNST1 Improve regulatory effectiveness. Compile and evaluate results from existing studies and those currently being completed on the effectiveness of existing federal, state, and local regulations to protect habitat. Facilitate discussions and building trust among elected officials. Develop strategies to address common issues that are identified.

A1.4 Ensure full, effective compensatory mitigation for impacts that cannot be avoided

When impacts cannot be avoided, it is critical to achieve and maintain full compensatory mitigation. Historically, this has been very difficult to achieve; estimates vary but local, regional, and national studies show that most mitigation projects fail to fully achieve their intended goals and are not effectively replacing lost or damaged resources, habitats, and functions.

Ongoing Programs

Ecology initiated the Mitigation that Works effort to help ensure that full compensatory mitigation is achieved and maintained when impacts cannot be avoided. The initiative started with a stakeholder process to develop a shared vision for successful mitigation and of a number of short- and long-term recommendations related to improving the mitigation process and mitigation success. It includes efforts to establish and implement a watershed-based approach to mitigation, support development and

piloting of innovative compensatory mitigation tools including market-based techniques and other approaches, and improve effectiveness monitoring programs for mitigation sites.

Near-Term Actions

None; work will focus on Ecology's Mitigation that Works initiative.

Emerging Issues and Future Opportunities

- Further incorporation of climate change considerations could include, but would not be limited to addressing habitat connectivity to preserve migration corridors, adding refugia considerations into land development planning, incorporating climate change impacts into long-term stewardship of coastal restoration sites, piloting blue carbon mitigation projects to fund estuary restoration and stewardship, evaluating whether modifications to Growth Management Act, Shoreline Management Act, State Environmental Policy Act, and other state programs are warranted, and integrating adaptation work into local plans.
- Continued improvements in the stream typing maps and uses.
- Evaluating the effectiveness of regulations.
- Identify when and how to provide direction to local governments when local planning is inconsistent with recovery needs.

A2. Protect and Restore Upland, Freshwater, and Riparian Ecosystems

One of the primary strategies for the Action Agenda is protection of ecologically sensitive or vulnerable lands in the Puget Sound region. This series of sub-strategies is aimed at different facets of ecological protection. Protection in this context means identifying pieces of land that are of high ecological value and protecting them from development or further development. To assist in these protection efforts, the Puget Sound Watershed Characterization and Puget Sound Nearshore Ecosystem Restoration Project, as well as the help of the Puget Sound Watershed Technical Assistance Team, will be enlisted.

A2.1 Protect and conserve ecologically important lands at risk of conversion

There are a significant number of private and public land protection programs and mechanisms. Local, state, federal, and private acquisition grant programs, land banks, and land conservancies use land protection mechanisms such as fee simple acquisitions, conservation easements, and leases. The preservation of intact, well-functioning land is an important element of these programs. The main challenges of protection through acquisition of property interests are ensuring sufficient land protection resources and implementing funding strategies that prioritize ecologically important lands. Especially as local jurisdictions continue to face revenue losses and local services are reduced, offsetting funding in the future may be required.

Ongoing Programs

In 2007, the Washington State Legislature (Legislature) created the Habitat and Recreation Lands Coordinating Group (lands group) to improve the visibility and coordination of state habitat and recreation land purchases and disposals. The lands group is comprised of representatives from state natural resource agencies, non-profit organizations, local governments, legislators, private interests, and others. This group uses an established process for making state habitat and recreation land purchases and disposals more visible and coordinated. The process has three components.

- The Annual State Land Acquisition Coordinating Forum brings together state agencies, local governments, non-government organizations, landowners, tribes, and citizens to learn about and share ideas on proposals for state habitat and recreation land purchases and disposals.
- The Biennial State Land Acquisition Forecast Report gives information about the state land purchases and disposals that are being planned around the state.
- The Biennial State Land Acquisition Monitoring Report shows whether state agencies achieved their initial acquisition project objectives.

The Washington State Recreation and Conservation Office (RCO) provides staff support to the lands group and also supports several grant programs that support the protection of habitat and recreation lands. In 2009, using the authority of the Partnership's fiscal accountability legislation (Revised Code of Washington [RCW] 90.71.340), the RCO, Partnership staff, stakeholders, and the two RCO funding boards (Recreation and Conservation Funding Board and Salmon Recovery Funding Board) identified policies to align the grant processes with the 2008 Action Agenda. This work resulted in the following changes to three of the largest RCO grant programs: Aquatic Lands Enhancement Account, Salmon Recovery Funding Board, and Washington Wildlife and Recreation Program Conservation Account.

- Prohibit funding for any project designed to address the restoration of Puget Sound if that project is in conflict with the Action Agenda (effective January 1, 2010).
- Consider whether projects are referenced in the Action Agenda.

The U.S. Fish and Wildlife Service (USFWS) works cooperatively with landowners, communities, and tribes to foster voluntary stewardship efforts on private lands to help conserve species. A variety of tools are available under the Endangered Species Act to help states and landowners plan and implement projects to conserve species. One tool is the Cooperative Endangered Species Conservation Fund (a program to provide financial assistance to states for cooperation under Section 6 of the Endangered Species Act), which provides grants for a wide array of voluntary conservation projects for candidate, proposed, and listed species. The program provides funding to WDFW and the Department of Health (DOH) for species and habitat conservation actions on state and other non-federal lands. USFWS has four grant programs available through the Cooperative Endangered Species Conservation Fund including the "traditional" grants for projects that conserve species via actions that include restoration, monitoring, and captive breeding and the "non-traditional" grants that support local land use planning and land protection actions via Habitat Conservation Planning, Habitat Conservation Plan Land Acquisition Assistance, and Recovery Land Acquisition Grants.

In addition, using special designations to protect high priority lands and waters, especially for the headwaters of rivers, streams, and tributaries that drain into Puget Sound, are an important tool for

Puget Sound recovery. Numerous special designation programs can be used to protect intact priority areas. These include the federal Wilderness Act, Wild and Scenic Rivers Act, Outstanding Water Resources (a federal designation administered by states), and Washington state programs that include the DNR's designation of Natural Area Preserves and Natural Resources Conservation Areas, WDFW's Marine Protected Areas, and local county Shellfish Protection Districts among the many ways to authorize protective measures that ensure the sustainability of high priority lands and waters.

The 2008 Action Agenda included an action to advocate for proposed Wilderness and Wild and Scenic River designations specifically supporting the Alpine Lakes Wilderness addition and the Pratt River Wild and Scenic designation; this is an ongoing effort. In addition, special designations have been suggested for other areas including Wild and Scenic designation of the Middle Fork Snoqualmie River, Wild and Scenic designation of Illabot Creek in the Skagit River watershed, Wilderness and Wild and Scenic designations for rivers and lands on the Olympia Peninsula, the west slopes of the North Cascades, and within the Nooksack River watershed. These ongoing and locally supported protection efforts are critical and need additional and sustained support.

Near-Term Actions

The near-term actions⁶ identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

- A.2.1.2 Updated avoidance and minimization guidance.** Ecology will reinforce the importance of avoiding and minimizing impacts to wetlands, particularly those with high ecological value and that are difficult to replace, by developing and implementing updated avoidance and minimization guidance.
- A.2.1.3 Port Gamble land conservation.** Forterra, working in collaboration with Kitsap County, the Port Gamble S'Klallam Tribe, and the Suquamish Tribe, will coordinate funding and participation to secure the conservation of ~6,700 acres of land near Port Gamble, including 1.5 miles of shoreline.
- A.2.1 SC2 Identify and protect high-value salmon recovery habitat and lands at immediate risk of conversion.** Secure funding to acquire high-priority, high-threat land as identified in salmon recovery plans and seek funding to secure property.
- A.2.1 SC14 Retain forest canopy cover and soils to attenuate stormwater runoff.**
- Promote programs that support retention and increase in forest canopy cover on private and public lands, especially those in priority and sensitive areas.
 - Identify and implement watershed revegetation in the Swan Creek Watershed through the Pierce County Raise the Grade initiative.
- A.2.1 SNST4 Local habitat protection and restoration.** Implement effective habitat protection strategies that have been identified in local plans, recommended by stakeholders, and approved by plan sponsors. Examples include the following.

⁶ Gaps in numbering reflect near-term actions that have been completed or otherwise retired.

- Acquisition by the City of Snohomish of 20 acres at the confluence of the Snohomish and Pilchuck River.
- Protection strategies identified in the Snohomish Basin Protection Plan and the Port Susan Marine Stewardship Area Conservation Action Plan.
- Promote the Conservation Reserve Enhancement Program and the Snohomish Conservation District’s “Free Trees Program”.

A.2.1 WC14 Kitsap Forest & Bay Divide Property acquisition. The West Central LIO, along with Great Peninsula Conservancy and other partners, will seek and secure funding to complete acquisition of the Kitsap Forest & Bay Divide Property, part of a larger effort to protect over 7,000 acres of forest and wetland habitat in north Kitsap County.

A2.2 Implement and maintain priority freshwater and terrestrial restoration projects

Numerous upland and riparian restoration efforts are underway in the region. While it is important to focus on those that give the Puget Sound a big lift for recovery, it also is critical to recognize the potential for local stream-based restoration efforts to both make marked improvements to ecosystem health, contribute to salmon recovery, as well as further regional awareness of the benefits a healthy Puget Sound creates for people and improve individual understanding and commitment to actions that will protect and restore Puget Sound. There is nothing like healthy salmon returning to the stream in your neighborhood to bring home the way we all are connected to Puget Sound.

Once installed, restoration projects need to be maintained and monitored over time to ensure that they are functioning as intended, and adapted where needed. Innovative maintenance methods such as partnerships with conservation organizations and citizen volunteers should be considered.

Freshwater restoration projects cover rivers, streams, lakes, and wetlands; within that body of work, a major focus of the Action Agenda is the riparian restoration needed to reach the recovery target. These gains will come from implementation of existing high priority projects in the salmon recovery 3-year work plans that are part of the National Oceanic and Atmospheric Administration (NOAA) approved Chinook Recovery Plan, other adopted multi-species recovery plans, flood hazard management plans, road decommissioning plans, Shoreline Master Programs, GMA programs, and local watershed assessments.

Local implementing organizations looked across these existing local plans to identify high priority projects in their local area. When prioritizing river and stream projects for implementation, local organizations considered the hierarchical restoration strategy of Roni et al. (2002), including (1) habitat reconnection (e.g., culvert improvements, off-channel connections), where prior disconnection is among the problems; (2) road work (e.g., removal, improvement); (3) riparian vegetation restoration; (4) instream habitat restoration (e.g., wood and boulder placement); (5) nutrient enhancement; and (6) habitat creation (e.g., instream with wood and boulders, off-channel).

Private landowners should continue to be encouraged to undertake restoration projects. Existing programs need to continue, expand, and be coordinated to further and effectively encourage private landowners to undertake and maintain restoration projects. Incentives for industrial and commercial landowners may also be needed. There are numerous landowner programs that include incentives and

technical assistance. The Washington State Conservation Commission (WSCC), conservation districts, DNR, Washington State University (WSU) Extension, Washington Sea Grant, local governments, and non-governmental organizations offer programs. Examples include direct financial incentives (e.g., grants, subsidized loans, cost-shares); indirect financial incentives (property tax relief); technical assistance (referrals, trainings, design assistance), recognition/certification for products or operations, and conservation leasing.

SALMON RECOVERY PLAN PRIORITY: HABITAT RESTORATION

Habitat restoration is an important part of recovery and needs to be done in a way that targets priority areas for ecosystem functions. Restoration priorities for each watershed are called out in Volume II of the Salmon Recovery Plan and then further developed out in each of the annual 3-year work plans.

How is this priority integrated into the Action Agenda? Sub-strategy A2.2 includes restoration of riparian habitat not covered by under floodplain, fish passage, and other upland actions.

Ongoing Programs

Ongoing programs related to this strategy include programs that implement species recovery plans including salmon recovery 3-year work plans implemented by the 15 lead entities, flood hazard management plans, road decommissioning plans, fish passage barrier removal via the Forest and Fish Agreement and other requirements, Shoreline Master Programs, GMA programs, DNR Aquatic Landscape Prioritization, and watershed assessments.

An example of work underway at a local level is the Nooksack Tribe's leadership in a wide variety of elk monitoring and habitat enhancement projects that has successfully worked with partners to develop and implement continuing elk habitat enhancement and protection projects. The tribal priority is protection and restoration of terrestrial ecosystems of elk.

Major funding sources for implementation of species recovery plans include Pacific Salmon Recovery Funding through NOAA, which provides funding for elements necessary to achieve overall salmon recovery including habitat projects and other activities that result in sustainable and measurable benefits for salmon and other fish species. Additional resources include NOAA's Community-based Restoration Program and the Puget Sound Acquisition and Restoration, a state capital program coordinated by the Partnership, which implements many of the Action Agenda and Salmon Recovery Plan's habitat restoration priorities. Other significant funding sources include the Estuary and Salmon Restoration Program, and Family Forest Fish Passage Program.

A number of past commenters noted that more work is needed to strengthen stewardship incentive programs to increase the ability of private landowners to undertake and maintain restoration projects. This is an issue for discussion in future Action Agenda updates.

Near-Term Actions

The near-term actions identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

- A.2.2.1 Prairie and oak woodland restoration.** WDFW in consultation with DNR, USFWS, and Joint Base Lewis McCord, will implement priority prairie and oak woodlands restoration projects.
- A.2.2 HC2 HCCC in lieu fee mitigation.** The HCCC established an In Lieu Fee Mitigation Program and will continue to manage it to provide mitigation for unavoidable adverse impacts from development projects within the program’s service area. Specific mitigation projects and progress of the program will be reported as part of the 2016 Action Agenda.
- A.2.2 WC12 West Sound Priority Watersheds for Protection.** The Suquamish Tribe will develop a detailed protection and restoration plan for the upper Chico Creek watershed. The Tribe will seek funding to undertake similar work for the high priority refugia, Curley and Blackjack Creek watersheds.
- A.2.2 WC15 Springbrook Creek fish passage enhancement and water quality retrofit.** The City of Bainbridge Island will seek funding to complete study and design for a watershed scale project that would ultimately replace two stream crossing culverts to improve fish passage; eliminate stream bank erosion through habitat enhancement; and reduce pollutants from road runoff by adding water quality retrofits, including addressing fecal coliform sources upstream of an important shellfish growing area and eliminating impound ponds.
- A.2.2 WC16 Duwe’iq stormwater treatment wetland and stream restoration.** Kitsap County Surface and Stormwater Management will complete construction of the Duwe’iq Stormwater Treatment Wetland and Stream Restoration project, which will reduce fecal coliform and other stormwater pollutants from 30 acres of commercial runoff into Clear Creek, improve stream habitat, advance public education about stormwater via Clear Creek Trail access, and increase green space in the urban Silverdale corridor.
- A.2.2 WC17 Clear Creek floodplain restoration.** With an ultimate goal of freshwater habitat restoration and enhancement, Kitsap County Surface and Stormwater Management will complete a project to construct floodplain, restore stream habitat, remove road, enhance trails, reduce downstream flooding, and advance public education about floodplains/wetlands/stormwater in Clear Creek. This includes:
- Completion of restoration design.
 - Completion of project permitting.
 - Completion of project construction.
- A.2.2 WH4 Padden Creek enhancements—24th to 30th Streets.** This freshwater project greatly improves existing habitat conditions for the section of Padden Creek that is immediately upstream of the newly daylighted tunnel. This site is now accessible to salmonid species. The project will increase the diversity and amount of fish habitat available by reconnecting Padden Creek to its floodplain, adding log jams, boulders and pools in an

urban environment. Steps include completing design, obtaining permits, constructing, planting the site, maintaining plantings, and monitoring site evolution.

A.2.2 WH5 WRIA 1 culvert inventory maintenance. Whatcom County completed an inventory of culverts in WRIA 1 in 2005. The document may need to be updated to reflect culverts replaced or repaired and inventories recently completed by WDFW. Completing designs for priority fish passage barriers would enable those barriers to be “shovel-ready” when funding becomes available to implement projects.

A2.3 Implement restoration projects in urban and developed areas while accommodating growth, density, and infill development

Restoration in urban areas also is needed. Examples of work include removing non-native invasive species, replanting, maintaining and stewarding native trees and vegetation, removing non-native invasive species, removal of shoreline bulkheads and bank regrading, setting aside portions of private lots for open space, day-lighting of creeks, and other stream restoration efforts. Many of these activities are supported by local conservation organizations, volunteer groups, and neighborhood associations. Actions that contribute to freshwater restoration and to improvement and maintenance of water quality include retrofitting stormwater infrastructure, incorporating bio-swales and rain gardens in urban environments. Restoration actions in urban areas need to be achieved in concert with the needs of these areas to accommodate anticipated growth.

Ongoing Programs

Many cities, counties, and organizations in urban and suburban areas have programs and ordinances to encourage maintaining and increasing urban tree canopies, removal of invasive species, planting native vegetation, and restoring creeks and streams. Protection of ecologically sensitive and important areas is also designated in critical area ordinances and shoreline management programs.

Near-Term Actions

None; work in the near-term will focus on implementation of ongoing programs.

Emerging Issues and Future Opportunities

- Further incorporation of climate change considerations could include, but would not be limited to, planning restoration projects in freshwater and terrestrial ecosystems. For example, projected changes to hydrological regimes from climate change.

A3. Protect and Steward Ecologically Sensitive Rural and Resource Lands

Private forest and agricultural lands provide critical fish and wildlife habitat and other ecosystem functions, especially in highly productive lower elevation riparian areas. These lands, however, are at significant risk of conversion to non-farm and non-forest uses, particularly residential and commercial development.

Maintaining the vibrancy of agriculture is crucial to recovering Puget Sound and instrumental in providing a high quality of life in the region. However, farming in the Puget Sound basin faces an uncertain future. Global competition for agricultural commodities has reduced prices for Puget Sound farm products while costs of land and raw materials continue to rise. Low profit margins have forced many farmers out of business and farmland is being converted to other uses at an alarming rate. Rural areas have a low density of impervious surfaces and farmland provides greater flood plain function than developed areas. The continued loss of farms in the region and conversion to non-farm uses is not only detrimental to individual farmers and to the regional farm economy; but is detrimental to the recovery of Puget Sound.

CLIMATE CHANGE

As identified in *Preparing for a Changing Climate: Washington State's Integrated Climate Response Strategy* (Washington State Department of Ecology 2012a), climate change impacts on forest lands include larger and more frequent fires, mountain pine beetle outbreaks, and changes in geographic range, growth, and productivity. Key impacts on agriculture include changes in crop productivity, decreases in water availability, increased stress from extreme events, reduced livestock productivity, increased stress from invasive weeds, diseases, and pests, and global economic impacts related to food production, processing, and transportation.

The state strategy identifies the following high-priority, overarching strategy.

- Conserving productive and adaptive farmland and forests.

Forest-related adaptation strategies include the following.

- Conservation and restoration of healthy, resilient forests across ownership boundaries and large geographic ranges.
- Maintaining and protecting forest species and genetic diversity.
- Protecting, expanding, and managing urban forests.
- Building capacity and support for maintaining, enhancing, and restoring resilient and healthy forests.

Agriculture-related adaptation strategies include the following.

- Protection of productive agricultural land.
 - Reduction of impacts of severe droughts and floods.
 - Prevention and control of invasive species.
 - Engagement of agricultural communities in adaptation efforts.
 - The Action Agenda strategies for forest and agricultural land conversation and multi-benefit approaches to restore floodplains help to implement the state strategy.
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Forest Lands

According to the Washington State Forestland Database, developed by the University of Washington Rural Technology Initiative, about 972,000 acres of private forestland in western Washington are threatened with conversion. Population pressures, changing forest ownership patterns, and the desire for rural housing sites are fragmenting once continuous forests into smaller tracts that are economically and environmentally unsustainable. The potential risk of private forestland conversion is highest in the Puget Sound region. Forest conversion also eliminates major opportunities to leverage forest carbon sequestration to address climate change and also negatively affect biodiversity, fisheries resources, and open space (University of Washington College of Forest Resources 2009).

Agricultural Lands

In 1950, there were about 1.4 million acres of farmland in the region. Today, less than 600,000 acres remain—a 58% loss. If this rate of loss continues, we will lose the last acre of farmland in seven of the Puget Sound counties by 2050 and the last acre in 2065. In the 15-year period from 1982 to 1997, the Puget Sound region lost nearly 20% of its farmland and 50% of its dairy farms.

Analyses indicate that 1 acre converted from agricultural to urban development produces 10 to 15 times the runoff and runoff-borne pollutants, including far higher concentrations of heavy metals, petroleum and other key pollutants. Farmland also provides habitat and food resources for migratory bird species, promotes aquifer recharge, and uses far less water than an equivalent area of urban development. At the same time, many salmon-bearing rivers and streams traverse farmland, which often results in degraded or removed habitat or alterations to habitat conditions. This creates a challenging dynamic for protecting farmland from urban development while also recognizing that some farmland is located in prime salmon habitat (Canty pers. comm.).

Development in rural areas presents a particularly concerning pressure on the ecosystem because it is in those rural areas (including both forested and agricultural lands) where high-quality habitat and significant ecological processes remain partially or largely intact. Rural area forest cover and agricultural land is being converted to housing and other uses in 5-acre and smaller patchwork patterns. The network of infrastructure (primarily roads, but also other utilities) constructed to serve such development further fragments the landscape, and interrupts or modifies the delivery, movement, and storage of water, sediment, woody debris, and nutrients, and impairs functions of fish and wildlife habitats for feeding, breeding, rearing, and migrating for numerous species. In addition, sea level rise projections pose a threat to potential future loss of

OCEAN ACIDIFICATION

As identified in *Ocean Acidification: From Knowledge to Action, Washington State's Strategic Response* (Washington State Blue Ribbon Panel on Ocean Acidification 2012), delivery of nutrients and organic carbon from land into marine waters contributes to Ocean Acidification. Agriculture, businesses, and coastal communities play an important role in helping to maintain shellfish production by reducing nutrient pollution to the marine system.

One of the Blue Ribbon Panel's recommendations includes providing a forum for agricultural, business, and other stakeholders to engage with coastal resource users and managers in developing and implementing solutions. The Action Agenda strategies for protecting and providing stewardship of ecologically sensitive rural and resource lands will help to implement the Blue Ribbon Panel's recommendations by helping to maintain the economic viability of working forests and farms.

SALMON RECOVERY PLAN PRIORITY: PROTECTION OF WORKING LANDS

The Salmon Recovery Plan calls for the protection of working lands within the context of how these working lands contribute to salmon recovery. Many of the watershed plans in Volume II specifically call out this need and also speak to the fact that some working lands are located in areas critical to salmon—for example, some estuarine habitat is currently being farmed—and that it is important to find solutions to both sustain working lands and recover salmon. Watershed chapters such as the Whatcom, Skagit, Stillaguamish and Snohomish are areas where this is called out.

How is this priority integrated in the Action Agenda? Strategy A3 and its associated sub-strategies and actions address the protection of working lands in the context of habitat protection and restoration. However, more discussion and agreement about these slightly different areas of focus is needed. Where working lands are the same as the lands needed for habitat restoration, more flexibility and creativity in conservation tools may be needed to achieve both restoration and farmland protection.

agricultural lands and saltwater intrusion, particularly in the Skagit, Snohomish, Stillaguamish, and Nooksack deltas.

A3.1 Use integrated market-based programs, incentives, and ecosystem markets to steward and conserve private forest and agricultural lands

Numerous incentive programs are available for landowners to encourage stewardship and conservation. However, they are not well coordinated, lack adequate funding, tend to be opportunistic rather than strategic, and are not being fully utilized or targeted at the most important lands. In addition, the eligibility requirements may not address the resource impacts. The strategies contained in this Action Agenda support the prioritization of incentive programs toward the highest-priority ecologically sensitive and important lands.

Ongoing Programs

Programs include the Designated Forest Land and Open Space Tax Program as well as the Forest Riparian Easement Program, Riparian Open Space Program, the Family Forest Fish Passage Program and the newly established voluntary stewardship program established by House Bill 1886 in the 2011 legislative session, among others. There are also numerous federal incentive programs offered through the Natural Resources Conservation Service (NRCS) and other federal programs.

DNR offers and administers a variety of landowner assistance programs targeted primarily at private forest landowners. The Forest Stewardship Program is a nationwide program which provides advice and assistance to help family forest owners manage their lands. The program is cooperatively funded by the U.S. Department of Agriculture (USDA) USFS and state forestry agencies and offers stewardship assistance, technical assistance, educational materials, and financial/cost-share assistance. At DNR, the Forest Stewardship Program is administered by the Small Forest Landowner Office.

The Voluntary Stewardship Program at the WSCC, created in 2011, requires counties across the state to either opt into the program or resume the process of updating their critical areas on agricultural lands under existing Growth Management Act processes. Counties who opt in must designate their priority watershed, then designate a lead agency to coordinate other local entities toward developing a work plan, which identifies critical areas on agricultural lands as well as an outreach plan to offer landowners incentives to protect critical areas. These coordinated efforts will enable resources to be targeted toward the most ecologically important areas, improving the efficient application of these incentives.

The NRCS offers programs to support the conservation of private forest and agricultural lands through economic incentives and market-based programs. — The Conservation Reserve Enhancement Program, administered by the Farm Services Agency and the WSCC, is a voluntary land retirement program that helps agricultural producers protect environmentally sensitive land, decrease erosion, restore wildlife habitat, and safeguard ground and surface water. The Environmental Quality Incentives Program (EQUIP) is a voluntary program that provides financial and technical assistance to agricultural producers through contracts up to a maximum term of ten years. EQUIP provides financial assistance to help plan and implement conservation practices that address natural resource concerns and for improvements to soil, water, plant, animal, air, and related resources on agricultural land and non-industrial private forestland.

There are also a wide variety of financial incentive-based programs for private forest and agricultural landowners in Washington administered through other state agencies. For example, the Conservation Reserve Enhancement Program offered by the Farm Service Agency focuses on improving the water quality of streams that provide habitat for endangered salmon by planting trees along riparian buffers. Natural Resources Conservation Service's EQUIP provides technical assistance and funding for conservation practices on private, non-industrial forests or agricultural land anywhere in the state. The WDFW also administers a financial incentive program for private landowners called the Landowner Incentive Program (LIP). LIP is a competitive grant program to provide financial assistance to private landowners for the protection and restoration of habitat to benefit species-at-risk on privately owned lands. Funds are a direct appropriation from Congress passed through the USFWS to state fish and wildlife agencies in a nationally competitive process. Currently, there are no funds for LIP.

Market-based approaches will help achieve this sub-strategy. A common theme among five reports addressing the preservation, conservation, and stewardship of important resource and habitat lands is consideration of ecosystem markets for farm and forest land services; keeping these lands economically viable is a mechanism for protecting them from conversion (Washington State Conservation Commission 2009; Washington Biodiversity Council 2007; University of Washington College of Forest Resources 2009; The Cascade Land Conservancy 2005; Forterra 2011). The *Washington Conservation Markets Study*, issued by the WSCC (2009) in response to Substitute House Bill 6805, specifically evaluated the feasibility of conservation markets in Washington to pay farmers and foresters for environmental benefits from conservation projects on their land and concluded, "Private farms and forests could supply substantial conservation gains in Washington," and that, "conservation actions on private farms and forests can be a viable, sustainable, and cost-effective way to achieve a wide variety of environmental goals."

Various ecosystem markets or "conservation banking" services, that are either topical or geographically limiting, are beginning to emerge in Washington, including markets for wetlands, carbon credits, biodiversity conservation, and development rights. Currently, however, these markets are uncoordinated and operate with different procedures and by various organizations—at least eight state agencies have conservation markets within their purview—and some centralized organization and management of these markets may be beneficial.

Key Ongoing Program Activities

- DNR and the WSCC will continue to direct stewardship funding, consistent with current statutory and regulatory requirements, to ecologically important areas as defined by the Puget Sound Watershed Characterization and other assessment and characterization information.
- The WSCC will continue assessing existing stewardship incentive programs to identify changes to better include underserved landowners, including small farmers and owners of non-working rural lands.
- The WSCC will continue working with other entities including WSU Extension, conservation districts, and counties to improve and expand public recognition for voluntary private sector stewardship of lands.

Near-Term Actions

The near-term actions identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

A.3.1.1 Use of Agriculture Conservation Program funds. WSCC will enhance use of conservation and habitat restoration program funding from a variety of sources, (i.e., Conservation Reserve Enhancement Program and Environmental Quality Incentives Program) that are currently underused by and not tailored for western Washington growers.

A.3.1.2 Landowner incentives for transfer of development rights and ecosystem markets. Commerce and Ecology, in coordination with DNR and WSCC, will provide technical support and fund local projects to identify and implement landowner incentives, including transfer of development rights and ecosystem services markets.

A3.2 Retain economically viable working forests and farms

Forest lands. The key recommendation from the 2008 Northwest Environmental Forum on protecting Washington forests, led by the University of Washington College of Forestry, is the establishment of a legislatively appointed Task Force to direct and produce an overall plan for integrating Washington's complex and various regulatory, tax, and forest land protection initiatives.

Agricultural lands. As described earlier, since 1950 we have lost more than half of the farmland in the Puget Sound region. Effectively preserving agricultural land will involve tackling a complex set of interrelated issues including real work to ensure that agriculture continues to be a viable, and vibrant, industry in Puget Sound.

Ongoing Programs

Key Ongoing Program Activities

- All sales from forested state trust lands currently are certified under the Sustainable Forestry Initiative® Standard. The sustainable harvest on state trust lands is being recalculated in 2014.

Near-Term Actions

The near-term actions identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

A.3.2.1 Protect working forests. DNR will work with other interested parties to develop a comprehensive strategy for retaining economically viable, long-term working forestlands.

A.3.2.2 Agriculture strategy. The Partnership, in collaboration with WSDA, Ecology, WSCC, and agricultural partners has convened an advisory committee to consider development of a Puget Sound agricultural strategy. The strategy will identify a) needs for maintaining the health of the industry b) key areas where the agricultural industry can contribute to the protection and restoration of Puget Sound and c) challenges to be addressed for achieving these goals and implementing a successful strategy. This near term action

could be further amended or integrated into the regional funding strategy as appropriate.

Emerging Issues and Future Opportunities

- Assessing the ecological functions and values that can be achieved on working farms in the Puget Sound region, and the risks to these functions and values associated with conversion of farmland to non-farm uses.
- Continued development of incentive based approaches and conservation markets to conserve land and ecosystem functions while promoting the long-term sustainability of farming in the region.
- Identify and map all land within the Puget Sound basin that is currently in agricultural use to create a baseline.
- Work directly with farmers to better understand ecological and economic issues and viable solutions.

A4. Encourage Compact Regional Growth Patterns and Create Dense, Attractive and Mixed-Use and Transit-Oriented Communities

Encouraging compact urban patterns would direct development away from working farms and forestlands and protect food and fiber production, wildlife habitat, ecosystem functions and water quality. Compact development patterns reduce impervious cover that leads to run-off pollution, and decrease shoreline development that leads to erosion and habitat destruction. Finally, compact development is more energy efficient, reducing energy-related pollution including greenhouse gas emissions.

A4.1 Integrate growth, infrastructure, transportation, and conservation planning at sub-regional levels and across jurisdictions

Regional planning alliances similar to the Puget Sound Regional Council, Thurston Regional Planning Council, South Sound Military and Communities Partnership, or Skagit Alternative Futures could plan for compatible land uses, growth, and corresponding infrastructure needs and concurrent ecosystem protection and recovery strategies at scales that are more efficient and provide more opportunity for examining and optimizing future planning scenarios and alternatives that reduce sprawl, increase density in urban areas, and promote and plan for regional transit solutions. For example, they could tackle issues related to which jurisdictions or portions of jurisdictions are best suited to accommodate projected growth, develop regional economic development strategies, which could allow for revenue sharing and minimization of competition among local governments, address inequities of tax structure that occurs with new development (e.g., fiscal zoning) and annexation issues.

Near-Term Actions

The near-term actions⁷ identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

A.4.1.2 Regional sustainable communities program. Commerce will work with local communities to implement Soundwide integrated regional planning that will integrate ecosystem protection, land use, transportation and housing, similar to the federal sustainable communities program.

A4.2 Provide infrastructure and incentives to accommodate new and re-development within urban growth areas

Barriers to achieving dense and vital urban centers can include restrictive development regulations, environmental constraints, legacy pollution, land ownership patterns, inadequate infrastructure, lack of coordination between cities and special purpose governments, lack of urban amenities, lack of grocery stores, lack of schools, public perceptions, and fear of political risks. If we are to achieve compact urban patterns that direct development away from working farms and forestlands and protect wildlife habitat, ecosystem functions and water quality overall in the Puget Sound, we must work to encourage new and redevelopment in urban growth areas while at the same time recognizing the potential for protection and restoration of critical habitats within urban growth areas.

Infrastructure gaps also can present a hurdle to re-development in urban growth areas, whether it is water supply, sewer treatment capacity, or transportation improvements. Beyond such functional infrastructure, investments in urban amenities and recreational facilities also can make a large difference in how cities attract additional population and private investment. Infrastructure is expensive and is a growing concern as cities address both existing and planned future development (Peters pers. comm.).

Near-Term Actions

The near-term actions identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

A.4.2 SC13 Complete Regional Alliances Project and share results to increase infill development in urban centers while meeting stormwater requirements and Growth Management Act mandates. Through the Regional Alliance Project,

- Develop recommendations for incentives and cost-effective tools to meet stormwater management and Growth Management Act requirements for development in urban areas in order to encourage infill development in urban centers instead of greenfield locations and to improve water quality.
- Develop recommendations related to comprehensive plan policy and development regulations to inform 2015 updates.
- Other actions may be identified.

⁷ Gaps in numbering reflect near-term actions that have been completed or otherwise retired.

Key partner in these efforts: Commerce

A4.3 Enhance and expand the benefits of living in compact communities

Accommodating growth inside urban growth areas likely will require increasing density in some places. To ensure this space is actually used, we must determine how to achieve truly livable density that is attractive to families. While there are currently no near-term actions identified for this sub-strategy, it will be a critical effort to begin to better understand this issue and to work with local governments to achieve and support density in the right places.

Near-Term Actions

No near-term actions identified.

Target View: Land Development and Cover

Land Development

The land surrounding Puget Sound is home to several million people who live, work, and play in our region. The needs for homes, office buildings, stores, and agricultural lands to support our lives must be taken into consideration as we strive to preserve working forests and habitats, and reduce polluted runoff into streams and the Sound.

In 1990, Washington State passed the Growth Management Act, which requires local governments to comprehensively plan for the location and manner of land development. Although this act has been successful in addressing our growth needs, there still are many pressures to develop in our rural areas which would further affect some of our high quality remaining habitat. Watershed-based approaches to locating where development occurs within urban growth areas and how it occurs within these areas are essential to minimizing pressures to ecological processes, habitat structures, and ecosystem functions.

A functioning, resilient Puget Sound ecosystem includes landscapes that provide important habitat and hydrology functions and a land base to support the built environment for a growing human population.

Recovery Target

- Basin-wide loss of vegetation cover on ecologically important lands under high pressure from development does not exceed 0.15% of the total 2011 baseline land area over a 5-year period.
- The proportion of basin-wide growth occurring within urban growth areas is at least 86.5% (equivalent to all counties exceeding their population growth goals by 3%) with all counties showing an increase over their 2000–2010 percentage.

Relevant Strategies (and Sub-Strategies)

- A1. Focus land development away from ecologically important and sensitive areas (A1.1, A1.2, A1.3, A1.4)
- A2. Protect and restore upland, freshwater, and riparian ecosystems (A2.1, A2.3)
- A3. Protect and steward ecologically sensitive rural and resource lands (A3.1, A3.2)
- A4. Encourage compact regional growth patterns and create dense attractive mixed-use and transit-oriented communities (A4.1, A4.2, and A4.3)
- A5. Protect and restore floodplain function (A5.2, A5.3, A5.4)
- A6. Maintain and enhance the community infrastructure that supports salmon recovery (A6.5)
- B1. Focus development away from ecologically important and sensitive nearshore areas and estuaries (B1.1, B1.2, B1.3)
- B2. Protect and restore nearshore and marine ecosystems (B2.1, B2.2, B2.4)
- B3. Protect and restore marine ecosystems (B3.1, B3.2)
- B4. Use, coordinate, expand, and promote financial incentives and programs for best practices at ports and in the marine industry that are protective of ecosystem health (B4.1)
- B5. Protect and restore native diversity and abundance of species (B5.1, B5.2)

Figure C-1 (Appendix C, *Results Chains*) depicts how the strategies (and related sub-strategies) contribute to reducing pressures related to land development and achieving the land development recovery target. Appendix C also contains a results chain for each individual strategy in the Action Agenda, showing how that strategy (and its related sub-strategies) reduces pressures and contributes to achieving numerous recovery targets.

Land Cover

Land cover is an essential indicator of ecosystem health because of its importance for both terrestrial and aquatic ecosystem processes and habitats. During the past 50 years, Puget Sound lost at least two-thirds of its remaining old growth forest, more than 90% of its native prairies, and 80% of its saltwater and freshwater marshes. From 1992–2006, approximately 60,000 acres of forest-covered lands were converted to developed land.

A functioning, resilient ecosystem includes a mosaic of forestlands, agricultural lands, open space, natural lands (i.e., forest, prairie), and developed lands and related infrastructure to support habitat needs, support natural processes, and generate ecosystem services.

Recovery Target

- The average annual loss of forested land cover to developed land cover in non-federal lands does not exceed 1,000 acres per year, as measured with Landsat-based change detection.
- Restore 268 miles of riparian vegetation or have an equivalent extent of restoration projects under way.

Relevant Strategies (and Sub-Strategies)

- A1. Focus land development away from ecologically important and sensitive areas (A1.2, A1.3)
- A2. Protect and restore upland, freshwater, and riparian ecosystems (A2.1, A2.2)
- A3. Protect and steward ecologically sensitive rural and resource lands (A3.1, A3.2)
- A4. Encourage compact regional growth patterns and create dense attractive mixed-use and transit-oriented communities (A4.1, A4.2, A4.3)
- B1. Focus land development away from ecologically important and sensitive nearshore areas and estuaries (B1.2)
- C4. Manage surface runoff from forest lands (C4.1, C4.2)

Figure C-2 (Appendix C, *Results Chains*) depicts how the strategies (and related sub-strategies) contribute to reducing pressures related to land cover and achieving the land cover recovery target. Appendix C also contains a results chain for each individual strategy in the Action Agenda, showing how that strategy (and its related sub-strategies) reduces pressures and contributes to achieving numerous recovery targets.

Floodplains

The Challenge

Floodplains play a vital, often unrecognized role in the health of the Puget Sound ecosystems and watersheds. Floodplains support a variety of key ecological functions: They slow and store flood waters, filter our water, generate economically and culturally valuable fisheries, produce fertile soils for farming, recharge our aquifers, create a variety of recreational opportunities, and provide critical habitat and sustenance for a diverse array of terrestrial and aquatic life. Floodplains are one of the most productive ecosystems in Puget Sound, yet they are also one of the most degraded portions of the Puget Sound ecosystem, and these impacts have significant consequences for people and nature. Several factors have impeded floodplain recovery (and related salmon recovery and water quality goals) to date. These factors include a lack of public support, high costs associated with restoration, and the existence of divergent and uncoordinated agency goals. Despite the tens of millions of dollars spent on ecosystem recovery and flood risk reduction, habitat remains in decline and flood risks continue to mount.

Local, state, and federal agencies employ a variety of programs to address floodplain management issues—sometimes in contradictory ways. Flood risk reduction projects developed in ways that don't take fish and wildlife needs into account get caught up in Endangered Species Act conflicts that prevent or delay construction and add mitigation costs. Habitat restoration projects developed as single-purpose projects are opposed by communities concerned with maintaining farmland or water management infrastructure. Progress on both sides has been too slow and arguably outweighed by the increased costs associated with continued development. The net result has been a continued decline of ecosystem functions and increase in human flood risks. Yet divergent floodplain management goals—flood hazard mitigation, clean water, salmon—are not inherently at odds with one another. Those portions of the river corridor that present the greatest risks to people (i.e., incur the most flooding and erosion) are often the same areas where salmon habitat, water filtering wetlands, groundwater recharge and flood storage are most likely to occur.

CLIMATE CHANGE

As identified in *Preparing for a Changing Climate: Washington State's Integrated Climate Response Strategy* (Washington State Department of Ecology 2012a), flood frequency is projected to increase progressively from the 2020s through the 2080s, with the largest increases predicted for mixed rain-snow runoff basins located in Puget Sound. Flooding can cause widespread damage to communities and property.

The state strategy identified several high-priority, overarching strategies related to floodplain protection and restoration, including the following.

- Protecting people and communities from climate change impacts.
- Reducing the risk of damage to buildings, transportation systems, and other infrastructure. This strategy specifically calls for reducing flood damage by restoring floodplains and capturing more water.
- Safeguarding fish and wildlife and protecting critical ecosystem services that support human and natural systems.
- Reducing the vulnerability of coastal communities, habitat, and species.
- Supporting the efforts of local communities and strengthening capacity to respond and engage the public.

Recovery Targets

The strategies and actions in this section will contribute to achieving the recovery targets for floodplains.

Vital Sign	Indicator	Recovery Target
Floodplains	Under development	Restore, or have projects underway to restore, 15% of degraded Puget Sound floodplain area.
	Under development	Have no net loss of floodplain function in any watershed.

Local Priorities

LIOs identified near-term actions that address floodplains. These local actions are presented in the *Strategies and Actions* section along with Soundwide actions under the sub-strategy shaded below. The local action numbering contains the area abbreviation shown in parentheses after each LIO name. See Section 4, *Local Recovery Actions*, for detailed information about local planning.

Local Integrating Organization	Sub-Strategy			
	A5.1	A5.2	A5.3	A5.4
Hood Canal Coordinating Council (HC)				
Island (ISL)				
San Juan (SJI)				
Snohomish-Stillaguamish (SNST)				
South Central Caucus Group (SC)				
Alliance for a Healthy South Sound (SS)				
Strait ERN (STRT)				
West Central (WC)				
Whatcom (WH)				

Strategies and Actions

A5. Protect and Restore Floodplain Function

A5.1 Improve data and information to accelerate floodplain protection, restoration, and flood hazard management

Complete and up-to-date information is fundamental to achieving floodplain recovery. All strategies and actions associated with floodplain protection and recovery assume that decision makers have access to reliable data on floodplain locations, conditions, and recovery priorities.

Near-Term Actions

The near-term actions⁸ identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

A.5.1.2 Regional floodplain vision and program. Identify the goals, capital project plans and funding needs associated with achieving the floodplain recovery goal.

A.5.1 WH3 Lower Nooksack floodplain management. Complete habitat assessments and restoration plans for Reaches 1-4 of the mainstem Nooksack. The restoration plans will advance the Flood/Fish Integration action in the WRIA 1 Salmonid Recovery Plan (through incorporation into Systemwide Improvement Framework Plan and/or Comprehensive Flood Hazard Management Plan), and will provide technical information to support the Whatcom Conservation District’s restoration and riparian efforts in agricultural areas. This action is critical to ultimately restoring Nooksack River floodplain.

⁸ Gaps in numbering reflect near-term actions that have been completed or otherwise retired.

A5.2 Align policies, regulations, planning, and agency coordination to support multi-benefit floodplain management, incorporating climate change forecasts

Floodplain management policies have been developed over many decades. Some of these policies conflict with Puget Sound recovery goals and present obstacles to achieving the floodplain restoration target. Flood risk management and ecosystem recovery are not mutually exclusive goals yet have been historically pursued independent of one another.

One of the principal challenges to achieving the recovery target is the sheer cost involved in floodplain restoration projects, most of which will involve expensive infrastructure work. Asking agencies to coordinate their programs to pool funding and achieve greater efficiencies is easy in theory; however, agencies are required to use cost-benefit analyses focused specifically on their programmatic mandate when making decisions about which projects or activities to fund. Developing a more holistic approach to cost-benefit analysis that speaks to multiple agency goals will be critical to enabling a coordinated, multi-agency approach to funding floodplain projects that will make people safer and our ecosystem healthier. Creating a decision making framework that enables agencies to identify projects that meet multiple program goals is a critical step toward being able to coordinate floodplain investments and finance floodplain recovery projects.

CLIMATE CHANGE

Projected changes in weather patterns are expected to cause an increase in the frequency and magnitude of flooding, increased sediment delivery to our rivers, and a rise in the Puget Sound sea level. These changes have significant implications for infrastructure and other land uses in floodplains and near-shore environments. Restoring floodplain functions can help mitigate this impact while creating more resilient communities. At the same time, our floodplain ecosystems will need to adapt to these changing conditions. Incorporating climate change forecasts into floodplain management strategies implies having a deeper understanding of what the potential is for localized impact to climate change, identifying how these impacts can be accounted for in existing planning processes, and most importantly appropriately reflecting the value of floodplain protection and restoration into decision making. The strategies delineated in this section represent the long-term solution and the near-term actions represent only the beginning of a much longer conversation needed to identify the full set of needed actions.

SALMON RECOVERY PLAN PRIORITY: PROTECTING AND RESTORING FLOODPLAINS

Functioning floodplains are critically important for salmon across the Puget Sound and need to be protected and restored. Specific floodplain protection and restoration areas are identified for all the mainstem, natal, watersheds in Volume II. Two key issues that have come out of salmon recovery but are relevant to the greater recovery effort are the biological opinion issued by NOAA/National Marine Fisheries Service (NMFS) on the Federal Emergency Management Agency (FEMA) National Floodplain Insurance Program and the U.S. Army Corps of Engineers (Corps) Levee Vegetation Management Standards.

- **NMFS Biological Opinion on FEMA National Floodplain Insurance Program:** The biological opinion indicated that the development that has been allowed in the floodplains across the Puget Sound has acted as a ‘take’ of salmon and orcas. This biological opinion is an important document in the information related to the need to protect and restore floodplain habitat.
- **Levee Vegetation:** the allowable amount and size of vegetation along Corps certified levees impacts the riparian habitat for many critical salmon-bearing streams and rivers. Opportunities may exist to increase riparian vegetation, consistent with Corps levee maintenance standards (or variances to these standards with the approval of levee owners). Work has been done to reinforce the Seattle variance but more work is needed to ensure this can be used.

How is this priority integrated in the Action Agenda? The strategies and actions in the Action Agenda generally reflect the themes and actions identified in the Salmon Recovery Plan through the need to protect and restore floodplains into functioning ecosystems. As all Chinook salmon populations need to get to a low risk status, prioritization of floodplain areas for protection, restoration, and farmland protection should be considered a sequencing question. In addition, identification of these areas should consider those already important for salmon in the Salmon Recovery Plan. Finally, prioritization efforts should not slow down the existing work to protect and restore floodplain areas known as important per the Salmon Recovery Plan.

As with the integration of working lands priorities, consideration about the flexibility of conservation tools may need to be more clearly articulated. The watershed chapters have specific information about where floodplain restoration gains could be made.

Ongoing Programs

Key Ongoing Program Activities

- In coordination with the Corps, and local levee owners, the Partnership is currently leading the development of new regional levee-based vegetation standards. Seattle District of the Corps is serving as the local federal lead for interagency coordination efforts on variances from mandatory Corps vegetation-management standards.

Near-Term Actions

The near-term actions identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

A.5.2.1 Improved permit process. Support WDFW, Ecology, Corps, USFWS, and NOAA in making changes to improve the current permit process.

A.5.2 SC5 Improve floodplains management by creating partnerships of interested parties (especially local governments and business community).

- Work with federal and state agencies to address and resolve conflicts between regulations that are a barrier to completing multi-benefit projects.
- Over the next 2 years, support King County's effort to lead the advisory committees of the Green River System-Wide Improvement Framework (SWIF) in developing integrated priorities for levee improvements that meet flood protection, safety, economic development, and, habitat, vegetation management, agriculture, and recreation objectives and that bridge conflicts in federal regulations.
- Over the next 2 years, support the Russell Foundation's work with WRIA 10 to complete a Watershed Open Space Strategy (WOSS). The process will focus on development of a regional strategy by aligning with current ecological management efforts in the watershed to promote inter-organizational collaboration and action.
- Share information among local governments on successful approaches to meeting requirements of the FEMA Biological Opinion.
- Participate in forums to address conflicts between agriculture, flood hazard reduction projects, and habitat restoration projects in the floodplain.

- Advocate for state to improve alignment and coordination between minimum requirements for local Flood Hazard Reduction Plans, Comprehensive Plans under the Growth Management Act (GMA), and minimum requirements for regulation of Frequently Flooded Areas.
- Implement major floodplain protection and restoration projects in King and Pierce Counties funded under state 2013 Capital Improvement Plan appropriation for Coordinated Investment Strategy, including Carlin Project and Lower Cedar River Integrated Floodplain Restoration Project in King County and the Green and White rivers in Pierce County.
- Continue to identify, implement, and publicize floodplain restoration projects, including the Needham Road Setback Levee Project and Calistoga Reach Setback Levee and Side Channel Construction Project that provide multiple benefits, including public safety, salmon habitat enhancement, open space, and recreation.
- Demonstrate quantifiable benefits of major floodplain restoration projects to salmon recovery, flood resilience, water quality, and agriculture and help make the case for ongoing investments of state funding in multi-objective flood hazard reduction projects. Work with King County, Corps, and other partners to identify alternatives to the existing policies on levee vegetation.

A.5.2 SNST7 Floodplain management for farm-fish-flood. Snohomish County, together with project partners, will complete the development of reach-scale plans for the Sustainable Lands Strategy project and begin the implementation of those plans.

- Continue development of Farm-Fish-Flood Coordination efforts led by King County.
- Utilize synergies between local and state agencies to coordinate and leverage efforts that deal with farm-fish-flood issues, such as Floodplains by Design.

A5.3 Protect and maintain intact and functional floodplains

In Puget Sound, protection of the remaining intact habitat functions of floodplains and restoration of lost functions is noted as a high priority in many listed species recovery plans, and the Action Agenda includes several near-term actions supporting these outcomes. Most of the intact and functional floodplains are in undeveloped areas. The focus of this sub-strategy is on ecosystem-level programmatic actions that contribute to maintaining and protecting floodplains. It is also important to note that in parallel to the protection and restoration of floodplains, there needs to be an effort to change the demand for development in dense/urban growth areas.

FEMA implements the National Flood Insurance Program, which issues flood insurance to homeowners and greatly influences the type and extent of development in floodplains. In late 2008, NMFS issued a biological opinion finding that the National Flood Insurance Program jeopardizes the existence of several Puget Sound species listed under the Endangered Species Act. NMFS has identified seven actions for FEMA that would bring the program into compliance with the act, the third of which calls for FEMA to modify its implementation of the program minimum criteria to prevent and/or minimize the degradation of channel and floodplain habitat. NMFS set a deadline of September 22, 2011, for work by FEMA and 122 communities in Puget Sound to implement this action (Puget Sound Partnership 2010b).

FEMA, with concurrence from NMFS, has prepared additional guidance that is intended to clarify certain aspects of the biological opinion and that should be considered with the biological opinion when compliance actions are undertaken. FEMA and local jurisdictions are working to ensure their policies and procedures prevent and/or minimize degradation of existing channel and floodplain habitat functions.

Ongoing Programs

FEMA and NOAA technical assistance teams are continuing to work with other local, state and federal governments to implement the BiOp and provide tools and mechanisms to promote consistency with other regulations. A performance metric is the number of National Flood Insurance Program communities with biological opinion compliance packages approved by FEMA.

Key Ongoing Program Activities

- DNR, WDFW, and other state agencies, tribes, local governments, and non-governmental entities use applicable federal and state grants, local government funds, and private funds to purchase development rights from working forest and farm landowners for lands at risk of conversion in key Puget Sound watersheds.

Near-Term Actions

The near-term actions⁹ identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

- A.5.3.2 Critical areas ordinance updates on frequently flooded areas.** Ecology, Commerce, and other interested state agencies will develop a strategy for and lead effective state engagement with local governments in the next round of critical areas ordinance updates on frequently flooded areas.
- A.5.3.3 Biological opinion compliance and floodplain target.** The Partnership will evaluate how biological opinion compliance contributes to achieving the floodplains target. This includes policy analysis of jurisdictional compliance, development that has occurred since the biological opinion, and recommendations for next steps.
- A.5.3.4 Levee vegetation.** The Partnership will continue to support King County and Whatcom County, in coordination with the Corps and regional partners, to craft a prioritized list of floodplain capital projects addressing flood risk and habitat issues and, as needed, variances for specified segments of levees through the system-wide improvement framework (SWIF) pilot projects being led by each county. Upon completion of the SWIF pilot projects and working with the pilot leads and the Corps, the Partnership will develop lessons learned and technical and process best practices for conducting integrated flood risk and habitat capital planning, and share this information through all appropriate means. The Partnership will work with pilot leads, the Corps, and additional regional entities to identify policy issues emerging from the work as related to Puget Sound recovery and consider appropriate actions to address them.

⁹ Gaps in numbering reflect near-term actions that have been completed or otherwise retired.

A.5.3.5 Floodplain permitting assistance. Ecology and Commerce will develop policy and technical assistance programs that integrate the recommendations and requirements listed within a) NMFS' National Flood Insurance Program Biological Opinion, and b) FEMA's National Flood Risk Information Project policy and program recommendations for implementation.

A5.4 Implement and maintain priority floodplain restoration projects

The target identified for Puget Sound recovery calls for a 15% restoration of floodplains. This is an ambitious goal, but, because of the importance of floodplains to overall Puget Sound recovery, an absolutely critical one. Achieving it will require overcoming key barriers in order to deliver the necessary public support, funding, and interagency coordination. It will take significant commitment and collaboration from agencies and a new approach that aligns flood risk management efforts and programs so that the necessary support and funding is garnered to accelerate recovery actions.

Floodplain forested lands are critically important habitat and provide several indispensable ecosystem services. The ecosystem services include rainfall diversion and storage to stem the flow of water to reduce downstream flood damage; surface water quality protection; groundwater recharge; and mitigation of erosion and sedimentation deposit.

The production of arable soils is one of the most valuable ecosystem services society gets from floodplains. The result is that the majority of farmland in Puget Sound is located in floodplains because of the rich, fertile soil. However, agricultural land use can significantly alter the functionality of floodplains. In their rating of existing floodplain function in Puget Sound, the NMFS found that agriculture-dominated Water Resource Inventory Areas (WRIAs) (25% or greater agricultural use) had "poor" or "poor-fair" conditions (Smith 2005 in Puget Sound Partnership 2010c) Farmers also experience the direct social and economic costs of floods when they occur. As we look to the future there is an opportunity to change agricultural management practices to make it more compatible with recovering floodplain functions. Coordinating with these floodplain agricultural interests can enhance stewardship of critical floodplain habitat while maintaining viability for critical resource lands.

It is important to locate new and replacement public infrastructure (e.g., bridges, roads, rails, treatment plants) outside of floodplains and ensure that the design of new or replacement infrastructure optimizes and enhances floodplain function. Repairs to infrastructure that cannot be relocated should be the least disruptive of floodplain function as possible.

Ongoing Programs

There are several grant programs and other finance mechanisms that create incentives for protection, enhancement, or restoration of floodplain function on forest and agricultural lands, some of which are listed below.

The **Family Forest Fish Passage Program** is a cost-share program that helps small forest landowners renovate barriers on their land to allow fish passage in small waterways. Artificial barriers in streams can prevent many fish from reaching miles of upstream habitat, and can be devastating to species such as salmon. As a public resource, fish are protected by state Forest Practice Rules which require landowners to restructure fish barriers by 2016 in a way that allows unobstructed fish passage. The program

provides 75 to 100% of the cost of removing the barrier, with the funding provided varying based on the quality of the habitat, number of salmon and trout species benefiting from the correction, and project cost. This program allows working forest lands to remain viable while supporting ecosystem function.

The **Forestry Riparian Easement Program** compensates eligible owners of small forest lands in exchange for a 50-year conservation easement on qualifying timber. Landowners agree to leave timber unharvested during the easement period, while still maintaining property rights and full access. The riparian benefits of the forested lands are maintained by the state. This program allows landowners to benefit from helping to preserve local waterways, thereby improving rural communities while helping to restore flood protection in these areas.

The **Aquatic Lands Enhancement Account** program is targeted at re-establishing the natural, self-sustaining ecological functions of the waterfront, providing or restoring public access to the water, and increasing public awareness of aquatic lands as a finite natural resource and irreplaceable public heritage. Typical projects include removing bulkheads to restore natural beach function, restoring estuaries, and restoring shoreline for salmon habitat. Funded by revenue generated from DNR's management of state-owned aquatic lands, these grants are available to local agencies, state agencies, and Native American tribes.

The **Land and Water Conservation Fund** provides funding to preserve and develop outdoor recreation resources, including parks, trails, and wildlife lands. Project goals typically involve protecting wildlife habitat or renovating parks. Funded by revenue from federal sales and leasing of off-shore oil and gas resources, these funds are available to local agencies, park and recreation districts, school districts, special-purpose districts, state agencies, and Native American tribes.

The **Salmon Recovery Funding Board** funds riparian, freshwater, estuarine, near-shore, saltwater, and upland projects that protect existing, high quality habitats for salmon. It also funds projects to restore degraded habitat to increase overall habitat health and biological productivity of the fish. Funds come from the sale of state general obligation bonds and federal Pacific Coastal Salmon Recovery Funds. These funds are available to state and local agencies, conservation districts, Native American tribes, non-profit organizations, private landowners, regional fisheries enhancement groups, and special purpose districts.

The **Estuary and Salmon Restoration Program** provides grants to protect and restore the Puget Sound near-shore. The program was created by WDFW to support the emerging priorities of the Puget Sound Nearshore Ecosystem Restoration Program. Typical projects include protection of nearshore and wetland habitat, restoration of salmon habitat and estuaries, and removal of bulkheads. Funding comes from the State Building Construction Fund. Federal funding also has been received from the NOAA's Community Based Restoration Program and USFWS. Federal funding for projects in Puget Sound is expected from the EPA. Funds are available to local, state and federal agencies, Native American tribes, academic institutions, private institutions and non-profit organizations.

The **Wetlands Reserve Program** provides grants to assist eligible applicants in the restoration, creation, protection and enhancement of wetlands on their property through a voluntary, environmentally safe and cost effective manner. This program is administered by NRCS through consultation with the State Technical Committee. In addition to the Wetlands Reserve Program, the NRCS has several other

conservation programs that help reduce soil erosion, enhance water supplies, improve water quality, increase wildlife habitat, and reduce damages caused by floods and other natural disasters.¹⁰

Puget Sound Acquisition and Restoration funds were requested by Governor Gregoire as part of her initiative to protect and restore Puget Sound by 2020 to accelerate implementation of the Salmon Recovery Plan. Funding has been provided by the Legislature through the capital budget to protect and restore habitat in Puget Sound with a focus on acquiring and protecting critical habitat and restoring habitat function. These funds are available to state and local agencies, conservation districts, Native American tribes, non-profit organizations, private landowners, regional fisheries enhancement groups, and special purpose districts. In 2011, the program was revised to prohibit state agencies from using Puget Sound Acquisition and Restoration funds to acquire land.

Key Ongoing Program Activities

- RCO, the Partnership, and Puget Sound lead entities with local and regional partners implement relevant habitat restoration projects identified in salmon recovery 3-year work plans (see Strategy A6).
- Snohomish Sustainable Lands Strategy and Skagit Tidegate Initiative are multi-benefit approaches that enable agricultural infrastructure improvements and/or provide regulatory certainty in exchange for restoration actions.

Near-Term Actions

The near-term actions identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

- A.5.4.1** **Prioritization of state highways with floodplain impacts.** WSDOT will identify and prioritize the state highway bridges (approximately 550 structures) that have the biggest impacts on floodplain function and connectivity, including consideration of WSDOT's 2011 Climate Impacts Vulnerability Assessment Report.
- A.5.4.2** **Agricultural land ecosystem services markets.** WSCC, working with conservation districts, watershed groups, and counties will identify three pilot project opportunities that demonstrate ecosystem services markets associated with flood hazard prevention and agricultural lands in floodplains.
- A.5.4.3** **Candidate areas for land swaps.** WSCC will work with conservation districts, agricultural community, watershed planning groups, and local jurisdictions to use the outputs from the characterization work (A5.1.1) to identify potential land swaps (i.e., county land use and conservation districts) and identify candidate areas available to expand for agriculture outside of priority floodplain areas.
- A.5.4.4** **Implement priority multiple-benefit floodplain restoration projects.** Secure funding for high-priority projects listed.

¹⁰ www.wa.nrcs.usda.gov/programs/index.html

- A.5.4.5** **Implement priority multiple-benefit floodplain restoration projects.** Develop and initiate a regional technical team to support the development of integrated reach-scale plans and projects.
- A.5.4 WH8** **Marietta Acquisition.** Acquire properties in repetitive flood loss area to prevent future loss and to enhance upstream habitat restoration opportunities. Clean up three former gas stations sites as dictated by site conditions.

Emerging Issues and Future Opportunities

- The Floodplain Protection and Policy Team could tackle additional key items such as the following.
 - Develop a decision making framework that enables agencies to identify cross-agency floodplain project priorities based on their ability to meet multiple goals and delineates a coordinated funding approach, including cost-share mechanisms, for floodplain-friendly modifications to flood protection infrastructure in a cost-effective manner.
 - Identify federal, state, local, and private funding to develop case studies that are illustrative of the benefits of a multi-objective approach to floodplain restoration and implement a pilot program to fund projects that leverage the work of the case studies.
 - Assess the disincentives for reestablishing habitat land on agricultural lands.
 - Support changes to state comprehensive flood management planning and project funding policies to ensure that plans and projects supported with state funding fully incorporate projected changes to sea level rise, flood frequency and volumes, sediment regimes and other issues that could be a major threat to human safety and floodplain ecosystem health.
-

Target View: Floodplains

A functioning, resilient ecosystem requires freshwater floodplains that support natural processes and deliver ecological services to keep people and property safe during flood flows, support fisheries production, and provide water filtration and groundwater recharge. Floodplains are lush regions that provide food and fresh water, as well as good agricultural land through soil and habitat formation. We also know that improving riverside and floodplain habitat is a key part of virtually all recovery plans for salmon.

Unfortunately, many floodplains in Puget Sound have been lost through a combination of shoreline armoring and levees, as well as residential, commercial, industrial and agricultural development. Better management of floodplains is essential for recovering salmon and Puget Sound.

Recovery Target

- Restore, or have projects underway to restore, 15% of Puget Sound floodplain area.
- Have no net loss of floodplain function, in any watershed.

Relevant Strategies (and Sub-Strategies)

- A1. Focus land development away from ecologically important and sensitive areas (A1.2, A1.4)
- A4.2. Provide infrastructure and incentives to accommodate new and re-development within urban growth areas
- A5. Protect and restore floodplain function (A5.1, A5.2, A5.3, A5.4)
- A6.1. Implement high priority projects identified in each salmon recovery watershed's 3-year work plan
- B1.2. Focus land development away from ecologically important and sensitive nearshore areas and estuaries

Figure C-3 (Appendix C, *Results Chains*) depicts how the strategies (and related sub-strategies) contribute to reducing pressures on floodplains and achieving the floodplain recovery target. Appendix C also contains a results chain for each individual strategy in the Action Agenda, showing how that strategy (and its related sub-strategies) reduces pressures and contributes to achieving numerous recovery targets.

Chinook Salmon

The Challenge

Salmon are a symbol of the Pacific Northwest and Puget Sound. The tribal cultures of the Pacific Northwest developed around the salmon as an abundant and critical resource. In addition, salmon have been an integral part of the Puget Sound ecosystem for thousands of years—a critical food source for local wildlife and a source of nutrients for the streamside forests.

When early settlers arrived the salmon were initially viewed as an inexhaustible resource. However we know now that was not true. A history of habitat destruction, overharvesting, and poor hatchery practices have led to a significant decline of the salmon. Puget Sound Chinook, Hood Canal summer chum, Puget Sound steelhead, and Puget Sound bull trout are all now listed under the Endangered Species Act.

There are currently 22 Chinook populations remaining, with estimated abundance at 10% or less than historic levels. In 2005, recovery plans were completed for Puget Sound Chinook salmon and Hood Canal and Eastern Strait of Juan de Fuca summer chum. These NOAA-approved plans, along with the 2006 NOAA supplement and the watershed 3-year work plans, guide implementation of the Salmon Recovery Plan. In addition, there is a draft bull trout recovery plan that is being updated and finalized by USFWS.

The two recovery plans articulate a long-term (50-year) approach with consistent funding, an integration of the different management decisions across harvest, hatchery, habitat protection, and habitat restoration, and a flexible adaptation approach that incorporates new information. The salmon recovery plans call for protection and restoration of habitats (specifically estuaries, floodplains, riparian areas, and the nearshore), improved access to habitat, sufficient water flows, improved water quality, harvest management, hatchery management, as well as integration of habitat, harvest and hatchery actions.

TRIBAL TREATY RIGHTS

A treaty is a legally binding contract between sovereign nations. Treaties are recognized under the U.S. Constitution as the “supreme law of the land.” In 1854–55, tribes in western Washington signed treaties with the U.S. government, ceding most of the land that is now western Washington which allowed the peaceful settlement of the territory. In the treaties the tribes reserved the right to fish, hunt, and gather shellfish and other natural resources in all of their traditional places to preserve the tribal way of life. The courts have found that the treaty rights to hunt and fish in usual and accustomed areas is a property right. Those rights pre-date the property rights of all other citizens of the State of Washington. The unique legal status of tribes and presence of tribally reserved rights and cultural interests throughout the state creates a co-management relationship between tribes and the state agencies responsible for managing and protecting fish and shellfish of the state. The tribes’ treaty rights are guaranteed under the treaties and by federal law.

The tribes’ treaty rights have been affirmed by the federal courts including the U.S. Supreme Court in numerous rulings including the 1974 U.S. v. Washington case known as the Boldt decision. The ruling upheld tribal treaty-reserved rights, established the tribes as co-managers of the salmon resource with the state of Washington, and re-affirmed the tribal right to half of the harvestable number of salmon returning to Washington waters every year.

The tribes note for those rights to have meaning, however, there must be salmon for treaty tribes to harvest. Salmon populations continue to decline at an alarming rate despite massive harvest reductions, hatchery mitigation and a huge financial investment in habitat restoration during the past four decades. A primary cause of the decline is that salmon habitat is being damaged and destroyed faster than it can be restored. This trend shows no sign of improvement and has led to the loss by some tribes of basic ceremonial and subsistence fisheries, a cornerstone of tribal culture.

In the summer of 2011, the treaty Indian tribes in western Washington launched the Treaty Rights at Risk initiative that calls on the federal government to take charge of salmon recovery. The federal government has both the obligation and authority to recover salmon and protect tribal treaty rights. Tribes want the federal government to align its agencies, programs and authorities to lead a more coordinated and effective salmon recovery effort. A white paper developed for the effort cites numerous examples from across western Washington of continued loss of habitat due to shoreline armoring, timber harvesting, an increase in paved lands, and filling and diking of estuarine wetlands. The Treaty Rights at Risk initiative is a call to action, intended to galvanize and energize response by federal, state, local and tribal governments and policy makers to reverse the decline of our salmon and their habitat.

Chinook and summer chum recovery work is an ongoing, long-term effort by tribes, state, federal and local government, non-governmental organizations, businesses and private landowners. Much of the work to implement the recovery plans is already underway and needs continued or more support. Implementation of the approved salmon recovery plans faces the following challenges.

- Regional concerns about the lack of habitat protection: In the spring and summer of 2011, NOAA/NMFS and the Northwest Indian Fisheries Commission each published documents that present strong critiques of the existing habitat protection system. These documents highlight the need to improve regional habitat protection efforts so that ecological functions for salmon are sustained.
- Under-investment in capital projects: When the Chinook Plan was completed in 2005 the estimated annual investment for the first 10 years was \$120 million for Chinook and bull trout for capital and some non-capital actions. The investment rate has consistently been less than half of this estimated need. The summer chum plan also estimated a need of \$136 million for the first 10 years for capital and non-capital actions.

- Addressing other barriers to habitat restoration: Potentially conflicting values for how best to manage the lands including resolving agricultural land needs with salmon habitat needs, addressing the impacts of transportation infrastructure such as highways and railroads, and permitting challenges for restoration projects.
- Under-investment in human infrastructure: Implementation of salmon recovery programs requires a robust human infrastructure within watersheds and regional entities. For local communities to agree on technically and community-supported salmon recovery strategies and actions, it is necessary to have people on the ground who can facilitate those conversations with all the relevant jurisdictions, tribes, and other stakeholders and also push for implementation of the high priority actions. Current staffing reductions are reducing the ability to implement harvest, hatchery, habitat restoration, and habitat protection actions.
- Lack of investment in several specific priorities identified in the Recovery Plans: Resolving technical and policy uncertainties about water availability and implementation of protective water quantity measures, resolving uncertainty about whether the regional water quality actions address the needs of salmon, furthering our understanding of watershed habitat status and trends, as well as project effectiveness to improve adaptive management, and a coordinated approach for making decisions associated with harvest, hatchery, habitat restoration, and habitat protection management.

CLIMATE CHANGE

While Pacific salmon have persisted in the face of exceptional climate variability for thousands of years—involving such large-scale factors as the advance and retreat of glaciers covering huge swaths of western North America—future climate change projections are troubling when considered in combination with the impacts that human development has had, and continues to have, on the landscapes of Puget Sound and elsewhere (Francis and Mantua 2003).

Pacific salmon have complex life cycles and highly diverse survival strategies, but all species rely to some degree on functional freshwater, estuarine, and marine habitat for successful reproduction, growth, and development. Impacts of climate change are likely to affect Pacific salmon across all of these habitats, but recent studies (e.g., Beechie et al. 1997; Mantua et al. 2009) have identified summertime stream temperatures, seasonal low flows, and changes in the frequency and magnitude of peak flow events as key pressures limiting the productivity of salmon populations in freshwater environments. By the latter half of this century, most watersheds in Puget Sound are likely to experience higher summertime water temperatures, lower summertime flows over longer periods of time, and higher peak flows occurring earlier in the winter/spring transitional period (Mantua et al. 2009). Particularly for species such as steelhead, coho, sockeye, and stream-type Chinook that rely heavily on freshwater for rearing over the first 1 to 2 years of life, these changes have the potential to significantly impact productivity. For others—such as pink, chum, and ocean-type Chinook—changes in freshwater environments will likely have relatively less impact.

Climate change is also expected to have a range of complex impacts on the marine environment. Projected warmer ocean temperatures are likely to increase stratification, yet potential increases in winds may counteract this impact and actually improve upwelling of the nutrients that drive oceanic food webs. In sum, though, the result of multiple stresses including altered thermal structure and increasingly acidic waters is likely to be negative for the marine environment in general (Miles 2009), and by extension, for Pacific salmon specifically.

Francis and Mantua (2009) find that in general, salmon populations in regions with healthy habitat are likely to persist in the face of climate change as long as the time scale of environmental change does not exceed the rate at which they are able to adapt. Salmon recovery actions that focus on habitat restoration and protection—particularly in lower elevation watersheds (Battin et al. 2007)—with the intent of maintaining and increasing

functional habitat are thus an important component of a larger suite of strategies to improve the capacity of salmon populations to withstand climate change impacts expected over the next half century, and beyond.

Preparing for a Changing Climate: Washington State’s Integrated Climate Response Strategy (Washington State Department of Ecology 2012a) identifies high priority response strategies related to salmon recovery.

- **Improving water management to address climate-related water supply reduction.** This includes ensuring sufficient cold water in salmon bearing streams during critical seasons.
- **Safeguarding fish and wildlife and protecting critical ecosystem services** that support human and natural systems.
- **Reducing the vulnerability of coastal communities, habitat, and species.**
- **Supporting the efforts of local communities and strengthening capacity to respond and engage the public.**

The state strategy calls for reducing non-climate stressors to help fish, wildlife, plants and ecosystem be more resilient to the effects of climate change. The strategies and actions in the Action Agenda are designed to achieve this need. It also calls for managing species and habitats to protect ecosystem functions and provide sustainable cultural, recreational, and commercial use in a changing climate. This means incorporating climate change information into existing and new management plans, refining vulnerability assessments, conserving genetic diversity.

Recovery Targets

The strategies and actions in this section will contribute to achieving the Chinook salmon recovery target.

Vital Sign	Indicator	Recovery Target
Chinook Salmon	Chinook salmon population abundance as measured by the number of natural origin adult fish returning to spawn.	Stop the overall decline and start seeing improvements in wild Chinook abundance in two to four populations in each biogeographic region (Figure 2 In latest data and maps section).

Local Priorities

LIOs identified near-term actions that address Chinook salmon. These local actions are presented in the *Strategies and Actions* section along with Soundwide actions under the sub-strategy shaded below. The local action numbering contains the area abbreviation shown in parentheses after each LIO name. See Section 4, *Local Recovery Actions*, for detailed information about local planning.

Local Integrating Organization	Sub-Strategy				
	A6.1	A6.2	A6.3	A6.4	A6.5
Hood Canal Coordinating Council (HC)	■				
Island (ISL)	■				
San Juan (SJI)	■				
Snohomish-Stillaguamish (SNST)	■				
South Central Caucus Group (SC)	■				
Alliance for a Healthy South Sound (SS)	■				
Strait ERN (STRT)	■		■		
West Central (WC)	■			■	
Whatcom (WH)	■				

Strategies and Actions

A6. Protect and Recover Salmon

A6.1 Implement high priority projects identified in each salmon recovery watershed’s 3-year work plan

In addition to the strategies and actions identified in the watershed chapters of the original Puget Sound Chinook Recovery Plan, each of the watersheds associated with a chapter in the Recovery Plan annually updates their proposed salmon recovery project list. This list always looks 3 years out and is referred to as the 3-year work plan. The watershed community prioritizes these projects based on the strategies outlined in their chapter.

The pace of implementation of these projects has been much slower than originally envisioned in the plan due to both financial and other barriers to implementation.

Ongoing Programs

Key Ongoing Program Activities

- Updating and implementing the 3-year work plans is a key ongoing program. All LIOs include salmon recovery 3-year work plan projects in their local priority actions; these projects represent 25 local near-term actions in the Action Agenda.

Near-Term Actions

The near-term actions identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

A.6.1.1 Secure annual chinook investment. The Partnership, in collaboration with the Salmon Recovery Council, the Governor’s Salmon Recovery Office in the Recreation and Conservation Office, WDFW, and the Northwest Indian Fisheries Commission will develop and implement a strategy to secure from a combination of sources, the annual investment of \$120 million to fully implement the approved Puget Sound Chinook

Salmon Recovery Plan. The Partnership will work with its salmon recovery partners to align that funding in support of the highest priority protection and restoration projects as identified by salmon recovery lead entities.

- A.6.1.2 Restoration permit barriers.** Develop a strategy for a new interagency permitting team that would assist in faster permitting of habitat recovery projects, including multiple objective restoration projects.
- A.6.1 HC6 Hood Canal salmon recovery funding.** HCCC is both the Lead Entity for Chinook salmon and the regional recovery organization for Hood Canal and eastern Strait of Juan de Fuca summer chum. HCCC will develop a process for prioritizing acquisition, protection, and restoration actions and continue to target funding to the highest priority salmon recovery actions.
- A.6.1 HC7 Hood Canal salmon recovery monitoring and adaptive management.** HCCC working with many partners, state and federal agencies, and the tribes will complete a Monitoring and Adaptive Management Framework for both Skokomish Chinook and Mid Hood Canal Chinook. Monitoring protocols and plans for both Chinook salmon recovery chapters will be completed.
- A.6.1 ISL6 Restore tidal inundation.** Island County will restore tidal inundation to one or more isolated pocket estuaries or tidal wetlands. The project selected will address either poor design or malfunctioning tidegates to improve habitat for juvenile salmon.
- A.6.1 SC3 Implement high-priority projects listed in local salmon recovery plans.** Secure funding for high-priority projects listed in the salmon recovery 3-year work plans for WRIAs 8, 9, and 10.
- A.6.1 SJI10 Salmon recovery, habitat protection and restoration (Near Term Shoreline Action II).**
- A.6.1 SNST13 Salmon/multi-species recovery plans.** Support priority projects as specified in the salmon recovery plan, salmon recovery 3-year work plans, and basin's 10- and 50-year salmon recovery goals.
- Identify and implement one to three top priority habitat restoration projects in each basin.
 - Establish the baseline condition of key habitats such as forest cover, wetlands, riparian areas, floodplains, nearshore, and assess trends and rate of change. Use analysis to predict future anticipated gains/losses based on population and build out trajectories as well as evaluating current restoration and protection benchmarks.
- A.6.1 SS12 Salmon recovery 3-year work plan implementation—WRIA 10/12.** Each lead entity will implement at least one top tier project each year from their South Sound Salmon Recovery 3-Year Work Plan. They will determine year one project and set up performance measures at the start of each fiscal year.
- A.6.1 SS13 Salmon recovery 3-year work plan implementation—WRIA 13.** Each lead entity will implement at least one top tier project each year from their South Sound Salmon

Recovery 3-Year Work Plan. They will determine year one project and set up **performance measures at the start of each fiscal year.**

- A.6.1 SS14** **Salmon recovery 3-year work plan implementation—WRIA 14.** Each lead entity will implement at least one top tier project each year from their South Sound Salmon Recovery 3-Year Work Plan. They will determine year one project and set up performance measures at the start of each fiscal year.
- A.6.1 SS15** **Salmon recovery 3-year work plan implementation—WRIA 11.** Each lead entity will implement at least one top tier project each year from their South Sound Salmon Recovery 3-Year Work Plan. They will determine year one project and set up performance measures at the start of each fiscal year.
- A.6.1 SS16** **Salmon recovery 3-year work plan implementation—WRIA 15.** Each lead entity will implement at least one high priority project each year from their South Sound Salmon Recovery 3-Year Work Plan. They will determine year one project and set up performance measures at the start of each fiscal year.
- A.6.1 STRT4** **Implement the highest priority habitat restoration and protection projects in the Elwha River ecosystem as informed by adaptive management.** Refer to the monitoring and adaptive management plans for the Elwha and the North Olympic Lead Entity for Salmon’s 3-year work plan, in part, for guidance. Adaptive management over the coming years may show that habitat restoration and protection projects become a higher priority. The 3-year work plan currently includes the following high priority restoration projects: Little River Large Woody Debris, Elwha Dike Removals, Elwha River Estuary Restoration Engineering Feasibility, and Elwha Conservation Planning. Elwha Revegetation and Elwha Engineered Log Jams projects are also a part of the 3-year work plan but are specifically cited as separate Strait Action Area local near-term actions. See the 3-year work plan for descriptions and costs for each project.
- A.6.1 STRT5** **Implement the high priority actions listed within the most current North Olympic Lead Entity for Salmon’s 3-year work plan.** This effort includes working with the HCCC-Lead Entity on summer chum recovery. Eventually, steelhead actions will also be incorporated into the 3-year work plan. Note: Number of projects funded each year is dependent on funding available and cost of each project.
- A.6.1 STRT6** **Implement the restoration and revegetation plan for Lake Mills and Lake Aldwell on the Elwha River.**
- A.6.1 STRT7** **Implement Dungeness river floodplain restoration projects.**
- A.6.1 STRT8** **Monitor interaction of existing engineered log jams with sediment load from removed Elwha River dams and consider additional engineered log jams, when and where necessary.**
- A.6.1 STRT9** **Implement the Pysht River salt marsh estuary restoration project.** Project includes removal of suction and clamshell dredge deposits placed on a 21.5 acre area of historic

salt marsh within the Pysht River estuary. Also, construct a series of tidal channels (2 miles) to allow for natural recolonization of salt tolerant native plants.

- A.6.1 STRT10** **Implement the high priority actions for the Strait Action Area listed within the most current HCCC-Lead Entity salmon recovery 3-year work plan.** This effort includes working with the North Olympic Lead Entity for Salmon on summer chum recovery. Eventually, steelhead actions will also be incorporated into the 3-year work plan. Note: Number of projects funded each year is dependent on the funding available, cost of each project, and the current reevaluation of priorities.
- A.6.1 STRT11** **Implement the Snow Creek Estuary and Maynard Beach nearshore restoration project.** Project includes railroad grade fill removal, bulkhead removal, estuary restoration, and beach restoration. (Note: Effort will also address the Olympic Discovery Trail)
- A.6.1 STRT37** **Implement stream flow improvement projects within the Dungeness portion of the Elwha-Dungeness Water Resources Area (WRIA 18).** Stream flow improvement projects include Water Acquisitions, Irrigation Efficiency, Water Storage & Aquifer Recharge, and Source Substitution; Also, work to update Ecology's 2003 Final Environmental Impact Statement on water conservation needs.
- A.6.1 WC9** **West Sound SR3 Chico Creek culvert replacement.** The WSDOT will develop a funding strategy and schedule for replacing the SR3 culvert with a bridge on Chico Creek. Chico is the most productive salmon stream in West Sound and a high priority watershed for protection and restoration, and replacing the culvert with a bridge will improve fish passage and restore estuarine functions.
- A.6.1 WC18** **Chico/Keta Park culvert replacement and floodplain restoration.** Kitsap County Roads and the Suquamish Tribe will replace a triple box culvert and reconnect/restore upstream floodplain habitat at Keta Park, on the mainstem of Chico Creek. This includes completion of project design, for which funding has already been secured.
- A.6.1 WH1** **Implement Chinook restoration projects in the WRIA 1 Salmon Recovery 3-Year Work Plan.** The preparation and updating of the 3-year work plan is an element of salmon recovery and is a regional requirement for lead entities, occurring annually. The local recovery plan and restoration strategies are the foundation for the updates, and reflect local restoration strategies and priorities.

A6.2 Implement the high priority salmon recovery actions identified in other parts of the Action Agenda and the Biennial Science Work Plan

The vast majority of strategies and actions in the Action Agenda will support salmon recovery by improving ecosystem function. Full implementation of the Action Agenda will support salmon recovery.

Near-Term Actions

The near-term actions identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

A.6.2.1 Implement the Puget Sound federal agency action plan. Work with the Puget Sound Federal Caucus to advance Puget Sound recovery. Federal agencies with authorities in Puget Sound will work in coordination to address key barriers to recovery. For example, federal agencies will work together to address fish passage barriers, shoreline armoring regulation, and floodplain and riparian habitat restoration. These actions will contribute to advancement of the Action Agenda and respond to the concerns raised by treaty tribes in western Washington.

A6.3 Implement harvest, hatchery, and adaptive management elements of salmon recovery

The Chinook recovery plans have unique actions related to harvest management, hatchery management and adaptation.

Ongoing Programs

- **Harvest management.** Harvest of salmon in Puget Sound is co-managed by the Treaty Tribes and the State of Washington. Fisheries are focused on healthy wild runs and hatchery salmon but there is some incidental take of listed stocks as well. NMFS reviews the plan that guides fisheries management decisions made by the co-managers to evaluate its potential impact on recovery. The Comprehensive Management Plan for Puget Sound Chinook: Harvest Management component submitted by the Puget Sound tribes and the state of Washington was approved by NMFS in 2011 and will be in effect through 2014.
- **Hatchery management.** To evaluate the impact of hatcheries and hatchery actions on recovery of listed species, NMFS requires each hatchery to submit a Hatchery Genetic Management Plan. This plan describes the operation of the hatchery and evaluates the potential impact of those operations on recovery of listed species. Draft plans have been submitted to NMFS for review by the tribal and state hatcheries in Puget Sound. In addition, the tribes and the State of Washington are working together to write Hatchery Action Implementation Plans that consolidate descriptions of hatchery programs from each watershed into a single document that addresses co-manager priorities, legal requirements of the Puget Sound Salmon Management Plan and the Endangered Species Act, and recommendations of the Hatchery Scientific Review Group. These plans also will describe how the hatchery actions will integrate with harvest management and habitat actions to work towards achieving salmon population goals.
- **Monitoring and adaptive management.** Monitoring of salmon populations and habitat is ongoing work that needs to continue. Ongoing work also includes development of the adaptive management plans that document the changes in the limiting factors and salmon populations, as well as incorporates this information into implementation. This work is being conducted by both by the Recovery Implementation Technical Team (RITT) and watershed groups, but needs funding to advance. There is also a significant gap in our understanding of how landscape changes impact our ability to recover salmon. Continued and increased investment in watershed based habitat status and trends monitoring, as well as project effectiveness monitoring is key to improving our adaption efforts. Work has begun to integrate these and other salmon recovery monitoring needs into the broader Puget Sound Monitoring Program.

Key Ongoing Program Activities

- **Harvest:** Implementation of the Comprehensive Management Plan for Puget Sound Chinook: Harvest Management component.
- **Hatcheries:** Completion and implementation of Hatchery Genetic Management Plans.
- **Adaptive management and monitoring:** The coordinated adaptation work of the watersheds, RITT and NOAA.

Near-Term Actions

The near-term actions identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

A.6.3.1 Implementation of hatchery actions. WDFW and the tribes, in coordination with NMFS, will advance implementation of hatchery actions by completing and approving hatchery genetic management plans.

A.6.3.2 Salmon recovery monitoring and adaptive management plans. The Partnership, in coordination with the Puget Sound Recovery Council and the Puget Sound Regional Implementation Technical Team, will facilitate and support salmon recovery watershed groups to complete monitoring and adaptive management plans for each Puget Sound Salmon Recovery watershed chapters. This is a condition of the approved Chinook Recovery Plan to improve the quality and success of plan implementation.

A.6.3 STRT3 Implement the Elwha River restoration project monitoring and management plans. Plans include two hatchery genetic management plans, one for each hatchery facility, and the Elwha Project's Chinook and Steelhead Monitoring Plan. Implementation of these plans will also be informed by a comprehensive Elwha monitoring and adaptive management plan to be published by the USFWS (currently in peer review).

A6.4 Protect and recover steelhead and other imperiled salmonid species

Puget Sound steelhead were recently listed as threatened under the Endangered Species Act and planning for the recovery of Puget Sound steelhead is now underway. The ongoing coordination with NMFS, the Governor's Salmon Recovery Office, the Partnership, and the Puget Sound watersheds to develop a Puget Sound Steelhead Recovery Plan needs to continue.

Near-Term Actions

The near-term actions¹¹ identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

A.6.4.2 Steelhead recovery plan. In collaboration with NMFS' Steelhead Recovery Team, the Partnership and the Puget Sound Salmon Recovery Council will support the development of a Puget Sound steelhead recovery plan. This will include creating a framework for use by all watersheds in developing local chapters of the recovery plan,

¹¹ Gaps in numbering reflect near-term actions that have been completed or otherwise retired.

and securing sufficient funding to support watersheds in populating these local chapters. The overall planning process will be inclusive and integrated with regional work by NMFS and the co-managers, and will look at various actions to achieve recovery, including full funding and implementation of a 5-year, joint U.S.-Canada marine survival research program developed by the Salish Sea Marine Survival Project Technical Team. It will also include actions like the designation of Wild Steelhead Management Zones where consistent with the objectives identified in watershed recovery chapters. WDFW and the tribes, by agreement of the co-managers, will work to establish three streams (one in each Technical Recovery Team identified Major Population Group) where no juvenile hatchery steelhead would be released, no recreational fisheries for steelhead would occur, and habitat protection and restoration actions would be accelerated. This early steelhead recovery action would consider information already compiled for the steelhead recovery plan that is under development.

A.6.4 WC11 West Sound Steelhead Recovery Chapter. The West Sound Watersheds Council will develop a local chapter of a Steelhead Recovery Plan. The Council will propose a budget and implementation strategy for its local chapter of the recovery plan.

A6.5 Maintain and enhance the community infrastructure that supports salmon recovery

Implementation of the salmon recovery plans requires a robust infrastructure within local watersheds and at the Soundwide, federal, tribal, and state level to implement the habitat, harvest and hatchery actions. Both the capacity and the implementing structures to do the work in the best way possible are needed. The following is a list of entities to be kept strong and integrated for salmon recovery.

Ongoing Programs

- **Lead entities.** Lead entities are responsible for local coordination related to managing and advancing watershed-level strategic restoration protection and restoration activities. Their work includes managing the 3-year work plans that articulate near-term recovery actions and adapting local strategies (RCO, local match).
- **Local jurisdictions.** Cities and counties are responsible for many of the decisions about habitat protection and land use management as well as key participants in habitat restoration actions. Local jurisdictions include counties, cities, and special districts such as drainage and public utility districts.
- **Co-managers.** The tribes and WDFW are responsible for determining appropriate harvest rates and implementing the recommendations of the Hatchery Science Review Group.
- **Other state agencies.** Other state agencies include the Governor’s Salmon Recovery Office (state-level direction and coordination) and the Recreation and Conservation Office (grant management for protection and restoration projects).
- **Tribes.** Tribes are strongly connected to salmon recovery through tribal treaty rights, technical expertise, cultural values, and political work.
- **NOAA.** This federal agency is responsible for the Chinook, summer chum, and steelhead plans.

- **Other federal agencies.** Notable agencies include USFWS (responsible for Bull Trout), the Corps (water resources), FEMA (floodplain management), and EPA (water pollution and other water resources).
- **Project sponsors.** A broad array of sponsors implement habitat restoration projects including but not limited to local governments, regional fisheries enhancement groups, land trusts, tribal governments, and conservation districts.
- **Puget Sound Partnership.** This state agency, by statute, administers the regional salmon recovery program. This includes coordination of the annual updates to the Salmon Recovery Plan and related 3-year work plan from each Puget Sound salmon recovery watershed, facilitating regional agreement across Puget Sound on the distribution of available salmon recovery funds, assisting the watersheds in developing and submitting to the state Salmon Recovery Funding Board an annual prioritized list of salmon recovery projects for funding, staffing and facilitating the work of the Puget Sound Salmon Recovery Council and the Watershed Leads to support regional collaboration and decision making on salmon recovery plan implementation, facilitating the RITT to provide scientific guidance on salmon recovery implementation, as well as facilitating regional discussions and strategy development for implementation of priority actions in and funding for the Salmon Recovery Plan.

Current budget constraints have resulted in loss of staffing at all levels mentioned above, impacting our collective ability to implement salmon recovery. Funding for this capacity, including for keeping the entities engaged, is increasingly difficult.

Near-Term Actions

The near-term actions identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

- A.6.5.1 Lead entity and partner funding strategy.** The Partnership, in collaboration with the Salmon Recovery Council, the Governor’s Salmon Recovery Office in the Recreation and Conservation Office and WDFW, will identify a funding strategy and approach to support salmon recovery lead entities and the associated partner programs essential to implementing the salmon and steelhead recovery.

Emerging Issues and Future Opportunities

- Integrate climate change scenario information, including water availability and sea level rise, in 3-year work plans and funding programs. This could include adjusting prioritization criteria for project sponsors and funders.
- Addressing liability issues for private landowners with restoration projects on their land.

Target View: Chinook Salmon

Salmon remain an important part of the economic and cultural identity of Puget Sound. The goal of the region's recovery plan is that there is a 95 to 99% probability that Puget Sound Chinook salmon can persist on their own for 100 years. This equates to an abundance of 60,580 to 271,640 wild Puget Sound Chinook salmon, depending on the productivity of the Chinook populations.

Puget Sound Chinook have an approved plan developed by local watershed communities, and are one of the few species in Puget Sound that have numerical targets and benchmarks for recovery. Chinook salmon are generally at less than 10% of their historic levels in Puget Sound river systems, with some below 1%. An estimated eight to 15 populations of Chinook salmon have been lost entirely.

Recovery Target

- Stop the overall decline and start seeing improvements in wild Chinook abundance in two to four populations in each biogeographic region (Figure 2 In latest data and maps section).

Relevant Strategies (and Sub-Strategies)

- A4.2. Provide infrastructure and incentives to accommodate new and re-development within urban growth areas
- A5.4. Implement and maintain priority floodplain restoration projects
- A6. Protect and recover salmon (A6.1, A6.2, A6.5, A6.3, A6.4)
- B2.1. Permanently protect priority nearshore physical and ecological processes and habitat
- B3. Protect and restore marine ecosystems (B3.2, B3.1)
- B5.1. Implement species recovery plans in a coordinated way
- C1. Prevent, reduce, and control the sources of contaminants entering Puget Sound (C1.3, C1.1, C1.4, C1.6)
- C2. Use a comprehensive approach to manage urban stormwater runoff at the site and landscape scales (C2.2, C2.4)
- C6.1. Reduce the concentrations of contaminant sources of pollution conveyed to wastewater treatment plants
- C8. Effectively prevent, plan for and respond to oil spills (C8.1, C8.2, C8.3)
- C9. Address and clean up cumulative water pollution impacts in Puget Sound (C9.1, C9.2)

Figure C-4 (Appendix C, *Results Chains*) depicts how the strategies (and related sub-strategies) contribute to reducing pressures on Chinook salmon and achieving the Chinook salmon recovery target. Appendix C also contains a results chain for each individual strategy in the Action Agenda, showing how that strategy (and its related sub-strategies) reduces pressures and contributes to achieving numerous recovery targets.

Summer Stream Flows

The Challenge

Surface-water flows and groundwater levels in most watersheds of Puget Sound have been altered as a result of dams and other hydrological modifications, loss and change of vegetative cover, water withdrawals for municipal, domestic, commercial, industrial, and agricultural water supplies, and in some cases, over-allocation of water rights. Climate change will compound these problems by reducing snowpack and groundwater infiltration, increasing stormwater runoff, raising stream temperatures, and concentrating pollutants in water bodies. As a result, Puget Sound aquatic habitats are degraded, native species have declined, and there is an uncertain future water supply for human consumption, especially in rural areas. Low water flows are identified as priority issues for salmon in 14 of the 19 Puget Sound WRIs.

CLIMATE CHANGE

Increasing temperatures will significantly reduce snowpack in Cascade and Olympic Mountains. This will lead to reduced summer stream flows, reduced soil moisture, higher summer stream temperatures, and an increased risk of drought for water users, including agriculture, municipalities, and fish and wildlife. Increased water demand could increase the potential for conflict among users. Coldwater fish species including salmon, steelhead, and bull trout are especially at risk.

One of the high-priority, overarching strategies in *Preparing for a Changing Climate: Washington State's Integrated Climate Response Strategy* (Washington State Department of Ecology 2012a) is to improve water management to address climate-related supply reductions. This strategy includes promoting integrated water management in vulnerable basins, implementing enhanced water conservation and efficiency programs, ensuring sufficient cold water in salmon-bearing streams during critical seasons, and adapting water management and planning practices to reflect changing water availability and flow timing.

Recommended actions include, but are not limited to, developing guidance on whether and how to incorporate projected climate information and adaptation actions into planning, policy and investment decisions related to approval of new or changing existing water rights, adoption of instream flow rules, implementing well-coordinated land and water policies, fostering climate-ready utility initiatives, improving existing water infrastructure, and adopting up-to-date water conservation technologies.

The sub-strategies in this section help to implement the state strategy, as do Strategies A1 through A5 and C2. Additional adaptation work will be needed for this strategy in the future.

Puget Sound watersheds require a comprehensive approach to protecting year-round, instream flows for people and instream uses. This is particularly important with increasing human population in the region and concomitant projected increases in water demand. Current approaches to managing stream flows, groundwater, water use, land use, and stormwater management are fragmented and the many programs that address water quantity are not coordinated. Many of the programs for managing water are funded from the state's General Fund, and have seen disproportionate cuts in recent years. A fundamental realignment in policy, regulation, and funding structure is needed at the state level to repair the system, one that ensures the protection of natural hydrologic processes and associated habitats within Puget Sound watersheds. Some of these actions will also help improve water quality.

SALMON RECOVERY PLAN PRIORITY: FRESHWATER

Adequate water availability is critical for salmon. Water availability for salmon recovery also includes the timing and the type of flow (e.g., peak flows, rain-on-snow events, water levels during summer versus levels during spring). The Recovery Plan calls for resolving technical and policy uncertainties around water availability and flow, and the implementation of protective water quantity measures.

How is this priority integrated in the Action Agenda? While the Action Agenda strategies and actions have some actions around instream flows and water availability, the Salmon Recovery Plan places a higher emphasis on resolving the water availability issues than is highlighted in the Action Agenda. The flow work has not advanced in the region as articulated in 2005. More work is needed to address the concerns around instream flows for salmon recovery.

Recovery Targets

The strategies and actions in this section will contribute to achieving the recovery targets for summer stream flows.

Protecting and improving stream flows also will help support recovery targets related to insects in small streams, wild Chinook salmon abundance (which in turn supports recovery targets for Puget Sound resident killer whales), and freshwater quality.

Vital Sign	Indicator	Recovery Target
Summer Stream Flows	Summer low flows	<ul style="list-style-type: none"> • Maintain stable or increasing flows in highly regulated rivers: Nisqually, Cedar, Skokomish, Skagit, Green. • Monitor low flow in the Elwha River after dam removal. • Maintain stable flows in unregulated rivers that currently are stable: Puyallup, Dungeness, Nooksack. • Restore low flows to bring the Snohomish River from a weakly decreasing trend to no trend. • Restore low flows to bring the Deschutes River, North Fork Stillaguamish River, and Issaquah Creek from a strongly decreasing trend to a weakly decreasing trend.

Local Priorities

LIOs identified near-term actions that address summer stream flows. These local actions are presented in the *Strategies and Actions* section along with Soundwide actions under the sub-strategy shaded below. The local action numbering contains the area abbreviation shown in parentheses after each LIO name. See Section 4, *Local Recovery Actions*, for detailed information about local planning.

Local Integrating Organization	Sub-Strategy		
	A7.1	A7.2	A7.3
Hood Canal Coordinating Council (HC)			
Island (ISL)			
San Juan (SJI)			
Snohomish-Stillaguamish (SNST)			
South Central Caucus Group (SC)			
Alliance for a Healthy South Sound (SS)			
Strait ERN (STRT)			
West Central (WC)			
Whatcom (WH)			

Strategies and Actions

A7. Protect and Conserve Freshwater Resources to Increase and Sustain Water Availability for Instream Flows

This strategy is intended to develop coordinated, watershed-based water management approaches, accounting for existing ecosystem goals, water management agreements, projected future climate conditions and water availability, projections of future instream flow demands, and maintaining low flows in tributaries. This strategy approaches freshwater protection and conservation from three perspectives.

- Regulation, monitoring, and enforcement.
- Water demand and conservation.
- Groundwater supplies and recharge.

A7.1 Update Puget Sound instream flow rules to encourage conservation

A critical tool for protecting and conserving freshwater resources is rulemaking for instream flows. Ecology has authority to set instream flows under several statutes—Chapters 90.22, 90.54, and 90.82, of the RCW. The term “instream flow” is used to identify a specific stream flow (typically measured in cubic feet per second, or cfs) at a specific location for a defined time, and typically following seasonal variations. Instream flows are usually defined as the stream flows needed to protect and preserve instream resources and values, such as fish, wildlife, water quality, aesthetics, and recreation.

It is important to note that instream flows are intended to set limits on the use of other, less senior water users. Often instream flows, once established, will not be met for much of the time. Instream flows can help to stop the decline of stream flows. However, other programs are needed to restore flow levels so that instream flows can be met more often.

Instream flows are most often described and established in a formal legal document, typically an adopted state rule. Ecology establishes in stream flow rules through the Administrative Procedures Act (RCW 34.05). In areas of the state where watershed planning has occurred, local planning units can

make recommendations to Ecology for instream flow rules to be established or, for existing rules, amended. WDFW provides technical assistance in the form of instream flow studies, flow study interpretation and analysis in light of hydrology and species-specific ecology, developing instream flow recommendations based on interpretation of instream flow study results, and explaining instream flow ecology and methods to stakeholders.

Most of the watersheds in WRIAs 1, 3, 4, 5, 7, 8, 9, 10, 11, 12, 13, 14, 15, and 17 are currently covered by instream flow rules. Only four of these rules, however, address permit-exempt groundwater withdrawals that can have a cumulative effect on stream flows, especially in late summer. For example, the instream flow rule for Kennedy—Goldsborough WRIA 14 was codified in 1988 and has not been updated. In general in the Puget Sound region, there is limited data on actual water use and the effects of groundwater withdrawal on stream flows. This lack of data can make it hard to understand and communicate how additional water withdrawals might impact senior water right users, and listed species.

An additional challenge to updating instream flow rules is the degree of local support and/or opposition to the rule-making process within any given basin. The degree of support or opposition can greatly influence both the cost and time required to adopt or update a rule, as evidenced by recent rule-making activity in WRIA 17 and WRIA 18. New instream flow rules often limit access to groundwater supplies, raising concerns among home builders, realtors, and property owners. To address this challenge, it will be important to work with local officials, legislators, tribes, and stakeholders to reach agreement on regulatory approaches and solutions to water supply problems. Finding solutions to the growing demand for water can take longer than developing the rule language itself. Education and outreach efforts are also critical for building public understanding and support. Outreach strategies would be tailored for specific basins. Ecology's staffing for instream flow rules has been reduced in recent years due to budget cuts—there are currently only two instream flow rule writers for this work statewide.

Ongoing Programs

Ecology's Watershed Plan Implementation and Flow Achievement Capital Grant Program and Watershed Planning Operating Budget Grant include specific technical approval criteria such as amount of water added to instream flows and improvements to fish habitat.

Performance measures from Ecology's Water Resources Division include two instream flow rules adopted (Q6, 2009–2011 biennium), number of instream flow rules adopted, 0% of monitored stream flows below critical flow levels, and 1,250 acre-feet of water saved for instream flow (for each period, 2009–2011 biennium). Additional measures include percentage of Hood Canal summer chum and Puget Sound Chinook stocks with spawner escapement (number of fish returning to a stream or river to spawn) exceeding 1993–1997 levels (base period prior to Endangered Species Act listing). An increasing number of populations with spawner escapement exceeding the population's 1993–1997 levels would indicate progress toward a healthier Puget Sound ecosystem.

Ongoing programs also establish minimum flow regimens on rivers where flows are controlled by dams. In general, these rivers have stable or positive trends relative to minimum flows. Note that implementation of minimum flow requirements for dam releases is just one mitigation measure for a variety of negative environmental impacts that dams can cause. There are six Puget Sound rivers where

flows are highly controlled by dams: the Cedar River, the Elwha River (although this will change in the future as the dams are removed), the Green River, the Nisqually River, the Skagit River, and the Skokomish River. Two additional Puget Sound rivers, the Deschutes River and the Snohomish River, are slightly regulated by dams.

Key Ongoing Program Activities

- Ecology will continue to support implementation of the recommendations from approved watershed plans prepared under the Watershed Planning Act (RCW 90.82), to the extent possible within legislatively approved funding levels, consistent with the Action Agenda and coordinated with other local restoration and protection efforts. Approved watershed plans in Puget Sound include Nooksack, San Juan, Island, Nisqually, Skokomish-Dosewallips, and Quilcene. Other areas stopped the RCW 90.82 planning process (Kitsap, Kennedy-Goldsborough, Chambers-Clover, Deschutes, Lower Skagit-Samish, Upper Skagit), and still other areas are not expected to participate in RCW 90.82 planning (Stillaguamish, Snohomish, Cedar-Sammamish, Duwamish-Green, Puyallup-White). Work is needed to provide support and funding for flow-protection and enhancement actions in approved watershed plans.
- Ecology will renew efforts to require metering in all new and existing diversions in the Puget Sound region and use metering data in making water availability decisions, modeling groundwater, and updating instream flow rules.

Near-Term Actions

The near-term actions identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

A.7.1.1 Set instream flows in priority watersheds. Ecology, with support from WDFW, will by 2020 set flow rules in the remaining priority Puget Sound watersheds that currently do not have instream flow rules:

- 1) WRIA 16.
- 2) The western portion of WRIA 17 (Sequim Bay watershed).
- 3) The western portion of WRIA 18 (Elwha-Morse watershed planning area).

Priority will be given to critical basins or those with known significant problems meeting instream or out-of-stream demands. Note that including the Elwha River in an instream flow rule may be delayed because of the need to develop a method to determine and set instream flows in the Elwha after dam removal and river stabilization.

A.7.1.2 PEP development and implementation. Ecology will develop and implement the comprehensive basin flow protection and enhancement programs called for in the recovery plans for Puget Sound Chinook and Hood Canal/Strait of Juan de Fuca Summer Chum.

A.7.1.3 Water code compliance and enforcement. Ecology will establish a strong program for Puget Sound watersheds to increase water code compliance and enforcement. This program will include the creation of Ecology “compliance officer” staff positions. These

positions would be similar to “water masters” used in other parts of the state, but also different because of the absence of adjudication and increased focus on mitigation strategies.

A.7.1 STRT36 Develop, adopt, and implement the water resources management program rules for Elwha-Dungeness WRIA 18. This action includes implementing the adopted rule that applies to eastern WRIA 18, the Dungeness watershed, from Bell Creek on Sequim Bay to the Bagley Creek sub-basin (WAC 173-518). Development of the Water Resources Program Rule for the Elwha portion of WRIA 18, that would involve the Elwha-Morse Management Team, is delayed awaiting completion of removal of the Elwha dams and river restoration.

A.7.1 STRT38 Develop, adopt, and implement a water resources management program rule for eastern Clallam County’s portion of WRIA 17. Eastern Clallam County’s Sequim Bay–Miller Peninsula portion of the Quilcene-Snow WRIA 17 is within the Dungeness River Management Team’s purview.

A.7.1 STRT39 Develop, adopt, and implement a water resources management program rule for WRIA 19 the Lyre Hoko watershed.

A7.2 Decrease the amount of water withdrawn or diverted and per capita water use

While the previous sub-strategy (A7.1) focuses on regulation and monitoring of freshwater resources through implementation of instream flow protection programs, this sub-strategy considers freshwater resource protection through demand and conservation strategies. Managing demand and promoting conservation will be critical as the human population increases in the Puget Sound region. Population stress on water supply will be further exacerbated by predicted decrease in snow-pack and increased frequency of droughts brought about by climate change. The near-term objectives for water demand and water conservation address four key sectors: municipalities, agriculture, industry, and rural domestic water users. Demand and conservation goals will be met through a combination of implementation/enforcement of rules, voluntary participation in conservation programs, market-based approaches to adjust water usage, and deployment of current and emerging water conservation technologies.

Ongoing Programs

Key Ongoing Program Activities

- The Partnership will support municipal water systems’ implementation of the DOH’s Water Use Efficiency Rule, including establishing water conservation goals, metering, and reporting from all municipal suppliers.
- Ecology will support an increase in periodic audits of industrial water users.

Near-Term Actions

No near-term actions; work in the near-term is focused on implementation of ongoing programs.

A7.3 Implement effective management programs for groundwater

A critical approach to protection and restoration of freshwater resources includes management of groundwater in conjunction with surface water to better account for the interaction between the two.

Work on groundwater should emphasize monitoring of groundwater resources (including exempt wells) and use projections, and completion and implementation of groundwater management plans throughout Puget Sound. It will require an emphasis on work in areas without current groundwater management plans that are at high risk of groundwater pollution and/or current or future demand. The Critical Aquifer Recharge Area program (under the Growth Management Act) is one potential vehicle for coordinating protection of groundwater resources across Puget Sound counties to support instream flows.

Near-Term Actions

The near-term actions identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

A.7.3.1 Exempt wells. Ecology will work with Tribal Nations, local governments, and other partners to develop and support a consistent approach to making decisions about exempt wells, and to ensure that both the physical and legal availability of water is considered in decisions. This will include workshops on exempt well issues to be completed by 2015.

A.7.3 SNST16 Groundwater study. Identify the costs and potential funding sources for conducting an impairment analysis for groundwater resources in the Stillaguamish and/or Snohomish River basins.

Emerging Issues and Future Opportunities

A number of ideas for future work could be undertaken to address protection of freshwater flows in Puget Sound. These ideas, listed below, should be an ongoing part of the regional discussion about freshwater flows, and may inform future funding decisions, programmatic priorities and guidance, and/or may become near-term actions in future Action Agenda cycles.

- Establishment of a stable dedicated funding source for water resource management. The dependence on General Funds for these initiatives must be reduced for progress to be made. A funding program should address funding both for state agencies and for local governments to help build partnerships that can make progress in implementing water resource elements of the Action Agenda.
- The proper balance between establishing new instream flow rules and updating existing rules. Ecology currently has no resources to update existing rules. Diverting resources to update existing rules would slow establishment of new instream flows. In general, this is a very resource challenged area of the Action Agenda.
- Development of additional information on the effects of groundwater withdrawals on stream flows and completion of groundwater resource assessments/water mapping.

- Application of more holistic, watershed and integrated water budget and planning based approaches that would examine all the water needs in a watershed (e.g., growth, industry/agriculture, stream flows) and all the potential water resources (e.g., reclaimed water, stormwater, and rainwater harvesting) and work to best match needs and resources.
 - Consideration of a comprehensive “Puget Sound Water Plan”, which would integrate all of the water issues in the basin, including water rights, water quality, land use permitting, habitat protection, and watershed management, and provide a mechanism to deploy relevant programs to increase the likelihood that instream flow targets will be met. Some commenters on the draft Action Agenda suggested that additional enforcement authorities are needed to ensure instream flows are met.
 - Use of water acquisition through, for example, water right leases and purchases, to restore/protect flows.
 - Consideration of new implementation mechanisms for planning, these might include consideration of watershed districts, which would have independent revenue (e.g., taxation authority) and the ability to review all permits for conformity with the plan and to step in where a proposal has a watershed-wide impact and take the lead for planning, for example for flood hazard mitigation or water supply planning.
 - Work with stakeholders and partners to build on existing public-private models, to support utilities adoption of demand management strategies (such as tiered pricing structures) to discourage inefficient and unnecessary use of municipal water, particularly in flow-limited areas or low flow periods.
 - More specific incorporation of climate change projections throughout Puget Sound.
 - The potential for work with Canadian partners in the development of groundwater management programs for transboundary aquifers such as the Abbotsford-Sumas Aquifer.
 - The need to ensure adequate flow in both mainstem rivers and tributaries.
-

Target View: Summer Stream Flows

Summer stream flows support salmon habitat needs, other ecosystem needs, and water for people. The summer (June through October) lowest 30-day average flow is a statistical measure of flow that has been linked to salmon habitat needs.

Summers in the Puget Sound region are often glorious, with comfortable temperatures and little rain. One result of this great weather is that the flow of water from rivers and streams around the Sound also declines, affecting salmon runs, wildlife, and our water supply. There are other man-made reasons for lower summer stream flows, such as new wells that tap ground water and new buildings and development that cover up the ground and decrease seepage—reducing the amount of water that would reach the stream in summer.

Of course, stream flows vary from year to year. But there are good measurements available for most of the rivers in the Puget Sound basin.

The river-specific targets for stream flow are displayed in the following graph. All flows are from U.S. Geological Service gages. Most gages are near the mouth of the river, except the Deschutes River and Dungeness River gages are higher in the watershed.

Recovery Targets

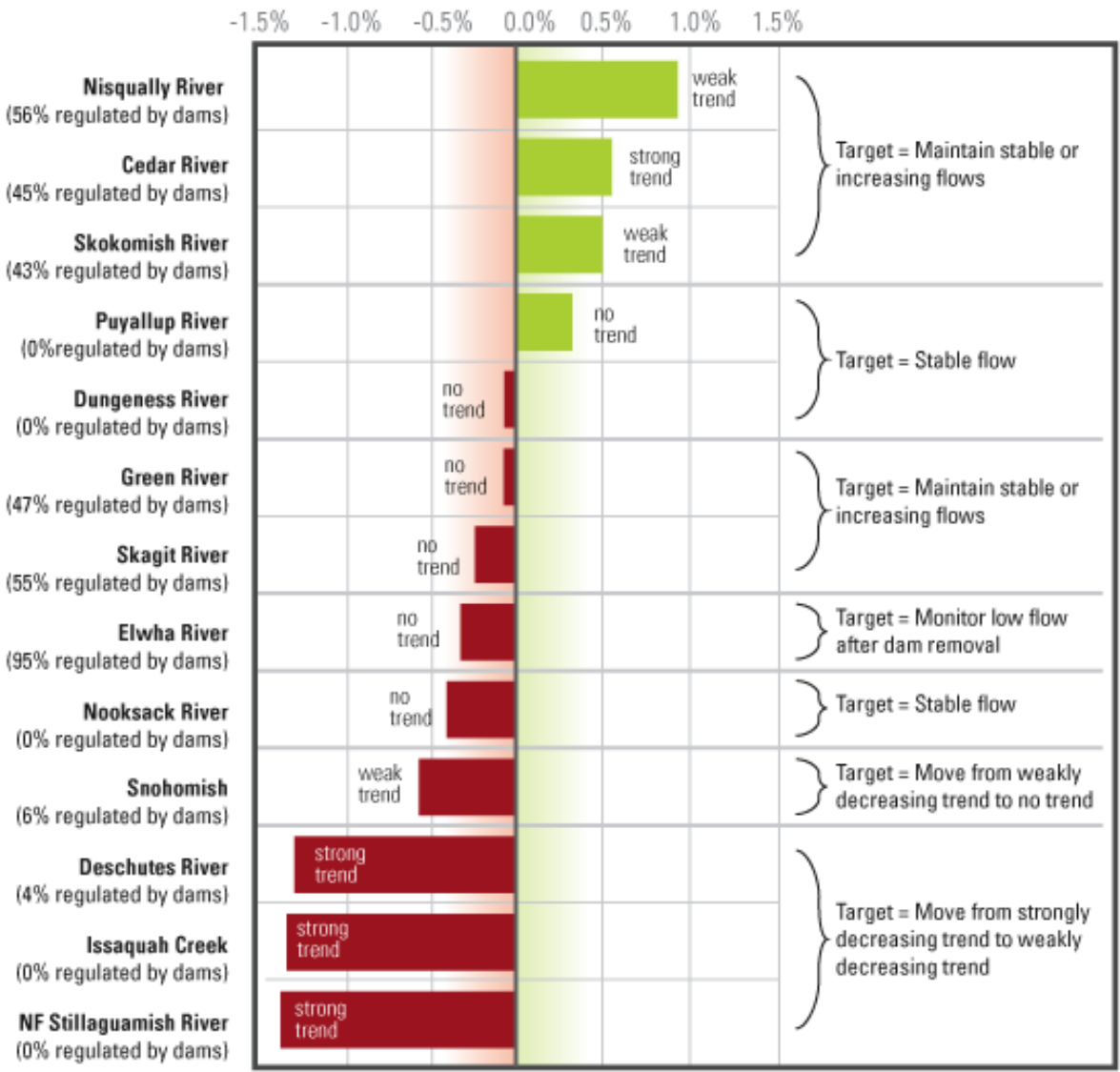
- Maintain stable or increasing flows in highly regulated rivers: Nisqually, Cedar, Skokomish, Skagit, and Green.
- Monitor low flow in the Elwha River after dam removal.
- Maintain stable flows in unregulated rivers that currently are stable: Puyallup, Dungeness, and Nooksack.
- Restore low flows to bring the Snohomish River from a weakly decreasing trend to no trend.
- Restore low flows to bring the Deschutes River, North Fork Stillaguamish River, and Issaquah Creek from a strongly decreasing trend to a weakly decreasing trend.

Relevant Strategies (and Sub-Strategies)

- A1. Focus land development away from ecologically important and sensitive areas (A1.1, A1.2)
- A7. Protect and conserve freshwater resources to increase and sustain water availability for instream flows (A7.1, A7.2, A7.3)
- C2. Use a comprehensive approach to manage urban stormwater runoff at the site and landscape scales (C2.3, C2.5)
- C6.5. Promote appropriate reclaimed water projects

Figure C-5 (Appendix C, *Results Chains*) depicts how the strategies (and related sub-strategies) contribute to reducing pressures related to summer stream flows and achieving the summer stream flow recovery target. Appendix C also contains a results chain for each individual strategy in the Action Agenda, showing how that strategy (and its related sub-strategies) reduces pressures and contributes to achieving numerous recovery targets.

Average Change in Low Water Flows in 13 Puget Sound Rivers Percent per year, 30-day average summer low flow, 1975-2010



Source: Washington State Department of Ecology



STRATEGIES AND ACTIONS

B: MARINE AND NEARSHORE

The protection and restoration of marine and nearshore ecosystems is vital to the long-term health of Puget Sound and the quality of life of its residents. Historical human activities have dramatically affected and damaged many of these systems, and in order to successfully protect and restore our marine and nearshore ecosystems we need to ensure that priority restoration and protection efforts are carried out; working waterfronts remain economically viable; citizens can easily access Puget Sound; eelgrass beds are able to flourish; marine and nearshore habitats continue to sustain diverse species and food webs; and non-native species do not impair the complex functions of the Puget Sound ecosystem.

The strategies in this section will contribute most significantly to achieving recovery targets for the following vital signs.

- Shoreline armoring
- Estuaries
- Eelgrass
- Toxics in fish
- Floodplains
- Pacific herring
- Orcas
- Chinook salmon
- Marine sediment quality

THIS SECTION DESCRIBES SIX

STRATEGIES—and associated sub-strategies, ongoing programs, and actions—that are essential to the protection and restoration of marine and nearshore systems. The strategies and actions are organized under the following headings.

Protect and Restore Nearshore and Marine Systems

B1. Focus Development away from Ecologically Important and Sensitive Nearshore Areas and Estuaries

B2. Protect and Restore Nearshore and Estuary Ecosystems

B3. Protect and Restore Marine Ecosystems

Protect and Steward Working Waterfronts and Improve Public Access to Puget Sound

B4. Protect and Steward Working Waterfronts and Improve Public Access to Puget Sound

Protect and Restore the Native Diversity and Abundance of Puget Sound Species

B5. Protect and Restore the Native Diversity and Abundance of Puget Sound Species

B6. Prevent and Respond to the Introduction of Invasive Species

RECOVERY IN FOCUS



Marine and nearshore strategies and actions contribute to achieving recovery targets for the vital signs presented in color in this *Puget Sound Vital Signs* graphic. The *Puget Sound Vital Signs* is an online tool that tracks and communicates ecosystem conditions and progress toward achieving recovery targets.

Marine, Estuarine, and Nearshore Systems

The Challenge

There is perhaps no better vantage point from which to appraise the health of Puget Sound than in the region's marine waters and nearshore habitats. There is near-universal agreement that the estuaries' recovery depends foremost on protecting and restoring the areas, species, and ecosystem processes that are most essential for ecological function. The challenge facing the planning community is to consolidate independent assessments into a more cohesive and coordinated policy directive. In the face of pressures associated with human population and economic growth, we will articulate where and how shoreline and marine development occurs, and which places we will strive to recover or set aside.

CLIMATE CHANGE

Sea level rise and storm surge will increase the frequency and severity of flooding, erosion, and seawater intrusion—increasing risks to vulnerable communities, infrastructure, and coastal ecosystems. Combined with increased ocean acidity and warmer marine temperatures, climate change will have profound effects on marine, nearshore, and estuarine ecosystems.

Sea level in the Puget Sound region is expected to increase 6 inches (range of 3 to 22 inches) by 2050 and by 13 inches (range of 6 to 50 inches) by 2100 (Mote et al. 2008). Changes at specific locations within Puget Sound will vary from these regional projections. Major impacts associated with sea level rise are likely to be inundation, flooding, erosion, and infrastructure damage, with the largest impacts occurring when storm or river flooding events converge with high tides.

The following high-priority response strategies related to marine, nearshore, and estuarine areas are identified in *Preparing for a Changing Climate: Washington State's Integrated Climate Response Strategy* (Washington State Department of Ecology 2012a).

- **Reducing the risk of damage to buildings, transportation systems, and other infrastructure.** This includes supporting local efforts to prepare for coastal flooding and storm surges, as well as considering climate change impacts when new development and infrastructure are sited.
- **Safeguarding fish and wildlife habitat and protecting critical ecosystem services that support human and natural systems.** This includes protecting and restoring habitat and reducing existing stresses on fish, wildlife, and ecosystems.
- **Reducing the vulnerability of coastal communities, habitat, and species.** This priority includes protecting people, property, and infrastructure from coastal hazards and avoiding new development in highly vulnerable areas. It also includes preventing coastal degradation and destruction, as well as seeking opportunities for upland habitat creation as sea levels rise.

The state's climate response strategy identifies several coast and ocean adaptation strategies with related actions. These strategies are recommended to help achieve the following.

- Limit new development in highly vulnerable areas.
- Protect the shoreline from rising sea levels using green or "soft" alternatives to traditional "hard" shore armoring, seawalls, and dikes.

- Accommodate rising sea levels through engineering and construction practices or raising the height of piers or buildings.
- Manage retreat from highly vulnerable sites.
- Restore and maintaining wetlands, preserving sediment transport processes, and preserving habitat for vulnerable species.
- Enhance monitoring and research of ocean chemistry changes and effects on marine ecosystems.

Strategies for implementation are listed below.

- **Leading by example through development of a state framework to guide decision-making and protect people, assets, and natural areas from coastal hazards.**
- **Avoiding development in highly vulnerable areas and promoting sustainable development in appropriate, less vulnerable areas.** Example actions include providing guidance, updating maps and information to help local jurisdictions, identifying incentives and regulatory tools to reduce risk exposure, providing updated guidance, assessing damage costs, and removing incentives that encourage rebuilding in at-risk areas.
- **Accelerating efforts to protect and restore nearshore habitat and natural processes.** Example actions include identifying priority conservation and restoration areas that can increase natural resiliency and protect vulnerable communities, developing restoration and protection guidelines, and identifying policy options to avoid or minimize shoreline hardening, especially in Puget Sound, to promote green shoreline and landward setback programs.
- **Building local capacity to respond to climate impacts by providing tools to assess vulnerability and advancing research, monitoring, and engagement efforts.** Example actions include completion of a sea-level rise and vulnerability assessment that includes Puget Sound, and assisting of coastal planners.

Many of the strategies and actions in the Action Agenda help implement the state’s climate response strategy.

Recovery Targets

The strategies and actions in this section will contribute to achieving the recovery targets listed below with their associated vital signs and indicators.

They also will contribute to recovery targets for eelgrass, floodplains, orcas, Pacific herring, and Chinook salmon.

Vital Sign	Indicator	Recovery Target(s)
Estuaries	The area of estuarine wetlands restored to tidal flooding in Puget Sound’s large river deltas	7,380 quality acres of estuarine wetlands are restored basin-wide, which is 20% of total estimated restoration need.
	The number of Chinook salmon natal river deltas where 10-year salmon recovery goals have been met	By 2020, all Chinook natal river deltas meet 10-year salmon recovery goals (or 10% of restoration need as proxy for river deltas lacking quantitative acreage goals in salmon recovery plans).
Shoreline armoring	Net amount of shoreline armoring	From 2011 to 2020, the total amount of armoring removed should be greater than the total amount of new armoring in Puget Sound (total miles removed is greater than the total miles added).

Local Priorities

LIOs identified near-term actions that address marine, estuarine, and nearshore systems. These local actions are presented in the *Strategies and Actions* section along with Soundwide actions under the sub-strategy shaded below. The local action numbering contains the area abbreviation shown in parentheses after each LIO name. See Section 4, *Local Recovery Actions*, for detailed information about local planning.

Local Integrating Organization	Sub-Strategy								
	B1.1	B1.2	B1.3	B2.1	B2.2	B2.3	B2.4	B3.1	B3.2
Hood Canal Coordinating Council (HC)									
Island (ISL)	■	■	■			■			
San Juan (SJI)			■			■			
Snohomish-Stillaguamish (SNST)		■							
South Central Caucus Group (SC)		■							
Alliance for a Healthy South Sound (SS)				■	■				
Strait ERN (STRT)		■	■						
West Central (WC)	■	■			■				
Whatcom (WH)					■				

Strategies and Actions

B1. Focus Development away from Ecologically Important and Sensitive Nearshore Areas and Estuaries

The Growth Management Act and the Shoreline Management Act direct local jurisdictions to plan for growth and development while ensuring no net loss of critical areas and their associated ecosystems (e.g., wetlands, streams, slopes) or of shoreline ecosystem functions and processes. Development regulations, borne out of those plans, are not always effective in achieving environmental objectives. An integrated approach to planning and permitting that involves all levels of government and the private sector is needed.

B1.1 Use complete, accurate, and recent information in shoreline planning and decision making at the site-specific and regional levels

Washington’s nearshore science community, through the Puget Sound Nearshore Ecosystem Restoration Project, has outlined a comprehensive set of protection and restoration priorities to improve sediment supply and other critical ecosystem processes for the Sound (Cereghino et al. 2012). These priorities have not yet been reconciled with potentially complementary analyses and efforts by the salmon recovery watersheds as part of the federally approved Chinook Salmon Recovery Plan, local conservation inventories, and other habitat and natural resource-specific rankings including the Puget Sound Watershed Characterization Project. This sub-strategy seeks to unite and apply the results across disciplines from the basin to local scale. Such consolidation will clarify what areas have the greatest

potential to aid recovery and which areas have least—and will help planners, decision-makers and the public to evaluate where best to apply protective measures, restore, and direct development. This sub-strategy is an important part of climate change adaptation.

Ongoing Programs

The Puget Sound Nearshore Ecosystem Restoration Project, which has become the Partnership’s nearshore program, is a partnership among the Corps; state, local, and federal government organizations; tribes; industries; and environmental organizations with the goal of guiding the restoration and protection of Puget Sound nearshore ecosystems. The project aims to achieve a shared understanding that can guide and coordinate restoration, including a recommendation to Congress for authorization through the Water Resources Development Act of a comprehensive plan to implement ecosystem restoration throughout the Puget Sound nearshore.

The Chinook Salmon Recovery Plan watershed chapters each contain nearshore and estuary restoration priorities. This program and the salmon recovery 3-year work plans are more fully described in strategy A6.

The Shoreline Master Programs (SMPs) also identify local protection and restoration priorities. SMPs include the items listed below.

- Goals for shoreline use, economic development, public access, circulation, recreation, conservation, and historical/cultural values.
- Environmental designations of shorelines based on their physical, biological and development characteristics.
- Policies and regulations for shoreline uses, shoreline modification activities.

Statewide, 260 local programs must be updated by 2014, including programs in all of the Puget Sound counties.

Northwest Straits Initiative also provides marine nearshore data and information through marine resource committees in seven counties.

In addition, strategy B1 and its sub-strategies and actions—which relate to watershed characterization and the DNR Aquatic Landscape Prioritization—will document science-based priorities for protection, restoration, enhancement, and managed growth that reconcile sediment supply priorities with high-value areas for salmon, shellfish, and other natural resources. The product of this effort is likely to be maps or other documents showing the science-based priorities for protection, restoration, enhancement, and managed growth at a drift cell (or smaller) scale.

Key Ongoing Program Activities

- DNR is developing and implementing an Aquatic Reserves network-wide comprehensive inventory and monitoring program to inform the adaptive management of Aquatic Reserves and the larger Puget Sound recovery effort. This work will inform and support efforts by WDFW, Ecology, and the Partnership to develop a network of marine protected areas in Puget Sound.

Near-Term Actions

The near-term actions¹ identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

- B.1.1.2** **Human use patterns in marine areas.** Ecology will identify human use patterns for marine areas in Puget Sound, to support marine spatial planning.
- B.1.1 ISL3** **Improve Island County GIS capability to support land use analysis, planning, permitting decisions, and enforcement with respect to adaptive management and Shoreline Master Program requirements.** Island County will develop standard operating procedures for updating data and consistency in its data storage network to ensure usage consistency and relevant data.
- B.1.1 WC3** **West Sound eelgrass and forage fish surveys.** The West Sound Watersheds Council, in coordination with the Suquamish Tribe, DNR, and others, will develop and implement periodic surveys of eelgrass and forage fish spawning habitat under a scientifically rigorous methodology, and update spawning habitat maps.

B1.2 **Support local governments to adopt and implement plans, regulations, and policies that protect the marine nearshore and estuaries, and incorporate climate change forecasts**

Federal and state resource management agencies and local governments need current best available science to support their decisions for development and redevelopment in nearshore and marine environments. Larger jurisdictions may have the resources to research and develop their own science-based decision-making guidelines, but smaller municipalities rely on state government, non-governmental organizations, or collaborative partnerships to provide handbooks and model ordinances. Over time, this sub-strategy will need to focus on climate change adaptation integration.

Ongoing Programs

Ecology is producing the Shoreline Master Program Handbook, which is designed to assist local government planners in meeting the requirements of the Shoreline Management Act (RCW 90.58) and revised SMP guidance (Washington Administrative Code [WAC] 173-26, Part III). Handbook chapters provide recommendations for various components of the SMP process and are based on best available science.

The State of Washington Aquatic Habitat Guidelines Program and WDFW developed technical assistance guidance in 2009 for local governments to integrate local land use planning and state salmon recovery efforts. The *Land Use Planning for Salmon, Steelhead and Trout: A land use planner's guide to salmonid habitat protection and recovery* (Knight 2009) contains information on state salmon recovery efforts, sources of best available science, and model policies and development regulations for implementing salmon recovery. The best available science on watershed processes, riparian and wetland management is translated into planning tools, model policies and model regulations that can be incorporated into Growth Management Act and Shoreline Management Act planning programs to protect salmonids and

¹ Gaps in numbering reflect near-term actions that have been completed or otherwise retired.

prevent further loss or degradation of habitat. The objective of the guidebook is to further the goal of recovering naturally spawning salmon in Puget Sound by incorporating recovery efforts with local land use planning and decision-making.

The Aquatic Habitat Guidelines Program has also endorsed a whitepaper by Washington Sea Grant *Protection of Marine Riparian Functions in Puget Sound, Washington* (Brennan et al. 2009). The whitepaper provides shoreline planners and managers with a summary of current science and management recommendations to inform the protection of ecological functions marine riparian areas. In a broader document that addresses functions of all nearshore habitats, the Aquatic Habitat Guidelines Program, WDFW, and others in the scientific community produced a summary of best available science for the nearshore environment. The document, *Protecting Nearshore Habitat and Functions in Puget Sound: June 2010 Revised Edition*, provides a synthesis of current science on several important nearshore habitats and processes, and directions for where to find data and specific recommendations for moving through the mitigation sequence (EnviroVision et al. 2010). The goal of the document is to help local planners prepare SMP updates and also to assist Ecology in their review to ensure that SMP updates are based on good science.

Finally, city and county governments that are updating their shoreline master programs are required to develop a restoration plan that identifies locations for preservation. Jurisdictions that border Puget Sound and the largest Puget Sound rivers are documenting priority areas for protection and acquisition. Government agencies and some city or county governments support mitigation banking or in-lieu fee mitigation programs. Although these programs are designed to offset development impacts, they can generate funds to help leverage protection and conservation efforts because they involve acquiring property or development rights for conservation purposes. In addition, sub-strategy B1.1 will help ensure that local governments have complete and accurate information to inform planning.

The Northwest Straits Initiative through its seven marine resource committees also provides information on local shoreline resources.

SHORELINE MASTER PROGRAMS

The state Shoreline Management Act, adopted by voters in 1972, ensures that all of us—the public, interest groups, local, state and tribal governments—work together to ensure our shorelines are kept safe and unpolluted, are developed and managed fairly, and give children and future generations that special “sense of place” we cherish in Washington.

The mechanism for putting new shoreline development regulations and policies in place is called a “shoreline master program.” Over 260 local programs must be updated by 2014, including programs in all of the Puget Sound counties. These updates are a unique opportunity to create a positive future for Washington’s shorelines.

Master programs are defined in the Shoreline Management Act as: “... the comprehensive use plan for a described area, and the use regulations together with maps, diagrams, charts, or other descriptive material and text, a statement of desired goals, and standards...” [RCW 90.58.030(3)(a)] SMPs include: goals for shoreline use, economic development, public access, circulation, recreation, conservation, and historical/cultural values; environmental designations of shorelines based on their physical, biological and development characteristics; and policies and regulations for shoreline uses, shoreline modification activities. Every SMP is unique, and many newer SMPs are integrated to some degree into local comprehensive plans and development regulations.

Ecology oversees local Shoreline Master Programs, maintaining review and approval authority, while providing technical assistance and other support for SMP updates. Ecology also tracks the update process and provides information to help residents participate in updates in their community.²

Near-Term Actions

The near-term actions identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

- B.1.2.1 Update local shoreline master programs.** Ecology will provide funding and, with WDFW, technical assistance to local jurisdictions to update local shoreline master programs by current deadlines, with all updates complete by 2014. A key deliverable for Ecology and local governments is to implement shoreline master programs in a manner that validates achievement of no net loss of ecological function and guides Puget Sound toward shoreline armoring target.
- B.1.2 ISL1 Develop an implementation strategy for Shoreline Master Program compliance.** Island County will develop an implementation strategy for Shoreline Master Program compliance that includes the following elements: a) develop an accurate evaluation of shoreline health that meets the state requirement for “no net loss” and Shoreline Master Program effectiveness based on guidance from Ecology; b) retain a consultant to set a baseline percentage of shoreline armoring and percent vegetative cover that will be used to quantitatively and qualitatively evaluate shoreline health status, trends, and compliance monitoring; c) conduct annual county-wide shoreline evaluations for trend analysis.
- B.1.2 SC4 Improve shorelines in the South Central Puget Sound Action Area by limiting new residential shoreline armoring and overwater coverage, and promoting “green” shoreline replacements.**
- Encourage programs and help implement projects that implement and promote incentives and best practices identified in local Shoreline Master Program studies updates. Support actions to retrofit/restore public and private shoreline properties.
 - Assist local governments by providing information on best practices and models. (e.g., hold informational sessions at standing planner forums including Puget Sound Regional Council, King County, and Seattle).
 - Work to promote existing and new incentive programs.
 - Use South Central Caucus Group (LIO) as a forum for sharing best practices for shoreline restoration and model shoreline regulations.
 - Compile incentive information and provide to local governments.
 - Coordinate outreach and incentive programs with existing industry best practices such as Leadership in Energy and Environmental Development, Green Shores for Homes project, and Built Green Certification program.
 - Seek funding to engage streamside/riparian, lakeshore, and nearshore area

² www.ecy.wa.gov/programs/sea/sma/st_guide/SMP/SMPintro.html

property owners and to increase assistance to shoreline landowners who are willing to implement aquatic area protection and enhancement practices.

- Support WRIA 8 Green Shorelines Steering Committee’s outreach and education to key marine and freshwater shoreline audiences (e.g., property owners, real estate agents, construction and landscaping communities, and local government planning departments) to share green shorelines materials and messages and to encourage improved shoreline restoration stewardship.
- Support ECO Net endorsed education and outreach efforts for this action.
- Retrofit/restore public and private lands

- B.1.2 SNST14 Port Susan Marine Stewardship Area conservation.** Establish Port Susan as a Marine Stewardship Area and implement the conservation action plan.
- B.1.2 STRT15 Implement the City of Port Townsend’s Shoreline Master Program through public education and incentive programs.** Education and incentive programs will be made available and promoted to City residents. Programs include promotion of improved stormwater management, removal of shoreline armoring, and restoring native marine riparian vegetation along the city’s shorelines. Shoreline education and technical assistance will be offered through implementation of Phase 2 of Jefferson County’s Watershed Stewardship Resource Center, as described in two other Strait Action Area near-term actions.
- B.1.2 STRT16 Finalize and adopt the Shoreline Master Program, and update and implement the highest priority projects listed within the City of Port Angeles shoreline restoration plan, a part of the city’s updated Shoreline Master Program.** In addition to finalizing and adopting the Shoreline Master Program update, the focus is on beach restoration projects within Port Angeles Harbor, including inner Ediz Hook, West End Park, and Hollywood Beach.
- B.1.2 STRT19 Organize and implement annual Jefferson County restoration planning summits.** Organize and implement the first annual Jefferson County Restoration Planning Summits, one for marine and one for freshwater areas. Consider implementing follow up activity, where needed.
- B.1.2 STRT20 Implement the highest priority projects listed within the Jefferson County Shoreline Restoration Plan, a part of the County’s updated Shoreline Master Program.** Implement the highest priority shoreline restoration projects.
- B.1.2 STRT21 Assess implementation of the Jefferson County Shoreline Restoration Plan, a part of the County’s updated Shoreline Master Program.** Regularly assess implementation of the Jefferson County Shoreline Restoration Plan.
- B.1.2 STRT22 Develop and adopt the update of the Clallam County Shoreline Master Program.**
- B.1.2 STRT23 Identify and implement a framework for measuring and tracking no net loss in Clallam and Jefferson Counties.** Complete the Enhanced Shoreline Protection project (EPA Watershed Management Assistance Program Grant) for Clallam and Jefferson Counties and evaluate the results to determine next steps for implementation.

- B.1.2 STRT24 Expand pilot Ecosystem Services Valuation analysis conducted along the Central Strait nearshore to other shorelines within the Strait Action Area and North Olympic Peninsula.** Following lessons learned from the pilot Ecosystem Services Valuation analysis along the Central Strait nearshore within Clallam County and the City of Port Angeles, consider expanding the effort to other shorelines within the Strait Action Area and North Olympic Peninsula. This action is one of a number of efforts to coordinate implementation of shoreline master programs among local governments within the Strait Action Area.
- B.1.2 STRT25 Identify implementation priorities for the adopted update of the Clallam County Shoreline Master Program.** Following adoption of Clallam County’s Shoreline Master Program update, identify implementation priorities, such as improved mapping capabilities to identify and monitor functions of vulnerable shorelines, an effective shoreline landowner outreach program, etc.
- B.1.2 STRT26 Develop a monitoring and adaptive management strategy for the adopted update of the Clallam County Shoreline Master Program, one that’s based on the no net loss indicators.** Following adoption of Clallam County’s Shoreline Master Program update, develop a monitoring and adaptive management strategy that’s based on the no net loss indicators developed by the Enhanced Shoreline Protection project.
- B.1.2 WC2 West Sound Shoreline Master Program update alternatives to shoreline armoring.** During the Shoreline Master Program update process for all West Central jurisdictions, the West Sound Watersheds Council will ensure that restoration plans for every Shoreline Master Program include alternatives to traditional shoreline armoring, and incentives for the removal of existing armoring.
- B1.3 Improve, strengthen, and streamline implementation and enforcement of laws, regulations, and permits that protect the marine and nearshore ecosystems and estuaries**

Nearshore-related regulatory authorities include Washington State Hydraulic Code, Shoreline Management Act, Growth Management Act, and the State Environmental Protection Act. At the federal level, these regulations include the Clean Water Act, The Endangered Species Act, the Coastal Zone Management Act, and others.

The Hydraulic Code administered by WDFW and the Shoreline Management Act administered by Ecology are the two principal state regulatory authorities for shoreline armoring in Washington State. Recent data based on the Hydraulic Project Approval program issued by WDFW indicate that construction of bulkheads (i.e., shoreline armoring) in Puget Sound is occurring at a steady net increase above the rate of removal. Habitat losses and displacement along Puget Sound shorelines continue to occur as a result of bulkheading. Such losses contribute to the degradation of nearshore ecosystem processes and function.

Ongoing Programs

A number of issues continue to limit the effectiveness of the Hydraulic Project Approval program at protecting shorelines within the context of shoreline armoring. WDFW currently lacks regulatory authority to (1) address the need for a bulkhead (i.e., perceived need for armoring continues to

supersede protection of shoreline functions); (2) require alternatives to traditional bulkheads, even in low-energy environments; and (3) address cumulative impacts or impacts that continue beyond the longevity of the permit, which is typically 5 years. Under the current regulations, protection of personal property will continue to supersede protection of shoreline processes and function along marine shorelines. WDFW is currently proposing changes to the hydraulic code rules to incorporate up-to-date fish science, simplify permitting, improve procedures, and establish a structure for adaptive management³.

Comprehensive updates of local SMPs were required of all Puget Sound jurisdictions by 2012. New shoreline rules, based on the Shoreline Management Act and outlined in WAC 173-26, are expected to limit the amount of new shoreline armoring. New provisions regarding shoreline stabilization structures and development include: allowing armoring only where it is demonstrated necessary to protect a primary structure; reducing the adverse effects of new shoreline modifications by limiting their number and extent; giving preference to modifications that have a “lesser impact on ecological functions” and requiring mitigation; and, giving priority to “soft” over “hard” shoreline modifications. Provisions for new shoreline development attempt to limit the amount of new or enlarged stabilization and the need for future stabilization during the life of a development. Replacement of erosion control structures must be designed, located, sized, and constructed to ensure no net loss of ecological functions.

Near-Term Actions

The near-term actions identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

- B.1.3.1 HPA capacity effectiveness.** Improve Hydraulic Project Approval Compliance and Effectiveness for water crossing structures and marine shoreline armoring.
- B.1.3.2 Hydraulic code rules revision.** WDFW will use best available science to revise Hydraulic Code Rules (220-110 WAC) and clarify conditions under which hydraulic projects must be conducted to prevent or mitigate the impacts to fish life and habitat.
- B.1.3 ISL2 Develop technical guidance document and trainings for residents on new Shoreline Master Program guidelines.**
- B.1.3 SJ19 Increase use of BMPs, reduce shoreline armoring, and increase vegetative cover by making information and assistance available to landowners, contractors and consultants (Near Term Shoreline Action I).**
- B.1.3 STRT18 Provide shoreline education, training, and technical assistance in Jefferson County and City of Port Townsend through implementation of Phase 2 of SquareONE (formally called Watershed Stewardship Resource Center).** Consider expansion of the SquareONE concept to the other three local jurisdictions within the Strait Action Area.

Following lessons learned from the SquareONE pilot project in Jefferson County; consider implementing Phase 2 to include the City of Port Townsend. Also, consider

³ Additional information on WDFW changes to hydraulic code rules can be accessed via: <http://wdfw.wa.gov/licensing/hpa/rulemaking>.

possible expansion of the concept to the other three local jurisdictions within the Strait Action Area. This action is one of a number of efforts to coordinate implementation of shoreline master programs among local governments within the Strait Action Area.

(Note: This action has a double benefit in that it is also a part of C2.5 STRT31.)

B2. Protect and Restore Nearshore and Estuary Ecosystems

Conserving intact areas can allow for robust and long-lasting protection of nearshore processes, functions, and habitats, and is often described by nearshore restoration practitioners as “protecting the best.” By setting aside areas that are largely intact, we can better maintain ecosystem functioning even in the absence of other restoration or management actions. Furthermore, protection of intact areas complements existing efforts to restore habitats degraded by human activities by both enabling restoration and increasing its effectiveness. Accelerating protection and restoration are specifically identified as part of climate adaptation.

Restoration of nearshore processes, structure and function also plays an important role. Recent research and analyses of Puget Sound marine and nearshore environments, such as the *2011 Puget Sound Science Update*, have pointed to particular stressors or pressures that need to be addressed in order to recover ecosystem health (Puget Sound Partnership 2011a)⁴.

Salmon recovery nearshore and estuary projects are listed in sub-strategy A6.1 as part of the salmon recovery 3-year work plans for the watersheds, as well as several Soundwide actions.

OCEAN ACIDIFICATION

As identified in *Ocean Acidification: From Knowledge to Action, Washington State’s Strategic Response* (Washington State Blue Ribbon Panel on Ocean Acidification 2012), there is mounting evidence that aquatic plants and algae, including seagrasses and kelp, can increase the pH of seawater by absorbing carbon dioxide from surrounding waters. There is also evidence that seagrasses and kelp can remove carbon from the atmosphere by sequestering carbon, mostly in the sediments beneath them. Protecting, preserving, and where possible, restoring native seagrass and kelp habitat is an important means of remediating local acidification and protecting those nearshore and estuary habitats that provide refuge to organisms that are vulnerable to ocean acidification, such as shellfish.

One of the Blue Ribbon Panel’s recommendations includes enhancing the resilience of native and cultivated shellfish populations and the ecosystems on which they depend by restoring and enhancing seagrasses and kelp. The Action Agenda strategies for protecting and restoring nearshore and estuary ecosystems help to implement the Blue Ribbon Panel’s recommendations.

⁴ **The Encyclopedia of Puget Sound** builds on and replaces the *2011 Puget Sound Science Update* as the forum for and description of the state of the science of Puget Sound ecosystem recovery. It can be accessed via <http://www.eopugetsound.org/science-review>.

B2.1 Permanently protect priority nearshore physical and ecological processes and habitat, including shorelines, migratory corridors, and vegetation particularly in sensitive areas such as eelgrass beds and bluff backed beaches

This sub-strategy seeks to accelerate the implementation of priority projects that address problems identified for Puget Sound nearshore (e.g., shoreline armoring) environments and move acquisition and restoration efforts forward. Specific locations identified by the analysis of Soundwide restoration priorities identified in sub-strategy B1.1 can be applied to targeted protection and conservation activities and programs. The landscape scale prioritization unites goals of multiple programs and disciplines from the basin to the local scale. If the priorities identified in sub-strategy B1.1 are incorporated into local comprehensive plans and zoning ordinances, the prioritization can help planners, restoration practitioners, and decision-makers direct growth away from existing areas of high ecological value and towards areas where resource conservation is not the primary objective.

While the protection of undeveloped lands and shorelines is a well-established conservation strategy, the same concept can be applied to the preservation of ecological processes and structures in marine contexts that face pressure from development. Residential and commercial development along shorelines often includes overwater structures such as docks, fixed piers, bridges, floating breakwaters, moored vessels, and pilings. One key impact of overwater structures is the shading of nearshore habitats. Shading affects the growth of eelgrass and other nearshore plants that provide foraging areas and shelter for marine birds, juvenile salmon, forage fish, and shellfish. Shading can therefore impact the distribution, behavior, and survival of fish and other aquatic wildlife that occupy adjacent shoreline habitats. Sharp gradients of light and shadow, such as those that occur near overwater structures, affect feeding behavior and efficiency of visual foragers (e.g., salmon, Dungeness crab) as well as fish schooling and migratory movements. Natural wave energy patterns can be altered by multiple rows of pilings in nearshore waters, which change the distribution and deposition of sediments. Overwater structures also have the potential to introduce contaminants into sensitive areas because older creosote- or copper-treated wood pilings or decks are known to leak toxics such as polycyclic aromatic hydrocarbons and copper arsenate compounds.

SALMON RECOVERY PLAN PRIORITY: PROTECT AND RESTORE NEARSHORE AND MARINE HABITAT

A high priority of the recovery plans is the protection and restoration of estuaries and the marine nearshore areas. These areas are vitally important for salmon spawning and rearing habitat, as well as prey habitat. Each watershed plan (Volume II) identifies local priority actions, including the need to link with local shoreline management plans. The San Juan Islands prioritization tool, South Sound tool, and other tools are specifically detailed in Volume II.

How are these priorities integrated?

The Action Agenda strategies and actions emphasize the protection and restoration of these areas although the initial focus was on the Puget Sound Nearshore Ecosystem Restoration Project information for selecting areas of focus rather than the Recovery Plan. While these two approaches are connected, continued effort is needed to maintain the connection and strengths of each as identified in sub-strategy B1.1.

Ongoing Programs

A variety of programs and mechanisms are used to protect and conserve nearshore habitats in Puget Sound. Acquiring property and development rights is a central mission for land trusts such as the Trust for Public Lands, Forterra, Jefferson Land Trust, and others.

The new provisions of the Shoreline Management Act regarding overwater structures (as outlined in WAC 173-26-231) state that structural shoreline modifications must be built to avoid, or if that is not possible, minimize and mitigate impacts to ecological processes and functions and critical areas resources. A variety of measures to reduce impacts are offered, such as using glass inserts, grading or reflective panels on piers and docks; using a north-south orientation; reducing width and increasing height; and locating structures in deeper water.

As part of their Aquatic Leasing Program, DNR has recently updated their leasing policies to better protect nearshore habitat. Among the policies, applicants are required to follow a set of habitat stewardship measures to protect critical aquatic habitats. Measures apply to both the design and use of materials for overwater structures.

The Northwest Straits Initiative and marine resource committees provide education, outreach and conduct restoration projects. These projects are implemented with both private and public landowners.

Key Ongoing Program Activities

- Through the habitat stewardship measures of the Aquatic Lands Habitat Conservation Plan, DNR will condition aquatic use authorizations to ensure new or retrofitted over-water structures do not impact eelgrass beds and/or other covered habitats and species.

Near-Term Actions

The near-term actions identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

- B.2.1.1** **Protect 10% of bluff-backed beaches.** PSP will promote acquisitions, easements, or other protective covenants to permanently protect at least 10% of bluff-backed beaches with high sediment supply or other priority nearshore habitats facing potential shoreline development pressure.
- B.2.1.2** **Community use dock incentives.** For state-owned aquatic lands, DNR, in consultation with WDFW and Ecology, will identify potential permit, economic, and social incentives for encouraging community use docks as an alternative to single family docks.
- B.2.1.3** **Overwater structures design guidance.** DNR, in consultation with the Aquatic Habitat Guidelines Interagency Group, will publish design guidance on construction, repair and rebuilding of overwater structures to increase light.
- B.2.1 SS18** **McNeil Island long-term conservation and low-impact public access.** Track state efforts to determine the long-term management strategy of McNeil Island. Support protection and restoration of habitat and natural resources of the island for low-impact public access.

B2.2 Implement prioritized nearshore and estuary restoration projects and accelerate projects on public lands

Restoration projects for marine and nearshore environments occur through a variety of programs and entities including those listed below.

- City and county governments
- Tribal organizations
- State resource agencies (e.g., WDFW’s Estuary and Salmon Restoration Program)
- Federal agencies (e.g., EPA, NOAA, USFWS, Corps)
- Congressional appropriations or authorizations
- Non-governmental organizations (e.g., Puget Sound Restoration Fund, Northwest Straits Initiative)

Prioritization of restoration projects in Puget Sound occurs at multiple levels as described in sub-strategy B1.1. These efforts include the Puget Sound Nearshore Ecosystem Restoration Project at the Soundwide scale, cities and counties through shoreline management plan updates, and basin or watershed scales primarily through the local salmon recovery efforts. Program goals range from protecting habitat to restoring water quality and native species. Many organizations also partner to collaboratively secure funding and restore priority areas. Over time, it may be appropriate to continue to investigate more funding opportunities for restoration programs and projects including use of Corps authorities.

Some of the Soundwide restoration priority areas occur on local, state, or federally owned land. These public lands provide opportunities for restoration without economic investment for acquisition, landowner negotiation, or access permission. Such projects often can be implemented more quickly than similar projects on private lands and should be the focus of governments across Puget Sound. As governments implement high-visibility restoration projects in publicly used spaces, they provide models for future restoration efforts on public or private lands.

SALMON RECOVERY PLAN PRIORITY: MARINE AND NEARSHORE HABITAT RESTORATION

Habitat restoration is an integral part of recovery and must be conducted in a way that targets priority areas for ecosystem functions. Restoration priorities for each watershed are identified in Volume II of the Salmon Recovery Plan and then further fleshed out in each of the annual 3-year work plans. There are robust river delta restoration plans associated with salmon recovery (e.g., in the Nisqually, Snohomish, Stillaguamish, Skagit, Dungeness, and Elwha chapters).

How are these priorities integrated? The Action Agenda strategies and actions incorporate the actions in the 3-year work plans as part of what is needed to recover the Puget Sound. From a salmon recovery perspective, derelict vessel and creosote log removal are lower priorities and should be sequenced as later actions.

Ongoing Programs

The Puget Sound Nearshore Ecosystem Restoration Project effort described in sub-strategy B1.1 will include a recommendation to Congress for a Water Resources Development Act authorization of a comprehensive plan to implement ecosystem restoration throughout the Puget Sound nearshore.

The Estuary and Salmon Restoration Program provides funding and technical assistance to restore Puget Sound. It was established by the Legislature in 2006 and is implemented by WDFW. The goal of the

program is to use the science-driven strategies of the Puget Sound Nearshore Ecosystem Restoration Project to move from opportunistic project funding to strategic ecosystem restoration.

In addition, WDFW tracks nearshore restoration projects funded by the Estuary and Salmon Restoration Program to determine the efficiency and effectiveness of grant projects. The program tracks project activities, provides supplemental funding to exemplary projects, and provides incremental funding to larger projects. The program also includes project-based learning, which is similar to adaptive management in that funding is provided for projects that are meant to resolve technical uncertainty or increase the efficiency or effectiveness of current restoration methods.

DNR operates a statewide Aquatic Restoration Program that funds restoration and enhancement projects in freshwater, saltwater, and estuarine aquatic systems. These projects benefit state-owned aquatic land. The goal of the program is to protect and restore healthy ecological conditions. Funded projects are those that have long-term viability, have a direct benefit to state-owned aquatic land, are based on sound technical knowledge, and are supported by the community.

WDFW also frequently conducts restoration on state lands to restore impaired habitats. State and local parks departments currently conduct smaller scale restoration on publicly owned lands.

DNR operates the Dredged Material Management Program including oversight of all disposal activities occurring on the public's state-owned aquatic lands. The program is focused on protecting aquatic environments and DNR manages disposal at eight sites around Puget Sound. Recently, some estuary restoration projects have demonstrated the use of clean dredged sediment from these disposal sites (e.g., Fidalgo Bay Habitat Restoration Project).

DNR also manages a Creosote Removal Program to remove creosote-treated debris from marine and nearshore waters. Creosote-treated wood is associated with existing or abandoned overwater structures (i.e., pilings or decks) and is known to leak toxics such as polycyclic aromatic hydrocarbons and copper arsenate compounds. The program was launched in 2004 with funding from a variety of sources. Volunteers from Marine Resources Committees, Washington State University Beach Watchers, and local parks staff have inventoried and removed creosote-treated material from Puget Sound beaches and overwater structures.

The salmon recovery watershed 3-year work plans and related funding described in sub-strategy A6.1 include nearshore and estuary restoration projects.

Key Ongoing Program Activities

- DNR, in collaboration with Ecology, WDFW, the Department of Veterans Affairs, and the State Parks Department, will deploy Puget SoundCorps crews on protection and restoration projects on state-owned lands.

Near-Term Actions

The near-term actions identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

B.2.2.1 Implementation of projects identified by Puget Sound Nearshore Estuarine Restoration Program. WDFW and the Corps will advance implementation of projects

identified by Puget Sound Nearshore Ecosystem Restoration Project, including those described in the Strategic Restoration Conceptual Engineering Final Design Report. Implementation will occur both through Corps programs as anticipated through the General Investigation process, and through other non-Corps federal, state, tribal and local programs.

- B.2.2.2 Washington State Parks nearshore restoration.** Washington State Parks will identify opportunities to provide nearshore restoration. Based on this assessment, Washington State Parks will refine its performance measures for this action including setting semi-annual estimates of the numbers of projects to be restored. Washington State Parks will restore nearshore habitat identified, including removal of hard armoring at state parks.
- B.2.2.3 Prioritizing restoration on state-owned aquatic lands.** DNR will develop a strategy to prioritize restoration projects on state-owned aquatic lands including those within protected landscapes such as Aquatic Reserves to ensure maximum long-term benefit from habitat restoration.
- B.2.2.4 Creosote piling inventory and removal.** DNR will complete a derelict creosote piling inventory of Puget Sound. DNR has removed 10,000 pilings since 2007, prioritizing removals near important herring spawning beds.
- B.2.2 SS8 Johns Creek (Bayshore) Estuary restoration.** Restore John’s Creek (Bayshore) Estuary, a Puget Sound Nearshore Estuarine Restoration Program project.
- B.2.2 SS9 Deschutes River estuary restoration.** Remove the 5th Avenue dam and restore 346 acres of estuarine and intertidal habitat. The project was recommended by the Capitol Lake Adaptive Management Plan steering committee and is a WRIA 13 Lead Entity and Puget Sound Nearshore Estuarine Restoration Program priority project.
- B.2.2 SS10 Sequelitchew Creek restoration.** Restore Sequelitchew Creek, a Puget Sound Nearshore Estuarine Restoration Program project.
- B.2.2 SS11 Chambers Bay estuarine and riparian enhancement project.** Enhance estuarine habitat structure, increase salt marsh, and restore marine riparian habitat within and around Chambers Bay, a Puget Sound Nearshore Estuarine Restoration Program project. These actions will improve shallow-water refuge, increase foraging opportunity, and improve rearing capacity of the shoreline for salmon, particularly early life stages of Chinook, chum and pink salmon.
- B.2.2 WC19 Point No Point Marsh restoration.** Pending the results of a feasibility study in progress, Kitsap Surface and Stormwater Management, WDFW, and the West Central LIO will design and construct a replacement tidegate at Point No Point State Park by December 31, 2014. The goal is restoration of tidal hydrology and fish passage at a regionally important location for salmon recovery.
- B.2.2 WC20 Waterfront Park bulkhead removal and conveyance retrofit.** With a goal of enhancing nearshore habitat through armoring removal and beach nourishment, the City of Bainbridge Island will complete a bulkhead removal, beach nourishment, and stormwater conveyance system retrofit. Funding has been secured for initial design work, community outreach, and armoring removal and beach nourishment, and funds

necessary to complete stormwater conveyance system retrofit work will be sought. All proposed project work must occur simultaneously in order to minimize project costs and maximize ecological outcomes.

B.2.2 WH7 Waterfront and estuary habitat connectivity projects. Implement restoration projects, and protect marine shorelines through stewardship projects.

B2.3 Remove armoring, and use soft armoring replacement or landward setbacks when armoring fails, needs repair, is non protective, and during redevelopment

Shoreline property owners are inherently interested in maintaining the quality of their homes, beaches and nearby habitats. Given dynamic erosion process and the exposed nature of beachfronts, over time shoreline property owners must occasionally consider development options to better protect their structures and other investments while limiting adverse impacts to nearshore habitat. Such decisions are not particularly rare. Every year, more than 1 mile of shoreline in the Puget Sound is newly armored, and an even greater amount of armoring is replaced. Often, the decision to newly armor one stretch of beach has a ripple effect on nearby properties. While some fraction of those hard armoring efforts may be required to safeguard property from imminent harm or risk, the remaining instances present an opportunity to employ better habitat-supporting alternatives, like soft-shore armoring, landward setback of structures at risk and other techniques that the public, contractors and others might be inclined to use, if they were made aware of them and convinced of their effectiveness.

Because bulkhead removal and soft-shore techniques may become more difficult or less effective in the face of sea level rise, other, more assertive techniques like the landward setback of homes and other structures may have greater long-term benefits for shoreline properties and allow for landward migration of beaches, tidelands and associated ecosystems. Such an anticipatory approach (and near-term actions) are consistent with *Preparing for a Changing Climate: Washington State's Integrated Climate Response Strategy* (Washington State Department of Ecology 2012a), which stresses the importance of creating opportunities for coastal habitat creation upslope as sea levels rise.

Ongoing Programs

As described above, the new provisions of the Shoreline Management Act regarding shoreline stabilization structures and development outlined in WAC 173-26 require shoreline jurisdictions to give priority to “soft” over “hard” shoreline modifications. Some local SMPs provide incentives that allow greater flexibility for development and expansion of existing development if bulkheads are removed or replaced with soft-shore techniques, but these approaches have not been widely implemented.

Cities and counties are beginning to provide guidance and incentives to waterfront landowners for soft-shore armoring techniques. In 2009, the City of Seattle’s Department of Planning and Development developed the Green Shorelines guidebook for lakefront homeowners. The guidebook describes alternatives to conventional shoreline armoring, emphasizing aesthetic and environmental benefits of plants and beaches. In 2010, the EPA, under the Puget Sound Watershed Management Assistance Program, awarded the City of Seattle a 4-year grant of more than \$500,000 to research incentives for removing bulkheads and improving the ecological function of residential shorelines along Lake Washington. The city piloted Green Shores for Homes credits and locally developed incentives on Lake Washington. San Juan County partnered and piloted Green Shores for Homes in marine coastal

locations. The Islands Trust, a federation of local governments within the British Columbia Gulf Islands, also joined this initiative as a transboundary partner and Washington Sea Grant also partnered and coordinated in the effort. The goal of simultaneously implementing Green Shores for Homes in British Columbia and Washington, as well as in urban freshwater and rural marine shorelines, was to provide models for other jurisdictions within the Salish Sea to protect shoreline ecological function from future impacts of growth.

In addition to revising the existing regulatory structure for redevelopment of existing bulkheads, incentives provide a non-regulatory approach to addressing ecosystem degradation caused by shoreline armoring. Voluntary or incentive programs are those programs that encourage stewardship through rewarding desired behavior. Voluntary programs for shoreline armoring may include grants, property tax reductions, or low interest loans. Such a program requires the development of local outreach and communication strategies.

Finally, the Green Shores for Homes program for the City of Seattle and San Juan County includes the development of incentives with the goal of inviting homeowners in the areas classified as amendable to the Green Shores for Homes approach, and encourage them to participate.

Near-Term Actions

The near-term actions identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

- B.2.3 ISL4** **Decrease the use of shoreline armor, or in those instances where armor is absolutely necessary, increase the utilization of soft shore protection to address shoreline protection concerns.** This effort will address two target audiences, Island County permitting staff and shoreline property owners. Education, outreach, and behavior change strategies will be used. Island County will engage its permitting staff and shoreline property owners in an extensive education and outreach campaign to meet its target of decreasing the use of shore armor and soft shore protection. The campaign will utilize appropriate behavior change strategies and technical/scientific data to support changes within the community. Island County will seek funding to provide technical assistance to landowners and to monitor program effectiveness.
- B.2.3 ISL5** **Remove hard shore armor and, where feasible, replace with soft shore protection where erosion control is needed to protect houses.** Develop a program for education and behavior change on shoreline armoring in Island County. Social marketing will be applied to program development. Financial incentives (e.g., free site visits from experts, and grants for cost share, design, permitting) will be offered to implement armor removal and possibly install soft shore protection. This program will include monitoring beach ecosystem health on removal and conversion projects (from hard shore to soft shore) to provide justification.
- B.2.3 SJ11** **Continue to develop a voluntary program providing alternatives and incentives for best management practices to avoid hard armoring and to maintain native vegetation (Near Term Shoreline Action III).**

B2.4 Implement a coordinated strategy to achieve the eelgrass recovery target

Eelgrass beds are essential spawning areas and nurseries for herring, other forage fish, and salmon, and generate food consumed throughout the marine food web. The overall acreage of eelgrass beds in Puget Sound is a key indicator for ecosystem health, along with their spatial distribution throughout the areas where salmon, Dungeness crab, and other species migrate and grow. In 2006, there were approximately 50,000 acres of eelgrass beds in Puget Sound. Although the total acreage has been relatively stable for a few years, these eelgrass beds are concentrated into a few areas, and some regions of Puget Sound, such as Hood Canal, have experienced localized losses. Many other Puget Sound habitats have shrunk in size, diminished in quality, fragmented, and the processes that form and sustain them have been disrupted.

In the long-term, climate change is anticipated to lead to greater stress on eelgrass followed by decline. Hardened shorelines will be particularly problematic for eelgrass as sea level rises. Population growth is also likely to increase stressors on eelgrass, nutrient loading that can lead to excessive phytoplankton growth also stresses eelgrass, by limiting light to eelgrass beds, polluted runoff from land and polluted wastewater, or spills, from boats and vessels can damage eelgrass beds as can anchoring of commercial and recreational boats and vessels. Finally, the effects of using of herbicides to control *Zostera japonica* (a Class C noxious weed) on native marine eelgrass beds is not well understood, and should be monitored.

Given the diversity of eelgrass stressors in Puget Sound, the preferred approach is to pursue multiple strategies concurrently that explicitly address improving information, protection, and restoration.

Ongoing Programs

Key Ongoing Program Activities

DNR carries out a variety of programs to support eelgrass protection and recovery, and will emphasize the following activities.

- Estimate the total area of eelgrass in Puget Sound annually (including assessment of eelgrass bed connectivity and shoot density) and provide feedback on the effectiveness of efforts to protect and restore this critical habitat. This information will track progress toward the eelgrass recovery target (increase eelgrass area by 20% by 2020). Annual Soundwide estimates will be produced within 1 year of sampling in order to ensure that information is delivered in a timely manner to guide management actions.
- Synthesize and publish guidance based on the best available science describing key eelgrass stressors in Puget Sound.
- Through the habitat conservation measures of the Aquatic Lands Habitat Conservation Plan, condition aquatic use authorizations to ensure new or retrofitted over-water structures do not impact important habitats such as eelgrass and kelp beds.
- Research how other estuaries have recovered seagrasses and identify proprietary tools implemented in other successful eelgrass recovery efforts that can be deployed here to prevent further damage to or loss of eelgrass on state-owned aquatic lands.

- The Northwest Straits Initiative is one example of other partners who also participate in eelgrass monitoring and recovery.

Near-Term Actions

The near-term actions identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

B.2.4.1 Eelgrass recovery target strategy. DNR, working in collaboration with PSP, will convene partners in state and local government, Tribes, the federal agencies, British Columbia, and non-governmental and business groups to develop a broad-based strategy to achieve the 2020 eelgrass recovery target and track progress.

B.2.4.2 Identification of eelgrass restoration sites. DNR will identify and recommend sites that are suitable for eelgrass restoration in Puget Sound. Sites will be selected using habitat suitability analysis, hydrodynamic modeling, and eelgrass resilience to local stressors. This will include identification of sites on state-owned aquatic lands with a focus on areas with long-term protections already in place.

B3. Protect and Restore Marine Ecosystems

B3.1 Protect intact marine ecosystems particularly in sensitive areas and for sensitive species

The conservation of marine environments that provide rare or unique habitats, culturally and historically important sites, recreational and commercial fisheries, and recreational enjoyment in Puget Sound is an important part of conservation and recovery. Marine Protected Areas (MPAs) are one management tool often used by federal, state, and local agencies to provide long term protection for marine resources. They can be effective tools when properly designed, effectively managed, and supported by marine resource users and managers.

Ecological responses to MPA establishment have been documented by numerous scientific studies in Washington and other temperate marine environments. Responses include greater target species densities, biomass, species size, and species richness within the boundaries of the MPA, replenishment of fish stocks in surrounding areas, increased reproductive rates due to larger fish sizes, increased ecosystem resilience, and reduced risk of population collapse. Responses in deep water pelagic and soft sediment habitats remain uncertain though studies are ongoing.

Ongoing Programs

There are 127 MPAs in the marine waters of Puget Sound and the outer coast. They are managed under a variety of names (e.g., marine reserves, marine sanctuaries, fishery conservation zones, aquatic reserves) with ranging degrees of protection established for diverse purposes. Almost all existing MPAs restrict fishing and shellfish harvest to some degree, and three-quarters of MPAs restrict non-harvest activities to some degree such as vessel anchoring or recreational access.

In 2008, to further a near-term action, the Legislature convened an MPA Work Group to inventory current MPAs in Washington, assess their management, and determine ways to improve the use and

effectiveness of MPAs in Washington as a management tool. The work group conducted a performance evaluation of existing MPAs and provided a set of recommendations that address: (1) coordination and consistency regarding goals, criteria for establishment, management practices, terminology, and monitoring practices; (2) integration of science, local governments, and non-governmental organizations into establishment and management decisions; and, (3) improvements to MPA effectiveness in Washington. The work group analysis and recommendations are detailed in a 2009 published report by WDFW (Van Cleve et al. 2009).

Near-Term Actions

The near-term actions⁵ identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

B.3.1.2 Outfall strategy on state-owned aquatic lands. DNR, in collaboration with Tribal Governments, Ecology, WDFW, and DOH, will develop and implement a strategy to reduce impacts from outfalls on state-owned aquatic lands in Puget Sound.

B3.2 Implement and maintain priority marine restoration projects

Priority restoration actions for the marine environment include the removal of derelict fishing gear, vessels, and creosote-treated wood. Derelict fishing gear includes nets, lines, crab and shrimp traps/pots, and other recreational or commercial harvest equipment that has been lost or abandoned in the marine environment. Modern nets and fishing line made of synthetic materials have been in use since the 1940s and take decades, even hundreds of years, to decompose in water. The derelict gear can entangle divers, trap or wound fish, shellfish, birds, and marine mammals, and result in other environmental hazards.

Ongoing Programs

The Northwest Straits Initiative started a comprehensive program to locate and remove harmful derelict fishing gear from Puget Sound in 2002. In July 2009, the Northwest Straits Initiative received \$4.6 million federal stimulus grant through the American Recovery and Reinvestment Act and NOAA to work full-time to essentially rid Puget Sound of derelict commercial fishing nets, which had been accumulating for decades. As of August 1, 2013, the Northwest Straits Initiative has removed 4,437 derelict fishing nets and 2,765 crab pots from Puget Sound, restoring 566 acres of marine habitat. It is estimated that about 1,000 derelict fishing nets remain in shallow sub-tidal areas of Puget Sound and the Northwest Straits are continuing removal operations as funding allows. On a separate note, support for continued gear loss-prevention efforts in Washington is strong. In 2012, state law was amended to require more timely reporting of lost or abandoned fishing nets. Despite the success of efforts to remove derelict gear in shallow waters, the development of safe and effective techniques to remove nets in waters deeper than 100 feet is needed to reduce the entanglement risks they pose to rockfish and other deepwater species.

DNR manages a Derelict Vessel Removal Program to address the problem of derelict or abandoned vessels in Washington State's waters. Derelict and abandoned vessels can pollute nearshore and marine waters with fuel and oil spills, threaten human safety as a navigational hazard, and impact aquatic

⁵ Gaps in numbering reflect near-term actions that have been completed or otherwise retired.

habitats. The goal of the program is to remove high priority vessels that are 200 feet or less and provide funding and expertise to assist public agencies in the removal and disposal of vessels across the state.

Key Ongoing Program Activities

- DNR will meet Government Management, Accountability, and Performance expectations for derelict vessel removals annually and will apply United States Coast Guard Large Derelict Vessel Task Force recommendations to Puget Sound within 1 year of recommendations being issued.

Near-Term Actions

The near-term actions identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

- B.3.2.1 Legacy net removal.** The Northwest Straits Foundation will work with WDFW, tribes, fishers and others to remove approximately 500 known remaining legacy nets in shallow sub-tidal waters. Original milestones (1 through 3) were met; however more nets were found. As a result, an additional milestone was added.
- B.3.2.2 Deep water net removal.** The Northwest Straits Foundation will complete development and at least one pilot implementation of a new methodology for deep-water net removal. To date, approximately 204 nets are known to exist in Puget Sound in waters deeper than 105 feet. These nets may be degrading important habitat for listed rockfish species. Pilot removal operations will focus on concentrations of known deepwater nets in documented rockfish habitat in the San Juan Islands.
- B.3.2.3 Derelict fishing net reporting, response and retrieval program.** The Northwest Straits Foundation will coordinate with WDFW and tribes to maintain a program to encourage reporting of newly lost fishing nets, respond promptly to all reported lost nets, and retrieve lost nets.

Emerging Issues and Future Opportunities

In addition to the specific ongoing program activities and near-term actions described above, a number of ideas for future work might be undertaken to address pressures on the nearshore and marine ecosystems in Puget Sound. These ideas should be an ongoing part of the regional discussion about Puget Sound protection and recovery, and may inform future funding decisions, programmatic priorities and guidance, or may become near-term actions in future Action Agenda cycles. They include the following.

- Whether or not we have effective statutory and regulatory tools in place to meet the shoreline armoring recovery target. In particular, some interests believe that a number of targeted statutory changes are needed to ensure we can adequately support nearshore protections to meet recovery targets. These could include (1) revising RCW 77.55.141 to give WDFW the ability to protect sediment supply and other shoreline processes, and (2) revising RCW 90.58.030 so that all bulkheads must go through the shoreline permitting process.
- Whether or not we have effective set of tools in place to ensure that permit holders will meet permit conditions, particularly those associated with mitigation of shoreline impacts. As understanding of what is needed to protect nearshore physical and ecological processes continues

to expand and planning and permit writing move to incorporate this information, a potential gap remains around permit implementation—checking back and monitoring to ensure that conditions are met and continue to perform over time. In addition to asking for information from permit holders on their ongoing compliance with permit conditions, some have talked about the idea of requiring bond posting for shoreline permits as a way to ensure that permit conditions are met.

- Opportunities may exist for state and local governments to carry out compliance monitoring related to nearshore and marine protection and restoration to identify shared priorities and pool resources—potentially increasing the efficiency of monitoring and allowing for additional monitoring investments.
 - Development of no anchor zones in specific areas of Puget Sound as needed.
 - Integrate climate change, including sea level rise into nearshore protection and restoration planning and implementation. This will include evaluation of shoreline management laws, integrating sea level rise criteria into project identification, development and funding, evaluating infrastructure at risk, further development of coastal retreat options, and developing policies and information to guide insurers in dealing with properties in vulnerable areas, providing more assistance to coastal planners, and continuing to raise awareness.
 - Further identification of feasible state-level policy programs to avoid or minimize shoreline hardening. As called out in the state climate response strategy, options will need to include streamlining local and state permitting processes to provide incentives for green shorelines and soft armoring practices.
 - Identification of how to incorporate recovery targets into review of Shoreline Master Plans.
-

Target View: Shoreline Armoring

A functioning, resilient ecosystem requires dynamic shorelines maintained by coastal processes such as shoreline erosion and ecological exchange between terrestrial and aquatic systems. The natural shoreline of Puget Sound is constantly changing due primarily to the action of waves and tides. On unarmored shorelines of the Sound, sand and gravel from bluffs erode into the intertidal areas, are transported by waves and currents and ultimately supply sediment to form and maintain beaches and spits. However, on some shorelines in the Sound, these processes are altered by bulkheads, seawalls and other methods used to prevent erosion. Currently, more than a quarter of all the shoreline around the Sound is armored with bulkheads and seawalls affecting important shoreline processes such as sediment supply and transport. The natural processes that occur on unarmored shorelines are important because they support vital functions like providing habitat for key species such as herring, surf smelt and salmon.

Shoreline armoring in the Sound is frequently associated with residential development as many landowners install armoring to protect their properties. Removing existing armoring is both costly and difficult, and is best accomplished on a scale larger than individual parcels. Public shorelines can provide high potential for removal actions. To reduce the total amount of armoring in the Sound, it will be necessary to minimize the need for new armoring by properly locating new structures and strategically remove existing armoring in key locations. Additionally, using “soft shore” designs for new and replacement armoring will reduce some of the impacts associated with traditional hard armoring.

The graph below shows the extent of shoreline armoring in Puget Sound through 2010.

Recovery Target

- From 2011 to 2020, the total amount of armoring removed should be greater than the total amount of new armoring in Puget Sound (total miles removed is greater than total miles added).

Relevant Strategies (and Sub-Strategies)

Protect and restore nearshore and estuary ecosystems.

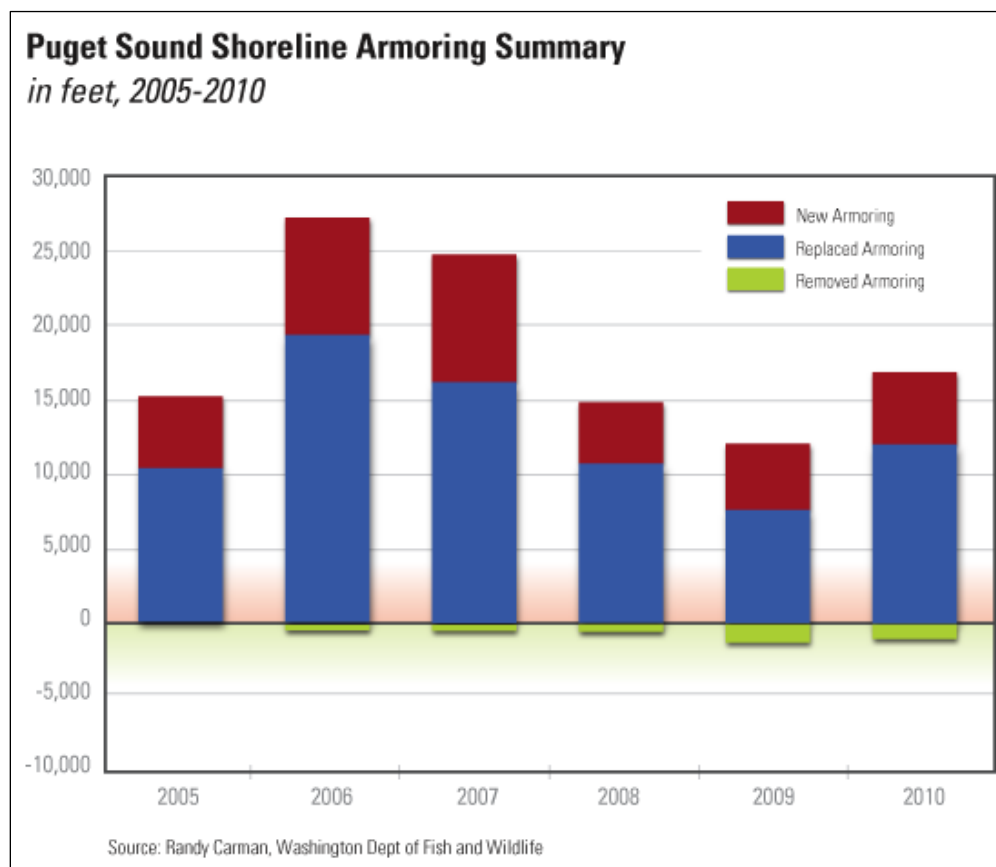
- B2.1. Permanently protect priority nearshore physical and ecological processes and habitat.
- B2.2. Implement prioritized nearshore and estuary restoration projects and accelerate projects on public lands.
- B2.3. Remove armoring, and use soft armoring replacement or landward setbacks when armoring fails, needs repair, is non protective, and during redevelopment.

Focus land development away from ecologically important and sensitive areas.

- A1.3. Improve local government ability to implement plans, regulations, and permits consistent with Puget Sound recovery.
- A1.4. Ensure full, effective compensatory mitigation for impacts that cannot be avoided.
- A6.1. Implement high priority projects in 3-year work plans.
- A6.5. Maintain and enhance the community infrastructure that supports salmon recovery.

- B1.1. Use complete, accurate and recent information in shoreline planning and decision making at the site-specific and regional levels.
- B1.2. Support local governments to adopt and implement plans, regulations, and policies that protect the marine nearshore and estuaries, and incorporate climate change forecasts.
- B1.3. Improve, strengthen, streamline implementation and enforcement to protect marine and nearshore ecosystems and estuaries.
 - B4.2. Increase access to Puget Sound.

Figure C-6 (Appendix C, *Results Chains*) depicts how the strategies (and related sub-strategies) contribute to achieving the shoreline armoring recovery target. Appendix C also contains a results chain for each individual strategy in the Action Agenda, showing how that strategy (and its related sub-strategies) reduces pressures and contributes to achieving numerous recovery targets.

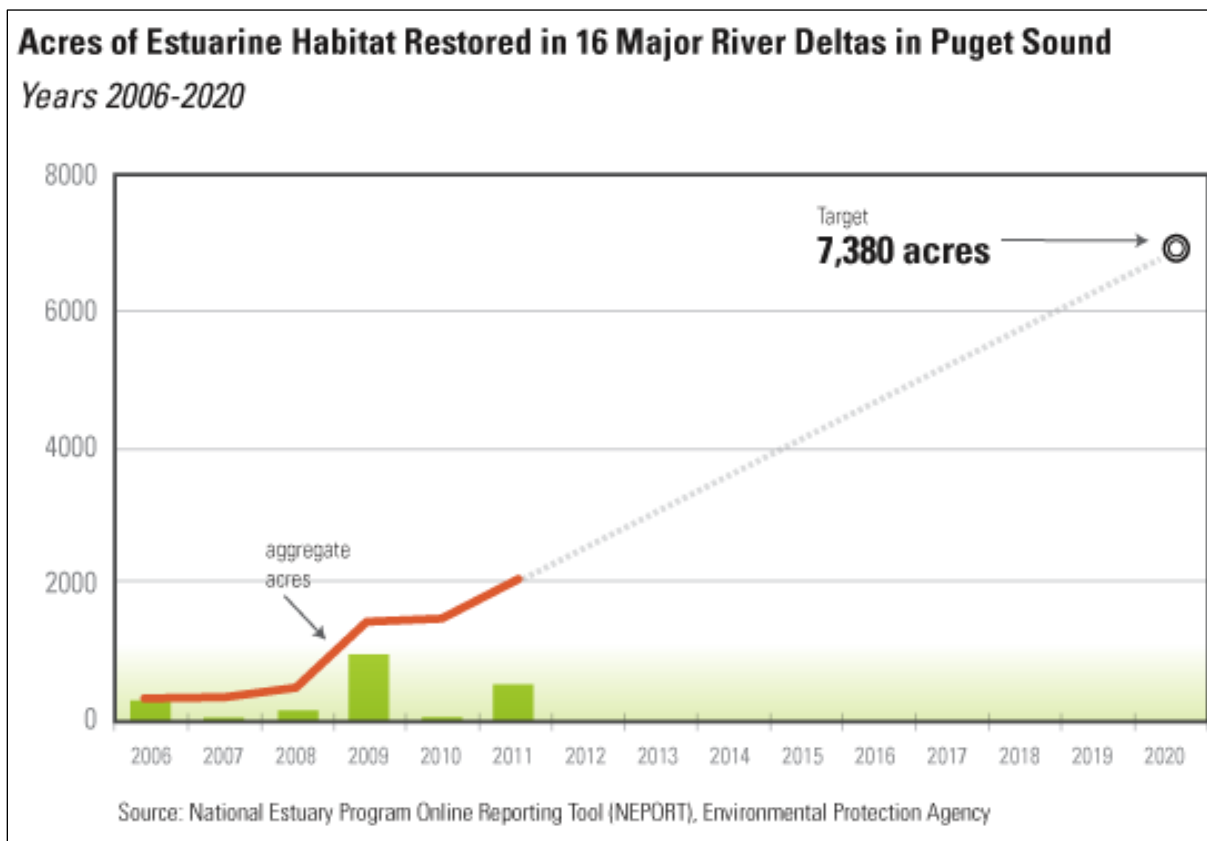


Target View: Estuaries

River delta estuaries are where river floodplains meet the sea, creating a uniquely important environment that provides a feeding and resting habitat for young salmon, migratory birds, and many other species. Young salmon that can rear longer in delta estuaries have been observed to grow faster and are more likely to survive their ocean migration.

In Puget Sound there are 16 large river-mouth estuaries: nine larger deltas drain the Cascade Mountains, and seven smaller deltas drain the Olympics. Of the approximately 62,000 acres of mapped historical swamp and marsh, only an estimated 14,640 acres remain. The ‘great swamps’ of the Skagit and Snohomish once contained over 37,000 acres alone (compared to around 1,620 acres for all the Olympic deltas combined). Across the region, estuaries and tidal wetlands have been diked, drained, or filled, either converted to farms and agriculture, or developed into modern ports and industrial sites. In the most highly developed river mouth estuaries, such as the Duwamish and Puyallup Rivers, estuarine habitat covers only a minute fragment of its original extent, and may never be recovered.

The graph below depicts acres of estuarine habitat restored in major Puget Sound river deltas. The green columns show acres restored in each year and the orange line represents the cumulative acres restored between 2006 and 2011. The dashed line projects the restoration required to achieve the recovery target of 7,380 quality acres restored by 2020. The figure represents restoration projects completed between 2006 and 2011 within the 16 major Puget Sound river mouth estuaries, as defined by the Puget Sound Nearshore Ecosystem Restoration Project.



Recovery Target

- 7,380 quality acres of estuarine wetlands are restored basin-wide, which is 20% of the total estimated restoration needed.
- By 2020, all Chinook natal river deltas meet 10-year salmon recovery goals (or 10% of restoration need as proxy for river deltas lacking quantitative acreage goals in salmon recovery plans).

Relevant Strategies (and Sub-Strategies)

- A1.3. Improve, strengthen and streamline implementation and enforcement of laws, plans, regulations, and permits consistent with protection and recovery targets.
- A4.2. Provide infrastructure and incentives to accommodate new and re-development within urban growth areas.
- A5.3. Protect and maintain intact and functional floodplains.
- B1. Focus development away from ecologically important and sensitive nearshore areas and estuaries. (B1.2, B1.3)
- B2.2. Implement prioritized nearshore and estuary restoration projects and accelerate projects on public lands.
- B4.1. Use, coordinate, expand and promote financial incentives and programs for best practices at ports and in the marine industry that are protective of ecosystem health.
- B5. Prevent and respond to the introduction of terrestrial and aquatic invasive species. (B5.3, B5.4)

Figure C-7 (Appendix C, *Results Chains*) depicts how the strategies (and related sub-strategies) contribute to reducing pressures on estuaries and achieving the estuaries recovery target. Appendix C also contains a results chain for each individual strategy in the Action Agenda, showing how that strategy (and its related sub-strategies) reduces pressures and contributes to achieving numerous recovery targets.

Working Waterfronts and Public Access

The Challenge

Washington State's economy is intrinsically connected to the commercial and recreational maritime industry, including deepwater ports for international trade, shipbuilding facilities, boatyards, and marinas. We must identify ways in which the economic vitality of working waterfronts can be promoted, advanced and fostered while simultaneously achieving environmental benefits. It is important to design Puget Sound protection and restoration strategies in a manner that recognizes the contribution of the maritime industry to the region's economic portfolio.

Public access to Puget Sound offers the general public the opportunity "to reach, touch, and enjoy the water's edge, to travel on the waters of the state, and to view the water and the shoreline from adjacent locations" (WAC 173-26-221(4)). This access, and subsequently use and enjoyment, is important to the health and well-being of the region's citizens as it offers recreational opportunities such as swimming, boat launching and beachcombing to everyone. Public access also provides a means to get up close and personal with the surrounding environment through activities such as bird and whale watching and low tide hiking, which provides hands on education experiences and further promotes the desire to maintain the health of Puget Sound.

The most common type of public access to shorelines is physical access, such as that provided by trails, docks, promenades, and bridges. Physical access may be implemented through dedication of land or easements, cooperative agreements, or acquisition of land along the shoreline. Public access can also be visual, such as via viewing towers and bridges or breezeways between buildings. A third type of access is "cultural access" to interpretive, educational, or historical features of the shoreline.

Public access to Puget Sound and its shorelines is threatened by numerous pressures. Geographic aspects such as natural topography, ongoing coastal erosion, and natural weathering make implementation and preservation of beach accesses challenging. In addition, anthropogenic sources such as population growth, privatization of coastal land, and waterfront commercial development all create demand for and limit public access to shorelines. It will be important to find ways to create and preserve public access as the natural and built environment around the shorelines of Puget Sound continue to change.

CLIMATE CHANGE

As described in *Preparing for a Changing Climate: Washington State's Integrated Climate Response Strategy* (Washington State Department of Ecology 2012a), “rising sea levels could affect port operations, damage seawalls and structures, and flood low-lying port land and surrounding transportation networks. The severity of impacts will depend on the local rate of sea level rise, the proximity to rivers subject to flooding, and the dependence of the port on vulnerable transportation links. Marinas and waterfront recreation facilities could also require more frequent repairs and modifications. Changes in the water level and coastal erosion could submerge or undermine fuel tanks for marinas and other facilities, which often locate their tanks close to their operations.” In addition, rising sea level, erosion, and changes in surface water runoff patterns will alter coastal sediment transport systems. This could result in larger volumes of sediment delivery that require more frequent dredging.

A high-priority response strategy related to ports is to reduce the risk of damage to buildings, transportation systems and other infrastructure. In addition, port best practices that protect ecosystem health are part of other priority response strategies including reducing the vulnerability of coastal communities, habitats and species.

Recovery Targets

The strategies and actions in this section will contribute to achieving the recovery targets listed below with their associated vital signs and indicators.

Vital Sign	Indicator	Recovery Target(s)
Toxics in fish	Levels of four types of toxic contaminants in fish: polychlorinated biphenyls, flame retardants, hydrocarbons, and endocrine-disrupting compounds	By 2020, contaminant levels in fish will be below health effects thresholds (i.e., levels considered harmful to fish health or harmful to the health of people who consume them).
	Levels of contaminant-related disease in fish	By 2020, contaminant-related disease or impairments in fish are reduced to background levels.
Marine sediment quality	Sediment Chemistry Index	By 2020, all Puget Sound regions and bays achieve chemistry measures reflecting minimum exposure with Sediment Chemistry Index scores >93.3.
	Sediment Quality Standards	Have no sediment chemistry measurements exceeding the Sediment Quality Standards set for Washington State.
	Sediment Quality Triad Index	All Puget Sound regions and bays, as characterized by ambient monitoring, achieve the following: Sediment Triad Index scores reflect unimpacted conditions (i.e., SQTl values >81).
Shoreline armoring	Net amount of shoreline armoring	From 2011 to 2020, the total amount of armoring removed should be greater than the total amount of new armoring in Puget Sound (total miles removed is greater than total miles added).

Local Priorities

No LIOs identified near-term actions that address working waterfronts and public access.

Strategies and Actions

B4. Protect and Steward Working Waterfronts and Improve Public Access to Puget Sound

B4.1 Use, coordinate, expand, and promote financial incentives and programs for best practices at ports and in the marine industry that are protective of ecosystem health

The Ports of Seattle and Tacoma are important gateways for international trade, and other major ports in Puget Sound include the Ports of Everett, Bremerton, Bellingham, Olympia, and Port Angeles. Ports and marinas have an important role to play in the protection and recovery of Puget Sound. Many ports are involved in habitat restoration and mitigation projects across a variety of scales and locations, from shoreline in marine industrial areas to upland properties. The transition from a primarily resource-based economy has left some Puget Sound communities with degraded and polluted waterfronts from old industrial activities, in addition to pollution created by combined sewer overflows (CSOs) and stormwater runoff. Many ports take on these types of cleanup projects through the Model Toxics Control Account or Superfund action, which prevents the spread of toxic plumes from abandoned industrial sites.

A significant number of large ports around Puget Sound require maintenance and/or new project dredging as part of their ongoing operations. Dredging is also a significant component of cleanup projects. For toxics control and reduction, it is critical that dredging and dredged material management practices ensure no degradation of the environmental quality of urban bays and waterways. The primary program that controls toxic substances from dredging is the Dredged Material Management Program, an interagency effort that oversees the disposal and use of dredged sediments.

Marinas and boatyards are critical to controlling waste generated by boat maintenance and repair activities and are regulated by the Clean Water Act well as by state law governing hazardous waste disposal. Without regulated marinas and boatyards, these activities would likely occur in areas where hazardous wastes are released directly into the environment. Marinas are also key points of outreach and education for recreational boaters, such as promoting best practices for bilge water and waste disposal.

Given the sizable presence of DOD naval facilities in Puget Sound, it is also important to consider including DOD as a partner in programs that promote best practices for ports and the marine industry that are protective of ecosystem health.

Ongoing Programs

In 2005 the Clean Marina Washington program was launched to improve environmental protection at marinas. Fifty-nine marinas are currently certified under the program. In 2011, the Northwest Marine

Trade Association helped launch the Clean Boating Foundation, a non-profit organization aimed at helping boatyards improve their environmental practices through a voluntary Certified Clean Boatyard program.

In 2011 the Legislature established a goal to phase-out copper bottom paint for recreational boats 65 feet and under by 2020 (Senate Bill [SB] 5436): “After January 1, 2018, new recreational water vessels with antifouling paint containing copper may not be sold in the state. Beginning January 1, 2020, the sale of copper antifouling paint intended for use on recreational water vessels is prohibited.”

Puget Sound ports have completed numerous development projects involving land and water cleanup and habitat remediation, and various projects are underway. Examples of recently completed projects include Port of Tacoma’s cleanup of the former Kaiser aluminum smelter and the Port of Anacortes’s “O” Avenue mitigation project, which included low-impact development features.

Key Ongoing Program Activities

- The Bellingham Bay Demonstration Pilot Program began in 1996 to improve the environmental health of Bellingham Bay through cleanup of polluted sediments, restoration of historically lost habitat, control of pollution sources, and revitalization of under-utilized waterfront properties. The Pilot includes 12 cleanup sites around Bellingham Bay and several habitat restoration projects. Clean up milestones for the Bellingham Bay Demonstration Pilot Project vary by individual project components. Progress on cleanup of contaminated sites in Bellingham Bay is viewable at Ecology’s website.⁶ Ecology will focus efforts on 12 priority cleanup and habitat restoration projects in Bellingham Bay. Current projections are that all the sites will be cleaned up or in progress by 2016.
- EPA released its feasibility study for the Elliott Bay/Lower Duwamish cleanup October 31, 2012.⁷
- Ecology will focus efforts on continuing to control pollutant sources and remediate toxics in the Lower Duwamish and East Waterway.
- Several sites in Port Angeles Harbor are in various stages of investigation and/or cleanup of toxic contamination as part of Ecology’s Puget Sound Initiative.⁸
- Ecology, in conjunction with the Clean Boatyard Washington program, will work toward ensuring Puget Sound boatyards meet the requirements as described in the Boatyard General Permit with a goal that 100% of Puget Sound boatyards covered under the Boatyard General Permit will meet the benchmarks for copper and zinc in stormwater discharges by 2014.
- Puget Sound ports and marinas covered under the National Pollutant Discharge Elimination System (NPDES) Industrial Stormwater permit will comply with the permit’s benchmarks and stormwater pollution prevention plan requirements.

Other ongoing activities and near-term actions related to working waterfronts are described under strategies C1 and C9.

⁶ www.ecy.wa.gov/programs/tcp/sites_brochure/blhm_bay/blhm_bay.htm

⁷ Executive summary for the final feasibility study is available here:
www.epa.gov/region10/pdf/sites/ldw/fs13/final_fs_executive_summary_103112.pdf

⁸ www.ecy.wa.gov/programs/tcp/sites_brochure/psi/portAngeles/psi_portAngeles_bay.html

Near-Term Actions

None; work in the near-term will focus on implementation of ongoing programs. Near-term actions related to cleanup of working waterfronts also are addressed in strategy C9.

Emerging Issues and Future Opportunities

- Exploration (and funding) for research and innovation to identify lower impact methods of shoreline armoring in an urban industrial context.
- Support for the recommendations contained in the *Marine Spatial Planning in Washington: Final Report and Recommendations of the State Ocean Caucus to the Washington State Legislature* (Washington State Department of Ecology 2011a), in particular Recommendation 4 which includes (among others) the following objectives.
 - Foster and encourage sustainable uses that provide economic opportunity and preserve coastal heritage without significant adverse environmental impacts.
 - Preserve and enhance public access to, commercial and recreational uses of, and other values for marine waters and shorelines.
 - Protect and encourage working waterfronts and support the infrastructure necessary to sustain water-dependent uses such as marine industry, commercial shipping, commercial, tribal and recreational fisheries, and shellfish aquaculture.
- Exploration of opportunities for stormwater treatment pilot projects and development of innovative treatment methods at public ports; and support expansion of innovative and effective stormwater treatment projects currently in use.
- Identification and adoption of low impact development techniques to maximize effectiveness in the context of working waterfronts.
- Explicitly incorporate climate change impacts and the recommendations from *Preparing for a Changing Climate: Washington State's Integrated Climate Response Strategy* (Washington State Department of Ecology 2012a) including working with ports to determine short- and long-term strategies to protect port infrastructure and transportation linkages to ensure movement of commerce and international trade.

B4.2 Increase access to and knowledge of publically owned Puget Sound shorelines and the marine ecosystem

Much of Puget Sound shorelines are privately held. Ecology maintains information on public access to Puget Sound in the Coastal Zone Atlas⁹, and the Trust for Public Lands has done additional analysis to map and evaluate public access to Puget Sound.

In June 2012, the Partnership launched a mobile application (Go2Beach) and website to disseminate maps, descriptions, and directions to all publicly owned shorelines, to make this information more accessible and easier to use.¹⁰

⁹ <https://fortress.wa.gov/ecy/coastalatlas/>

¹⁰ <http://www.rco.wa.gov/recreation/>

The marine ecosystem is accessed directly by boaters and divers and by residents who travel or commute by ferry boat and who visit marine education centers such as the Seattle Aquarium or the Port Townsend Marine Science Center.

Ongoing programs such as SMPs require consideration of public access to Puget Sound shorelines as part of local SMP updates, and agencies, such as State Parks and WDFW, provide and maintain both shoreline and marine access points.

Near-Term Actions

The near-term actions identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

- B.4.2.1 Washington State Parks interpretive experiences.** Increase passive, active and virtual interpretive experiences on Puget Sound ecology, threats, vital signs, and recovery actions at Washington State Parks and other publically owned lands that provide access to Puget Sound. Maximize opportunities to connect Park visitors with the regional ecosystem recovery effort.

Emerging Issues and Future Opportunities

There are a number of opportunities to explore additional strategies and investments to improve access to Puget Sound. Many of these were suggested by commenters during the comment period on the draft 2012/2013 Action Agenda and can be followed up on and considered for the next substantive update to the Action Agenda planned for 2016. These include the following.

- Revising grant criteria and allowable expenditures so that sites acquired with public funds for conservation purposes will consistently include public access compatible with restoration and protection objectives.
- Making a concerted investment to preserve, repair and maintain parks, nature centers, fishing piers, trails, promenades and other shoreline access points throughout Puget Sound.
- Creating programs to subsidize free or low cost admission to the Seattle Aquarium, Port Townsend Marine Science Center, Poulsbo Marine Science Center, Arthur D. Feiro Marine Lab, Marine Science and Technology Center in Redondo, Point Defiance Aquarium, Marine Life Center in Bellingham, Nisqually Reach Nature Center, Makah and Suquamish Museums and similar facilities where the public can connect with and learn more about the Puget Sound marine environment.

In addition, public access strategies and actions will need to incorporate changes in sea level rise as needed.

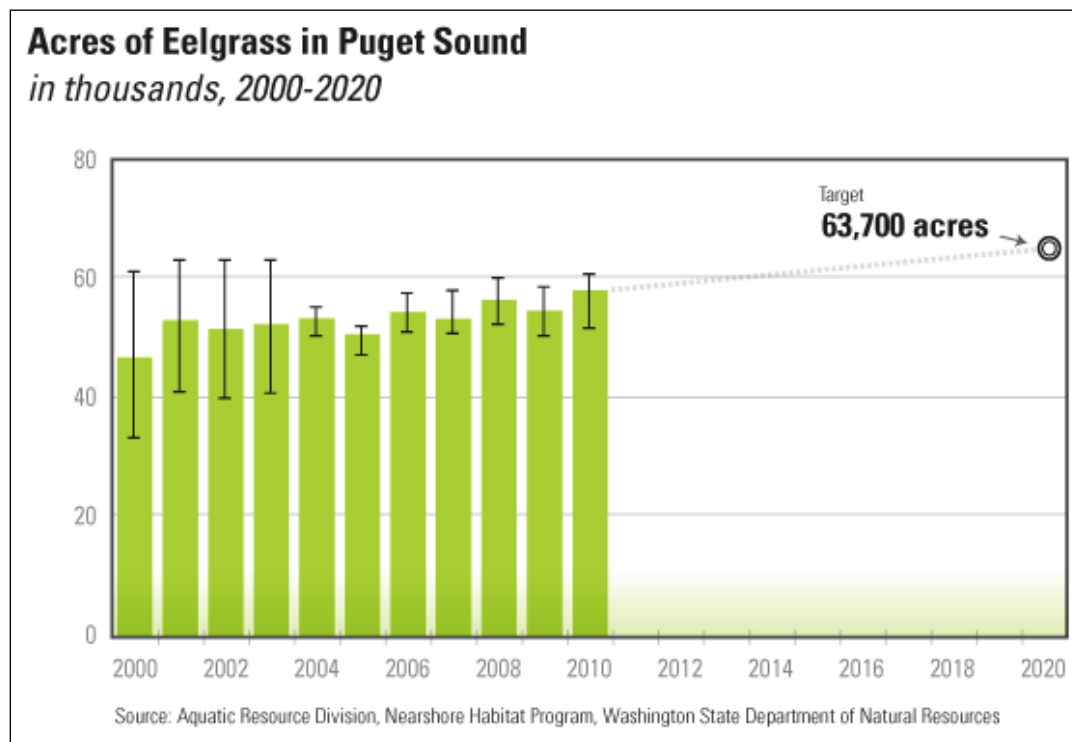
Target View: Eelgrass

Eelgrass is a marine plant that grows in the shallow waters of Puget Sound. It flowers and produces seeds, unlike seaweed, and expands quickly in the spring and summer, only to slow its growth in the winter in response to lower water temperature and light. Eelgrass is important because it provides food and habitat for birds, fish, crabs, shellfish and other marine organisms. It also dampens wave energy thereby protecting shorelines from erosion and improving water quality.

Eelgrass and other seagrass species are used as indicators of estuarine health throughout the world because they respond sensitively to many natural and human-caused environmental factors that affect water quality and shoreline sediment. Changes in the abundance or distribution of this resource are likely to reflect changes in environmental conditions. They are also likely to affect many other species that depend on eelgrass habitat.

One way to improve Puget Sound is to increase the amount of eelgrass that grows in its waters. Though some larger Puget Sound eelgrass beds are stable or possibly increasing in size, many of the smaller more widely dispersed beds are in decline. Although research is underway, currently, the reason for this decline is not fully understood.

The graph below shows acres of eelgrass in Puget Sound. The black bars represent the margin of error for the estimated acreage, showing the uppermost and lowermost potential value for each year. The target shown in the graph (63,700 acres by 2020) is equivalent to the percentage increase described in the target below. In 2004, DNR modified its survey methodology and the precision of the estimates improved.



Recovery Target

- A 20% increase in the area of eelgrass in Puget Sound relative to the 2000–2008 baseline reference by 2020.

Relevant Strategies (and Sub-Strategies)

- B1.1. Use complete, accurate and recent information in shoreline planning and decision making at the site-specific and regional levels.
- B2.1. Permanently protect priority nearshore physical and ecological processes and habitat.
- B2.4. Implement a coordinated strategy to achieve the eelgrass recovery target.
- B4.1. Use, coordinate, expand and promote financial incentives and programs for best practices at ports and in the marine industry that are protective of ecosystem health.
- C8. Effectively prevent, plan for and respond to oil spills. (C8.1, C8.2, C8.3)

Figure C-8 (Appendix C, *Results Chains*) depicts how the strategies (and related sub-strategies) contribute to reducing pressures on eelgrass and achieving the eelgrass recovery target. Appendix C also contains a results chain for each individual strategy in the Action Agenda, showing how that strategy (and its related sub-strategies) reduces pressures and contributes to achieving numerous recovery targets.

Native Species

The Challenge

Puget Sound's terrestrial and freshwater species interact with marine species to form a complex and biologically rich food web that requires protection and responsible stewardship to maintain function and minimize disruption. The biodiversity of Puget Sound has provided valuable health, economic, and cultural benefits to humans, beginning with the earliest native residents. Many of these benefits are quantifiable in pounds of fish harvested or board-feet of timber produced. Other benefits, such as ecosystem services, are more difficult to quantify but are beginning to gain recognition through new and innovative metrics. The intrinsic value of biodiversity, such as its scenic beauty or contribution to quality of life, may never be fully measured but is nonetheless universally recognized as an important asset to protect. Protection and recovery of native species is an integral part of maintaining overall species diversity throughout Puget Sound. Currently sixteen Puget Sound species are listed as federally threatened or endangered and sixteen additional species are on the state endangered and threatened species lists. WDFW also lists eight species as sensitive, and approximately 35 Puget Sound marine fish and bird species are candidates for review and possible listing as State Endangered, Threatened, or Sensitive species.

One of many things that threaten biodiversity is the introduction of invasive plants and animals. It is significantly less expensive and more effective to prevent or rapidly respond to introductions of invasive species than to control and eradicate them once they have become established; however prevention and rapid response present many challenges especially in the context of the international shipping that occurs in Puget Sound. In recent years, a number of invasive species have taken hold in Puget Sound despite efforts to prevent them. These include such species as Japanese knotweed, *Spartina*, nutria, and New Zealand mud snails. Knotweeds are noxious weeds that spread quickly, particularly along rivers and streams, where they can out-compete native plants and destroy habitat for spawning fish. *Spartina* is a cord grass that out-competes native vegetation and converts mudflats into single-species meadows. *Spartina* destroys important habitat for migratory shorebirds and waterfowl, increases the threat of flooding and severely affects the state's shellfish industry. Nutria, large invasive rodents, threaten the health of marine and freshwater habitats. New Zealand mud snails are a highly invasive threat to freshwater and brackish water environments. They can dominate river and lakebed habitat by achieving densities of more than 100,000 per square meter.

Sub-strategies in this area address recovering native species and preventing and rapidly responding to invasive species.

CLIMATE CHANGE

Climate change will have significant impacts on biodiversity including changes in habitat, types of species and where they are found in Puget Sound, and on species' lifecycles and predator-prey interactions. Already reduced populations may be further weakened formerly healthy populations may decline. Warmer temperatures allow nonnative plants, animals, insects and pathogens to expand their range and enhance winter survival. Native habitats will experience an increase in disturbances such as wildfires, floods, drought, or disease or insect outbreaks opening them up to more frequent invasion by opportunistic nonnative species that are adapted to survive in changed habitats. Ocean acidity will likely have significant impact on marine ecosystems, impairing the ability of organisms to form shells or skeletons. This will affect species important to the food web like shellfish, corals, and pteropods (a food source for salmon, herring, and whales). This stress will provide opportunities for nonnative species to become established and flourish.

Several of the high-priority response strategies in *Preparing for a Changing Climate: Washington State's Integrated Climate Response Strategy* (Washington State Department of Ecology 2012a) relate directly to biodiversity and invasive species.

- **Safeguarding fish and wildlife and protecting critical ecosystem services that support human and natural systems.** This means protecting and restoring habitat, protecting sensitive and vulnerable species and their habitats, and reducing existing stresses on fish, wildlife, plants and ecosystems.
- **Reducing the vulnerability of coastal communities, habitat, and species.** This includes preventing coastal habitat degradation and destruction and seeking opportunities for upland habitat creation.
- **Reducing forest and agriculture vulnerability to climate change.** This strategy includes enhancing surveillance and eradication of pests and diseases.
- **Supporting the efforts of local communities and strengthening capacity to respond and engage the public.**

The specific strategies and actions related to biodiversity and invasive species focus on the conservation, restoration, and improvement of ecological functions and processes, and ways to help species and ecosystems recover from the impacts of climate change and extreme events. Reducing non-climate stressors to help build the resilience of natural systems is critical. Actions include protecting and restoring connections between rivers and floodplains, restoring estuaries, managing freshwater withdrawals, maintaining stream flows, reducing existing pollution and contamination, and maintaining and restoring stream flows. For example, reducing stormwater pollution improves water quality and aquatic habitat, increasing the resilience of aquatic species to additional stresses from climate change. In addition, the state's climate response strategy calls for taking early action to eliminate or control non-native species that take advantage of climate changes, especially where they threaten native species or current ecosystem function.

The strategies and actions in this section are similar to those in the state's climate response strategy and will help minimize impacts of climate change in Puget Sound.

Recovery Targets

The strategies and actions in this section will contribute to achieving the recovery targets listed below with their associated vital signs and indicators.

Vital Sign	Indicator	Recovery Target(s)
Toxics in fish	Levels of four types of toxic contaminants in fish: polychlorinated biphenyls, flame retardants, hydrocarbons, and endocrine-disrupting compounds	By 2020, contaminant levels in fish will be below health effects thresholds (i.e., levels considered harmful to fish health or harmful to the health of people who consume them).
	Levels of contaminant-related disease in fish	By 2020, contaminant-related disease or impairments in fish are reduced to background levels.
Marine sediment quality	Sediment Chemistry Index	By 2020, all Puget Sound regions and bays achieve chemistry measures reflecting minimum exposure with Sediment Chemistry Index scores >93.3.
	Sediment Quality Standards	Have no sediment chemistry measurements exceeding the Sediment Quality Standards set for Washington State.
	Sediment Quality Triad Index	All Puget Sound regions and bays, as characterized by ambient monitoring, achieve the following: Sediment Triad Index scores reflect unimpacted conditions (i.e., SQTI values >81).
Shoreline armoring	Net amount of shoreline armoring	From 2011 to 2020, the total amount of armoring removed should be greater than the total amount of new armoring in Puget Sound (total miles removed is greater than total miles added).
Eelgrass	Eelgrass area	A 20% increase in the area of eelgrass in Puget Sound relative to the 2000–2008 baseline reference by 2020.
Orcas	Number of southern resident killer whales	By 2020, achieve an end-of-year census of 95 individual southern resident killer whales, which would represent a 1% annual average growth rate from 2010 to 2020.
Chinook salmon	Chinook salmon population abundance as measured by the number of natural origin adult fish returning to spawn	Stop the overall decline and start seeing improvements in wild Chinook abundance in two to four populations in each biogeographic region.
Pacific herring	Biomass of spawning Pacific herring	Increase the overall amount of spawning herring throughout Puget Sound to 19,380 tons. For each stock, the targets are: <ul style="list-style-type: none"> • Cherry Point: 5000 tons • Squaxin Pass: 880 tons • All other stocks: 13,500 tons

Local Priorities

LIOs identified near-term actions that address native species. These local actions are presented in the *Strategies and Actions* section along with Soundwide actions under the sub-strategy shaded below. The local action numbering contains the area abbreviation shown in parentheses after each LIO name. See Section 4, *Local Recovery Actions*, for detailed information about local planning.

Local Integrating Organization	Sub-Strategy			
	B5.1	B5.2	B5.3	B5.4
Hood Canal Coordinating Council (HC)				
Island (ISL)				
San Juan (SJI)				
Snohomish-Stillaguamish (SNST)				
South Central Caucus Group (SC)				
Alliance for a Healthy South Sound (SS)				
Strait ERN (STRT)				
West Central (WC)				
Whatcom (WH)				

Strategies and Actions

B5. Protect and Restore the Native Diversity and Abundance of Puget Sound Species, and Prevent and Respond to the Introduction of Terrestrial and Aquatic Invasive Species

B5.1 Implement species recovery plans in a coordinated way

Recovering at-risk native species is vital to restore the biological health and integrity of Puget Sound. Implementation of existing species recovery plans will be most effective if overlapping actions within these plans are identified and redundancies eliminated.

Existing terrestrial species recovery plans include the following.

- Fisher (Hayes and Lewis 2006)
- Marbled murrelet (U.S. Fish and Wildlife Service 1997)
- Northern spotted owl (U.S. Fish and Wildlife Service 2010)
- Western gray squirrel (Linders and Stinson 2007)
- Streaked horned lark (Pearson and Altman 2005)

Existing freshwater species recovery plans include the following.

- Oregon Spotted Frog¹¹

¹¹ <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?sPCODE=D02A>

- Western pond turtle (Hays et al. 1999)

Existing marine species recovery plans include the following.

- Puget Sound Chinook salmon (National Marine Fisheries Service 2007)
- Hood Canal and Eastern Strait of Juan de Fuca summer-run chum (Hood Canal Coordinating Council 2005).
- Sea otter (Lance et al. 2004)
- Southern resident killer whale (National Marine Fisheries Service 2008)
- Puget Sound rockfish (a conservation plan; Washington Department of Fish and Wildlife 2011)

Each plan lays out a species-specific approach to ensure self-sustaining populations at appropriate levels of abundance. Recovery plans generally include an assessment of the stock status and an evaluation of the factors that contribute to declining populations and measures to mitigate them. These plans also recommend specific actions to protect species habitat needs, their food and forage requirements, and protection from human disturbance and harvest management.

In addition, WDFW has identified management recommendations for 101 species and five priority habitats.¹²

Many of the actions to protect and restore habitat and to improve fresh and marine water quality and quantity described in other sections of the Action Agenda echo the types of actions called for in species recovery plans.

Ongoing Programs

The USFWS is the lead federal agency for protecting and restoring biodiversity in Puget Sound, and has jurisdiction under the Endangered Species Act for all federally listed species except for salmon, steelhead, and marine mammals. The USFWS has provided substantial funding to protect and restore species biodiversity, as well as estuary restoration in Puget Sound. The USFWS also implements and funds research on the impacts of climate change on biodiversity in Puget Sound.

NOAA has jurisdiction under Section 10 of the Endangered Species Act and its implementing regulations require habitat conservation plans (HCPs) for salmon, steelhead, and marine mammals. Elements of HCPs include, but are not limited to, the following.

- An assessment of impacts likely to result from the proposed taking of one or more federally listed species.
- Measures that the permit applicant will undertake to monitor, minimize, and mitigate for such impacts, the funding available to implement such measures, and the procedures to deal with unforeseen or extraordinary circumstances.
- Alternative actions to the taking that the applicant analyzed, and the reasons why the applicant did not adopt such alternatives.
- Additional measures that USFWS may require.

¹² http://wdfw.wa.gov/conservation/phs/mgmt_recommendations

- Both the USFWS and NOAA prioritize restoration actions within plans.

At the state level, WDFW conserves and protects native fish and wildlife through the following actions.

- Protecting Puget Sound species and habitats by regulating construction projects in or near water that may harm fish and their habitat, and enforcing environmental, fishing, and hunting laws.
- Identifying and implementing hatchery reform actions to reduce risks to native salmon and steelhead.
- Ensuring fishery impacts on native fish are reduced to levels consistent with conservation goals.
- Initiating new and enhancing existing partnerships with conservation, invasive species, and other organizations to help conserve Washington's fish and wildlife.
- Protecting, acquiring and restoring the habitat of species.
- Participating in Shoreline Management Act and Growth Management Act efforts of local governments.
- Completing and implementing the highest priority conservation actions.
- Developing an integrated climate change response and adaptation strategy for species, habitats and ecosystems to maintain healthy and sustainable fish and wildlife populations and to prevent the loss of critical ecological functions.

Federal law requires states to develop comprehensive wildlife conservation strategies, known as Wildlife Action Plans, in order to receive federal funding through the Wildlife Conservation and Restoration Program and State Wildlife Grants program. The purpose of these strategies or plans is to conserve wildlife and vital natural areas before they become too rare and costly to protect.

WDFW's Comprehensive Wildlife Conservation Strategy creates a framework to protect species and habitats in greatest need of conservation; moves from species management to an ecosystems-based management approach; and expands the emphasis on biodiversity conservation, at the statewide and eco-regional scales including Puget Sound lowlands, the Cascade and Olympic eco-regions.

Through adaptive management, the strategy will do the following.

- Re-examine and redefine the relative priority of wildlife species and associated habitats.
- Help coordinate land acquisitions among state and local agencies.
- Improve coordination among federal and state agencies in conservation planning.
- Complete habitat assessments at the local level.
- Provide good biological information to local planners and decision makers to improve their ability to administer the Growth Management Act and other locally administered land use laws; and expand efforts to help local governments use "best available science" in protecting important habitats by providing them with good habitat mapping products.
- Better integrate the management of marine and aquatic ecosystems with terrestrial ecosystems, both within WDFW and among state and federal agencies.
- Incorporate management recommendations into operational work plans within WDFW and other conservation partners.

- Incorporate specific conservation actions into WDFW’s cost accounting systems to help develop and monitor project budgets and priorities.
- Prevent the introduction of new aquatic invasive species and control or eradicate established populations.

Finally, both the Pacific Coast Joint Venture and the U.S. North American Bird Conservation Initiative seek to advance protection and recovery of bird populations across their migratory range and provide significant opportunities for collaboration with public and private entities in British Columbia and beyond. The Pacific Coast Joint Venture develops partnerships between public and private agencies and organizations to pool financial and management resources to fund and carry out on-the-ground projects to protect lowland wetlands and upland habitats. The U.S. North American Bird Conservation Initiative Committee uses a similar model to ensure the long-term health of North America’s native bird populations. This Committee works with cross border partners to advance integrated bird conservation, based on sound science and cost-effective management.

Near-Term Actions

The near-term actions identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

B.5.1.1 **Develop and implement species plans.** Develop (where necessary) and implement actionable plans for imperiled Puget Sound species.

B5.2 **Create a more integrated planning approach to protect and enhance biodiversity in the Puget Sound basin**

Multiple state and federal agencies, local governments, non-profit organizations, and tribes operate programs and create plans that either explicitly benefit biodiversity in Washington State or have the potential to impact biodiversity. An integrated approach to identify programmatic overlap and gaps is important for maximizing the impact of biodiversity work in Washington State, minimizing duplication of effort and maximizing coordination of resources and synergies across plan implementation.

Existing state biodiversity plans and/or programs and policies that benefit biodiversity include those listed below.

- Washington Biodiversity Conservation Strategy
- WDFW’s Comprehensive Wildlife Conservation Strategy
- WDFW’s Priority Habitat and Species
- The Washington Natural Heritage Plan (produced by the Washington Natural Heritage Program in DNR)
- DNR’s Aquatic Lands Enhancement Account
- DNR’s Aquatic Lands Habitat Conservation Plan
- DNR’s Forest Practices Habitat Conservation Plan
- DNR’s Natural Heritage Program for priority species and ecosystems
- Forest Practices Act (administered by DNR)

- Washington Wildlife and Recreation Program
- Washington Invasive Species Council's Invaders at the Gate Strategic Plan

The Washington Biodiversity Council¹³ (2004–2010) created a comprehensive framework for securing Washington State's biodiversity, the Washington Biodiversity Conservation Strategy (Washington Biodiversity Council 2007). The concepts and recommendations described in the strategy are instructive for crafting an integrated planning approach to biodiversity. In 2010, Governor Gregoire asked the Natural Resources Cabinet to absorb the Biodiversity Council's oversight role. The Council completed this transition in June 2011 by handing off ongoing projects to member agencies. Without a single point of contact for biodiversity policy work in the state, coordination and collaboration to carry out the biodiversity conservation strategy will remain a challenge.

Ongoing Programs

Priority Habitats and Species Program¹⁴ serves as the backbone of WDFW's proactive approach to the conservation of fish and wildlife. It is the principal means by which WDFW provides important fish, wildlife, and habitat information to local governments, state and federal agencies, private landowners and consultants, and tribal biologists for land use planning purposes. Using the best available science, the program identifies which common and at-risk species and habitat types are priorities for conservation, where these habitats and species are located, and what should be done to protect these resources when land use decisions are made. The program is supported by a list of priority habitats and species, maps, management recommendations and technical assistance staff. The database may be directly accessed at <http://wdfw.wa.gov/mapping/phs/>.

Landowner Assistance

- **WDFW private landowner assistance.** WDFW enrolls private landowners in a voluntary private lands access program¹⁵ and participants may request technical assistance from WDFW staff to help improve fish and wildlife habitat on their lands. Department staff may also be available to help landowners apply for or implement federal programs administered by the Farm Service Agency or the NRCS (e.g., the Conservation Reserve Program and Environmental Quality Incentives Program). WDFW has developed guidance documents for the inventory, assessment, and prioritization of fish passage barriers and for the design of road culverts for fish passage. Additionally, biological and engineering assistance may be available from WDFW to help assess and review new and replacement fish passage structures.
- **Incentive-based landowner conservation programs.** DNR provides financial and technical assistance to communities¹⁶ and forest stewardship assistance¹⁷ to non-industrial private landowners as well as technical assistance on leases of state-owned aquatic lands¹⁸.

¹³ http://www.rco.wa.gov/biodiversity/about_the_council.shtml

¹⁴ <http://wdfw.wa.gov/conservation/phs/>

¹⁵ http://wdfw.wa.gov/hunting/hunting_access/private_land/landowners.html

¹⁶ http://www.dnr.wa.gov/researchscience/topics/urbanforestry/pages/rp_urban_commandurbanforestry.aspx

¹⁷ http://www.dnr.wa.gov/BusinessPermits/Topics/SmallForestLandownerOffice/Pages/forest_stewardship_program.aspx

¹⁸ http://www.dnr.wa.gov/businesspermits/topics/shellfishaquaticleasing/pages/aqr_aquatic_land_leasing.aspx

- **Financial and technical assistance** includes the following.
 - Helping rural landowners to remove or fix fish passage barriers.
 - Compensating small forest landowners for not harvesting timber along riparian corridors.
 - Offering private landowners the option of donation or compensation to preserve timberlands on islands of timber within rivers or streams.
 - Helping non-industrial private forest landowners manage their properties to improve timber production, forest health, wildlife and fish habitat, water quality, aesthetics, and fire safety.
 - Supporting the Washington Register of Natural Areas to recognize voluntary participation to protect and conserve priority species or ecosystems, as identified in the Washington Natural Heritage Plan.

Local Habitat Assessment. WDFW has developed a suite of habitat assessment tools. One of these ranks relative habitat value across a whole county or watershed. The Local Habitat Assessment methodology produces a color-coded map that is easy to interpret and use to inform local land use planning initiatives at a variety of scales. WDFW has collaborated with several Puget Sound jurisdictions to produce Local Habitat Assessment maps for whole counties, watersheds, or smaller sub-areas. Assessments have been completed in Skagit County, the Birch Bay watershed in Whatcom County, and Kitsap County.

- **Puget Sound Watershed Characterization.** The Local Habitat Assessment method is being integrated into a Puget Sound Watershed Characterization that applies several ecological assessments including water flow, water quality and the Puget Sound Nearshore Ecosystem Restoration Project. The Puget Sound Watershed Characterization is a collaborative effort among Ecology, WDFW, and the Partnership that covers the entire Puget Sound basin. The project is producing landscape-scale assessments that provide scientific information on which areas are the most important to protect for water resources and habitats.

Biodiversity Scorecard. Washington Biodiversity Council and University of Washington researchers collaborated to develop a draft scorecard model to track the status of the state's biodiversity, similar to the Partnership's *Puget Sound Vital Sound* online tool. The model considers the status of species and ecosystems, ecosystem processes, human activities, and ecosystem services. This project is now housed with the Washington Natural Heritage Program (at DNR).

Conservation Opportunity Maps. These maps assess the distribution of important species, plant communities, and ecological systems, and overlay that with human population trends. They provide high-level guidance on where to invest in biodiversity conservation activities in Washington State.

- WDFW has developed a data viewer application for the maps using ArcGIS, which enables users to see the data underlying the maps.
- The Washington Natural Heritage Program is enhancing the map viewer on the LandScope Washington¹⁹ site to include these maps and data.

Biodiversity Conservation Toolbox for Land Use Planners. This toolbox aims to put biodiversity conservation information for Washington planners in one place. It is organized in six main categories to

¹⁹ <http://www.landscape.org/washington/>

address the primary needs that planners identified: resources, guidance documents, case studies, policy language, data and maps, and training and conferences.

- Commerce’s Growth Management Services now hosts this toolbox on its Critical Areas and Best Available Science page.

Green Bylaws Toolkit. The Canadian Environmental Law Clinic published the Green Bylaws Toolkit. This is a comprehensive resource that will help local governments protect threatened ecosystems. The Toolkit explains how to use a myriad of tools—from planning to regulatory bylaws—to protect wetlands, grasslands and other important ecosystems.

Biodiversity project website. The website was created to provide a hub for biodiversity information in Washington State.

- LandScope Washington, administered by the Washington Natural Heritage Program, now hosts the content on stewardship and incentives, education, and Washington’s ecoregions.

Aquatic habitat conservation plan. DNR’s draft conservation plan includes management measures to minimize impacts on state owned lands from over water structures, log booming, and shellfish aquaculture and to meet the requirements of the federal Endangered Species Act. The plan is being finalized and implemented.

Forest practices habitat conservation plan. Carrying out DNR’s Forest Practices Habitat Conservation Plan maintains and restores aquatic and riparian habitat in forests to meet the requirements of the federal Endangered Species Act, as well as those of the federal Clean Water Act for species included in the plan.

WDFW and DNR will integrate the Forest Practices Application and Hydraulics Project Approval permitting process to protect fish and other natural resources; as well as reduce paperwork burdens and uncertainty for applicants, and enhance compliance and effectiveness monitoring. To reduce reliance on the state General Fund, the agencies will assess fees for services to cover administrative costs.

Near-Term Actions

None; work in the near-term will focus on implementation of ongoing programs.

B5.3 Prevent and rapidly respond to the introduction and spread of terrestrial and aquatic invasive species

The goal of this sub-strategy is to gain an understanding of invasive species presence and extent in Puget Sound terrestrial and aquatic ecosystems; prevent the introduction of new high-priority, high-risk invasive species to these ecosystems; rapidly respond when new priority invasive species are detected; stop invasive species already here from spreading to other locations; and completely eliminate them as soon as possible, wherever possible.

Accomplishing these goals requires the following elements.

- A forum to provide policy-level planning and direction for regional invasive species efforts and coordination, collaboration, and information sharing among federal, state, tribal, local, and private partners.

- Cooperation and collaboration with Canadian provincial and federal partners to align invasive species management programs across the international border.
- Education and outreach that increases awareness of the invasive species problem and offers solutions.
- A Puget Sound invasive species monitoring program.
- A Puget Sound early detection and rapid response system.
- Prevention efforts that target the highest risk pathways, such as hull fouling and ballast water.
- Maintained or enhanced programs to control, contain, or eradicate existing infestations.
- Asking and answering research questions that fill critical information gaps.

Ongoing Programs

Efforts to prevent and respond to invasive species in Puget Sound are focused on a number of ongoing programs.

- **The Washington Invasive Species Council (the Council).** The Washington Invasive Species Council is the legislatively established forum to provide policy-level planning and direction for regional invasive species efforts and coordination, collaboration, and information sharing among federal, state, tribal, local, and private partners. Their strategic plan sets priorities, identifies gaps and provides goals, recommendations, and actions to address the significant threat invasive species pose to recovering Puget Sound. A key element of this sub-strategy is maintaining capacity to support the Council's role to provide outreach and policy-level planning, direction, coordination, and information sharing among member agencies and stakeholders. The Council provides structure and infrastructure for coordinated efforts to prevent and manage invasive species including integration of invasive species policies and protocols into existing processes such as the State Environmental Policy Act and Governor's Office of Regulatory Assistance Joint Aquatic Resource Permit Application. Major funding sources include the Vessel Response Account and contributions from member agencies.
- **Basin-wide detection and rapid response efforts.** A second element is to enhance ongoing basin-wide detection and rapid response efforts to address invasive species risks. The effectiveness of the state's ability to prevent and respond to invasive species lies in these ongoing programs.
 - Washington State Department of Agriculture (WSDA) leads, and works with WDFW, to monitor for and eradicate *Spartina* infestations. WSDA also leads the monitoring for and eradication of invasive knotweed infestations, as well as other insect, plant pathogens, and weed pests. In addition, the WSDA prevents the introduction of invasive aquatic plants through its quarantine and inspection program, and controls other invasive aquatic plants.
 - WDFW regulates pathways and practices that introduce non-native animals, classifies non-native animals and responds to newly found animal invaders through its Aquatic Invasive Species Prevention and Enforcement, and Ballast Water Management programs. The state ballast water inspection and compliance program works to minimize the risks associated with hull fouling and ballast water discharges, two significant pathways for the introduction and spread of marine invasive species. The state general fund is the primary resource contributor.

- Washington State Noxious Weed Control Board classifies the threats related to terrestrial and aquatic plants and works with local weed boards and landowners to control and eradicate invasive plants infesting private property.
- Ecology provides technical and financial assistance to local governments and lake associations to manage and eradicate freshwater invasive weeds such as Brazilian elodea and Eurasian milfoil. In addition, the Ecology coordinates the state's efforts related to the EPA's Vessel General Permit for managing incidental discharges from the normal operation of vessels.
- Washington State Department of Transportation (WSDOT) controls terrestrial and aquatic weed species along the state's major highway corridors as vehicular traffic and linear corridors serve as primary vectors for introduction and spread.

Funding sources for this work includes the Aquatic Invasive Species Prevention and Enforcement Account, Freshwater Aquatic Algae Control Account, state general fund (GF-S), and federal grants. It is essential to maintain and, in some cases, enhance these base programs. Reducing their capacity will open the gate to further invasions and associated effects on the region's economy and ecosystem. For example, tunicate management is not funded after FY 2010–2011.

- **Cooperation and collaboration.** It is important to cooperate, collaborate and identify opportunities to improve coordination, strengthen existing partnerships, and develop new partnerships across jurisdictional boundaries and levels of government including tribes, and with non-profit organizations and private businesses, and with neighboring states, regional organizations, and Canadian entities to enhance public awareness, align programs and maximize limited resources to address common invasive species threats to Puget Sound.

Near-Term Actions

The near-term actions identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

- B.5.3.1 Invasive species baseline assessment.** Washington Invasive Species Council, in consultation with WSDA, will expand its baseline assessment to include an additional 15 of the Council's priority invasive species. The assessment provides locations of species, details about management programs, and identifies gaps that exist.
- B.5.3.2 Invasive species early detection and monitoring.** Washington Invasive Species Council, in consultation with WSDA, will develop an early detection and monitoring program plan for priority invasive species in Puget Sound. The Council will coordinate the plan and implementation efforts with the Puget Sound Coordinated Ecosystem Monitoring Program.
- B.5.3.3 Managing invasive species on/in boats and ships.** Prepare implementable recommendations for managing invasive species transported in the hulls of commercial watercraft by developing a 5-year (2015–2020) state ballast water management plan.
- B.5.3.4 Ballast water treatment effectiveness.** WDFW will complete an assessment of and make recommendations to improve the effectiveness of open sea exchange and treatment in meeting state ballast water standards.

- B.5.3.5 Zebra/quagga mussel and New Zealand mud snail plans.** WDFW will develop plans to respond to (1) a potential zebra/quagga mussel invasion in the Puget Sound Basin and (2) limit the spread of New Zealand mud snails.
- B.5.3.6 Invasive species baseline assessment.** Washington Invasive Species Council, in consultation with WSDA, will expand its baseline assessment to include the last remaining 20 priority invasive species. The assessment provides locations of species, details about management programs, and identifies gaps that exist.
- B.5.3.7 State ballast water management.** Support effectiveness of state ballast water management by developing a Memorandum of Agreement with the U.S. Coast Guard and EPA for cooperative state/federal management of ballast water.
- B.5.3 ISL11 Implement a noxious and invasive weed eradication program.**
- B.5.3 SNST12 Riparian corridor knotweed control.** Program leads will be divided among basins: Stillaguamish—Stillaguamish Tribe and Snohomish County; Skykomish/Snohomish—Tulalip Tribes and Snohomish County; Snoqualmie—Snoqualmie Tribe and King County. Leads will work to vet methods and strategies, and develop control and elimination plans, and monitoring programs.
- B.5.3 WH6 Implement and expand the noxious weed eradication program.** The Noxious Weed Board has implemented a program in Whatcom County to remove knotweed from the Nooksack Forks and spartina species from marine intertidal areas including the Nooksack and Lummi River deltas. Long term surveys and continued annual removal/treatment is necessary to prevent the establishment of spartina and to manage knotweed infestations.

B5.4 Answer key invasive species research questions and fill information gaps

Key questions related to invasive species include: How invaded are Puget Sound terrestrial and aquatic ecosystems, and what is the full extent of the problem and level of risk? Answers to these questions can be used to develop more targeted response strategies. The aim of this sub-strategy is to provide a strong scientific basis for managing invasive species, understanding the effects of climate change on the spread and distribution of invasive species in terrestrial and aquatic ecosystems, and targeting specific pathways and species for management. Organizations that will play a role in answering these questions include Puget Sound Science Panel and Puget Sound Institute.

Near-Term Actions

The near-term actions identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

- B.5.4.1 Environmental and economic impact of invasive species.** Washington Invasive Species Council, in consultation with WSDA, will complete a risk assessment to evaluate the environmental and economic impacts of invasive species in the Puget Sound marine and nearshore ecosystems and incorporate short-term climate change considerations.

Emerging Issues and Future Opportunities

- Development of biodiversity markets.
 - A mitigation bank for protection of prairie habitat.
 - Expansion of technical assistance to support local government efforts to plan and manage for biodiversity conservation.
 - Implementing the Washington Biodiversity Council recommendations for a sustainable leadership strategy by identifying a single state agency or entity to coordinate Puget Sound biodiversity.
 - Investigating whether and how invasive responses could be handled under Ecology's Aquatic Invasive Species Management General Permit so there is no delay responding to an early detection of an invasion.
 - Adding invasive species prevention protocols as components of Joint Aquatic Resource Permit Application review.
 - Increasing vessel inspections related to ballast water discharges.
 - Implementing recommendations from *Preparing for a Changing Climate: Washington State's Integrated Climate Response Strategy*. This includes, but would not be limited to, the following.
 - More explicitly incorporating climate change considerations into existing and new management plans for protecting sensitive and vulnerable species. This could include modifying protection and recovery plans to accommodate migration, as well as longer-term shifts in species range associated with climate change and its effects. It could also include conservation of genetic diversity by protecting diverse populations and genetic material.
 - Conducting and refining species and habitat vulnerability assessments to determine appropriate management approaches in a changing climate.
 - More explicitly incorporating climate change considerations for species, habitats and ecosystem processes into land use, water and other natural resource planning and regulatory activities.
-

Target View: Pacific Herring

Pacific herring are a vital component of the marine ecosystem, and are a key indicator of the overall health of Puget Sound. Healthy stocks of herring indicate that the food web in Puget Sound is functioning to provide a prey base for fish, seabirds, and marine mammals; that nearshore and open-water habitats are functioning properly; and that fisheries for bait and other products are available for Puget Sound residents.

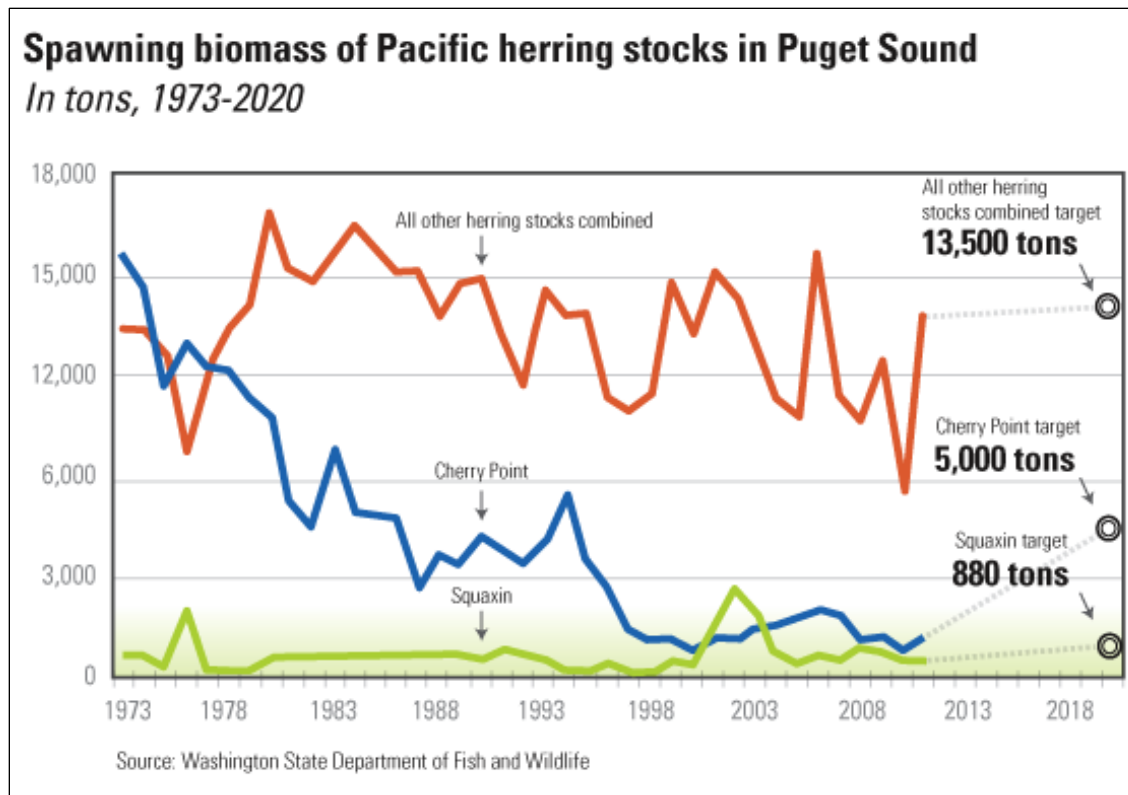
Herring are one of a number of small, schooling fish species called “forage fish” that are preyed upon by larger predators for food (other species include surf smelt, Pacific sand lance, and northern anchovy). The Partnership has focused on Pacific herring as a key sentinel for Puget Sound health. Herring are one of the most abundant forage fish species, and their populations have been tracked since the 1970s.

Overall, the number of herring in Central and Southern Puget Sound has been relatively stable for the past 40 years. However, the population of one large and important stock of Pacific herring, the Cherry Point stock in north Puget Sound, has declined by 90% since 1973. There are many factors that may have contributed to this decline, including pollution, overfishing, changes to the natural shoreline, parasites, changes in abundance of predators or prey, and disease. Some scientists think the decline may be part of a natural cycle, related to large-scale ecosystem conditions.

Efforts to help the recovery of Cherry Point herring have been taken, but we have yet to see their population turn around. More needs to be done to understand the causes of the decline. For herring in the rest of Puget Sound, appropriate fishery management is important to ensure continuation of the commercial and sport harvest. In addition, we need to protect the water quality and habitats essential to the well-being of all herring populations.

Further, as prey for virtually every large predator in Puget Sound, healthy herring populations play a significant role in a healthy food web. Herring are particularly susceptible to some types of toxic contaminants, such as polycyclic aromatic hydrocarbons (PAHs; see “Toxics in Fish”). In addition, levels of some types of contaminants, such as polychlorinated biphenyls (PCBs; see “Toxics in Fish”) increase in fish tissues as the chemicals move up the food chain, from herring to salmon, birds, seals, orcas, and humans.

The graph below represents the tons of adult Pacific herring estimated to be in Puget Sound, based on annual surveys. The estimated number of tons that spawn each year is called the spawning biomass. The herring targets are grouped based on results of genetic studies that indicate Cherry Point and Squaxin Pass herring stocks are genetically distinct and that all other sampled Puget Sound herring stocks are not genetically distinguishable from each other.



Recovery Target

Increase the overall amount of spawning herring throughout Puget Sound to 19,380 tons. For each stock, the targets are:

- Cherry Point: 5,000 tons
- Squaxin Pass: 880 tons
- All other stocks: 13,500 tons

Relevant Strategies (and Sub-Strategies)

- B2.4. Implement a coordinated strategy to achieve the eelgrass recovery target.
- B3.1. Protect intact marine ecosystems particularly in sensitive areas and for sensitive species.
- B5.1. Implement species recovery plans in a coordinated way.
- C8. Effectively prevent, plan for, and respond to oil spills. (C8.1, C8.2, C8.3)
- C9.2. Clean up contaminated sites within and near Puget Sound.

Figure C-9 (Appendix C, *Results Chains*) depicts how the strategies (and related sub-strategies) contribute to reducing pressures on Pacific herring and achieving the Pacific herring recovery target. Appendix C also contains a results chain for each individual strategy in the Action Agenda, showing how that strategy (and its related sub-strategies) reduces pressures and contributes to achieving numerous recovery targets.

Target View: Orcas

Orca whales are an iconic species of the Pacific Northwest. We are thrilled when we see a killer whale breaching (jumping) high out of the water or when a resident pod swims majestically by a state ferry. Orcas also are at the top of the marine food chain—their main diet is Chinook salmon, as well as cod, herring and other fish species. Therefore, their health is a great indicator of the overall supply and quality of living organisms in the Sound.

The orcas in Puget Sound are generally known as southern resident orca whales and are actually a large extended family, or clan, comprised of three pods: J, K, and L pods. They are often seen during the summer in the protected inshore waters of the Salish Sea, especially in Haro Strait west of San Juan Island, the Strait of Juan de Fuca and in Georgia Strait near the Fraser River. Orcas can live as long as 80 to 90 years.

The historic population of southern resident orcas may have numbered around 200 individuals, but by mid-2011, the population totaled fewer than 90 whales. Current potential threats to resident orcas include reduced quantity and quality of food, high levels of environmental contaminants possibly affecting immune and reproductive systems, human disturbance (especially boat traffic and noise disturbance), and the threat of oil spills. Further, there are currently only 17 female orcas capable of bearing young, and orcas generally wait 3 to 5 years between pregnancies. Also, about three orcas disappear from the population every year; generally their fates are unknown.

Recovery Target

By 2020, achieve an end-of-year census of 95 individual southern resident killer whales, which would represent a 1% annual average growth rate from 2010 to 2020.

Relevant Strategies (and Sub-Strategies)

- B5.1. Implement species recovery in a coordinated way.
- C1. Prevent, reduce, and control the sources of contaminants entering Puget Sound (C1.1, C1.3, C1.4, C1.6).
- C8. Effectively prevent, plan for and respond to oil spills (C8.1, C8.2, C8.3).

Figure C-10 (Appendix C, *Results Chains*) depicts how the strategies (and related sub-strategies) contribute to reducing pressures on orcas and achieving the orcas recovery target. Appendix C also contains a results chain for each individual strategy in the Action Agenda, showing how that strategy (and its related sub-strategies) reduces pressures and contributes to achieving numerous recovery targets.



STRATEGIES AND ACTIONS

C: POLLUTION

Reducing and controlling the sources of pollution to Puget Sound is of paramount importance to the long-term health of the Puget Sound ecosystem and its residents. Human and animal wastes, fertilizers, pesticides, and the toxic chemicals that run off pavement during storms and are discharged from industrial facilities can enter the water and harm aquatic life, and also pose several health and safety problems to humans. A successful approach to pollution in Puget Sound must ensure that toxics in marine waters and sediments, and in mammals, fish, birds, shellfish, and plants, do not harm the persistence of these species; urban stormwater runoff, as well as agricultural and forest runoff, is effectively controlled and managed in an integrated way; loadings of toxics, nutrients, and pathogens do not exceed levels consistent with healthy ecosystem function; shellfish populations are healthy and abundant; the threat and severity of oil-spills is minimized; and our legacy of pollution impacts in Puget Sound is addressed and cleaned up.

The strategies in this section will contribute most significantly to achieving recovery targets for the following vital signs.

- Freshwater water quality
- Toxics in fish
- Marine sediment quality
- Shellfish bed
- Marine water quality
- Eelgrass
- Swimming beaches
- Orcas
- Land development and cover
- Pacific herring
- Onsite sewage systems

THIS SECTION DESCRIBES NINE STRATEGIES—and associated sub-

strategies, ongoing programs, and actions—that are essential to the addressing pollution in Puget Sound. The strategies and actions are organized under the following headings.

Contaminants

C1. Prevent, Reduce, and Control the Sources of Toxic Contaminants Entering Puget Sound

Built Environment Runoff

C2. Use a Comprehensive Approach to Manage Urban Stormwater Runoff at the Site and Landscape Scales

Agricultural Runoff

C3. Prevent, Reduce, and Control Agricultural Runoff

Forest Land Runoff

C4. Prevent, Reduce, and Control Surface Runoff from Forest Lands

Wastewater

C5. Prevent, Reduce, and/or Eliminate Pollution from Decentralized Wastewater Treatment Systems

C6. Prevent, Reduce, and/or Eliminate Pollution from Centralized Wastewater Systems

Shellfish

C7. Ensure Abundant, Healthy Shellfish for Ecosystem Health and for Commercial, Subsistence, and Recreational Harvest Consistent with Ecosystem Protection

Oil Spills

C8. Effectively Prevent, Plan for, and Respond to Oil Spills

Cumulative Impacts

C9. Address and Clean Up Cumulative Water Pollution Impacts in Puget Sound

RECOVERY IN FOCUS



Pollution strategies and actions contribute to achieving recovery targets for the vital signs presented in color in this *Puget Sound Vital Signs* graphic. The *Puget Sound Vital Signs* is an online tool that tracks and communicates ecosystem conditions and progress toward achieving recovery targets.

Contaminants

The Challenge

For decades, humans have released toxic chemicals, nutrients, and pathogens into Puget Sound and its watersheds through a variety of activities. Concerns about the possible harmful effects of these contaminants led to the creation of Washington's Pollution Control Commission in 1945, almost 30 years before the federal Clean Water Act, as well as the Puget Sound Water Quality Authority in 1985. While these and other federal and state efforts have been important at addressing threats to water quality, many sources continue to release contaminants to the water, air, and lands of the Puget Sound basin.

Contaminants of concern for Puget Sound include excess nutrients, pathogens, sediments, and toxic chemicals. Human-caused releases of excess nutrients, pathogens, and sediments can harm aquatic life and the human uses of fresh and marine waters. A number of toxic chemicals used by humans (e.g., pesticides, industrial chemicals) are released to the Puget Sound environment where they harm or threaten harm to biota and humans. Among toxic chemicals, persistent, bioaccumulative, and toxic (PBT) chemicals raise special challenges because they remain in the environment for a long time and accumulate in people and in the food chain. They also can travel long distances and generally move easily between air, land and water. Prevention is especially important for PBT chemicals, since they can remain in the environment and continue to harm wildlife. One example is PCBs, which were banned more than 30 years ago, but remain in the environment and continue to harm wildlife and people. An effective way to reduce and control problems from all types of pollution is to prevent the initial release of contaminants to the environment.

In 2007, Washington became the first state in the country to ban specific polybrominated diphenyl ethers (PBDEs) because of human health and environmental concerns. More recently, Washington State enacted laws banning the use of bisphenol A (BPA) in children's bottles and other containers, banning the use of lead wheel weights to balance tires, and restricting the amount of copper in vehicle brake pads. Since 2012, manufacturers of children's products in Washington have been required to report to Ecology if their products contain chemicals on a list of chemicals of high concern to children, under the Children's Safe Products Act.

PUGET SOUND TOXICS ASSESSMENT

In 2011, Ecology, in coordination with the Partnership and other organizations, completed a multi-year study of toxic chemicals in Puget Sound. The 17 chemicals evaluated in this study were selected based on the threat or known harm to biota, the broad range of conveyance pathways, and the availability of monitoring data. These chemicals of concern include metals, PBT chemicals such as PCBs, and contaminants of emerging concern, including endocrine disrupting compounds. Of the 17 chemicals, only five have been restricted nation-wide under the federal Toxic Substances Control Act. Additional contaminants of emerging concern, such as those from pharmaceutical waste, personal care products, and plastic pollution, may also be important toxic threats to Puget Sound, although much less is known about the exposures and effects of those contaminants in Puget Sound.

The Puget Sound Toxics Assessment found the following.

- Levels of copper, mercury, PCBs, PBDEs, dioxins and furans, DDT and related compounds, and PAHs occur at levels in the Puget Sound basin associated with documented or potential adverse effects to a variety of aquatic organisms.
- Sources of toxics are varied and include vehicles, pesticides, industrial air emissions, combustion emissions, and leaching or off-gassing of toxics from products in the environment. Industrial, commercial, and institutional point sources do not account for the largest releases of toxic chemicals; a variety of diffuse sources account for the majority of toxic chemical releases.
- Runoff and leaching from roofing materials appears to be a large source of release of metals.
- Vehicle-related releases—from wear of vehicle components, combustion of fuel, and leaks of motor oil and fuel—contribute large amounts of a variety of contaminants (e.g., copper, zinc, PAHs, dioxins and furans).
- Toxic chemicals move into Puget Sound aquatic habitats through numerous pathways, including surface runoff, air deposition, discharges from industrial sources and wastewater treatment plants, groundwater discharges, combined sewer overflows, spills, contaminated sediments, exchange with oceanic waters, and biological transport.
- Surface runoff or stormwater is the primary way that many of the contaminants evaluated in this study enter Puget Sound. Runoff from commercial/industrial lands typically has the highest concentrations. Due to the large of forests in the Puget Sound basin, considerable loads of contaminants are delivered to aquatic environments in runoff from forest-covered lands.
- Atmospheric deposition of contaminants to surface waters is an important loading pathway for PBDEs and some PAHs.

The assessment concludes the following.

- Priorities for source control actions should focus on copper, PAHs, bis(ethylhexyl)phthalate, and petroleum.
- High priority should be given to implementing control strategies to prevent the initial release of contaminants.
- Source control strategies should focus on reducing or treating stormwater inputs, especially identifying and controlling contaminant releases from existing and new developments.
- Source control strategies should be developed around reducing contaminant inputs from vehicles.
- Field investigations should be conducted to improve information about runoff and leaching from roofing materials.

For more information see the following Ecology reports.

- *Assessment of Selected Toxic Chemicals in the Puget Sound Basin, 2007–2011* (Publication No. 11-03-055).
 - *Primary Sources of Selected Toxic Chemicals and Quantities Released in the Puget Sound Basin* (Publication No. 11-03-024).
-

The strategies in this section are focused on source-reduction efforts to keep chemicals and other contaminants from being used or generated in the Puget Sound region or released to the Puget Sound environment. This includes reducing and restricting the use of toxic chemicals, controlling initial releases of contaminants to the Puget Sound environment, and improving how businesses and other entities use and manage chemicals and other contaminants. It also includes efforts to control specific pathways of delivery, such as wastewater and stormwater pollution, and to clean up areas where pollution has occurred. For instance, while strategy C1 includes approaches for reduced releases of contaminants to wastewater treatment plants, much of what we think of as wastewater controls is presented in strategies C5 and C6. Similarly, controlling sources contaminants to reduce the levels of pollution entrained in stormwater and surface runoff is addressed in strategy C1, while other aspects of management of urban stormwater and runoff from agricultural and forest lands are presented in strategies C2, C3, and C4.

CLIMATE CHANGE

Climate change impacts on precipitation timing including seasonal stream flow, more severe winter flooding, and more frequent and extreme storm events, will likely increase runoff from stormwater. Preventing, reducing, and controlling contaminants before they reach land and water is important part of preparing for this increase in runoff.

Preparing for a Changing Climate: Washington State's Integrated Climate Response Strategy (Washington State Department of Ecology 2012a) contains high-priority response strategies to reduce the vulnerability of coastal communities, habitat, and species, as well as, those to address stormwater (addressed by strategy C2).

Recovery Targets

The strategies and actions in this section will contribute most significantly to achieving the recovery targets listed below with their associated vital signs and indicators. They also will help achieve targets for freshwater quality.

Vital Sign	Indicator	Recovery Target(s)
Toxics in Fish	Levels of four types of toxic contaminants in fish: polychlorinated biphenyls, flame retardants, hydrocarbons, and endocrine-disrupting compounds	By 2020, contaminant levels in fish will be below health effects thresholds (i.e., levels considered harmful to fish health or harmful to the health of people who consume them).
Marine Sediment Quality	Sediment Chemistry Index	By 2020, all Puget Sound regions and bays achieve chemistry measures reflecting minimum exposure with Sediment Chemistry Index scores >93.3.
	Sediment Quality Standards	Have no sediment chemistry measurements exceeding the Sediment Quality Standards set for Washington State.
	Sediment Quality Triad Index	All Puget Sound regions and bays, as characterized by ambient monitoring, achieve the following: Sediment Triad Index scores reflect unimpacted conditions (i.e., SQTI values >81).
Shellfish Beds	Acres of harvestable shellfish beds	A net increase of 10,800 harvestable shellfish acres, including 7,000 acres where harvest had been prohibited between 2007 and 2020.
Swimming Beaches	Conditions of swimming beaches.	Have all monitored beaches in Puget Sound meet EPA standards for what is called enterococcus, a type of fecal bacteria.

Local Priorities

LIOs identified near-term actions that address contaminants. These local actions are presented in the *Strategies and Actions* section along with Soundwide actions under the sub-strategy shaded below. The local action numbering contains the area abbreviation shown in parentheses after each LIO name. See Section 4, *Local Recovery Actions*, for detailed information about local planning.

Local Integrating Organization	Sub-Strategy					
	C1.1	C1.2	C1.3	C1.4	C1.5	C1.6
Hood Canal Coordinating Council (HC)						
Island (ISL)						
San Juan (SJI)						
Snohomish-Stillaguamish (SNST)						
South Central Caucus Group (SC)						
Alliance for a Healthy South Sound (SS)						
Strait ERN (STRT)						
West Central (WC)						
Whatcom (WH)						

Strategies and Actions

C1. Prevent, Reduce, and Control the Sources of Contaminants Entering Puget Sound

C1.1 Implement and strengthen authorities and programs to prevent toxic chemicals from entering the Puget Sound environment

Based on a priority of EPA Administrator Lisa Jackson, EPA announced plans to reauthorize the Toxic Substances Control Act to reform and strengthen the effectiveness of the nation’s chemical management legislation. Ecology, environmental agencies from other states, and various non-governmental organizations are involved in the Toxic Substances Control Act–reform efforts. EPA is also implementing a phthalates action plan, which included issuing rulemakings under the Toxic Substances Control Act in 2012 to regulate eight phthalates. Ultimately, keeping toxic substances out of our waters will require more effective federal legislation. Until this act and other federal statutes are updated, states need to continue to address chemicals of concern.

Ecology has a Reducing Toxic Threats initiative that aims to prevent the use of toxic chemicals, assist businesses to reduce or manage the amount of toxic chemicals that enter the environment, and clean up toxics that have polluted the air, land, or water. Key focus areas include reducing the use of toxics in products and preventing toxics from entering stormwater. In its efforts to reduce and help phase out PBT chemicals, Ecology develops chemical action plans (CAPs), which identify, characterize, and evaluate all uses and releases of a specific toxic chemical, and then recommend actions to protect human health and the environment. Past CAPs have addressed lead, mercury, and PBDEs. Ecology began focusing specifically on PAHs in 2010 as part of the Puget Sound Toxic Loading Study and completed the *PAH Chemical Action Plan* in December 2012 (Washington State Department of Ecology 2012b). Results from the Puget Sound loading analysis identify wood smoke, creosote-treated lumber, and vehicle emissions as the largest sources of PAHs in Puget Sound.

These federal and state toxics control programs are complemented by an array of toxics reduction initiatives of local hazardous waste programs and environmental organizations such as the Washington

Toxics Coalition, Washington Environmental Council, and Futurewise. These efforts are further discussed in the technical assistance and education sub-strategy below (C1.4). To be fully effective, federal, state, and local entities in the U.S. will also need to collaborate with Environment Canada to address transboundary sources of toxic contaminants in Puget Sound. This sub-strategy helps reduce the release of toxic chemicals to the Puget Sound environment by continuing and enhancing programs that prevent the release of chemicals. Based on the priorities of Ecology's Reducing Toxic Threats Initiative and the findings of the Puget Sound Toxics Assessment, the near-term actions that support this sub-strategy focus on preventing pollution that enters Puget Sound from a few key sources: vehicles, pesticides, and toxic pollutants in air emissions (also discussed in sub-strategy C1.3). Actions to address pesticide use are covered here and under the agricultural runoff strategy (C3). Ecology and its partners are specifically focusing in the near-term on addressing chemicals of concern in Puget Sound as evaluated in the Puget Sound toxics assessment. However, it will also be important to better understand and characterize any potential threats to Puget Sound from contaminants of emerging concern, such as pharmaceuticals, personal care products, and micro-plastics, and then develop appropriate toxic-reduction strategies to address the most important problems.

OCEAN ACIDIFICATION

As identified in *Ocean Acidification: From Knowledge to Action, Washington State's Strategic Response* (Washington State Blue Ribbon Panel on Ocean Acidification 2012), local emissions of carbon dioxide, nitrous oxides, and sulfur oxides may also be enhancing acidification in local waters, especially in urbanized areas around Puget Sound. For example, nitrogen oxides and sulfur oxides may contribute to local acidification downwind from their primary sources. Contributors of these gases include motor vehicles, ships, and electric utilities.

One of the Blue Ribbon Panel's recommendations includes taking action to reduce global, national, and local emissions of carbon dioxide by implementing additional actions recommended by the Climate Action Team, where such actions would reduce acidification of Washington's marine waters. The Action Agenda strategies for preventing, reducing, and controlling the sources of contaminants entering Puget Sound help to implement the Blue Ribbon Panel's recommendations by implementing policy actions recommended for reducing local emission of carbon dioxide, nitrogen oxides and sulfur oxides.

Ongoing Programs

Over the next few years, Ecology's Reducing Toxics Threats Initiative plans to support congressional reform of Toxic Substances Control Act¹, implement the Better Brakes Law (Chapter 173-901 WAC) adopted October 19, 2012, implement the CAP for PAHs, establish a mercury lamp product stewardship program, and complete a CAP for PFOS (perfluorooctane sulfonate, a PBT chemical). Key performance metrics in evaluating the success of toxics efforts include the number and volume of chemicals of high concern to children replaced with safer alternatives and reduced environmental levels of toxics in fish, the primary exposure route to humans through consumption. Statewide, Ecology also has an overall target of reducing the amount of hazardous materials used by 2% per year. Ecology has been awarded a Toxics and Nutrient Grant from EPA's National Estuary Program, which provides funding for toxics reduction efforts in Puget Sound. This grant can be used to help implement near-term actions identified in the Action Agenda to reduce toxic threats.

¹ www.ecy.wa.gov/programs/hwtr/betterbrakes.html

Key Ongoing Program Activities

- Ecology continues to implement the state law relating to limiting copper used in vehicle brake friction material (Chapter 173-901 WAC) and will track the pounds/year of copper reduced. Brake pads and shoes manufactured after January 1, 2015, must not contain asbestos, lead, cadmium, mercury, or chrome (VI). Brakes manufactured after this date must also be marked to indicate the amount of copper they contain.
- Ecology convened an Advisory Committee to develop a CAP for PCBs, which is planned for completion in 2014. After the completion of the PCB CAP, Ecology will review the PBT list and prioritize the next PBTs for CAPs with a multi-year schedule. Ecology will also determine if it is necessary to revise the PBT Rule to update the list of PBTs. Rulemaking would be required if revisions are needed.

Near-Term Actions

The near-term actions² identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

In addition, actions related to removal of creosote pilings and derelict vessels are described in strategy B3.

- C.1.1.1 Polycyclic aromatic hydrocarbons and perfluorooctane sulfonate chemical action plans.** Ecology, working with its partners, will complete a polycyclic aromatic hydrocarbons chemical action plan and a chemical action plan for perfluorooctane sulfonate or all perfluorinated compounds, and begin to implement the recommendations from the Plans. (Wood smoke actions in the polycyclic aromatic hydrocarbons chemical action plan will build from the control strategies outlined in the Tacoma State Implementation Plan for fine particulates. The polycyclic aromatic hydrocarbons chemical action plan may also include recommendations to reduce polycyclic aromatic hydrocarbons from incomplete combustion and/or other sources. The perfluorooctane sulfonate/ perfluorinated compounds chemical action plan will include an evaluation of safer alternatives and recommendations for reducing use of perfluorooctane sulfonate and/or perfluorinated compounds.)
- C.1.1.2 Mercury lamp product stewardship.** Ecology will establish a mercury lamp product stewardship program.
- C.1.1.3 Fish consumption rates.** The Ecology will finalize a technical report on fish consumption rates. Ecology will initiate rulemaking to develop Human Health Criteria for Washington and advance a related rule that will provide options for permit holders to comply with water quality standards. In one other related action, Ecology will complete changes to the Sediment Management Standards rule to include methods and policies for establishing sediment cleanup standards based on human health protection.

² Gaps in numbering reflect near-term actions that have been completed or otherwise retired.

C.1.1.6 Emerging contaminants. Ecology and PSP will assemble information on chemicals of emerging concern, beyond the 17 chemicals of concern in the Puget Sound Toxics Loading Studies, including PBTs, endocrine disruptors, other chemicals, and nanotechnology and nanomaterials, and will recommend actions to (1) better understand the threats to Puget Sound and (2) address the highest priority problems.

C1.2 Promote the development and use of safer alternatives to toxic chemicals

Governmental and non-governmental green chemistry and green design initiatives such as EPA's Design for Environment Program help evaluate and promote products and process alternatives that are cost effective and safer for the environment. Green chemistry refers to the design of chemical products and processes that reduce or eliminate the use or generation of hazardous substances. Green design or Design for Environment refers to an approach for designing products or processes that minimizes negative environmental impacts throughout the life cycle of the product; often this includes replacing toxic material inputs with less toxic or non-toxic alternatives. This sub-strategy complements the sub-strategies focused on reducing the use of toxic chemicals through regulations, enforcement, technical assistance, and education by ensuring that safer alternatives to problem chemicals, formulations, and/or products are available for businesses and consumers to use.

Ongoing Programs

Activities to support the development and use of safer alternatives to toxic chemicals include developing new alternatives through green chemistry approaches, conducting assessments of alternatives, and providing guidance and training to assist organizations with their efforts to find safer alternatives. Ecology's Reducing Toxic Threats Initiative has identified several priority activities related to spurring the development of safer alternatives to toxics for 2011–2013 and beyond, including the following.

- **Strategy development.** Create a green chemistry roundtable "roadmap" for the state and implement recommendations, including establishing a green chemistry center.
- **Guidance development.** Work with certain member states of the Interstate Chemicals Clearinghouse (IC2) to develop a chemical alternative assessment guidance document. Ecology also plans to develop a case study portfolio.
- **Alternatives assessment.** Perform an assessment of five chemicals to identify safer alternatives (if grant funding is received).
- **Education and training.** Train businesses on GreenScreen™ Version 1.2 (a tool to help businesses to evaluate the toxicity of various chemicals), train staff on a Quick Chemical Assessment Tool (a tool based upon the GreenScreen™ to evaluate alternatives to toxic chemicals), and conduct a green chemistry workshop for high school teachers.

Overall, by reducing toxic chemicals in products and promoting safer alternatives, Ecology aims to achieve the following statewide, quantitative performance target.

- Reduce the annual pounds of hazardous materials used by 2% per year.

As part of its Phthalates Action Plan, EPA is conducting a Design for Environment and Green Chemistry alternatives assessment to assist with phthalate rulemakings under the Toxic Substances Control Act and

the identification of safer alternatives. EPA's alternative assessment will present data on the hazards associated with the eight phthalates found in Ecology's list of chemicals of high concern to children.

Key Ongoing Program Activities

- The EPA Design for Environment Program has convened Alternatives to Certain Phthalates Partnership to assess alternatives to commercial uses of phthalates as part of its Phthalates Action Plan. Ecology will interpret the data provided in EPA's phthalate alternative assessment, as well as other sources, and recommend alternative(s) to phthalates in specific applications. Ecology will also incorporate the information on safer alternatives into its guidance materials and technical assistance efforts and recommend and take actions to reduce phthalates entering Puget Sound. Future efforts will incorporate the recommendations of the Sediment Phthalate Workgroup, which provided recommendations on sediment recontaminated by phthalates in stormwater.

Near-Term Actions

The near-term actions identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

- C.1.2.1 Chemical alternatives assessments.** Ecology will work with the Interstate Chemicals Clearinghouse (IC2) to develop a guidance document on chemical alternatives assessment and, depending on funding availability, will complete assessments of five chemicals to identify safer alternatives.
- C.1.2.2 Toxics in roofing materials.** Ecology will establish a task force that will oversee a study evaluating toxic materials (including toxic metals and, possibly, phthalates) in roofing materials and recommend strategies for promoting less-toxic alternatives or ways to use materials that minimize releases of toxic materials to receiving waters. To support the task force's work, Ecology will solicit information from manufacturers on the presence of toxic chemicals in roofing materials. Using any data from manufacturers or previously published studies, Ecology will create and implement a sampling strategy to assess the release of contaminants from different roofing materials. The task force will use this information to develop its recommendations.
- C.1.2 SC11 Keep toxics and excess nutrients out of the waste stream.**
- Identify and implement strategies to keep toxics and excess nutrients out of the waste stream through product stewardship and source control.
 - Support state and local programs for safe reduction, recycling, or disposal of hazardous wastes from households, small businesses, and agriculture.
 - Support programs and projects that implement, teach, or otherwise encourage BMPs that remove toxic pollutants from the environment (source control; alternative products; hazardous waste technical assistance).
 - Inventory toxics reduction efforts and programs and additional chemicals of concern that need to be reduced.

- Through the NW Product Stewardship Council, coordinate efforts for product-focused strategies to reduce the use of toxic chemicals.
- Coordinate with and support new product stewardship initiatives.
- Support and promote the implementation of the Washington Toxics Reduction Strategy Workgroup Recommendations of January 16, 2013.
- Support efforts to increase funding.
- Implement and strengthen authorities and programs to prevent toxic chemicals from entering the Puget Sound environment.

C1.3 Adopt and implement plans and control strategies to reduce pollutant releases into Puget Sound from air emissions

One of the ways that toxic chemicals enter Puget Sound is through air emissions. Sources include vehicle emissions, air emissions from business and industry, and combustion emissions from wood stoves and fire places, among others. There are numerous woodstoves contributing to emissions; for example, in Pierce County, there are more than 25,000 uncertified stoves in the air quality non-attainment area alone. Statewide, Ecology has completed close to 9,000 retrofits on school buses and publicly owned fleets to reduce diesel emissions, resulting in large gains for public health; however, private fleets and vehicles are still large contributors to regional air quality issues. Private heavy duty trucks, locomotives, ships, and construction equipment all contribute large quantities of soot, PAHs, oils, and other toxics to the environment, and much of that ends up washing downstream into Puget Sound. This sub-strategy focuses on adopting air quality plans and requirements to reduce toxic air emissions, such as through state implementation plans to meet stricter National Ambient Air Quality Standards (NAAQS), and implementing the plans to achieve the reductions needed to meet the air quality goals. Over the longer term, there is also a need to improve air quality laws, regulations, and guidance to protect public health and the environment from air toxics.

Ongoing Programs

Air quality requirements will be tightening over the next several years, as EPA adopts new air quality standards for fine particulates and ozone, and as the boundaries of non-attainment areas in Puget Sound and elsewhere are subsequently redrawn. EPA adopted revised air quality standards for nitrogen dioxide (NO₂) and sulfur dioxide (SO₂) in 2010 and fine particulates (PM 2.5) in 2012. The ozone standard will likely be revised next. After adopting standards, EPA designates non-attainment areas, which are geographic areas that do not meet the standards, and then states need to prepare revised state implementation plans that outline emissions reductions and control strategies needed to meet the standards.

With the changes in air quality standards over the next several years, the number of nonattainment areas in Washington is expected to increase from one to four or more. The Tacoma/Pierce County State state implementation plan for fine particulates was completed in 2012, and the necessary regulations adopted in 2013. Maintenance state implementation plan revisions are underway for PM10 for Tacoma Tideflats, Kent Valley and Seattle-Duwamish areas and a PM10 maintenance state implementation plan revision was approved for Thurston County in 2013. Additional monitoring for NO₂ and SO₂ began in

2012, driven by the revised standards. Ecology is also continuing its efforts to reduce diesel emissions. Ecology is operating a grant program³ to help local organizations (e.g., public utilities, tribes, private companies, etc.) to implement various clean diesel technologies

An important aspect of air quality management in the region is inter-jurisdictional coordination, as sources of air pollutant emissions come from both within and outside the Puget Sound basin. For example, the NW AIRQUEST Consortium (Northwest International Air Quality Environmental Science and Technology Consortium), which encompasses Washington, Oregon, Idaho, Montana, Alaska, British Columbia, and Alberta, seeks to develop, maintain, and enhance a sound scientific basis for air quality management decision-making in the Pacific Western Region of North America. The state implementation plans that Ecology develops for specific non-attainment areas within Puget Sound consider the effects of transboundary air pollution and information from regional data centers such as NW AIRQUEST.

Key Ongoing Program Activities

- Ecology will continue implementation of anti-idling education programs and write a statewide anti-idling regulation, to reduce petroleum emissions to the air. The regulations would be designed to reduce diesel soot, PAHs, and greenhouse gases from petroleum-powered engines and equipment.

Near-Term Actions

None; work in the near-term will focus on implementation of ongoing programs.

C1.4 Provide education and technical assistance to prevent and reduce releases of pollution

This sub-strategy involves developing toxic chemical control and nutrient reduction strategies to encourage homeowners, businesses, and others to adopt behaviors that reduce their contribution to pollution. Numerous government and non-governmental organizations around Puget Sound have education and technical assistance programs; these include local stormwater, wastewater, and solid waste utilities; educational organizations such as Washington Sea Grant, Washington State University extension, and other colleges, universities, and schools; and non-profit and community-based organizations. Examples of programs that are particularly relevant to toxics reduction include the following.

- **Local source control program** is a partnership among Ecology and 25 local government jurisdictions that focus business technical assistance to prevent stormwater pollution and improve hazardous waste management practices. Local source control specialists help small businesses stop pollution that could harm Puget Sound.
- **EnviroStars** is a program that originated in 1995 in which local governments in six Puget Sound counties provide assistance and incentives for small businesses to reduce hazardous materials and waste, in order to protect public health, municipal systems, and the environment.
- **Washington Environmental Council and Futurewise** work through education and action to protect and restore the land and waters of the Puget Sound basin. These organizations are carrying on the

³ See Washington State Clean Diesel Grant Program at: www.ecy.wa.gov/programs/air/cars/DieselGrantPage.htm

work of the former People for Puget Sound, which developed a series of fact sheets and communication resources on toxics threatening Puget Sound.

- **Puget Sound Partnership Stewardship Program** is the Partnership’s education and outreach effort to help people understand the threats to the Puget Sound ecosystem and what actions they can take to reduce toxic contaminants, nutrients, and other pollution into Puget Sound.
- **STORM** (Stormwater Outreach for Regional Municipalities) is a coalition of more than 60 municipal stormwater permittees in the Puget Sound region. These counties and cities work collaboratively to deliver relevant, vetted, coordinated stormwater messages and social marketing to the region’s 4.5 million residents. STORM is a principal partner in the Puget Sound Starts Here campaign.
- **Puget Sound Starts Here** is a partnership of local governments, the Partnership, Ecology, and local organizations that are part of the Partnership’s Education, Communication and Outreach Network (ECO Net). This program leverages the combined investments of all these organizations, and provides consistent public awareness and education messages across the twelve county Puget Sound region. Using state of the art communications techniques, it provides a regional communications umbrella to support and enhance the effectiveness of local stormwater program delivery.
- **Take Back Your Meds** is a group of organizations that support a statewide program for safe return and disposal of unused medicines to reduce access to addictive drugs, prevent poisonings, and reduce environmental contamination; it has a series of locations such as pharmacies where medicines can be dropped off.
- **Washington Toxics Coalition** advocates for policy changes to reduce toxic pollution, promotes safer alternatives to toxics, and educates people to create a healthy environment. Informational resources include strategies for reducing toxics at people’s homes and gardens, in food, and in products children use.

These and other programs have had success in reducing the use and releases of toxic chemicals to our environment; however, funding constraints have limited the extent of implementation and, therefore, the results that have been achieved. Several existing EPA grants for Puget Sound-specific funding can be used for education and technical assistance; these include grants for work on toxics and nutrients, watersheds, and public engagement and stewardship, with Ecology and the Partnership serving as lead organizations.

Ongoing Programs

Ecology’s Reducing Toxic Threats Initiative has several performance objectives and priority activities that relate to education and technical assistance for the 2013–2015 biennium. Education-related objectives include developing a “Washington Green Chemistry road map” to institute safer approaches to product design, initiating a task force to identify safer roofing alternatives and expanding the Partnership’s STORM social marketing effort for Soundwide education and outreach (Washington State Department of Ecology 2012c). Statewide performance objectives and activities related to technical assistance include the following.

- Document 150,000 pounds in lead, mercury, and cadmium reductions from businesses reporting via the Toxics Release Inventory (TRI).

- Reduce annual pounds of hazardous waste generated overall by 4% annually, with a long-term goal of 80% statewide reduction from 1990 levels by 2020.
- Through the Local Source Control Partnership, fund local government agencies to conduct 600 small business technical assistance visits per quarter to explain hazardous waste requirements to small businesses and prevent sources of polluted runoff to Puget Sound and the Spokane River. (Ecology currently has funding from EPA to support local source control inspections in the Puget Sound region.) Ecology prepares a biennial progress report on the Local Source Control Program describing program activities and results.
- Ecology staff will conduct 520 compliance-related technical assistance visits during 2013–15 to help businesses determine how to manage their hazardous wastes and reduce toxics use.
- Develop policy guidance on safe hazardous waste management and toxics use reduction for hospitals, used paint recycling, and auto shred residue.
- Create web-based dangerous waste workshop module for business technical assistance.
- Receive and review 100% (approximately 450) of pollution prevention plans received annually from businesses and facilities.
- Visit or assist 100% of pollution prevention planner facilities using or producing waste containing lead, mercury, or cadmium (about 25 toxic metal visits per quarter).
- Conduct two to four detailed technical assistance projects annually and 20 energy assessments.

In addition to these toxics and hazardous-waste focused programs, state, tribal, and local agencies and non-governmental organizations across Puget Sound also have education and assistance programs that focus specifically on preventing and reducing water pollution problems, including the following two ongoing program activities. Additional programs are discussed in other strategies in Section 3C.

Key Ongoing Program Activities

- EPA and Ecology will continue to support and expand the Local Source Control Partnership in Puget Sound in which local jurisdictions provide education and technical assistance to small businesses to prevent pollution and reduce sources of polluted runoff.
- Ecology will continue to support site visits and other technical assistance for pollution prevention planner facilities in the state that use or produce waste containing lead, mercury, or cadmium to help them to reduce their hazardous wastes.

Near-Term Actions

The near-term actions identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

- C.1.4 ISL9 Stormwater technical assistance and incentive programs implementation.** Island County will implement a stormwater retrofit program to target private properties. The program will include designing and conducting workshops for landowners and providing incentives for compliance (incentives may include cost sharing for rain gardens, no-cost engineering).

C.1.4 SS7 **Prevention of pollution and/or recovery of shellfish beds through education, outreach, and advocacy.** Customize outreach efforts aimed at each watershed-inlet for citizen involvement and improved effectiveness to achieve behavioral change through ECO Net.

C.1.4 SS17 **Habitat and shellfish recovery through education and outreach.** Implement the Shore Stewards Program throughout the South Puget Sound Action Area. The voluntary program engages shoreline homeowners to implement BMPs and behavior practices to reduce pollutant inputs and to improve habitat. Develop a local welcome packet to engage, connect, and educate new shoreline homeowners about local issues and resources available to them.

C1.5 **Control wastewater and other sources of pollution such as oil and toxics from boats and vessels**

Establishment of a No Discharge Zone along with sufficient and convenient pump out capacity and an effective outreach and education program will reduce pollution from vessels. The availability of sewage pump-out stations, the importance of the water body for human health and recreation, and the desire for more stringent protection of a particular aquatic ecosystem are important considerations in the designation of No Discharge Zones for vessel sewage. Discharge of untreated or partially treated human wastes from vessels sends toxic chemicals as well as pathogens, such as fecal coliform and viruses, into the water and increases human health risks. Excessive amounts of nutrients from vessel sewage exacerbate the known nutrient and low dissolved oxygen problems in Puget Sound.

In addition to wastewater management, boats and vessels have the potential, because they are operated in the marine environment, to be a source of other pollutants to Puget Sound. These include oils, greases, paints, soaps and trash. Programs like the Clean Marina program, a collaboration between Puget Soundkeeper Alliance, Northwest Marine Trade Association, EnviroStars Cooperative, Washington Sea Grant, Ecology, DNR, and the State Parks and Recreation Commission work with marinas to help boat owners reduce and eliminate all sources of pollution to Puget Sound.

Ongoing Programs

Using National Estuary Program grant funds, Ecology and DOH coordinate with State Parks' Clean Vessel Program to inventory and improve existing pump-out facilities, gauge stakeholder support, and determine the geographic scope of a No Discharge Zone. This work culminated in a draft petition to EPA for the designation of a No Discharge Zone in February 2014, with a final petition by the end of 2016. Expected performance measures include those listed below.

- Improved pump-out capacity.
- Successful designation of No Discharge Zones in Puget Sound.
- Reduction in vessel sewage discharged into Puget Sound.

Near-Term Actions

The near-term actions identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

- C.1.5.1 No Discharge Zone evaluation and petition.** Ecology, in collaboration with State Parks and EPA, will administer grants to fund the development of a petition to EPA to establish a No Discharge Zone to prohibit recreational and commercial vessels from discharging sewage in all or parts of Puget Sound.
- C.1.5.2 Pump-out station improvements.** Ecology and DOH, with National Estuary Program grant funding, will coordinate with Washington State Parks' Clean Vessel Program to assist in construction, repair and monitoring of pump-out stations to meet requirements of the NDZ petition.
- C.1.5 WC10 West Sound pump out stations.** Kitsap Public Health District will identify pump out stations and develop needs assessment to address marine vessel sewage.

C1.6 Increase compliance with and enforcement of environmental laws, regulations, and permits

Local, state, and federal programs periodically inspect regulated facilities in Puget Sound to ensure compliance with applicable laws and regulations. These include air emissions control requirements under the Clean Air Act and the relevant state implementation plan (as discussed in sub-strategy C1.3 above), industrial wastewater pretreatment requirements under the Clean Water Act (discussed in sub-strategy C6.1), and hazardous materials and waste management requirements, such as the federal Resource Conservation and Recovery Act and the state Dangerous Waste and Pollution Prevention Plan regulations. This sub-strategy helps ensure compliance with environmental laws governing hazardous materials and waste through targeted enforcement of those laws. Many of the agencies that conduct compliance inspections, as well as some not-for-profit organizations, also have technical assistance programs that provide education, training, and assistance to businesses seeking to prevent pollution and emissions and improve facility operations (technical assistance efforts are discussed in sub-strategy C1.4).

Ongoing Programs

Ecology has Puget Sound-specific funding from EPA for work in this area, under the Toxics and Nutrients grant award. Additional funding could allow Ecology staff to conduct more compliance inspections and follow-up activities to prevent and reduce toxic releases. In its *Federal Fiscal Year 2013 Work Plan and Multi-Year Implementation Strategy* (2013), Ecology has proposed the following actions for its hazardous waste compliance program.

- Assist small businesses prevent polluted runoff from entering Puget Sound by performing source control visits and providing source control technical assistance.
- Provide safer solvent alternatives and spray efficiency technical assistance to at least 30 auto body and repair shops to encourage them to switch to non-solvent cleaning systems. Provide shops with a free 3-month trial of safer brake cleaning products or paint gun washing systems, a before and after air monitoring study and technical support;
- Provide secondary containment information and spill kit equipment to businesses that develop a voluntary spill prevention plan

- Conduct dangerous waste compliance and pollution prevention workshops to improved regulatory compliance.

Near-Term Actions

The near-term actions identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

- C.1.6.1 Hazardous waste, wastewater, and air quality compliance and enforcement.** Increase Ecology’s hazardous waste, and wastewater compliance inspection and enforcement programs in the Puget Sound.
- C.1.6.2 Compliance for use of toxics in products.** Ecology will conduct compliance activities for state laws banning the use of toxic materials (e.g., PBDEs) in products, including taking appropriate enforcement actions against noncompliant products.
- C.1.6.3 Water quality enforcement.** Ecology, working with DOH, will increase the capacity for enforcement, and enforce all regulations pertaining to pathogens and contaminants that pollute waters of the state to ensure achievement of approved shellfish growing water certification.

Emerging Issues and Future Opportunities

Specific longer-term activities to control sources of toxics that were identified during the Action Agenda update process include the following.

- If justified by findings from Puget Sound basin studies of pesticides, WSDA will work with Ecology and other partners to tailor pesticide management in the Puget Sound basin. A WSDA decision to adapt the management of pesticides in the Puget Sound basin will consider information about pesticide use (e.g., uses of copper containing pesticides, homeowner use of pesticides), refined estimates of pesticide contributions to toxic chemical loading, and surface water monitoring of pesticides.
- Ecology will continue to work with EPA and other partners to evaluate, recommend, and institute additional requirements to address threats posed by air toxics.
- Options should be evaluated for expanding the phase-out of copper bottom paint to include ships over 65 feet in length and/or commercial vessels of various sizes. A work group could be formed to develop recommendations related to an expanded phase-out.

Other ways that this strategy to reduce the sources of toxic chemicals entering Puget Sound could be advanced include the following items.

- Conducting scientific investigations of topics such as chemical causes of endocrine disruption (apparent as reproductive impairment) in Puget Sound fish, studies of the amount, fate, and transport of petroleum releases from drips and leaks, and gathering source data for PBT chemicals that were not included in the Puget Sound Toxics Loading Study.
- Exploring the possibility of additional authorities and/or voluntary agreements to have the private sector accept responsibility for product stewardship (e.g., targeting products that contain chemicals

of concern). (Ecology already plans to develop a product stewardship program for lamps containing mercury.)

- Initiating a broad-based effort to investigate additional ways to reduce the release of toxic contaminants from vehicles and roadways (i.e., are there alternative means of ensuring the mobility of people and goods that would decrease the loads of toxic chemicals released to the environment?).
 - Developing a chemical action plan or similar assessment and plan for reducing the use and releases of halogenated flame retardants. (This would be completed after a CAP on PFCs, depending on funding availability.)
 - Addressing the use and application of sewage sludge.
-

Built Environment Runoff

The Challenge

Urban stormwater runoff poses a high risk to the health of Puget Sound by causing two major problems.

First, the runoff transports a mixture of pollutants such as petroleum products, heavy metals, bacteria, nutrients, and sediments from construction sites, roads, highways, parking lots, lawns, and other developed lands with the following consequences.

- Urban stormwater is the leading contributor to water quality pollution in urban creeks, streams and rivers in the state.
- Urban stormwater is a significant contributor of toxics to marine sediment, including contaminated sites undergoing cleanup.
- Three species of salmon (Chinook, Summer Chum, and Steelhead) and bull trout are listed as threatened species under the federal Endangered Species Act. Loss of habitat due to stormwater and development is one of the causes.
- Shellfish harvest at many beaches is restricted or prohibited due to pollution. Stormwater runoff is often one of the causes.
- Stormwater causes the death of high percentages of healthy coho salmon in Seattle creeks within hours of the fish entering the creeks before the fish are able to spawn.
- English sole are more likely to develop cancerous lesions on their livers in more urban areas. Stormwater pollutants likely play a role.
- Although more research is needed, there are some indications that urban stormwater runoff may contribute to the decline of eelgrass populations.

Second, during the wet winter months, high stormwater flows, especially long-lasting high flows, can do the following.

- Cause flooding.
- Damage property.
- Harm and render unusable fish and wildlife habitat by eroding stream banks, scouring stream beds and widening stream channels, depositing excessive sediment, and altering natural streams and wetlands.

In addition, more impervious surface area means fewer opportunities for water to soak into the ground. As a result, groundwater drinking water supplies may not be replenished and streams and wetlands may not be recharged. This can lead to water shortages for people and inadequate stream flows and wetland water levels for fish and other wildlife.

SALMON RECOVERY PLAN PRIORITY: MANAGING AND REDUCING STORMWATER

Improvement in water quality is identified in the Salmon Recovery Plan with a call to resolve uncertainty about whether the regional water quality actions address the needs of salmon. Volume I identifies general concerns related to stormwater runoff. Watershed chapters for WRIA 8 and WRIA 9 have strategies/actions related to stormwater and water quality. One item that is of particular interest in WRIA 8 and 9 but also in other watersheds is the issue of pre-spawn mortality of different species of salmon.

How are these priorities integrated? The Action Agenda contains more detailed strategies and actions to address stormwater runoff in the built environment than the Salmon Recovery Plan. While the Action Agenda addresses the general concerns in the Recovery Plan, the resolution about the effectiveness of actions still needs to be addressed.

A significant amount of the work completed for the 2012/2013 Action Agenda was informed by the draft *Stormwater Vision and Financing Strategy for Puget Sound* (Bissonnette 2011), *Task 1: Urban Stormwater Runoff Preliminary Needs Assessment Technical Memorandum* (Bissonnette and Parametrix 2010), and work by a subcommittee of the Ecosystem Coordination Board (ECB) focused on stormwater funding. An interagency team of stormwater professionals used these foundation documents to suggest the draft sub-strategies and near-term actions contained in this section. The purpose of the Stormwater Vision is to suggest comprehensive actions and financing strategies that will reduce polluted surface runoff from urban and rural landscapes to Puget Sound.

The Stormwater Needs Assessment highlights the needs for regional local governments to fully implement the municipal NPDES stormwater permit programs and estimated costs to carry out stormwater retrofits (described below in sub-strategy C2.3 on existing development). Puget Sound municipal permit holders invested between \$160 and 170 million in 2009 to implement the municipal permits. This figure represents a significant portion of the total they spent on stormwater management. While state and federal assistance via grants and loans are substantial—in FY 2011 Ecology disbursed \$23.5 million for permit assistance and an additional \$23.4 million for Low Impact Development and retrofit projects—the state and federal portion of total costs pales in comparison to what local governments spent.

The ECB Stormwater Funding Subcommittee's report (Puget Sound Partnership 2011b) details recommendations that include the need for greater overall investment in stormwater management in the region and the need for more financial assistance to local governments, who currently shoulder the majority of costs. Current investments in addressing problems caused by existing development through structural retrofits are not nearly sufficient—the cost to retrofit existing development for treatment alone is estimated to cost, at a minimum, \$3 to 16 billion (Bissonnette and Parametrix 2010). Local stormwater utilities in many cases will need to be increased, and local governments need support to successfully raise local stormwater rates. Concurrently, the level of investment by the state and federal government must be increased significantly to help share the burden of costs so that we can adequately address the scope of stormwater problems and meet related recovery targets.

In addition to strategy C2 and related sub-strategies and actions, the strategies to reduce land development pressures (A1, A2, A3, A4, A5, and B1 and B2) plus the toxics control strategy (C1) are essential to addressing stormwater.

CLIMATE CHANGE

Declining snow pack and loss of natural water storage, changes in precipitation timing including seasonal stream flow and more severe winter flooding, and more frequent and extreme storm events will likely strain our stormwater systems and increase the amount of polluted runoff flowing to Puget Sound. Potential impacts include the following.

- Winter flooding could strain the capacity of urban drainage infrastructure and result in more frequent combined sewer overflows.
- The intrusion of seawater due to increased melting of polar ice caps coupled with higher storm surges could damage equipment and strain the capacity of wastewater and stormwater systems.
- Backflow of water through stormwater pipes could cause localized flooding in low-lying areas. Drainage of low-lying areas will become more difficult and stormwater management may require installation of tide gates, control works, or pump systems.

To reduce the risk of damage to buildings, transportation systems, and other infrastructure is a high-priority overarching response strategy identified in *Preparing for a Changing Climate: Washington State’s Integrated Climate Response Strategy* (Washington State Department of Ecology 2012a), which directly relates to stormwater. This means identifying vulnerable areas and taking proactive steps to reduce risks to infrastructure and avoiding risks when siting new infrastructure, supporting local efforts to prepare for coastal flooding and storm surges and considering climate change impacts when new developments and infrastructure are sited.

Specific strategies related to stormwater include those listed below.

- **Managing water resources in a changing climate by implementing integrated water resources management approaches in highly vulnerable basins.** This includes developing guidance for whether and how to incorporate project climate information and adaptation actions into planning, policies and investment decisions. This will ensure that investments made now are not increasing future vulnerability and causing unintended consequences.
- **Building the capacity** of state, tribal and local governments, watershed/regional groups, water managers, and communities to identify and assess risks and vulnerabilities to climate change impacts on water. This includes making sure utilities have tools and modeling to integrate climate impact information into stormwater planning and design.
- **Enhance the preparedness of transportation, energy, and emergency service provides to respond to more frequent and intense weather-related emergencies.** This includes early warning and adjustment of routine maintenance and inspection to prepare for more frequent and intense storms and floods.

The stormwater strategies and actions in the Action Agenda will need to be adapted over time to address climate change effects. This includes infrastructure siting and design, as well as prioritization criteria.

Recovery Targets

The strategies and actions in this section will contribute most significantly to achieving the freshwater quality recovery target for the Benthic Index of Biotic Integrity indicator listed below.

Vital Sign	Indicator	Recovery Target(s)
Freshwater Quality	Benthic Index of Biotic Integrity	Protect small streams that are currently ranked <i>excellent</i> by the Benthic Index of Biotic Integrity for biological condition, and improve and restore streams ranked <i>fair</i> so their average scores become <i>good</i> .

Runoff from the built environment directly affects the structure, habitat, and fish and wildlife in small, wading-depth lowland streams of Puget Sound. Insects found in these small streams serve as strong indicators for the relative biological health of Puget Sound freshwater stream systems. If communities of native insects in these streams are plentiful and diverse, other biological components, including salmonids, should be healthy as well.

The Puget Sound Stream Benthos, a website developed by officials from the City of Seattle, King County, Pierce County, Snohomish County, and others provides a database that allows sharing of benthic macroinvertebrate data among organizations and provides tools for calculating metrics and indices. The database fulfills the goal of storing macroinvertebrate data in a manner that allows for reliable comparisons across sites and programs over time.

These strategies and actions will also contribute to achieving targets for land development and cover, freshwater quality, shellfish beds, toxics in fish, and marine sediment quality. Finally, although more research is needed, there are some indications that urban stormwater runoff may contribute to the decline of eelgrass populations.

Local Priorities

LIOs identified near-term actions that address built environment runoff. These local actions are presented in the *Strategies and Actions* section along with Soundwide actions under the sub-strategy shaded below. The local action numbering contains the area abbreviation shown in parentheses after each LIO name. See Section 4, *Local Recovery Actions*, for detailed information about local planning.

Local Integrating Organization	Sub-Strategy				
	C2.1	C2.2	C2.3	C2.4	C2.5
Hood Canal Coordinating Council (HC)					
Island (ISL)					
San Juan (SJI)					
Snohomish-Stillaguamish (SNST)					
South Central Caucus Group (SC)					
Alliance for a Healthy South Sound (SS)					
Strait ERN (STRT)					
West Central (WC)					
Whatcom (WH)					

Strategies and Actions

C2. Use a Comprehensive Approach to Manage Urban Stormwater Runoff at the Site and Landscape Scales

C2.1 Manage urban runoff at the basin and watershed scale

Urban runoff cannot be fully managed at the site and parcel levels alone—it is also necessary to manage runoff at the broader basin and watershed scales. Numerous regional and national studies show that as native vegetation and soils are replaced by rooftops, roads, and other hard surfaces, numerous environmental indicators decline. Local land use decisions (i.e., location, type, and intensity of development) directly affect urban runoff quantity and quality within watersheds. This sub-strategy addresses the need to protect native vegetation, soils, and high quality habitat; site new development appropriately; and better connect land use and stormwater management.

In addition to the sub-strategies listed in this section, the region must have a robust, effective program to regularly monitor and assess the effects of stormwater runoff on receiving waters and the effectiveness of BMPs, programs and permit requirements in mitigating these effects. The ongoing monitoring and assessment work of the Stormwater Monitoring Work Group, Washington Stormwater Center and partners are described in strategy D4.

- **Protect native vegetation and high quality streams.** Protecting native vegetation, soils and high quality habitat, particularly in remaining stream drainages with “excellent” B-IBI scores through actions outlined in Sections 3A and 3B, requires mapping locations of these streams, and carrying out strategies to protect the streams. This involves using tools such as the Puget Sound Watershed Characterization Project (Watershed Characterization), growth management and shoreline planning, critical areas and other land development regulations, proposed Low Impact Development requirements in municipal NPDES permits, stormwater management manuals, land conservation programs, landowner incentive programs, and other measures. More information on strategies and actions related to watershed characterization is described in sub-strategy A1.1.
- **Site new development appropriately.** New development needs to be sited appropriately, using the watershed characterization study, Growth Management Act, Shoreline Management Act, State Environmental Protection Act, and other tools. The Watershed Characterization, other watershed plans, and, where needed, finer scale analyses can be used to identify areas most appropriate to protect, develop and restore through structural retrofits, legacy pollutant removal, and other means. Where development is targeted, smart growth concepts can ensure that compact, mixed-use, mass-transit supported development increases. More information on these issues is provided under strategies A2, A3, and A4.
- **Better connect land use and stormwater management.** Land use planning and stormwater management need to be integrated. Development of watershed plans based on Watershed Characterization data that integrate land use planning and stormwater management could be

accomplished by either (1) reactivating and funding Clean Water Act Section 208 planning to include major land uses (urban, agricultural/rural, and forestry) and water resource elements such as stormwater, combined sewers, wastewater, water supply, reuse and non-point sources; or (2) supporting and funding the development of stormwater plans, watershed plans, or WRIA plans that address the full spectrum of water resource elements and land use on a regional basis. The impacts of land use decisions on stormwater runoff and receiving waters should be evaluated. Regulations should be aligned with watershed plans, including municipal, industrial and construction NPDES permits, non-point source control programs, critical areas ordinances, Shoreline Management Act, State Environmental Protection Act, Endangered Species Act, and the Growth Management Act if warranted.

OCEAN ACIDIFICATION

As mentioned in *Ocean Acidification: From Knowledge to Action, Washington State's Strategic Response* (Washington State Blue Ribbon Panel on Ocean Acidification 2012), much progress has been made in reducing pollutants that affect water quality, including nutrients and organic carbon. Yet many challenges still remain, especially with regards to the management of nutrients. Various existing local, state, and federal programs and planning efforts focus on reducing pollution and improving water quality. These efforts advance the goals of economic vitality, environmental protection, resource conservation, and future sustainable development. Additional benefits could be realized by strengthening and reinforcing these efforts.

The Blue Ribbon Panel recommends monitoring the effects of existing regulatory and voluntary programs that reduce pollution and improve water quality to determine the effectiveness of these programs. The Action Agenda strategies in this section directly implement the Blue Ribbon Panel's recommendations.

Ongoing Programs

The Puget Sound Watershed Characterization, a collaborative effort among Ecology, the Partnership, and WDFW, is designed to provide local governments with better information to improve land use planning and resource protection at the watershed scale. The Watershed Characterization is a regional-scale perspective that divides Puget Sound geographically into three areas: those most important to protect, those most beneficial to restore, and those most suitable for development. It is designed to describe a multi-scale framework for land-use planning. The results from the assessments should help guide the protection and restoration of watersheds and the habitats they support. The Watershed Characterization effort includes an outreach component to explain the role and proper application of these assessments.

Near-Term Actions

The near-term actions identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

C.2.1.1 Watershed based stormwater management. The Ecosystem Coordination Board requested an evaluation of the feasibility, cost, and effectiveness of transitioning the existing municipal stormwater jurisdiction by jurisdiction permit approach using “general permits,” to watershed-based municipal stormwater management. PSP agreed to work with interested parties, particularly Ecology and local governments, to ensure their perspectives and concerns are addressed and accounted for when developing the

scope of work for their evaluation. Based on limited funding, a decision was made: to first survey other programs to examine experiences in implementing a watershed-based permit and to learn from those experiences. Any subsequent tasks will be evaluated by the ECB for further action as appropriate.

- C.2.1.2 Protect best remaining streams.** King County, in cooperation with agencies populating the Puget Sound Stream Benthos database, will identify and map remaining streams with Benthic Index of Biotic Integrity scores of at least 42-46 and develop an overall strategy and tailored actions to protect these areas.
- C.2.1.3 Stormwater system mapping.** King County, in cooperation with Ecology, local governments, WSDOT, and DNR, will help improve understanding and management of the region's stormwater infrastructure by developing data collection protocols, methodology and definitions for stormwater system mapping.
- C.2.1 ISL7 The City of Oak Harbor will implement Freund Marsh restoration and stormwater improvement project.** The project will restore natural treatment functions to reduce nutrient loading and improve flow rates by increasing infiltration in Oak Harbor, the only urban watershed in the County. The project will complete the Freund Marsh improvements including a trails network and interpretive center to educate public about stormwater, water quality, and wetland issues.
- C.2.1 SNST2 Identify existing data and prioritize needs.**
- Water quality: Compile water quality data from the previous 10 years for streams in the Snohomish and Stillaguamish River watersheds, and evaluate available data to establish priority areas for water quality improvements.
 - Culverts: Collect and assess existing data on public and private stream culverts in the Snohomish and Stillaguamish basins to identify high priority culverts for replacement based on multiple factors, such as fish passage.
 - Map systems: Inventory and map stormwater facilities and conveyance systems in the Snohomish and Stillaguamish basins, and begin to prioritize the need for public and private stormwater retrofits.
- C.2.1 SS6 South Puget Sound nutrient reduction strategy.** Implement nutrient reduction strategies as recommended in the Ecology dissolved oxygen study or as indicated from modeling results based on that report.
- C.2.1 WH11 Implement the Birch Bay watershed and aquatic resources management (BBWARM) district stormwater program.** The BBWARM program includes both capital and programmatic elements to improve water quality, reduce flooding, and protect aquatic habitat. BBWARM works with a variety of partners including the Birch Bay Shellfish Protection District, Birch Bay Water Sewer District, Whatcom Conservation District, Nooksack Salmon Enhancement Association, MRC, and other Whatcom County programs. BBWARM program areas include:
- Capital Improvement Projects

- Maintenance and Operations
- Water Quality Monitoring
- Education and Outreach

C2.2 Prevent problems from new development at the site and subdivision scale

New development at the site and sub-division scale can be a significant source of stormwater-related problems. Effective management of sediment on construction sites using best management practices (BMPs) and other tools from the Stormwater Management Manual for Western Washington (or a local, equivalent manual), inspections, and enforcement (when needed) can prevent sediment and other contaminants from reaching surface waters, where they can cause harm. Appropriate design, siting, installation, and maintenance of permanent BMPs is critical to ensure they perform as designed. This sub-strategy includes NPDES permits for municipalities, state highways, industries, construction sites, and boatyards; continued transition to low impact development; and ensuring new development outside NPDES permitted areas uses standards and practices equivalent to those used within permitted areas.

- **Stormwater NPDES permits.** Federal NPDES permits are in place for municipalities, state highways, industries, construction sites, and boatyards. All NPDES stormwater permits for western Washington must be issued, implemented, overseen, complied with, and improved over time according to federally established timelines. Municipal stormwater permits need to contain requirements for Low Impact Development, monitoring, and structural retrofits. The need to bring in additional local governments under municipal permits to cover more land area of the basin should be evaluated. Funding is needed for municipal permittees to carry out permit requirements. Permits for federal and tribal lands/facilities also need to be consistent with state-issued NPDES stormwater standards and permits. The state-approved stormwater manuals should be updated as needed, including planning for climate change.
- **Low Impact Development.** The regional transition to low impact development should continue, Technical guidance and educational materials should continue to be developed and revised to help transition the region to the use of Low Impact Development and other green infrastructure approaches. State-approved runoff manuals should continue to refine how these techniques are modeled, sited, designed and maintained. Guidance to local governments on integrating Low Impact Development into codes and standards should also continue. This work includes providing information on projects, costs, performance, longevity, maintenance needs, and how best to integrate Low Impact Development facilities into existing drainage systems. Refining and providing incentives for Low Impact Development and other green infrastructure approaches is part of this sub-strategy. Local governments need funding review of development proposals, inspections, enforcement, and maintenance of facilities.
- **Consistent, basin-wide management of new development.** To protect and restore resources and beneficial uses everywhere in the basin, including shellfish harvest areas and salmon habitat, ensure that new development outside NPDES-permitted areas includes stormwater management standards and thresholds that are technically equivalent to the Stormwater Management Manual for Western Washington. Ensure that local governments located outside NPDES-permitted areas carry out

stormwater management programs that are consistent with the NPDES municipal stormwater permit for western Washington.

Ongoing Programs

NPDES permits. Ecology administers NPDES stormwater permits for municipalities, industries, construction sites, boatyards, and WSDOT.

Municipalities with populations over 100,000 are covered by NPDES Phase I permits. In Puget Sound, this includes King, Pierce and Snohomish counties and the cities of Seattle and Tacoma. Municipalities with populations under 100,000 located in urbanized areas, as defined by EPA rules, are covered under Phase II permits. In 2012, there were 76 local governments in Puget Sound covered by the western Washington Phase II permit. An NPDES municipal stormwater permit also exists that covers WSDOT's transportation facilities within the Phase I and II permit areas. Ecology maintains the Stormwater Management Manual for western Washington, the region's stormwater technical manual, which contains minimum requirements, technical standards and BMPs for new and redevelopment projects. Ecology also issues and oversees NPDES permits for construction sites, industries, and boatyards.

In 2009, the Legislature directed Ecology to work with stakeholders to establish a stormwater technical resources center. The Washington Stormwater Center, jointly managed by WSU Extension, the City of Puyallup, and The Center for Urban Waters (University of Washington, Tacoma) provides technical assistance to municipal and industrial stormwater NPDES permit holders, education and training, research and monitoring of Low Impact Development practices, and review and approval of new stormwater BMPs.

Low Impact Development. Providing the right tools is key to transitioning the region to the use of Low Impact Development techniques. WSU Extension and the Partnership, with help from regional professionals, are revising the region's Low Impact Development manual, *LID Technical Guidance Manual for Puget Sound*. WSU Extension and UW offer Low Impact Development professional training and certificate programs. Seattle and other local governments have developed guidance, educational materials, and checklists for ongoing maintenance of systems. The Partnership is developing *Integrating LID into Local Codes: A Guidebook for Local Governments* to help local staff integrate Low Impact Development into their codes and standards. Ecology plans to provide new standards and training on maintenance of systems. Many local governments, developers and builders, and consulting engineers provide leadership by designing and building innovative Low Impact Development projects.

Key Ongoing Program Activities

- Ecology issued updated 2013–2018 Phase II municipal NPDES stormwater permits for western Washington and an updated *Stormwater Management Manual for Western Washington* in 2012. The permits became effective August 1, 2013. The municipal stormwater permits require Low Impact Development for new developments and redevelopment unless site conditions are prohibitive.
- WSU Extension and the Partnership (2012) issued the updated *Low Impact Development Technical Guidance Manual for Puget Sound*.

- The Partnership issued *Integrating LID into Local Codes: A Guidebook for Local Governments* in (Puget Sound Partnership 2012b).

Near-Term Actions

The near-term actions identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

- C.2.2.1 NPDES municipal permits.** Ecology will issue municipal permits for western Washington and provide financial assistance to permittees for implementation, particularly for code changes, stormwater system mapping, operations and maintenance, inspections and enforcement. This will require additional resources to Ecology for permit oversight, technical assistance, and enforcement. Ecology will provide incentives to NPDES permittees who, by interlocal agreement, lead or carry out regional or watershed scale NPDES implementation.
- C.2.2.2 Stormwater treatment standards.** Ecology will evaluate under which circumstances (i.e., for which pollutants, from which land uses) discharges to Puget Sound should be required to provide treatment beyond sediment removal (i.e., TSS removal) to help meet 2020 recovery targets.
- C.2.2.3 Stormwater management outside permitted areas.** Ecology, in coordination with DOH, will identify two high priority shellfish growing areas degraded by urban stormwater discharges and work with local governments and other key parties to reduce these impacts to the areas.
- C.2.2.4 New development under earlier stormwater programs.** Ecology will initiate a process to assess projected implications and impacts of current state law concerning the level of stormwater control from new development approved under earlier stormwater programs.
- C.2.2 SC9 Share information on low impact development/green stormwater infrastructure and facilitate the transition from conventional stormwater management.**
- Use LIO as a forum for sharing approaches to implementing Low Impact Development policies.
 - Encourage local government participation in Washington State University Low Impact Development technical workshops.
 - Support ECO Net endorsed education and outreach efforts for this near-term action.
 - Support development of regulations that implement Action Agenda priorities.
- C.2.2 SJI5 Control and mitigate stormwater runoff (Near Term Run Off Action I).**
- C.2.2 SNST15 Low impact development.** Provide funding for the construction of up to five Low Impact Development projects in the Snohomish and Stillaguamish basins, including the City of Everett's Green Stormwater Infrastructure Implementation Program.

- C.2.2 STRT17** **Implement the highest priority projects listed within the City of Sequim Restoration Plan, a part of the city’s updated Shoreline Master Program.** The current focus for this action is on Restoration Priority 7.1 from the city’s Restoration Plan, namely “Improve Water Quality and Reduce Pollutant Delivery”. This focus area is also a part of the local near-term action titled Develop a Storm and Surface Water Management Plan for the City of Sequim.
- C.2.2 STRT27** **Adopt the City of Port Townsend’s Stormwater Management Plan.** Review and adopt local Low Impact Development codes and standards related to stormwater management and land development practices, to include an evaluation of stormwater conditions and needs within the 18 sub-basins of Port Townsend.
- C.2.2 STRT28** **Develop and adopt a Storm and Surface Water Management Plan for the City of Sequim.** Develop a Storm and Surface Water Management Plan, including adoption of Low Impact Development incentives and stormwater ordinances to support surface water pollution reduction. Initially, conduct a stormwater management needs assessment and develop a Storm and Surface Water Management Master Plan, including the possibility of a utility.
- C.2.2 STRT30** **Implement the City of Port Angeles NPDES Phase II permit and Stormwater Management Program.** Implement NPDES Phase II Stormwater Management Program, including Low Impact Development incentives and ordinances to support surface water pollutant reduction.
- C.2.2 STRT32** **Update, adopt, and implement the Clallam County Stormwater Management Plan.** Update and implement the Clallam County Stormwater Management Plan, including adoption of Low Impact Development incentives and ordinances to support stormwater management.

C2.3 Fix problems caused by existing development

Most development within the Puget Sound basin was built prior to the use of local and state stormwater manuals that require management of stormwater discharges. This development, unless already retrofitted, may be presumed to be discharging untreated or undertreated stormwater, and inadequate management of high flows. Stormwater discharges from existing development can be mitigated through a variety of means: Structural retrofits, regular and enhanced maintenance to remove legacy pollutant loads, and/or redevelopment policies. The *Urban Stormwater Runoff Preliminary Needs Assessment Technical Memorandum* (Bissonnette and Parametrix 2010), in a survey of 20 permit holders, found that system cleaning was highly effective: 234,000 tons of total solids were removed in 2009. This is believed to be due to “past underfunded maintenance” of stormwater systems. The report further estimates that, conservatively, an estimated \$3–15.6 billion is needed to upgrade existing stormwater systems within municipal permit areas for treatment. The report states that “prioritization is necessary” (given the huge investment required) and that “acceleration of the maintenance, inspection, and pollutant source investigation elements of the... permit program, in combination with addressing the highest priority retrofits, is recommended.” This sub-strategy includes: fixing problems from existing

development through structural retrofits; ongoing regular maintenance and enhanced maintenance; and redevelopment policies and activities.

- **Structural retrofit.** Over time, existing development needs to be upgraded, as needed, with flow control and treatment techniques that contribute towards meeting the recovery targets. Structural retrofits should focus on areas that would benefit most, and assess whether structural upgrades or other means (e.g., source control, maintenance) will achieve objectives. This work should include, assessing the level of effort needed (i.e., number of projects and acres retrofitted) to meet goals. Adequate, new funding will be needed to ensure significant progress is made.
- **Maintenance.** Stormwater pollution prevention plans must be carried out and all stormwater systems need to be regularly inspected and maintained to function to engineering design standards. Removing legacy loads from portions of the systems needs to be assessed and carried out, building on City of Tacoma’s study on removal of legacy loads. Technical and financial assistance should be provided to local governments.
- **Redevelopment.** Ensure that redevelopment policies in state-approved stormwater manuals and permits are fully implemented and bring about improvements to runoff from existing development. Revise policies as needed as one tool to upgrade stormwater controls on existing development.

Ongoing Programs

Retrofit. Local governments in Puget Sound run capital improvement programs and, as funding becomes available, undertake projects to improve their stormwater systems. While flood prevention and property protection are most often targeted, many programs and projects also address water quality, fish habitat, and discharges to shellfish harvest areas. Municipal phase I permit holders are required to run structural stormwater programs that include construction of new and improvements to existing facilities.

The municipal NPDES permits require that existing stormwater systems be upgraded when certain thresholds are reached during a redevelopment project. This is an opportune time, or “window of opportunity” to improve existing stormwater infrastructure; however, the current rate of redevelopment within the basin is fairly low.

Maintenance. Local governments, industries, and boatyards regularly maintain their permanent BMPs according to permit requirements and to ensure they continue to perform as designed. This regular, systematic, ongoing maintenance is critical to the functioning of systems, since unmaintained stormwater infrastructure can actually export pollutants.

Several local governments, such as the City of Tacoma, have undertaken enhanced maintenance activities to remove legacy (or long-residing) pollutants from their systems. This system “flushing” can be highly effective at removing large amounts of pollutants in a cost-effective manner.

Near-Term Actions

The near-term actions identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

- C.2.3.1 Stormwater retrofit projects.** Ecology will lead a process to identify high priority retrofit projects that will contribute to the recovery of Puget Sound and complete conceptual

design to a stage sufficient to seek project implementation funding. The work will build on retrofit prioritization work by WSDOT, King County and others, and will be replicable in other urban and suburban areas around the Sound.

- C.2.3.2 Map, prioritize, and restore degraded streams.** King County, in cooperation with agencies populating the Puget Sound Stream Benthos database, will identify and map stream drainages with “fair” Benthic Index of Biotic Integrity scores, and develops a prioritized list, strategies and actions to improve scores of 30 of these streams.
- C.2.3.3 Legacy pollutant removal.** Ecology, in cooperation with local governments, will provide guidance and financial assistance to local governments to help them remove legacy pollutant loads from their stormwater systems.
- C.2.3 HC4 HCCC stormwater retrofit plan.** Stormwater retrofit and Low Impact Development practices improve water quality, help protect shellfish beds, decrease flooding risks, and increase aquifer recharge. HCCC is developing a Hood Canal Regional Stormwater Retrofit Plan to coordinate stormwater and Low Impact Development retrofit efforts on a regional scale. The plan will include conceptual designs for 10 to 12 retrofit projects in the Hood Canal Action Area, which will be implemented by the county governments or other partners as funding is available.
- C.2.3 ISL12 Identify, map, and prioritize blocked and failing culverts and replace one to two priority culverts using fish-friendly passage designs.** Fish-blocking culverts negatively affect flood risk, scouring, erosion, landslides, and water quality. Island County will map all existing culverts noting which are blocked and failing, and will create a prioritization schedule for replacing these culverts.
- C.2.3 SC6 Identify, guide, and fund stormwater retrofits.**
- Complete WRIA 9 retrofit study and promote it as a model.
 - Advocate locally and sound-wide through the LIO for increased funding for priority stormwater retrofit projects.
 - Develop a list of high-priority stormwater retrofit projects to support local investments and state funding request in 2014 and 2015, using upcoming guidance from Ecology and findings from the WRIA 9 study on stormwater retrofit priorities.
 - Participate in the Commerce’s technical assistance and study of examples of urban-specific implementation or stormwater retrofit projects.
 - Support ECO Net endorsed education and outreach efforts for this near-term action.
- C.2.3 SC7 Promote operation and maintenance and improvements to existing stormwater systems.** Promote, support and guide technical assistance for local government adoption of improved operation and maintenance techniques for existing stormwater infrastructure, such as:
- System flushing
 - Vactoring

- High-efficiency street cleaning

- C.2.3 SNST10 Inspections and maintenance.** Provide regular inspections of public and private stormwater facilities in the Snohomish and Stillaguamish basins and identify prescriptive maintenance needs and retrofit opportunities.
- C.2.3 STRT35 Complete the collection of habitat information for use by WSDOT to inform the prioritization of stormwater road retrofit projects within the Strait Action Area.**
- C.2.3 WC21 Ridgetop Boulevard Green Street.** Kitsap Surface and Stormwater Management will install 10-14 median bioretention (rain gardens) facilities on Ridgetop Boulevard near Silverdale, treating 18 acres of road runoff and reducing fecal coliform and other contaminants flowing into Dyes Inlet.
- C.2.3 WC22 Poulsbo Low Impact Development retrofit study for Upper South Fork Dogfish Creek basin and downtown Poulsbo.** City of Poulsbo will seek funding and complete stormwater retrofit plans for the Upper South Fork Dogfish Creek Basin and Downtown Poulsbo basins.
- C.2.3 WC23 Gig Harbor stormwater retrofit study.** City of Gig Harbor and Pierce County will complete a stormwater retrofit study for the City of Gig Harbor. The primary deliverable will be a comprehensive, prioritized list of beneficial stormwater projects within the City. Once completed, Gig Harbor and Pierce County can include identified projects on their Capital Facilities Plans and/or apply for relevant stormwater retrofit grants to fund construction.
- C.2.3 WC27 Marine Drive/Kitsap Way/Oyster Bay Avenue storm system filtration retrofit.** With a goal of improving water quality impacting shellfish harvest in Oyster and Ostrich bays, the City of Bremerton will install a passive stormwater filtration system prior to the outfall into Oyster Bay and Low Impact Development components along approximately 1.5 miles and 65 acres on Marine Drive, approximately 31 acres along the north portion of Kitsap Way, and approximately 1.5 miles and 40 acres on Oyster Bay Avenue.
- C.2.3 WC28 Ostrich Bay Creek retrofit plan design.** With a goal of improving water quality impacting shellfish harvest in Oyster and Ostrich bays, the City of Bremerton will complete a stormwater retrofit design study for Ostrich Bay Creek. The retrofit design plan will evaluate and determine the best locations and types of Low Impact Development components to use for this drainage basin. The basin is more than 230 acres of pervious and impervious surface used for light commercial facilities, residences and State Highway. The plan will address water quality and quantity issues that impact Ostrich Bay Creek by using various Low Impact Development components and treatment systems. The City will pursue funding through the LIO process, grants, and local partnerships to construct the designed components as funding is made available.
- C.2.3 WH12 Lake Whatcom watershed stormwater projects.** Implement stormwater retrofit projects identified in the Lake Whatcom Comprehensive Stormwater Plan.

- Coronado-Fremont Stormwater Improvements: Construction of Phase 1 in 2013 included a bio-infiltration swale and stormwater vaults. The project will treat runoff from approx. 10 acres.
- Academy Road Stormwater Improvements: Partner with the City of Bellingham on a joint stormwater retrofit project to improve stormwater quality in the Lake Whatcom Watershed. This project will treat runoff from approximately 80 acres.
- Cedar Hills/Euclid Stormwater Improvements: Install rain gardens, filter vaults, and treatment swales. This project will treat runoff from approximately 60 acres.

C.2.3 WH13 Birch Bay area stormwater projects. Implement stormwater retrofit projects identified in the Birch Bay Comprehensive Stormwater Plan:

- Birch Bay Stormwater Priority Retrofit Projects Pre-Design: Ecology Watershed protection and Restoration grant-funded project to complete preliminary design and analysis for priority capital projects.
- Beachway Drive & Fern/Park Stormwater Improvements: Stormwater retrofit project to improve stormwater quality entering Birch Bay and reduce flooding impacts.
- Harborview Road Culvert Replacement: Replace undersized driveway culverts and catch basins to alleviate flooding along Harborview Road.
- Cottonwood Drive Drainage Improvements: Stormwater retrofit project to improve conveyance from uplands areas, reduce nearshore flooding, and provide additional drainage connections along Birch Bay Drive. Water quality treatment options will be incorporated.

C.2.3 WH14 Ferndale stormwater projects. Implement stormwater projects that address runoff to the Nooksack River, and that are identified in the City of Ferndale Stormwater Management Plan.

- Gateway Stormwater Facility projects: Upgrade the stormwater conveyance reaches identified in the 2013 Ferndale Gateway Stormwater Study and planned for implementation (project reaches W-R-2 and W-R-3).
- Decant Design and Construction: Design and construct a covered facility for the City of Ferndale stormwater decant process, which currently is located in the floodplain.
- City of Ferndale Stormwater Studies: Complete stormwater drainage studies for two areas within the City of Ferndale: Main Street and Labounty and Thornton Street Stormwater Pond.

C.2.4 Control sources of pollutants

Stormwater runoff from urban and rural areas is a significant source of toxics, nutrients, and pathogens delivered to Puget Sound. (Even small concentrations of polluted runoff can be harmful to fish and other aquatic life.)

Proper control and treatment of this stormwater, as discussed in earlier strategies and actions, is critical to Puget Sound recovery. It also is important to reduce the amount of contamination that becomes caught up in the stormwater stream. Many pollutants, such as dissolved metals, are very expensive and difficult to remove from the stormwater stream through treatment BMPs. Other pollutants, like pathogens, are commonly found in stormwater, and, like other pollutants, cause problems in receiving waters. It is far more cost-effective to minimize the introduction of pollutants to stormwater than to rely only on stormwater flow control and treatment. This sub-strategy includes on local pollution and control programs; inspections, technical assistance, and enforcement; and development and implementation of total maximum daily loads (TMDLs).

- **Local pollution and control programs.** Local programs should be developed and implemented to identify, track and control/eliminate sources of stormwater-related pollutants. Local governments need guidance and ongoing financial assistance to carry out this work. In addition, pollution identification and correction programs are discussed more fully in C.9.4.
- **Inspections, technical assistance, and enforcement.** Needed work includes carrying out periodic inspections of businesses and industries with high likelihood of discharging pollutants of concern, working with property owners and operators to use BMPs to reduce discharges, and using technical assistance, incentives and enforcement to achieve compliance. Information from local pollution identification efforts, watershed plans, and regional monitoring activities should be used to identify pollutant hotspots/areas to restore. Local governments need guidance ongoing financial assistance to carry out this work. In addition, strategies and actions related to source control of toxics are discussed in strategy C.1.
- **TMDLs.** Water quality implementation plans to eliminate impairments to water quality from stormwater discharges need to be developed and implemented. TMDLs need to contain monitoring, and follow up work should be conducted to ensure plans are achieving goals. Local governments need guidance and ongoing financial assistance to carry out this work. In addition, strategies and actions related to TMDLs are described more fully in sub-strategy C9.1.

Ongoing Programs

Local governments carry out source control actions through their illicit discharge detection and elimination programs (a requirement in all NPDES municipal permits). These programs can be effective tools to identify and address sources of illegal discharges to stormwater systems. In addition, NPDES phase I permit holders are required to run source control programs, which can lead to reductions in pollutants running off properties through site visits, assistance, and enforcement (when needed).

Near-Term Actions

The near-term actions identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

- C.2.4.1 Compliance assurance program.** Ecology and local governments will increase inspection, technical assistance, and enforcement programs for high-priority businesses and at construction sites.

C.2.4.2 Vehicle leak detection program. King County, in cooperation with Seattle, WSDOT, the STORM advisory committee, and PSP will lead a regional discussion to develop options and recommendations for a new program to inspect and eliminate privately owned vehicle drips and leaks. This work builds on the related work of existing grants to STORM and Seattle on vehicle leaks and drips.

C.2.4 STRT34 Continue Clallam County Streamkeepers ambient monitoring program to understand stormwater baseline conditions and expand monitoring according to the Washington State Stormwater Work Group recommendations. Consider partnerships with the cities of Port Angeles and Sequim to accomplish this action.

C.2.5 Provide focused stormwater-related education, training, and assistance

Cities and counties rely on a variety of education, training and technical and financial assistance resources to deliver effective local stormwater management programs. By providing these resources, in addition developing supplementary guidance and model ordinances, stormwater can be more effectively managed throughout the region.

Focused information, education, and training on stormwater-specific issues should be provided for multiple audiences.

- **Citizens (especially homeowners).** Importance of problem, sources of contaminants and effects, their role in helping to solve problems.
- **Legislators and elected officials.** Issues, funding needs, results of significant studies and reports, product bans and phase-outs.
- **Local government staff.** Training on permit activities, including inspections and maintenance, source control, spill response, and Low Impact Development implementation.
- **Businesses.** Source control training, BMPs, proper material disposal, and other technical assistance.

A variety of techniques, such as sharing of science and research, social marketing, prioritization of issues and contaminants, media with vetted messages, proven BMPs and program strategies, classes, and training workshops should be used.

Support for and participation in Puget Sound Starts Here, STORM, and other regional programs designed to facilitate coordination and implementation of municipal stormwater public education and stewardship programs should be encouraged. Transportation-related topics need to be included in this effort.

Ongoing Programs

The Partnership, Ecology, local governments, Washington Sea Grant, WSU Extension, and non-profit organizations carry out a broad stormwater-focused behavior change campaign. These programs emphasize problems, sources, solutions and roles, funding needs, and stormwater management on residential properties.

Puget Sound Starts Here is a partnership of local governments, the Partnership, Ecology, and local organizations that are part of the Partnership's ECO Net. This program leverages the combined

investments of all these organizations and provides consistent public awareness and education messages across the twelve-county Puget Sound region. Using state-of-the-art communications techniques, it provides a regional communications umbrella to support and enhance the effectiveness of local stormwater program delivery.

The Washington Stormwater Center serves as a central resource for integrated NPDES education, permit technical assistance, stormwater management and new technology research, development, and evaluation.

Near-Term Actions

The near-term actions identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

- C.2.5.1 Low Impact Development training and certification.** Ecology will provide focused training for local government staff on Low Impact Development project review, and inspections and approvals, as well as to local government staff and private sector on maintenance. Develop new professional certification for stormwater maintenance specialists. Provide business staff and contractors with training on source control, spill recognition, spill response, and erosion control.
- C.2.5.2 Education for the next generation of stormwater professionals.** The Tulalip Tribes will develop a near-term plan to provide sustainable water resource management academic curriculum in all Puget Sound counties for future stormwater professionals that is inclusive of tribal treaty rights, history, civics, and emphasizes continuing improvements in stormwater management in the context of the larger issues of sustainable water resource management and climate change.
- C.2.5 SC8 Increase education of and stewardship by homeowners and businesses to reduce stormwater pollution.**
- Increase education of and stewardship by homeowners, businesses, and institutions to reduce pollutant loadings to stormwater (e.g., fertilizers, pesticides, oils, cleaners).
 - Support ECO Net endorsed education and outreach efforts for this action.
- C.2.5 SJ17 Provide technical and financial assistance, outreach, incentives, education and natural resource planning on a voluntary basis to interested residents to improve stormwater management and reduce polluted runoff and nutrient loading into the marine environment (Near-Term Run Off Action III).**
- C.2.5 SS5 Small community stormwater reduction program.** Develop and enhance program with education, advocacy, and restoration elements addressing non-NPDES mandated stormwater programs in small communities.
- C.2.5 STRT31 Provide stormwater education, training, and technical assistance in Jefferson County and Port Townsend using a watershed-based approach through implementation of Phase 2 of SquareONE.** Consider expansion of the SquareONE concept to the other

three local jurisdictions within the Strait Action Area. Following lessons learned from the SquareONE pilot project in Jefferson County, consider implementing Phase 2 to include the City of Port Townsend. Also, consider possible expansion of the concept to the other three local jurisdictions within the Strait Action Area. Phase 2 would (a) Implement the stormwater management public education plans in Jefferson County and Port Townsend by increasing citizen awareness and capacity to self-select preferred actions and methods; (b) Provide training on BMPs and Low Impact Development to the development community to increase capacity for successful site assessment and facility design, installation, and maintenance; and (c) Provide training to county and city staff to increase capacity for successful plan review and site inspections. (Note: This action has a double benefit in that it is also linked to B1.3 STRT18.)

C.2.5 STRT33 Provide stormwater management education, training, and technical assistance in Clallam County using a watershed-based approach. Consider partnerships with the cities of Port Angeles and Sequim to accomplish this action. Work to (a) increase citizen awareness and understanding of the importance, need, and techniques for stormwater management and familiarity with the new stormwater management plans requirements; (b) provide technical assistance to homeowners in Clallam County to assist in implementation of Low Impact Development BMPs contained with the Small Project Drainage Manual; and (c) provide training in Low Impact Development and BMPs to Clallam County staff to improve development plan review, site inspections, and assistance at the Permit Center. Consider partnerships with the cities of Port Angeles and Sequim. Also consider the Watershed Stewardship Resource Center concept used in Jefferson County and City of Port Townsend to accomplish this action.

C.2.5 WC4 West Sound Low Impact Development Training. Kitsap County Surface and Stormwater Management Program – with direct assistance from and close coordination with other stormwater utilities and agencies in the County – will provide training for 80% of Low Impact Development professionals in Kitsap County, including plan review staff, designers, installers, inspection, and maintenance staff.

C.2.5 WC24 Low Impact Development peer leaders network. With funding provided through Kitsap County Surface and Stormwater Management, WSU Cooperative Extension will develop and implement a Low Impact Development professionals network program.

Emerging Issues and Future Opportunities

- More explicitly incorporate climate change information and state climate adaptation strategies into Puget Sound stormwater strategies. This includes downscaled climate projections for stream flows, sea level rise and salt water intrusion, as well as consideration of extreme weather events for planning, designing and siting stormwater infrastructure. Examples include prioritization criteria for retrofits and adaptation of basin-scale hydrologic models.
- Additional local governments should be evaluated for coverage to bring more land area under the NPDES permits over time.
- Providing Low Impact Development training at colleges.

Target View: Benthic Index of Biotic Integrity (Freshwater Quality)

Runoff from developed lands and clearing of trees along waterways can harm the health of small streams that support salmon, other aquatic life, and wildlife. Water insects (benthic macroinvertebrates) are an indicator of biological health of stream systems, and a common method for quantifying this indicator is the Benthic Index of Biotic Integrity, which produces a numerical value to indicate a stream's ecological condition.

Further information on the Benthic Index of Biotic Integrity scoring system is available at the Puget Sound stream benthos website⁴, an ongoing project to store and analyze data from macroinvertebrate sampling programs. Soundwide results have not been reported, but King County data show that about 37% of sites are rated "good" or "excellent" with the remaining 63% rated "fair" or "poor."

Recovery Target

Protect small streams that are currently ranked excellent by the Benthic Index of Biotic Integrity for biological condition, and improve and restore streams ranked fair so their average scores become good.

Relevant Strategies (and Sub-Strategies)

- A4.2. Provide infrastructure and incentives to accommodate new and re-development within urban growth areas
- C2. Use a comprehensive approach to manage urban stormwater runoff at the site and landscape scales (C2.1, C2.2, C2.3, C2.5)
- C1. Prevent, reduce, and control the sources of contaminants entering Puget Sound (C1.2, C1.4, C1.6)
- A6.1. Implement high priority projects identified in each salmon recovery watershed's 3-year work plan
- C3. Prevent, reduce, and control agricultural runoff (C3.1, C3.2)
- C4. Prevent, reduce, and control surface runoff from forest lands (C4.1, C4.2)

Figure C-11 (Appendix C, *Results Chains*) depicts how the strategies (and related sub-strategies) contribute to reducing pressures on water insects (benthic macroinvertebrates) and achieving the Benthic Index of Biotic Integrity recovery target. Appendix C also contains a results chain for each individual strategy in the Action Agenda, showing how that strategy (and its related sub-strategies) reduces pressures and contributes to achieving numerous recovery targets.

⁴ www.pugetsoundstreambenthos.org

Agricultural Runoff

The Challenge

Improperly managed surface water runoff from farms can convey a variety of pollutants to groundwater and Puget Sound. These pollutants include sediment, pathogens, pesticides and other chemicals, and excess nutrients. Nutrients can pose particular risks because they can support and enhance production and accumulation of algal blooms. As the algae die and decompose, they deplete the water of available oxygen, contributing to the death of aquatic organisms, such as fish and shellfish. In Puget Sound, inlets with few freshwater inputs and deep basins that have limited exchange with surrounding waters such as South Puget Sound and Hood Canal are particularly vulnerable. Excess nutrients can also contaminate drinking water from both surface and groundwater sources.

Agricultural and rural areas constitute about 30 to 35% of the Puget Sound, these lands include commercial agriculture, small farms, and rural development and they can produce significant sediment, nutrient, pathogenic, and chemical loads to stormwater through non-point sources. Strategies in this area seek to provide both incentives and tools to farmers to help them apply BMPs to improve the quality of surface water runoff, while ensuring that working farmland can be maintained and agriculture in the Puget Sound remains economically viable. Particularly challenging are the large number of small acreage farms. These farms typically contain small numbers of animals, including cows, horses, sheep, or goats. Wastes from these animals, if not properly managed can be a significant source of polluted runoff. Small agricultural operations such as those found in many areas of Puget Sound may not meet eligibility requirements for federal incentive programs.

Maintenance of agricultural land also is critical. Strategies and actions oriented towards protection and stewardship of ecologically sensitive rural and resource lands and maintaining the vibrancy of agriculture are discussed in sub-strategy A3.3.

CLIMATE CHANGE

Declining snow pack and loss of natural water storage, changes in precipitation timing may likely exacerbate runoff concerns from agricultural lands. A high-priority overarching response strategy identified in *Preparing for a Changing Climate: Washington State's Integrated Climate Response Strategy* (Washington State Department of Ecology 2012a) directly relates to runoff.

- **Safeguard fish and wildlife and protect critical ecosystem services that support human and natural systems.** This includes reducing existing stresses on fish, wildlife, plants, and ecosystems. Reducing polluted runoff improves water quality and aquatic habitat, thereby increasing the resilience of aquatic species to additional stresses from climate change.

Implementing the agricultural runoff strategy in the Action Agenda helps prepare for climate change.

SALMON RECOVERY PLAN PRIORITY: AGRICULTURAL RUNOFF

As described in Action Agenda strategy C2, improvement in water quality is identified in the salmon recovery plan with a call to resolve uncertainty about whether the regional water quality actions address the needs of salmon. Volume I identifies general concerns related to stormwater runoff. Several watershed chapters specifically mention rural runoff from areas such as agricultural lands as needing to be addressed.

How are these priorities integrated? The Action Agenda contains more detailed strategies and actions to address rural runoff than the Salmon Recovery Plan. More work is needed to address rural run-off priorities as identified in the specific watershed chapters. In addition, the resolution about the effectiveness of actions still needs to be addressed.

Recovery Targets

The strategies and actions in this section will contribute to achieving the recovery targets listed below with their associated vital signs and indicators.

Vital Sign	Indicator	Recovery Target(s)
Freshwater Quality	Water Quality Index	At least half of all monitored stations should score 80 or more on the Water Quality Index.
	Number of <i>impaired</i> waters	Reduce the number of <i>impaired</i> waters.
	Benthic Index of Biotic Integrity	Protect small streams that are currently ranked <i>excellent</i> by the Benthic Index of Biotic Integrity for biological condition, and improve and restore streams ranked <i>fair</i> so their average scores become <i>good</i> .
Marine Sediment Quality	Sediment Chemistry Index	By 2020, all Puget Sound regions and bays achieve chemistry measures reflecting minimum exposure with Sediment Chemistry Index scores >93.3.
	Sediment Quality Standards	Have no sediment chemistry measurements exceeding the Sediment Quality Standards set for Washington State.
	Sediment Quality Triad Index	All Puget Sound regions and bays, as characterized by ambient monitoring, achieve the following: Sediment Triad Index scores reflect unimpacted conditions (i.e., SQTl values >81).
Marine Water Quality	Dissolved oxygen levels	Prevent dissolved oxygen levels from declining more than 0.2 milligrams per liter in any part of Puget Sound as a result of human input.
Shellfish Beds	Acres of harvestable shellfish beds	A net increase of 10,800 harvestable shellfish acres, including 7,000 acres where harvest had been prohibited between 2007 and 2020.
Swimming Beaches	Conditions of swimming beaches.	Have all monitored beaches in Puget Sound meet EPA standards for what is called enterococcus, a type of fecal bacteria.
Eelgrass	Eelgrass area	A 20% increase in the area of eelgrass in Puget Sound relative to the 2000–2008 baseline reference by 2020.

Local Priorities

LIOs identified near-term actions that address agricultural runoff. These local actions are presented in the *Strategies and Actions* section along with Soundwide actions under the sub-strategy shaded below. The local action numbering contains the area abbreviation shown in parentheses after each LIO name. See Section 4, *Local Recovery Actions*, for detailed information about local planning.

Local Integrating Organization	Sub-Strategy	
	C3.1	C3.2
Hood Canal Coordinating Council (HC)		
Island (ISL)		
San Juan (SJI)		
Snohomish-Stillaguamish (SNST)		
South Central Caucus Group (SC)		
Alliance for a Healthy South Sound (SS)		
Strait ERN (STRT)		
West Central (WC)		
Whatcom (WH)		

Strategies and Actions

C3. Prevent, Reduce, and Control Agricultural Runoff

C3.1 Target voluntary and incentive-based programs that help working farms contribute to Puget Sound recovery

Numerous programs, guidelines and technical assistance opportunities exist to help farmers identify potential pollution impacts from farming activities and implement BMPs to reduce, control or eliminate pollution.

For example, conservation districts and local USDA NRCS offices currently work with farmers to develop voluntary farm management plans (farm plan). A farm plan identifies the resources on the property and the possible impacts to those resources from agricultural activities, identifies the practices the landowner can undertake to correct these impacts, and identifies the state or federal funding programs the landowner may apply for in order to help implement the practices. If the landowner chooses to implement the practices consistent with the plan, the landowner will address the resource impacts. The practices a landowner might undertake include streamside fencing, manure composting, pasture renovation, and weed management techniques. The planning evaluates site specific characteristics such as the size of the farm, types of soil, slope of the land, proximity to streams or water bodies, types of livestock, or crops, resources such as machinery or buildings, and available finances. Once the farmer decides what changes he or she wants to make on their property, they work with the local Farm Planner to set a tentative implementation schedule.

Another program to address impacts to water quality due to agricultural activities is the Conservation Reserve Enhancement Program. This program is administered by USDA's Farm Service Agency and is a voluntary program that helps farmers protect environmentally sensitive land, decrease erosion, restore wildlife habitat and safeguard ground and surface water resources. Under this program, eligible farmers can receive financial compensation when they enter into ten to fifteen year contracts to keep valuable resource land out of production and technical and financial assistance (up to 50%) to install restoration measures such as riparian plantings along streams.

These incentive-based programs, publicized by local programs, conservation districts, and NRCS, are currently implemented in an "opportunistic" manner—that is, the landowner seeks out their local conservation district or WSU Extension staff for information and assistance. Consequently, service delivery is not targeted to specific locations to address specific resource concerns, such as degraded riparian areas and water quality. These programs can be better targeted to address priority resources concerns and better coordinated with regulatory efforts to make them more effective.

Ongoing Programs

The primary objective of these actions is to enhance the targeting of ongoing landowner incentive programs to address specific resource concerns on commercial and non-commercial farms. In order to better target voluntary, incentive, and technical assistance programs and promote their use in Puget Sound, the Washington State Conservation Commission (WSCC) has worked with all the Puget Sound conservation districts to develop a Puget Sound Conservation District Action Agenda. This document links the work of the 12 conservation districts in the Puget Sound basin to the specific threats identified by the Partnership. Funding is then provided by the WSCC to the conservation districts to implement on-the-ground activities that address the identified threats. In this way, specific conservation district work and landowner activities can be directly linked to specific Puget Sound threats.

The WSCC also is working with counties and other state agencies to implement the Voluntary Stewardship Program (VSP). This new program is intended to address the contentious issue of the protection of critical areas on agricultural lands while maintaining viable agricultural production. The VSP provides counties with an alternative to protecting critical areas from agricultural activities through the Growth Management Act process. If they decide to opt-in, counties must identify, in accordance with specified criteria, watersheds that will participate in the VSP and nominate, watersheds for consideration by the WSCC as state priority watersheds.

Once a county has opted-in to the VSP and funding is made available, the county must also identify a watershed group to develop a work plan that will identify how critical areas in the watershed will be protected in the context of agricultural activities. The work plan is submitted to the WSCC for approval in consultation with affected state agencies. The work plan must include measureable goals and benchmarks for the protection of critical areas. The watershed group must show progress on these goals and benchmarks every 5 years, or implement adaptive management if progress is not being made.

Near-Term Actions

The near-term actions identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

- C.3.1.1** **Water quality BMPs.** Ecology, WSDA, and WSCC, after conferring with federal, tribal, and local partners will work on a solution to improved implementation of BMPs that protect water quality.
- C.3.1.2** **Effectiveness of incentive programs.** WSCC—in consultation with WSDA, DOH, and Ecology; conservation districts; federal agencies; and tribes—will report to the Governor and the Legislature on the effectiveness of incentive programs to achieve resource objectives. The report will include a section from Ecology on compliance with water quality standards.
- C.3.1.3** **Voluntary stewardship program.** WSCC, Ecology, and WSDA should support implementation, funding, and assistance to those counties participating in the Voluntary Stewardship program, as well as new capacity for enforcement of state and federal water quality regulations.
- C.3.1 ISL8** **Implement a small farm water quality improvement project in Ebey’s Prairie.** The project will include water quality treatment technology (e.g., grassy swales, filter strips, phytoremediation) and landowner farm practices (e.g., manure management, filter strips) to reduce non-point stormwater pollution.

In addition, actions associated with Ecology, DOH, WSDA, and WSCC in identifying priority areas for implementation of voluntary, incentive, and technical assistance programs for rural unincorporated landowners, small acreage farms, and other working farms are described in sub-strategy A3.1.

C3.2 **Ensure compliance with regulatory programs designed to reduce, control, or eliminate pollution from working farms**

The Washington Water Pollution Control Act, RCW 90.48, administered by Ecology, prohibits the discharge of pollutants from all lands in the state, including agricultural lands. WSDA inspects dairy operations and ensures their compliance under the Dairy Nutrient Management Act, RCW 90.64.

Ongoing Programs

Ecology has the responsibility to control and prevent the pollution of streams, lakes, rivers, ponds, inland waters, salt waters, watercourses, and other surface and underground waters of the State of Washington. Ecology also is authorized to provide grants to address pollution problems.

Ecology identifies priority areas for work to address agricultural runoff through a variety of processes, including ambient monitoring and the state Water Quality Assessment, which lists the impaired waters in the state. To address these impaired waters, Ecology may develop a total maximum daily load/water cleanup plan or may work to directly implement the practices necessary to solve the water quality problems. In many cases, incentive and technical assistance programs are available to help land owners identify and implement BMPs; some of these programs provide financial assistance. Ultimately, Ecology uses a combination of tools—education, technical and financial assistance, and compliance actions to ensure water quality standards are met. In conducting this work, Ecology often works with and may provide funding for other entities such as conservation districts or WSU Extension.

Water quality BMPs, referenced by RCW 90.48, is a legal term that refers only to those combinations of pollution controls used to prevent and control water pollution that achieve compliance with water quality law. Regulations in Washington State specifically define water quality BMPs as those approved by Ecology (WAC 173-201A-020), and those that are applied to attain compliance with the water quality regulations (WAC 173-201A-510).

Dairies must control the use of nutrients and limit bacteria discharge on their dairy operations in order to eliminate runoff from their fields getting into surface water or to minimize leaching into groundwater. Nutrients and bacteria may come from dairy manure, commercial fertilizer or other non-agricultural sources. Nutrient controls are intended to prevent nutrients from reaching surface water and thus helps to prevent reductions of dissolved oxygen or changes in pH. Bacteria controls are intended to prevent bacteria from reaching surface water, which protects human health from harmful organisms, and supports safe shellfish production. Preventing nutrients and bacteria from reaching groundwater protects human health from contaminated drinking water and protects surface water from potential contamination through hydraulic connectivity between groundwater and surface water

To protect Puget Sound from dairy discharges of nutrients and bacteria, WSDA inspects all dairies and identifies those that have infrastructure conditions or management practices that may result or have the potential to discharge nutrients and bacteria to waters of the state, both surface and ground. If risks are identified, WSDA works with the dairy operation to identify structural improvements or changes in management practices that will reduce and eliminate the risk of discharge. WSDA inspections may include referrals to technical assistance agencies or may result in enforcement when needed.

WSDA inspections evaluate dairies to ensure that operators properly collect, transfer, treat and store manure and contaminated water. Proper collection, handling and storage of dairy generated manure and wastewater and protect water of the state and Puget Sound from nutrient and bacterial contamination. WSDA evaluates nutrient management on dairies by reviewing the dairy's soil tests, their nutrient application timing, methods, locations, amounts, and the crops grown on their fields. WSDA monitors the nutrient levels and operators response in management from year to year and takes compliance actions as needed. This recordkeeping requirement helps the dairy operator to focus on applying just enough nutrients for their fields in each growing season. Fall soil tests show how much nitrogen and phosphorus are left on fields after crop removal and thereby help inform the operator on management adjustments for future improvements.

Finally, there is a specific permit focused on addressing pollution from animal feeding operations. The concentrated animal feeding operation NPDES permit is administered by Ecology. This permit is required for all animal feeding operations that discharge to waters of the state. Animal feeding operations are defined as operations that confine and feed animals for a total of 45 days or more in any 12-month period where vegetation or post harvest residues are not sustained in the normal growing season over any portion of the facility where animals are confined. Ecology's work implementing the concentrated animal feeding operation permit is focused on ensuring that manure is stored, handled and applied properly and at agronomic rates to prevent discharges to surface and groundwater. This includes discharges from application fields, waste storage facilities and animal confinement areas.

Near-Term Actions

The near-term actions⁵ identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

- C.3.2.1** **Priority Areas for voluntary incentive and regulatory programs.** WSCC, WSDA, Ecology, and DOH will identify priority areas to better target and coordinate implementation of voluntary incentive and regulatory programs for rural landowners, small-acreage landowners, and working farms.
- C.3.2.4** **Concentrated Animal Feeding Operation General Permit.** Ecology will issue an updated Concentrated Animal Feeding Operation General Permit by December 2016.
- C.3.2 SNST3** **Agricultural runoff.** Engage with the WSCC Agriculture Stormwater Committee to develop implementation and monitoring priorities related to agricultural runoff in the Snohomish and Stillaguamish basins. Both the King Conservation District and the Snohomish Conservation District will work with agricultural producers and livestock owners to implement BMPs that will address water quality and habitat resource concerns.

Emerging Issues and Future Opportunities

Reducing nutrient pollution is important, particularly in areas like parts of Puget Sound where harmful algal blooms and depressed oxygen levels affect both aquatic life and human use and health. Currently, only dairies or facilities covered under the concentrated animal feeding operation permit have requirements and oversight to control nutrient applications. Monitoring nutrient applications from all sources, including manure, fertilizer, tilled-in cover crops, and other organic soil amendments is needed in Washington State to ensure beneficial application of nutrients are conducted.

Existing technical assistance to agricultural operators should be augmented with focused nutrient management education to third-party applicators of manure and fertilizers as well as major crop growers. The objective should be to increase awareness across the industry sectors of the importance of accounting for all nutrient sources, of making necessary applications at the right time, in the right place, in the right form and in the right amount. In addition, education on field conditions and appropriate measures to take to prevent runoff into adjacent or nearby surface water should also be communicated to landowners and applicators. The dairy industry has found savings in their fertilizer costs by better accounting of all sources; there may be similar economic advantages for other agricultural growers.

Manure handling and storage of manure solids can include periodic transport from manure generators to crop fields for stockpiling in preparation for spreading at a later time. Manure is an important source of crop nutrients and improves soil health. Continued export of manure to crop growers is an important element of sustainable agricultural practices and economy. However, improper transport and stockpiling can result in runoff of nutrients and bacteria as well as cause nuisance issues related to odor. Only dairies currently have regular oversight on this practice. Existing technical assistance to agricultural operators should be augmented with focused education to third-party haulers and applicators of manure as well as major crop growers on handling and storage. Agencies may need to review current standards for potential improvements to the standard as well as the implementation of the standards.

⁵ Gaps in numbering reflect near-term actions that have been completed or otherwise retired.

Target View: Dissolved Oxygen (Marine Water Quality)

One important measure of water quality and a component of the Marine Water Condition Index is the amount of dissolved oxygen in the water. Fish, crabs, and many other species living in Puget Sound need oxygen to survive. As dissolved oxygen decreases, animals become stressed. When levels of dissolved oxygen get too low, fish and other animals may die, often in widespread “fish kills.” An over-abundance of nitrogen can be a major cause of low dissolved oxygen since it fosters growth in marine plants and algae. When these plants and algae die, their decay robs the water of oxygen. Nitrogen occurs naturally in water, but we also add more through discharge from wastewater treatment plants, septic systems, and run-off from developed and agricultural lands. One way we can improve marine water quality is to reduce the amount of nitrogen we contribute from these sources. Linking the amount of nitrogen pollution from humans to the growth of algae and the amount of dissolved oxygen is critical to protecting water quality.

Because dissolved oxygen concentrations are a result of many natural and human influences, we cannot simply measure dissolved oxygen and understand how much humans contribute directly. A combination of monitoring data, studies on the sources of nitrogen, and sophisticated mathematical models are required to determine whether human inputs are contributing to a decline in dissolved oxygen.

Ecology and Pacific Northwest National Laboratory recently released the report *Dissolved Oxygen Assessment for Puget Sound and the Straits: Impacts of Current and Future Human Nitrogen Sources and Climate Change through 2070*. Modeling efforts indicate most of the Salish Sea reflects a relatively low impact from human nitrogen sources. Portions of South and Central Puget Sound experience the greatest impacts, which would worsen with future population growth. In addition, timing of freshwater flow due to climate change could worsen impacts in some regions but lessen others. As we gain a better understanding of how humans contribute to low levels of dissolved oxygen, it will be possible to develop targeted management actions to address them. In the future we will update these results using better models and more recent estimates of nitrogen loads coming into Puget Sound. Together, model assessments and the Marine Water Condition Index will be used to track current conditions and long term changes in dissolved oxygen and overall water quality of Puget Sound.

The Marine Water Condition Index combines measurements relevant to water quality in Puget Sound. Changes in water quality are reported with numbers greater than zero indicating improving water quality in green and numbers smaller than zero indicating decreasing water quality in red. Although the index is well suited to track changes in water quality in Puget Sound it cannot be used to identify the specific sources of human contribution that are causing poor water quality.

Ecology's Marine Water Condition Index

Annual, 1999-2010

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Admiralty Reach	20	13	8	4	0	-5	-3	-6	3	1	-7	-4
Georgia Basin	-2	14	13	-2	-2	10	-2	-7	2	9	-10	7
South Hood Canal	16	7	9	2	-4	-8	-1	-12	6	10	-1	-13
Central Basin	15	14	12	8	0	-6	-9	-3	4	1	-7	-11
Bellingham Bay	10	13	23	-3	1	6	-13	-10	7	2	-12	-14
Sinclair Inlet	8	16	13	0	-1	-5	-6	-10	3	1	1	-14
Oakland Bay	16	13	14	-1	-6	-10	-5	1	3	-3	-2	-7
South Sound	19	14	14	-6	4	0	-5	-2	3	0	-8	-12
Elliot Bay	28	19	5	-4	-9	3	-16	-9	3	3	-6	-6
Commencement Bay	17	8	13	-3	-6	-1	-4	-1	6	-4	-8	-8
Whidbey Basin	11	8	8	-6	-2	-10	-1	-1	8	7	-9	-13
Budd Inlet	8	14	17	1	-12	-9	-7	-1	8	4	0	-9

Source: Marine Monitoring Unit, Washington State Department of Ecology

Recovery Target

Prevent dissolved oxygen levels from declining more than 0.2 milligrams per liter in any part of Puget Sound as a result of human input.

Relevant Strategies (and Sub-Strategies)

- C1. Prevent, reduce, and control the sources of contaminants entering Puget Sound (C1.1, C1.2, C1.3)
- C2. Use a comprehensive approach to manage urban stormwater runoff at the site and landscape scales (C2.1, C2.2, C2.3, C2.4, C2.5)
- C3. Prevent, reduce, and control agricultural runoff (C3.1, C3.2)
- C6. Prevent, reduce and/or eliminate pollution from centralized wastewater systems (C6.1, C6.2, C6.3, C6.4, C6.5)
- C9. Address and clean up cumulative water pollution impacts in Puget Sound (C9.1, C9.3)

Figure C-12 (Appendix C, *Results Chains*) depicts how the strategies contribute to reducing pressures on dissolved oxygen and achieving the marine water quality recovery target for dissolved oxygen. Appendix C also contains a results chain for each individual strategy in the Action Agenda, showing how that strategy reduces pressures and contributes to achieving numerous recovery targets.

Forest Land Runoff

The Challenge

Approximately 60 to 65% of the Puget Sound basin is forested land. A significant amount of this area is being actively managed for timber production (non-national park/wilderness areas). Surface runoff from forestry, particularly forest roads, stream crossings, delivery of water from road ditches and the capturing of seeps and springs as part of road cuts, has the potential to deliver excess sediment to streams. Forest harvesting also has the potential to affect the hydrology of a watershed, by affecting evapotranspiration rates; and as a result of skid trails, yarding corridors and harvesting near unstable slopes.

In Washington State, forest practices are regulated under the Forest Practices Act, established by the Legislature, and by the rules adopted by the Washington Forest Practices Board (the Board). The most recent significant change in rules was adopted in July 2001. The 2001 rules were informed by the Forests and Fish Report, which was the product of a multi-stakeholder effort to recommend improvements to forest practices that would protect water quality and the aquatic and riparian habitat associated with fish and riparian dependent amphibians on forestlands.

The forest practices program meets the requirements of the Endangered Species Act through establishing rules that are designed to meet the *Forest Practices Habitat Conservation Plan*. In addition, the forest practices program, as guided by a well-funded and robust adaptive management program, was intended to bring these forested waters into compliance with state and federal water quality requirements. Through meeting the *Forest Practices Habitat Conservation Plan* and the Clean Water Act requirements, the State of Washington seeks to provide long-term conservation of covered species by restoring and maintaining riparian habitat on non-federal forestland, meeting water quality standards and supporting an economically viable timber industry.

CLIMATE CHANGE

Declining snow pack and loss of natural water storage, changes in precipitation timing may likely exacerbate runoff from forests. A high-priority overarching response strategy identified in *Preparing for a Changing Climate: Washington State's Integrated Climate Response Strategy* (Washington State Department of Ecology 2012a) directly relates to runoff.

- **Safeguard fish and wildlife and protect critical ecosystem services that support human and natural systems.** This includes reduce existing stresses on fish, wildlife, plants, and ecosystems. Reducing polluted runoff improves water quality and aquatic habitat, thereby increasing the resilience of aquatic species to additional stresses from climate change.

Implementing the forest runoff strategy in the Action Agenda helps prepare for climate change.

SALMON RECOVERY PLAN PRIORITY: FOREST LAND RUNOFF

As described in Action Agenda strategy C2, improvement in water quality is identified in the salmon recovery plan with a call to resolve uncertainty about whether the regional water quality actions address the needs of salmon. Volume I identifies general concerns related to stormwater runoff. Several watershed chapters specifically mention rural runoff from areas such as forest roads as needing to be addressed.

How are these priorities integrated? The Action Agenda contains more detailed strategies and actions to address rural runoff than the Salmon Recovery Plan. More work is needed to address rural run-off priorities as identified in the specific watershed chapters. In addition, the resolution about the effectiveness of actions still needs to be addressed.

Recovery Targets

The strategies and actions in this section will contribute to achieving the recovery targets listed below with their associated vital signs and indicators.

Vital Sign	Indicator	Recovery Target(s)
Freshwater Quality	Water Quality Index	At least half of all monitored stations should score 80 or more on the Water Quality Index.
	Number of <i>impaired</i> waters	Reduce the number of <i>impaired</i> waters.
	Benthic Index of Biotic Integrity	Protect small streams that are currently ranked <i>excellent</i> by the Benthic Index of Biotic Integrity for biological condition, and improve and restore streams ranked <i>fair</i> so their average scores become <i>good</i> .
Toxics in Fish	Levels of four types of toxic contaminants in fish: polychlorinated biphenyls, flame retardants, hydrocarbons, and endocrine-disrupting compounds	By 2020, contaminant levels in fish will be below health effects thresholds (i.e., levels considered harmful to fish health or harmful to the health of people who consume them).
	Levels of contaminant-related disease in fish	By 2020, contaminant-related disease or impairments in fish are reduced to background levels.
Marine Sediment Quality	Sediment Chemistry Index	By 2020, all Puget Sound regions and bays achieve chemistry measures reflecting minimum exposure with Sediment Chemistry Index scores >93.3.
	Sediment Quality Standards	Have no sediment chemistry measurements exceeding the Sediment Quality Standards set for Washington State.
	Sediment Quality Triad Index	All Puget Sound regions and bays, as characterized by ambient monitoring, achieve the following: Sediment Triad Index scores reflect unimpacted conditions (i.e., SQTl values >81).
Shellfish Beds	Acres of harvestable shellfish beds	A net increase of 10,800 harvestable shellfish acres, including 7,000 acres where harvest had been prohibited between 2007 and 2020.

Local Priorities

Whatcom LIO identified a near-term action that addresses forest land runoff. This local action is presented in the *Strategies and Actions* section along with Soundwide actions under the sub-strategy

shaded below. The local action numbering contains the area abbreviation shown in parentheses after each LIO name. See Section 4, *Local Recovery Actions*, for detailed information about local planning.

Local Integrating Organization	Sub-Strategy	
	C4.1	C4.2
Hood Canal Coordinating Council (HC)		
Island (ISL)		
San Juan (SJI)		
Snohomish-Stillaguamish (SNST)		
South Central Caucus Group (SC)		
Alliance for a Healthy South Sound (SS)		
Strait ERN (STRT)		
West Central (WC)		
Whatcom (WH)		

Strategies and Actions

C4. Prevent, Reduce, and Control Surface Runoff from Forest Lands

C4.1 Achieve water quality standards on state and privately owned working forests through implementation of the Forest and Fish Report

In 1999, the Forest and Fish Report included Clean Water Act assurances granted by Ecology with the expectation that by 2009, research and monitoring would demonstrate that water quality standards would be achieved or a trend towards that achievement identified. In 2009, Ecology found there was insufficient data and information to substantiate the assurance that water quality standards were being achieved in working forests. At the same time, Ecology also found that the Forest and Fish program, even with its challenges, creates a well-established foundation for achieving full compliance with the water quality standards. Ecology extended Clean Water Act assurances, conditioned on achievement of 21 program milestones, with some scheduled to be completed by as late as 2019. These include the following.

- Support rules and funding to implement the Forest and Fish Report.
- Support an adaptive management program to update rules and guidance as necessary, with particular focus on water quality-related rules.
- Consistent compliance and enforcement of Forest Practices Rules.
- Bring roads up to design and maintenance standards.

Recent Progress

As of August 2011, 10 of the 21 program milestones have been completed. DNR, Ecology, and the Forests and Fish cooperators continue to make progress on completing key milestones towards maintaining Clean Water Act assurances.

One of the main constraints to accomplishing the milestones on schedule is personnel capacity and funding limitations at DNR and other agencies and partners in the implementation of the Forest and Fish Report. The Forest Practices Program has experienced decreased funding in the last two biennial budgets, with an overall decrease of \$4 million in FY 2009–2011 and an additional \$2 million in FY 2011–2013 from state general funds. This represents a decrease of approximately 28% in state general fund appropriations, and has impacted DNR's ability to support the Adaptive Management Program, compliance monitoring, and enforcement of the Forest Practices Rules. Compounding the decreased state funding, federal funding from the Pacific Coastal Salmon Recovery grants has also diminished.

Federal funding through the Pacific Coastal Salmon Recovery Fund supported a substantial portion of the Forest Practices Adaptive Management Program between 2000 and 2011. Averaging almost \$5 million a biennium, and spanning a period of ten years, this funding is no longer being provided by the federal government. These funds supported the development of tools to aid implementation of the Forests and Fish Report, and in the last 6 years, went almost entirely to support adaptive management program research and monitoring. This loss of funding has created a serious challenge for the Forest Practices Program to meet adaptive management program obligations. While those funding losses have been offset somewhat by the creation of the Forests and Fish Support Account by the Legislature to support tribal and non-governmental participation in the implementation of the Forests and Fish Report, this does not completely bridge program costs associated with the Adaptive Management Program.

Ongoing Programs

DNR is working to complete the remaining 11 milestones on a schedule to maintain Clean Water Act assurances from Ecology. Among those remaining, a few have been a particular challenge for DNR and its cooperators to complete due to funding and staffing resource limitations. These include obtaining an independent review of the Adaptive Management Program, training and certification of staff and cooperators, assessing the condition of small forest landowner roads, and completing the Cooperative Monitoring, Evaluation, and Research work that drives the science-based adaptive management process. In the coming years, DNR and the Forest and Fish Cooperators will continue to work towards these milestones. The operational and procedural milestones had completion due dates by 2013, while a schedule of Cooperative Monitoring, Evaluation, and Research studies stretches out through 2019.

Near-Term Actions

The near-term actions identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

- C.4.1.1 Forest Practices Adaptive Management Program review.** DNR will work to secure long-term and dependable funding for the Forest Practices Adaptive Management Program to conduct science and research to assist the Forest Practices Board to achieve the resource goals and objectives of the Forests and Fish Report.

C.4.1.2 Forest Practices Adaptive Management Program. DNR will work to secure long-term and dependable funding for the Forest Practices Adaptive Management Program, training, compliance monitoring, and enforcement.

C.4.1.3 Continue to implement road maintenance and abandonment programs on forested trust lands. DNR will continue to complete scheduled and planned road work on forested trust lands in the Puget Sound basin to protect water quality and provide for fish passage.

C4.2 Maintain forest roads and implement road abandonment plans for working forest lands subject to the Forest Practices Rules on schedule, and ensure federal forest managers meet or exceed state standards for road maintenance and abandonment on federal lands

Forest Practices Rules include road maintenance and abandonment provisions to prevent sediment and hydrology-related impacts to public resources such as water quality and fish habitat. The rules require large forest landowners to develop and implement road maintenance and abandonment plans (RMAP) for roads within their ownership. Large forest landowners are required to have all roads within their ownership covered under a DNR-approved RMAP (WAC 222-24-051) by July 1, 2006, and to bring all roads into compliance with forest practices standards by October 1, 2016 (or with approved extension by 2021). This includes all roads that were constructed or last used for forest practices since 1974. An inventory and assessment of orphaned roads (i.e., forest roads and railroad grades not used for forest practices since 1974) also must be included in the RMAP.

In an effort to minimize the economic hardship on small forest landowners (also known as family forest landowners), the 2003 Legislature passed a RMAP bill (House Bill [HB] 1095) that modified the definition of “small forest landowner” and specified how the road requirements applied to small forest landowners. Small forest landowners have the option to submit a “checklist” RMAP with each forest practices application or notification, rather than to provide a plan for their entire ownership. The RMAP checklist is a brief assessment of certain characteristics of roads proposed to be used under a forest practice application, and does not provide a complete inventory of the condition of all of the landowner’s forest roads. This means that specific roads on small forest landowner properties need not be brought up to current standards until they are being actively used for a forest practices activity.

To assist small forest landowners in achieving road maintenance requirements specific to fish passage, the Legislature created the Family Forest Fish Passage Program⁶ in 2003. This is a cost-share program that provides 75 to 100% of the cost of correcting fish barriers. The program is managed by three Washington State agencies (DNR, WDFW, and RCO).

The federal *Northwest Forest Plan* has been in place since the mid-1990s and has dramatically lowered rates of timber harvest on federal lands within the range of the northern spotted owl. This has resulted in less timber revenue to support maintenance of federal forest roads. In 2000, the USFS Region 6 and Ecology signed a memorandum of agreement in which the USFS agreed to develop RMAPs for all federal forest roads within 5 years (2005) and fully implement those plans within 15 years (by 2015). Yet,

⁶ www.dnr.wa.gov/BusinessPermits/Topics/SmallForestLandownerOffice/Pages/fp_sflo_ffpp.aspx

continued reductions in federal funding has created an estimated \$300 million (2005 dollars) shortfall in the funds needed to upgrade roads to current standards, repair fish passage barriers, and decommission roads no longer needed or supportable.

In November 2010, as part of implementation guidance on national regulations for Travel Management Planning⁷ the Deputy Chief for the U.S. Forest System set a target for each National Forest to complete plans that would “right size” the federal forest road system by 2015. Each unit of the National Forest System is to identify the minimum road system needed for travel and the protection, management and use of National Forest System lands, and identify roads that are no longer needed to meet forest management objectives, and therefore scheduled for decommissioning. The National Forest System expects to identify an appropriately sized and environmentally sustainable road system that is responsive to ecological, economic, and social concerns, which will include water quality effects from forest runoff. National Forest System staff is expected to engage the public in the process, involving a broad spectrum of interested and effected citizens, other state and federal agencies, and tribal governments.

Recent Progress

State and private forest landowners have made a significant capital commitment to protecting public resources and listed species through the RMAP requirement, as detailed in the *Forest Practices Habitat Conservation Plan Annual Report* (Washington State Department of Natural Resources 2013). As of June 2013, approximately 20,026 miles have been improved to current standards. There are currently 254 approved RMAPs and submitted checklists statewide. Between 2001 and 2012, over 4,846 fish passage barriers were removed or replaced, which is about 66% of known fish barriers identified in RMAPs. As a result, over 2,659 miles of fish habitat were opened in streams on forestlands. In addition, over 10,268 RMAP checklists have been submitted by small forest landowners associated with the approval of forest practice applications.

As of June 2012, over 289 projects were completed and up to 682 miles of stream habitat previously inaccessible to fish were opened up through the Family Forest Fish Passage Program. Over that same time period, the state of Washington has invested approximately \$20.85 million in the program (Washington State Department of Natural Resources 2013).

According to the *FY 2010 Legacy Roads and Trails Accomplishment Report* (U.S. Forest Service 2010), \$7.3 million was spent on Washington State’s federal forest roads and trails. With this funding, 42 miles of roads were decommissioned, and 788 miles of road storm proofing and maintenance were conducted. In addition, five fish passage barriers were restored, opening a total of 12.2 miles of fish habitat. This is the greatest commitment of legacy roads and trails funding for the Pacific Northwest region in more than a decade. Unfortunately, this level of effort is insufficient to address the backlog of National Forest System roads system repairs.

Given that more than 80% of the current National Forest System roads system was built before 1980, and there are over 90,000 miles of forest roads just in the Pacific Northwest region, it seems unlikely this restoration effort will meet its commitment with the State of Washington to implement all necessary

⁷ www.fs.fed.us/recreation/programs/ohv/final.pdf

road maintenance and abandonment by 2015. It was estimated in the 2000 memorandum of agreement that Congress (at that time) allocated less than 20% of the funding necessary for the USFS to adequately maintain their roads. More recent estimates in 2005 suggest a \$300 million backlog of work on forest roads in Washington alone. With 2010 marking the greatest commitment of funding in a decade, it appears that Congress will have to substantially increase funding in order to ensure road systems on federal lands do not contribute to poor water quality for salmon and people in the Puget Sound basin or threaten downstream habitat improvements that have been made.

The effort to appropriately size the National Forest System road network has begun, with nine of 17 National Forests in the Pacific Northwest region having begun the process of conducting a “Travel Analysis” to identify an appropriate road system.

Ongoing Programs

Large landowners must bring all roads into compliance with forest practices standards by October 31, 2016 (or with approved extension by 2021).

DNR will continue to ensure that small forest landowner roads used for forest practices activities are brought up to forest practices standards as part of the checklist RMAP process. In addition, Forest Practices will continue to track RMAPs and checklist RMAPs submitted by small landowners, reporting progress in its annual published HCP report. DNR reported to the Legislature in December 2013 on the progress of checklist RMAP implementation.

The Family Forest Fish Passage Program has more than 500 landowner-proposed repair projects that are not funded. Several hundred more barriers likely exist on these smaller forest ownerships, in addition to those already waiting for funding. However, this is not a complete inventory. Every year 50 to 100 new landowners enroll in the program. The major factor limiting progress is funding. More than 30 local community conservation organizations around the state provide project oversight and accountability, and work with the small forestland owners to ensure projects are identified and installed according to plan. Minimal state agencies staff provide the program structure, accounting, coordination and consistency. In terms of stream habitat opened up per dollar spent, Family Forest Fish Passage Program has proven to be one of the soundest investments in salmon recovery being made in Washington State.

When USFS received \$20 million of 2010 funding for the Legacy Roads and Trails Program in the Pacific Northwest region, they planned 3 years of projects, assuming maintenance of that budget. In FY 2011, however, that budget was reduced to \$8.5 million. In FY 2013 funding for Legacy Roads and Trails Program was folded together with four other watershed protection and restoration programs into the Integrated Resource Restoration budget as a pilot⁸. The pilot program consistently showed improved efficiencies and USFS is seeking \$820 million in FY 2015 funding nationwide (U.S. Forest Service 2014).

All National Forest System units in the region are preparing plans for completion of the travel analysis by 2015. They will each identify a road network that can be reasonably maintained under current budget constraints, given management objectives, and responsive to ecological, economic and social concerns. In addition, each unit has been asked to identify the capital budget needed to bring that appropriately

⁸ Integrated Resource Restoration budget includes: Wildlife and Fisheries Management, Vegetation and Watershed Management, Forest Products, Non-wildland urban interface (WUI) Hazardous Fuels, and Legacy Roads and Trails

sized road network up to a level that can be maintained under the current budget. This will include road maintenance and abandonment needs, and fish passage issues needing correction. This capital budget needs assessment will provide an updated estimate of the true backlog of road maintenance needs on federal forestlands.

Near-Term Actions

The near-term actions identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

- C.4.2.1 Risk assessment of small forest landowner roads.** DNR, in consultation with Ecology, will design and complete a resource risk assessment of small forest landowner roads for the delivery of sediment to waters of the state. Work with stakeholders to propose an approach to solving identified problems, and focus restoration efforts on small forest landowner lands in the Puget Sound Basin.
- C.4.2.2 Accelerate Family Forest Fish Passage Program implementation.** DNR, will continue to implement and seek to expand financial support for the Family Forest and Fish Passage Program which improves water crossing projects within the Puget Sound Basin.
- C.4.2.3 Fish passage barriers.** WDFW will assess and prioritize fish passage barriers by watershed within the Puget Sound.
- C.4.2.4 Enhance road maintenance and abandonment plan database.** DNR will continue to update the Large Landowner Road Maintenance and Abandonment Plan database to ensure tracking of progress in bringing roads up to current standards.
- C.4.2.5 Road maintenance and abandonment plan coordination with federal partners.** DNR will work to secure participation in annual road maintenance and abandonment plan coordination meetings with landowners, WDFW, Ecology, affected tribes, NMFS, USFWS, affected counties, watershed councils and other interested parties within each watershed (per WAC 222-24-051(11)). Participants will discuss opportunities to provide a coordinated approach within each watershed resource inventory area by (1) prioritizing road maintenance and abandonment planning and (2) exchanging information on road maintenance and stream restoration projects.
- C.4.2 WH2 WRIA 1 Forest Road Inventory and Assessment for implementation.** Compile information on federal, state, and private forest roads identified as risks to aquatic resources. In addition, identify additional non-system roads and prioritize road segments based on potential for mass wasting and sediment delivery to streams. Develop treatments for road decommissioning, storage, and seek funding for implementation.

Wastewater

The Challenge

Pollution of the rivers, creeks, bays and open waters of Puget Sound comes from a variety of sources and travels along many pathways. This section focuses on the potential for pollution from wastewater collection, treatment, and disposal—the system that is designed to collect and treat used water and human waste from homes and businesses and, in some cases, wastewater from industrial processes and urban stormwater. Essentially, everything that goes down a sink or is flushed down a toilet ends up in the wastewater system. This includes not just human waste but also a wide range of household cleaning products and chemicals and personal care products.

Wastewater management involves a spectrum of approaches and technologies that can be used to effectively treat sewage in different situations. In every case, the selected approach and technology must be tailored to local site conditions and take into account such factors as development densities; capital, maintenance and operation costs; and protection of public health and water resources. Generally, wastewater is treated either through a wastewater treatment plant or through an onsite sewage system. Both types of systems are regulated and permitted by state and/or local agencies.

Wastewater treatment plants are centralized facilities that use sewer collection systems to serve densely developed areas; they typically discharge treated effluent to surface water. Onsite sewage systems, commonly known as septic systems, are decentralized or distributed systems that serve small communities, areas of limited development, and individual properties. They are called onsite systems because they treat wastewater on or near the site where the wastewater is generated.

Both types of systems are part of the region's permanent wastewater infrastructure. There are roughly 100 wastewater treatment plants that discharge to surface waters in the Puget Sound region. There are about 300 large onsite sewage systems and more than a half million small onsite sewage systems in the Puget Sound basin. Wastewater treatment systems play a critical role protecting public health and water quality, but they need proper management, operation, and maintenance to ensure effective treatment and to protect the infrastructure investments.

Ten centralized Puget Sound facilities include combined sewer overflows (CSOs) as part of their sewage and stormwater system. CSOs often are located in older parts of cities. Sewage and stormwater flow through a single piping system to a sewage treatment plant. During heavy rainfall events the system can be overwhelmed and is then designed to "overflow" untreated wastewater and stormwater at specific outfalls. In some locations, these CSO outfalls have been associated with sediment contamination and other impacts. Untreated wastewater also is discharged to Puget Sound from some boats and vessels.

Strategies for reducing pressures on Puget Sound from wastewater include efforts to prevent and control pollution from onsite sewage systems, wastewater treatment plants, and boats and vessels. They also include consideration of overarching approaches to promote watershed-based and integrated approaches to better manage the region's wastewater treatment needs.

CLIMATE CHANGE

Preparing for a Changing Climate: Washington State’s Integrated Climate Response Strategy (Washington State Department of Ecology 2012a) identifies reducing existing stresses on the ecosystem as an important part of climate adaptation strategies. Action Agenda strategies to reduce pressure from wastewater from onsite sewage systems and treatment plants, help implement the state’s climate response strategies to achieve the following.

- Safeguard fish and wildlife and protect critical ecosystem services that support human and natural systems.
- Reduce the vulnerability of coastal communities, habitat, and species.

In addition, wastewater facilities can be vulnerable to climate change impacts. Extreme weather events could cause more frequent combined sewer overflow events and intrusion of seawater could damage equipment and strain. Higher water tables and increased flood events may increase corrosion of underground utilities. Siting of retrofits and new facilities will need careful consideration.

Recovery Targets

The strategies and actions in this section will contribute to achieving the recovery targets listed below with their associated vital signs and indicators.

Vital Sign	Indicator	Recovery Target(s)
Onsite Sewage Systems	Onsite sewage inventory, inspection, and repair.	Inventory all onsite sewage systems in Marine Recovery Areas and other specially designated areas; be current with inspections at 95%; and fix all failures.
		Phase in an expansion of Marine Recovery Areas and other specially designated areas to cover 90% of Puget Sound’s unsewered marine shorelines.
Shellfish Beds	Acres of harvestable shellfish beds	A net increase of 10,800 harvestable shellfish acres, including 7,000 acres where harvest had been prohibited between 2007 and 2020.
Swimming Beaches	Conditions of swimming beaches.	Have all monitored beaches in Puget Sound meet EPA standards for what is called enterococcus, a type of fecal bacteria.
Eelgrass	Eelgrass area	A 20% increase in the area of eelgrass in Puget Sound relative to the 2000–2008 baseline reference by 2020.
Toxics in Fish	Levels of four types of toxic contaminants in fish: polychlorinated biphenyls, flame retardants, hydrocarbons, and endocrine-disrupting compounds	By 2020, contaminant levels in fish will be below health effects thresholds (i.e., levels considered harmful to fish health or harmful to the health of people who consume them).
	Levels of contaminant-related disease in fish	By 2020, contaminant-related disease or impairments in fish are reduced to background levels.
Marine Water Quality	Dissolved oxygen levels	Prevent dissolved oxygen levels from declining more than 0.2 milligram per liter in any part of Puget Sound as a result of human input.
Marine Sediment Quality	Sediment Chemistry Index	By 2020, all Puget Sound regions and bays achieve chemistry measures reflecting minimum exposure with Sediment Chemistry Index scores >93.3.

Vital Sign	Indicator	Recovery Target(s)
	Sediment Quality Standards	Have no sediment chemistry measurements exceeding the Sediment Quality Standards set for Washington State.
	Sediment Quality Triad Index	All Puget Sound regions and bays, as characterized by ambient monitoring, achieve the following: Sediment Triad Index scores reflect unimpacted conditions (i.e., SQTI values >81).

Local Priorities

LIOs identified near-term actions that address wastewater. These local actions are presented in the *Strategies and Actions* section along with Soundwide actions under the sub-strategy shaded below. The local action numbering contains the area abbreviation shown in parentheses after each LIO name. See Section 4, *Local Recovery Actions*, for detailed information about local planning.

Local Integrating Organization	Sub-Strategy							
	C5.1	C5.2	C5.3	C6.1	C6.2	C6.3	C6.4	C6.5
Hood Canal Coordinating Council (HC)								
Island (ISL)								
San Juan (SJI)								
Snohomish-Stillaguamish (SNST)								
South Central Caucus Group (SC)								
Alliance for a Healthy South Sound (SS)								
Strait ERN (STRT)								
West Central (WC)								
Whatcom (WH)								

Strategies and Actions

C5. Prevent, Reduce, and/or Eliminate Pollution from Decentralized Wastewater Treatment Systems

Onsite sewage systems are an essential and valuable part of Puget Sound’s wastewater infrastructure. They provide a high level of treatment and great flexibility developing and using properties where construction of, or connection to, centralized sewer systems is not feasible or practical. They can be designed and configured to treat sewage in most settings. Small systems (peak design flows below 3,500 gallons per day) typically serve single family residences or combined flows from fewer than a dozen homes. The vast majority of these systems are very small. The typical design for a 3-4 bedroom home is 360–480 gallons per day, and because of water efficiency measures such as low flow showers and faucets, most of these systems operate at closer to 250 gallons per day. Large systems (peak design flows up to 100,000 gallons per day) can be engineered to treat flows from up to 370 residential connections.

Small onsite sewage systems traditionally consist of collection pipes, a septic tank, and a drainfield. In this design, the septic tank holds and separates wastewater into solid and liquid components to allow initial decomposition and treatment in an anaerobic (septic) environment. From the tank, the liquid effluent flows into the drainfield, which is generally a series of perforated pipes or molded chambers installed in suitable soil. The drainfield provides further treatment by allowing the effluent to be exposed to an oxygen-rich environment where bacteria and other microbes continue to treat contaminants. The drainfield removes and inactivates pathogens as the effluent filters through the soil layers before entering the groundwater.

There are other treatment technologies in use that are collectively referred to as “alternative systems.” These systems often use devices to enhance aerobic treatment and may use filters to screen solids and pumps to pressurize and distribute the septic tank effluent more evenly over the drainfield to promote better soil treatment. Large onsite sewage systems are often engineered to include additional or other types of treatment.

When onsite sewage systems don’t function properly they can pollute groundwater or, if there is a direct connection, nearby surface water. The pathogens and chemicals in sewage can make people sick, contaminate shellfish and other water resources, and disrupt ecosystem functions. Older onsite sewage systems and systems in sensitive areas often present higher risks. In addition, even properly operating systems can leach excess nutrients into Puget Sound; an issue that needs further study and action to address. Work is underway to better understand and document the sources, loadings, and impacts of nitrogen on Puget Sound and the appropriate steps to effectively address this emerging challenge.

There are many strategies for improving the region’s decentralized wastewater infrastructure. The key is life-cycle management and care of onsite sewage systems, making sure they are properly sited, designed, installed, operated and maintained. Overarching strategies include (1) implementing and funding effective state and local onsite sewage programs; (2) providing low-interest loans to help homeowners repair and replace failed and malfunctioning systems; (3) documenting problem areas and pollution impacts and developing appropriate wastewater treatment solutions; and (4) improving practices, partnerships, and professional services to effectively and efficiently manage and maintain onsite sewage systems.

C5.1 Effectively manage and control pollution from onsite sewage systems

DOH administers the state rule for onsite sewage systems with peak design flows below 3,500 gallons per day (Chapter 246-272A WAC). This is the vast majority of all systems in Puget Sound. Local health jurisdictions adopt and implement this rule to regulate and permit onsite sewage systems at the local level. Among other requirements, the rule sets standards for siting, designing, installing, operating and maintaining onsite sewage systems. Once systems are in use, onsite sewage system owners are responsible for operating, monitoring, and maintaining their systems to make sure they function properly.

Under the state rule, the 12 Puget Sound local health jurisdictions are required to develop and carry out comprehensive plans to help ensure that systems are properly managed, with emphasis on operation and maintenance activities and geographic areas where onsite sewage systems pose an increased public health risk. The local operations and maintenance programs are designed and implemented differently

in each county and are applied strategically to different types of systems, sensitive areas, and other situations (e.g., time-of-sale inspections) on the basis of public health risk and other criteria.

As part of the planning process, local health jurisdictions also are required to designate and protect marine recovery areas (Chapter 70.118A RCW). Marine recovery areas (MRAs) must be designated when the local health officer determines that existing onsite sewage systems are a significant factor contributing to concerns associated with the degradation of shellfish growing areas, marine waters listed by Ecology for low-dissolved oxygen levels or fecal coliform, or marine waters where nitrogen has been identified as a contaminant of concern. The focus in marine recovery areas is to: (1) find existing failing systems and ensure that system owners make necessary repairs, and; (2) find unknown systems and ensure that they are inspected and functioning properly, and repaired if necessary.

Ongoing Programs

The state and local onsite sewage system programs are designed to regulate the safe and appropriate use of onsite sewage systems to effectively treat sewage and to protect public health and water quality. Ongoing implementation of these programs includes many activities and responsibilities. Some are unique to DOH, some are unique to the local health jurisdictions, and some are shared. The work includes the following DOH performance measures: (1) Reviewing and approving local rule changes and reviewing waivers to ensure ongoing consistency with the state rule; (2) reviewing and registering proprietary products, additives, and sewage tanks for use in the state; (3) regularly updating state standards and guidance documents for alternative technologies; (4) contracting with and distributing state funds to help implement the local onsite sewage system management plans and coordinating semi-annual performance reporting; and (5) adapting onsite sewage system management plan implementation and reporting to align with and make progress toward onsite sewage system performance measures adopted for Government Management Accountability and Performance (GMAP) and the Action Agenda.

All 12 Puget Sound counties have developed local management plans and submitted them to the DOH for approval, and nine counties have designated one or more marine recovery areas. Based on the number of onsite sewage systems noted in an earlier section of more than 500,000 and an annual failure rate of 1%, the annual need should approach 5,000. Many system repairs or replacements are financed privately or by lending institutions. Additionally, Ecology oversees funding to LHJs, which is directed to owners to support repairs; LHJs issue permits for repairs/replacements to many owners who self-finance repair work. These amount to hundreds of annual improvements and personal investments.

The GMAP program identifies two measures for onsite sewage systems. First the state tracks the number of onsite sewage system repairs or replacements funded by Ecology in Puget Sound counties. The target is 39 every 6 months. Ecology passes funding to local health jurisdictions that identify the systems for repair or replacement and oversee the work. Since 2007, performance has been at or above the target, and as of December 2010, 388 systems had been repaired or replaced by local health jurisdictions through financial assistance from Ecology. Second, the state tracks the status of onsite sewage systems inventoried, inspected, and fixed in marine recovery areas and other designated sensitive areas. The target, consistent with the Puget Sound recovery goal, is to inventory all onsite sewage systems, fix all failures, and be current with inspections at 95% in marine recovery areas and

other designated areas by 2020. The target also calls on local health jurisdictions to expand these areas and programs to cover 90% of Puget Sound’s un-sewered marine shorelines by 2020.

Near-Term Actions

The near-term actions⁹ identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

- C.5.1.2 Onsite sewage system operation and maintenance program best practices.** DOH will work with Local Health Jurisdictions (LHJs) to identify successes and best practices, develop common performance standards, and recommend approaches to improve core functions of local operation and maintenance programs.
- C.5.1.3 Onsite sewage system nitrogen treatment technologies.** DOH will evaluate public domain onsite sewage system treatment technologies for nitrogen reduction and develop standards and guidance for their use if testing results indicate the technologies are effective and reliable. The evaluation will be completed and work on standards and guidance, if needed, will begin after that.
- C.5.1.4 Wastewater facilities treatment.** Outside urban growth areas. Commerce, in partnership with Ecology and DOH, will identify shoreline areas outside urban growth boundaries where residential densities are great enough that it may be appropriate to extend centralized wastewater collection systems and that are in close enough proximity to centralized treatment that extension of infrastructure may be feasible. The goal of this effort is completion of the design of at a least one pilot project and construction of a least one pilot project.
- C.5.1 SJ16 Fully implement the Onsite Sewage System Operation and Maintenance Program Plan (Near-Term Run Off Action II).**

C5.2 Effectively manage and control pollution from large onsite sewage systems

DOH directly regulates and permits large onsite sewage systems with flows between 3,500 and 100,000 gallons per day (gpd) (Chapter 246-272B WAC). DOH adopted a revised large onsite sewage systems rule in 2011. Among other changes, the expanded large onsite sewage system program consolidates all large onsite sewage system permitting authority at DOH, requires annual operating permits for all large onsite sewage systems, and requires protection of public health and the environment. The rule is structured to regulate and permit large onsite sewage systems in different situations ranging from newly constructed systems to existing systems that have never been documented or permitted. The revised rule includes many new requirements and approaches for siting, designing, constructing, operating, maintaining, repairing, permitting and managing large onsite sewage systems.

Ongoing Programs

The overarching performance objective of the large onsite sewage system program is to regulate the systems and owners to achieve effective long-term treatment and to protect public health and water

⁹ Gaps in numbering reflect near-term actions that have been completed or otherwise retired.

quality. The program includes a strong focus on Puget Sound. The work includes the following DOH performance measures: (1) locate, assess, and permit all large onsite sewage systems with emphasis on marine recovery areas and other designated areas; (2) annually review and renew operating permits; (3) issue permits for large onsite sewage systems previously permitted by Ecology as the permits expire; (4) issue permits for large onsite sewage systems previously permitted by local health jurisdictions as the permits transfer to DOH; (5) work with large onsite sewage system owners as needed to address deficiencies in order to achieve adequate treatment and compliance with the rule and permit conditions; (5) develop technical guidelines and standards for large onsite sewage system design and operations and maintenance, system evaluations, document submittals, and other program activities; and (6) reset and report on the large onsite sewage system performance measure for GMAP based on the new large onsite sewage system rule and database and make progress toward the targets.

The state GMAP performance measure for large onsite sewage systems addresses compliance with requirements of the revised large onsite sewage system rule adopted by DOH in 2011. By the end of 2011, DOH had identified 277 large onsite sewage systems in the Puget Sound region, 263 of which were under permit.

Near-Term Actions

None; work in the near-term will focus on implementation of ongoing programs.

C5.3 Improve and expand funding for onsite sewage systems and local large onsite sewage system programs

Funding for proper operation and maintenance of onsite sewage systems and for replacement of failing systems is an ongoing challenge. The work is expensive; the cost of replacing a system can be as high as \$40,000.

Funding assistance currently is comprised of a variety of grant and loan programs, including a \$4.2 million state program administered by Ecology to help homeowners and small businesses in the 12 Puget Sound counties repair, replace, or improve their existing systems. (See discussion of performance objectives for ongoing onsite sewage systems programs, above.) Since 2007, this program has funded replacement of 388 failing systems around Puget Sound. In addition, Craft3 (formerly Enterprise Cascadia) offers low interest loans to homeowners and businesses in Jefferson, Kitsap, Mason, and Clallam Counties to repair or replace onsite sewage systems. This program, funded in part through Ecology, uses public and private resources to help owners fix or replace malfunctioning systems. From 2007 through December 2010, 245 systems were improved using this mechanism.

Other Puget Sound counties have established their own low-interest loan programs, as well. While these programs have helped, eligibility for them can be constrained by the age and location of the system, the income level of the homeowner, and other criteria. Additional and more reliable sources of funding are needed to support local operation and maintenance programs and programs to repair or replace failing onsite sewage systems.

Near-Term Actions

The near-term actions identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

- C.5.3.1 Regional onsite sewage system homeowner loan program.** DOH and Ecology and the PSP will help evaluate options and support proposals to fund a unified, self-sustaining, low-interest loan program in the Puget Sound region to help onsite sewage system owners repair and replace their systems.
- C.5.3.2 Regional onsite sewage system program funding source.** DOH will evaluate approaches and mechanisms (e.g., a regional flush tax or sewer surcharge) to generate and distribute funds to Puget Sound counties to implement their onsite sewage system management plans and programs.
- C.5.3 SNST5 Onsite septic systems maintenance and retrofit.** Seek stable funding and expand Snohomish Health District program to provide technical assistance to property owners with septic systems. Investigate role of failing onsite septic systems in elevating stream bacteria and nutrient loads in Kimball and Coal Creek subbasins. Explore upgrading or decommissioning septic systems and connecting to municipal sewer systems.
- C.5.3 SNST8 Pollution identification and correction project.** Snohomish County, together with project partners, will conduct a pollution identification and correction project to identify specific sources of fecal coliform bacteria contamination in the Lower Stillaguamish sub-basin and expand to the Snohomish Basin.
- C.5.3 SS1 Mason County enhanced septic repair grant and loan program.** Achieve a self-sustaining septic repair loan program through a partnership with Craft3, expressly targeting shellfish reopening and/or preserved open status in Oakland Bay, North Bay, Hammersley, Totten, and Little Skookum Inlet watersheds.
- C.5.3 SS2 Thurston County enhanced septic repair grant and loan program.** Achieve a self-sustaining septic repair grant and loan program, expressly targeting shellfish reopening and/or preserved open status in Henderson and Eld Inlet watersheds.
- C.5.3 SS3 Pierce County enhanced septic repair grant and loan program.** Achieve a self-sustaining septic repair grant and loan programs, expressly targeting shellfish reopening and/or preserved open status in Nisqually, Case, Pickering, Carr and Island Inlet watersheds.

Emerging Issues and Future Opportunities

In addition to the specific ongoing program activities and near-term actions described above, a number of ideas for future work might be considered to better address the Puget Sound region's wastewater treatment needs and further reduce pressures on the Puget Sound ecosystem. These ideas should be an ongoing part of the regional discussion about how to best address wastewater treatment needs in the Puget Sound basin, and may inform future funding decisions, programmatic priorities and guidance, and/or may become near-term actions in future Action Agenda cycles.

Many of these ideas have to do with exploring potential future funding to ensure local health jurisdictions can effectively oversee and administer programs for reliable operation, maintenance, repair and replacement for onsite systems. They include the following.

- Evaluate funding options to help local governments with projects involving onsite sewage systems conversions to more centralized treatment and to decommission abandoned systems. Residences in older neighborhoods in some cities remain on onsite sewage systems even though surrounding, newer neighborhoods are served by centralized wastewater treatment. It can be difficult to convert these neighborhoods to centralized treatment—often individual homeowners do not have adequate resources or incentives to work together to fund conversion, utilities have little incentive to convert older neighborhoods, and local governments do not have the resources to subsidize these efforts.
- Evaluate and discuss models and ways to engage private wastewater companies and public utilities in onsite sewage system management as pilot projects or in new working relationships.
- Explore approaches to expand funding options for large onsite sewage systems.

Other ideas raise a range of issues related to targeting technical and financial assistance, considering cumulative impacts, and improving treatment technologies.

- Identify priority areas around Puget Sound needing focused technical and financial assistance to solve chronic sewage problems. Explore options to provide targeted technical and financial assistance to solve these problems.
- Revise the definition of onsite sewage systems failure to account for cumulative impacts of multiple onsite sewage systems. We need to address situations where the cumulative effect of pollution from onsite sewage systems in a community has a significant effect on water quality, even though the individual systems do not meet the traditional definition of failure (i.e., sewage that surfaces or backs up into a structure). This may be the case, for example, where it is clear that a certain neighborhood is creating water quality impacts but no individual onsite sewage system in that area is failing.
- Objectively evaluate impacts of onsite sewage system for pollutants of concern other than fecal coliform, like nitrogen and toxic chemicals, and update regulations and management plan guidance to address these findings.
- Work with the onsite sewage system industry and others to develop new, affordable, and reliable technologies that reduce nutrient and fecal coliform concentrations in onsite sewage system effluent.
- Work to develop cost effective ways to effectively separate urine from wastewater.
- Develop standards of practice for onsite sewage system operations and maintenance service providers in the Puget Sound region.
- Include assessment of cumulative impacts in planning and permitting for centralized and decentralized wastewater systems in comprehensive plans. Centralized wastewater management options largely flow from the location at which the wastewater is generated—inside or outside an urban growth area; served by centralized treatment or not. Options to reduce wastewater generation through re-use of gray water, and to re-use treated water through reclaimed water projects are implemented largely on an ad hoc basis. There may be opportunities to take a more

holistic approach to wastewater planning and thereby to better and more efficiently provide needed treatment and use all water resources fully. This issue also is discussed in sub-strategy C5.1 on effectively managing and controlling pollution from onsite sewage systems. In the 2012/2013 Action Agenda, a series of near-term actions were proposed on this issue, and comments on the near-term actions were mixed, and focused on the interaction between Growth Management Act requirements and wastewater treatment planning. These ideas will be explored further as a part of near-term action C5.1.3.

- Integrate climate change considerations into siting and design of new facilities and retrofits.
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C6. Prevent, Reduce, and/or Eliminate Pollution from Centralized Wastewater Systems

Centralized wastewater treatment facilities are regulated through NPDES permits administered by EPA and Ecology under the federal Clean Water Act and state regulations. Untreated wastewater from municipal, industrial, and government facilities contains a broad spectrum of pollutants, including nutrients and pathogens. Wastewater treatment removes or transforms many, but not all, contaminants. Depending on the amounts and types of treatment, treated wastewater can contain a variety of contaminants, including personal care products, caffeine, endocrine-mimicking chemicals, pharmaceuticals, and industrial chemicals.

Approximately 100 municipal and industrial wastewater treatment plants discharge to the marine waters of Puget Sound and the Straits of Georgia and Juan de Fuca and to rivers and other water bodies in the Puget Sound watershed. The combined daily discharge of treated wastewater to Puget Sound is over 430 million gallons per day. In addition, during wet weather events, CSOs in some older urban areas of ten Puget Sound cities sometimes discharge mixed stormwater and untreated domestic and industrial wastewater when conveyance or treatment plant capacities are exceeded.

The effectiveness of pollutant removal at treatment plants varies with the treatment technology and to some degree the age of the treatment facility. Treatment effectiveness also depends on the amount and types of contaminants in the wastewater treatment facilities receive from residents and businesses. Municipal facilities have traditionally focused on removing pathogens, biochemical oxygen demand, toxic chemicals, and suspended solids with a primary objective of protecting human health. Industrial facilities typically have systems customized to the exact composition of their wastewater and/or discharge to municipal systems after pre-treatment on site. In Puget Sound most municipal wastewater treatment plants use secondary treatment technology, and few have needed to install advanced treatment technology to meet current discharge limits. All new facilities constructed in recent years have been built with advanced treatment.

Reducing the amount of impervious surface also may reduce the frequency and extent of CSOs and inflow and infiltration. Implementing the stormwater actions described in strategy C2 will help reduce the pressure on Puget Sound from wastewater.

OCEAN ACIDIFICATION

As stated in *Ocean Acidification: From Knowledge to Action, Washington State's Strategic Response* (Washington State Blue Ribbon Panel on Ocean Acidification 2012), acidification of coastal waters, especially in highly populated and developed areas, is often exacerbated by locally derived human and natural inputs that generate additional carbon dioxide in marine waters. Nutrients and organic carbon provide locally important contributions. Programs that reduce nutrients and organic carbon are not only beneficial for removing pollutants that reduce pH or lower dissolved oxygen levels, but also protect people and shellfish from bacterial contamination. Substantial progress has been made in Washington to reduce the pollutants that affect water quality and human health, including nutrients and organic carbon. One existing program is underway at the LOTT sewage treatment plant, where nitrogen has been removed from its effluent for several years. This has resulted in a significant benefit to Budd Inlet, which receives the plant's discharge.

The Blue Ribbon Panel recommendations include a strategy to strengthen and augment existing pollutant reduction actions to reduce nutrients and organic carbon. Strategic actions also recommend expanding nutrient and carbon reduction efforts by initiating similar programs at other treatment plants where discharge is contributing to ocean acidification. The strategies and actions in this section directly implement the Blue Ribbon Panel's recommendations.

C6.1 Reduce the concentrations of contaminant sources of pollution conveyed to wastewater treatment plants through education and appropriate regulations, including improving pre-treatment requirements

Preventing sources of pollution conveyed to wastewater treatment plants will be a key part of reducing the overall threat to Puget Sound. Work in this area will rely heavily on strategies and actions related to reducing sources of toxics addressed in strategy C1 and include developing safer alternatives for chemicals in use, advancing programs to help prevent chemicals from entering the Puget Sound environment, education and technical assistance, and other strategies.

Pre-treatment programs, which are focused on working with businesses and industrial facilities that discharge wastewater to municipal treatment plants, also play an important role. These programs work to prevent the introduction of pollutants that could interfere with treatment plant processes, impact receiving water or biosolids quality, and/or threaten workers' safety. Effective implementation of the pre-treatment program plays a vital part in ensuring contaminants are not conveyed to wastewater treatment plants in amounts in excess of the plants' treatment capacity or acceptance requirements.

Emerging chemicals are a particular issue for pre-treatment standards, and are discussed in the emerging issues list, below. In addition, some commenters on the draft Action Agenda expressed concern that pre-treatment requirements, overall, are not protective enough for Puget Sound and should be reevaluated and updated, this is an issue that warrants further discussion.

Near-Term Actions

None; work will focus on implementation of ongoing programs.

C6.2 Reduce pollution loading to Puget Sound by preventing and reducing combined sewer overflows

Combined sewer systems are wastewater collection systems designed to carry sanitary sewage (consisting of domestic, commercial, and industrial wastewater) and stormwater in a single piping

system to a treatment facility. In periods of rainfall or snowmelt, total wastewater flows can exceed the capacity of the sewer collection systems and/or treatment facilities. When this occurs, the combined sewer system is designed to overflow directly to nearby streams, lakes, and harbors, discharging untreated sewage and stormwater. These overflows are called CSOs and can contribute to water and sediment quality problems.

Contaminants in CSOs can include pathogens, oxygen consuming pollutants, solids, nutrients, toxic chemicals, and floatable matter—all of which can harm the health of people, fish and wildlife. CSOs can contribute to shellfish harvesting restrictions, contaminated sediment, impairment of the aquatic habitat, and aesthetic degradation due to unsightly floating materials associated with raw sewage. Ten Puget Sound cities have combined sewage and storm collection systems.

CSO control is a vital part of the statewide effort to reduce and control stormwater discharges. CSO reduction programs are in place in 11 jurisdictions in Washington. In 1988, Ecology estimated that the average volume of untreated CSOs discharged to the state waters was 3.3 billion gallons per year. Since then, Washington has made progress in addressing this pressure, with a reduction of CSOs to less than 1 billion gallons in 2009.

A number of communities have been successful in controlling and reducing their CSOs completely and the remaining communities continue to make progress in CSO control. Strategies for controlling CSOs include separation, storage, or treatment of flows. More recently, “green” stormwater infrastructure (GSI) has been used alone or in concert with other control strategies as a cost effective approach for some CSO reduction projects. Many different tools, including a variety of stormwater control strategies, could be used to reduce pressures on the Puget Sound ecosystem from CSOs.

One of EPA’s National Priorities for enforcement and compliance assurance for FY 2008–2010 addresses CSOs and sanitary sewer overflows. The priority focuses on enforcement of the Clean Water Act and the codified CSO Control Policy, which requires that CSO discharges to be reduced to a level that does not contribute to violations of the water quality standards.

Ecology requires that CSO discharges be controlled to an average of one discharge per year per outfall, consistent with the EPA’s CSO Control Policy. As of February 2011, the following Puget Sound CSO facilities were determined to meet this standard: Anacortes, Bellingham, Bremerton, and LOTT (in Olympia). Other facilities are under permits or compliance orders to meet the standard: Everett (estimated compliance date 2017), King County (estimated compliance date 2030), Mount Vernon (estimated compliance date 2015), Port Angeles (estimated compliance date 2015), Seattle (estimated compliance date 2025), and Snohomish County (no estimated compliance date).

Ecology’s work on CSOs is focused on ensuring that facilities current in compliance, and on providing technical assistance to facilities developing compliance plans and activities to ensure they meet their compliance dates.

Near-Term Actions

The near-term actions identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

C.6.2 STRT29 Implement City of Port Angeles combined sewer overflow reduction projects.

Implement suite of combined sewer overflow Phase 1 and Phase 2 projects to reduce combined sewer overflow events into the Port Angeles Harbor to one per outfall per year on average.

C6.3 Implement priority upgrades of municipal and industrial wastewater facilities

EPA has delegated authority to Ecology to administer the Clean Water Act provisions for NPDES permits. This includes both individual permits to discharge and general permits that cover multiple dischargers in particular categories of sources (e.g., municipal stormwater permits). All wastewater treatment plants that discharge to Puget Sound have individual NPDES permits, which are highly tailored to meet water quality standards for the pollutants in the discharge.

Ecology also is responsible for establishing TMDLs or water cleanup plans for impaired water bodies that are identified as not meeting state water quality standards. In marine waters such as Puget Sound, TMDLs require that contributions from the combined total of human point and nonpoint sources cannot cause dissolved oxygen levels to fall below particular concentrations; where concentrations naturally fall below these levels, the combined total of all human sources cannot cause more than a 0.2 mg/L depletion at any time. Marine waters with measured concentrations below the thresholds must be assessed to determine whether human activities are contributing to the low levels or whether the low levels result from natural conditions. Through implementation of the TMDL program, Ecology can identify when and where wastewater treatment discharge limits for individual treatment plans must be lowered to achieve water quality goals; these studies also will identify areas where nonpoint sources, including contamination from onsite sewage systems and polluted runoff, may need to be reduced.

Municipal and industrial wastewater treatment plants provide a critical element of Puget Sound protection by giving us a way to manage wastewater; however, outfall discharges into Puget Sound prevent harvest from shellfish growing areas on state-owned lands, depriving the state of badly needed revenue, half of which is used to restore and protect the state's aquatic lands through the Aquatic Lands Enhancement Grant program. Closures on private tidelands also reduce income for private shellfish businesses and deprive residents of the opportunity to harvest shellfish at recreational sites. Closures associated with outfalls are required regardless of permit discharge limits and regardless of permittees compliance with permits. These closures are automatic, based simply on the presence of the outfall and the associated potential for pollution. Many large outfalls are not practical to remove or relocate, but others may be under used, no longer needed, or able to be combined with other nearby outfalls.

Ongoing Programs

To support TMDL or similar processes in Puget Sound, Ecology is carrying out a number of studies to determine how nitrogen from a variety of sources affects dissolved oxygen levels in South Puget Sound and other areas with low levels of dissolved oxygen. These studies are a critical first step in determining what will be needed to improve water quality. The results of the studies may show that human-related sources of nitrogen need to be reduced to keep South Puget Sound and other regions healthy. If reductions are needed, the study will also help determine where reductions might need to occur and what actions might be needed, such as upgrading wastewater treatment plans to advanced treatment. These studies also will identify areas where nonpoint sources, include contamination from onsite

systems and polluted runoff, need to be reduced. The TMDL program and related near-term actions are described under strategy C9.

Near-Term Actions

None; work in the near-term will focus on implementation of ongoing programs; see C9 for additional discussion of TMDLs and water cleanup plans.

C6.4 Ensure all centralized wastewater treatment plants meet discharge permit limits through compliance monitoring, technical assistance, and enforcement where needed

NPDES permit holders, including all wastewater treatment plants that discharge to Puget Sound, must report compliance in Daily Monitoring Records (DMRs) submitted to Ecology. Ecology reviews these DMRs and also inspects facilities for compliance.

Ecology's goal is that all wastewater treatment plants maintain compliance with permits written to meet standards for all permit limits. Consistent with this goal, Ecology recognizes wastewater treatment plants for perfect performance—that is, meeting every permit condition, every day, for an entire year. In 1995, only 14 plants in Washington State were in full compliance with permit requirements; in 2010, over 100 plants were in full compliance including 40 within the Puget Sound watershed.

When violations are found, Ecology's goal is to ensure plants return to compliance quickly. EPA guidance defines a major violation as any parameter violated by a permittee for the months in a row. In that case, Ecology's permit manager initiates contact with the permittee and takes a range of action to ensure a return to compliance. Ecology may issue enforcement orders if a permittee is unable to correct the violation. Ecology's goal is to inspect major plants once a year and minor plants every 2 years.

One issue that gained some attention during development of the 2012/2013 Action Agenda was inflow and infiltration (I&I). Excess water that flows into sewer pipes from groundwater and stormwater is called infiltration and inflow, or I&I. Groundwater (infiltration) can seep into sewer pipes through holes, cracks, joint failures, and faulty connections. Stormwater (inflow) can rapidly flow into sewers via roof drain downspouts, foundation drains, storm drain cross-connections, and through holes in manhole covers. Most I&I is caused by aging infrastructure that needs maintenance or replacement. There is some evidence that a substantial portion of excess water entering conveyance lines derives from side sewers that connect individual homes and businesses to the collection system. This excess water takes up capacity during peak flows that could otherwise be used for wastewater treatment alone and generates the need to build added capacity in pipelines, treatment plants, and other wastewater facilities.

Wastewater treatment providers manage I&I as part of the overall maintenance of the conveyance system; however where I&I derives largely from side sewers or individual homes or businesses opportunities for centralized utilities to find and repair the sources of I&I can be limited, and present funding challenges. NPDES permits do not necessarily specify a target for the percentage of water delivered to treatment plants that comes from I&I rather than through wastewater. Permittees are required to report I&I in their annual reports to Ecology. I&I levels are reviewed, along with any permit violations or sanitary sewer overflows considered spills, and must be reported to Ecology. Ecology may

issue a compliance order to plants that have multiple problems, and I&I controls, if appropriate, could be one of several actions required. Currently, one plant in South Puget Sound is under a compliance order. Recent permits added a new requirement that permittees pressure test force mains for exfiltration. Plants that have high levels of I&I in the winter may be more likely to produce exfiltration in the summer months, and some permits stipulate that any gravity sewers close to water bodies must be pressure tested once per permit cycle.

Ongoing Programs

Key Ongoing Program Activities

- Ecology, in accordance with NPDES permits issued under the Clean Water Act, will continue to work with permittees to reduce sanitary sewer overflows in all areas of Puget Sound, with an emphasis on Marine Recovery Areas.
- Ecology will work with permittees to reduce inflow and infiltration in centralized wastewater collection systems in all areas of Puget Sound with an emphasis on watersheds with declining baseflows or watersheds closed to additional withdrawals or otherwise water stressed.
- Ecology will work with permittees to reduce exfiltration in all areas of Puget Sound with an emphasis on watersheds and marine waters where bacteria concentrations violate water quality standards.
- Ecology will complete evaluations of I&I project effectiveness in Puget Sound basin and review evaluations from elsewhere to determine the potential effectiveness of I&I reduction programs.

Near-Term Actions

The near-term actions identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

C.6.4.1 Water quality standards update. Ecology has initiated rulemaking to amend the Water Quality Standards to update and develop predictable regulatory compliance tools that address short and long-term source control programs. The proposed changes will provide predictable regulatory tools to help entities comply with existing and new source control requirements or discharge limits. The changes will allow compliance with requirements while they effectively work toward meeting permit limits and control sources of pollutants.

C6.5 Promote appropriate reclaimed water projects to reduce pollutant loading to Puget Sound

Reclaimed water is derived from domestic wastewater and small amounts of industrial process water or stormwater. The process of reclaiming water, sometimes called water recycling or water reuse, involves a highly engineered, multi-step treatment process that speeds up nature's restoration of water quality. The process provides a high-level of disinfection and reliability to ensure that only water meeting stringent requirements leaves the treatment facility.

Reclaimed water can be used for a wide variety of beneficial uses such as irrigation, industrial process and cooling water, toilet flushing, dust control, construction activities, and many other non-potable uses. Reclaimed water also can be used as resource to create, restore, and enhance wetlands, recharge

groundwater supplies, and increase the flows in rivers and streams. Reclaimed water is classified based on intended use. Class A reclaimed water must meet strict standards. Reclaimed water must not cause a violation of state water quality standards.

Ongoing Programs

Expansion of reclaimed water programs will be a vital part of Puget Sound recovery. In 2006, the Legislature directed Ecology to adopt a rule for reclaimed water use by 2010. The rulemaking has been delayed due to other legislation (2011 Washington State Legislature ESHB 1478), but Ecology can now move forward and will file an intent for rulemaking in June 2014 to continue the rulemaking process. When final, the rule will provide a consistent, predictable, and efficient regulatory process. It also will encourage the generation and beneficial use of reclaimed water while preserving and protecting public health, the environment, and existing water rights.

Key Ongoing Program Activities

- Ecology will resume the Reclaimed Water Rule no earlier than 2013 or as directed by the Governor. The intent of this rule is to encourage the appropriate use of reclaimed water.
- Ecology will develop materials that describe the full range of beneficial uses for reclaimed water, best and appropriate uses, and public health issues (in consultation with DOH) to expand market demand for reclaimed water. The draft guidance document developed for the rule is on hold along with the Reclaimed Water Rule.
- As part of the future Reclaimed Water Rule, the Partnership, and Ecology will develop a comprehensive outreach and education approach to promote the appropriate use of reclaimed water, including incentives for reclaimed water use where appropriate, and reduce barriers to reclaimed water projects.

Near-Term Actions

No near-term actions identified. Work in the near-term will focus on implementation of ongoing programs.

Emerging Issues and Future Opportunities

In addition to the specific ongoing program and near-term actions described above, a number of ideas for future work might be undertaken to address the Puget Sound region's ongoing need for centralized wastewater treatment and to further reduce pressures on the Puget Sound ecosystem. These ideas should be an ongoing part of the regional discussion about how to best address wastewater treatment needs in the Puget Sound basin, and may inform future funding decisions, programmatic priorities and guidance, and/or may become near-term actions in future Action Agenda cycles. They include the following.

- Consideration of whether increasing nutrient removal requirements should be applied through the water quality based programs such as TMDL implementation, or whether Ecology should pursue a revision in secondary treatment technology standards for new treatment plants and upgrades at treatment plants that discharge to Puget Sound before all TMDLs are complete. Some stakeholders advocate requiring advanced secondary treatment (largely for nitrogen removal) and/or tertiary

treatment (largely for additional chemical treatment or other forms of polishing) for all wastewater treatment plants that discharge to Puget Sound; others are concerned about making such a large investment (and thereby precluding other needed investments) without specific documentation that such treatment is needed to protect water quality.

- Better understanding and addressing other contaminants of concern. Due to new detection and sampling methods and new products and consumption patterns we are increasingly aware of chemicals that can threaten human and environmental health in effluents from wastewater treatment plants at very low concentrations. These include pharmaceuticals, personal care products, caffeine, natural hormones, and other chemicals. We should better understand where this is occurring and the impacts of these chemical in the environment and continue to refine source control and wastewater treatment, pre-treatment, and reclaimed water programs to address chemicals of concern.
 - Replacement of aging infrastructure.
 - Integrate climate change considerations into siting and design of new facilities and retrofits.
-

Target View: Onsite Sewage Systems

For many people, especially those in rural areas of Puget Sound, onsite sewage systems are the best option for sewage treatment. When properly designed and installed, these systems provide a high level of treatment. Proper care is the key to long-term performance of all sewage treatment systems. Older onsite systems and systems located in sensitive areas often present higher risks. With newer systems, advances in technology mean there is more need for regular maintenance to keep things working smoothly. Poorly maintained systems can break down, requiring costly repairs and polluting our prized waterways and water resources. Regular inspections help protect onsite sewage systems and Puget Sound.

Recovery Target

- Inventory all onsite sewage systems in Marine Recovery Areas and other specially designated areas; be current with inspections at 95%; and fix all failures.
- Phase in an expansion of Marine Recovery Areas and other specially designated areas to cover 90% of Puget Sound's unsewered marine shorelines.

Relevant Strategies (and Sub-Strategies)

- C5. Prevent, reduce, and/or eliminate pollution from decentralized wastewater treatment systems (C5.1, C5.2, C5.3)
- C7. Ensure abundant, healthy shellfish for ecosystem health and for commercial, subsistence, and recreational harvest consistent with ecosystem protection (C7.1, C7.2, C7.3, C7.4)
- C9. Address and clean up cumulative water pollution impacts in Puget Sound (C9.3, C9.4).

Figure C-13 (Appendix C, *Results Chains*) depicts how the strategies (and related sub-strategies) contribute to reducing pressures related to onsite sewage systems and achieving the onsite sewage systems recovery target. Appendix C also contains a results chain for each individual strategy in the Action Agenda, showing how that strategy (and its related sub-strategies) reduces pressures and contributes to achieving numerous recovery targets.

Shellfish

The Challenge

Shellfish play a significant role in the biological, cultural and historical context of Puget Sound. Healthy shellfish beds are essential to Puget Sound's ecosystem diversity and complexity. Pacific Northwest tribes have lived and harvested shellfish in Puget Sound for about 12,000 years, and archeologists have uncovered shell middens dating back as far as 5,000 years. Shellfish provide sustenance and figure prominently in tribal spiritual beliefs. In the 1850s tribal governments signed treaties with the U.S. government relinquishing land but reserving rights to fish and harvest shellfish in usual and accustomed areas except for staked or cultivated shellfish beds.

Commercial shellfish harvesting began during the California Gold Rush era and continues today providing a significant source of jobs and economic activity in Puget Sound. Overall, Washington State leads the country in production of farmed clams, oysters and mussels with an annual value of over \$107 million. Across the state, shellfish growers directly and indirectly employ over 3,200 people and provide an estimated total economic contribution of \$270 million. In both Mason and Pacific counties, the commercial shellfish industry is the second largest private-sector employer, supporting more than 1,200 jobs and an estimated total annual payroll that exceeds \$27 million. In Puget Sound specifically, there are about 270 recreational shellfish beaches open to harvesting. WDFW conservatively estimates that \$125 shellfish harvesting trips are made each year to Puget Sound beaches, providing a net economic value of \$5.4 million to the region.

In addition to the cultural, recreational, and economic contributions shellfish make in Puget Sound, they also can play a role in improving the water quality of Puget Sound. Shellfish filtering can improve water clarity so sunlight penetrates the depths, which can improve eelgrass and macroalgae (attached seaweed) growth. Shellfish assimilate some of what they take in and pass on the rest as digested and undigested material that settles to the bottom sediments. These filtering and recycling processes can contribute to regulating the health of nearshore ecosystems and take on more importance as human activities and related pollution increase in shoreline areas. They also provide structure to the nearshore and refuge and forage opportunities and can help remove nitrogen from the water.

A significant number of shellfish beds are closed in Puget Sound due to pollution. The pollution is from a variety of sources, but mostly from fecal bacteria from humans, livestock, and pets that gets into the water and threatens the areas where oysters, clams and other bivalve shellfish grow. Work to improve water quality to enable the re-opening of shellfish beds closed because of pollution, such as enhanced inspection and reporting requirements for onsite sewage systems (see figure next page), has been ongoing for many years and has achieved considerable success, especially since 1995. Nonetheless, expanding and promoting financial incentives and programs that protect, reopen, and enhance shellfish harvest areas and that restore and enhance the native Olympia Oyster and Pinto Abalone will contribute further to local and state economies.

The significant economic contribution of the shellfish industry was a major motivating factor behind the Washington State Shellfish Initiative announced on December 9, 2011. The initiative is a convergence of the NOAA's National Shellfish Initiative and the state's interest in promoting a critical clean water industry. The NOAA policy establishes a framework to allow sustainable domestic aquaculture to contribute to the U.S. seafood supply, support coastal communities and important commercial and recreational fisheries, and help to restore species and habitat. NOAA sees aquaculture as a critical component to meeting increasing global demand for seafood and maintaining healthy ecosystems.

The Washington Shellfish Initiative is the first of its kind in the nation. While the initiative supports Governor Gregoire's goal of a "dig-able" Puget Sound by 2020, it also encompasses the extraordinary value of shellfish resources on the coast. As envisioned, the initiative will protect and enhance a resource that is important for jobs, industry, citizens, and tribes.

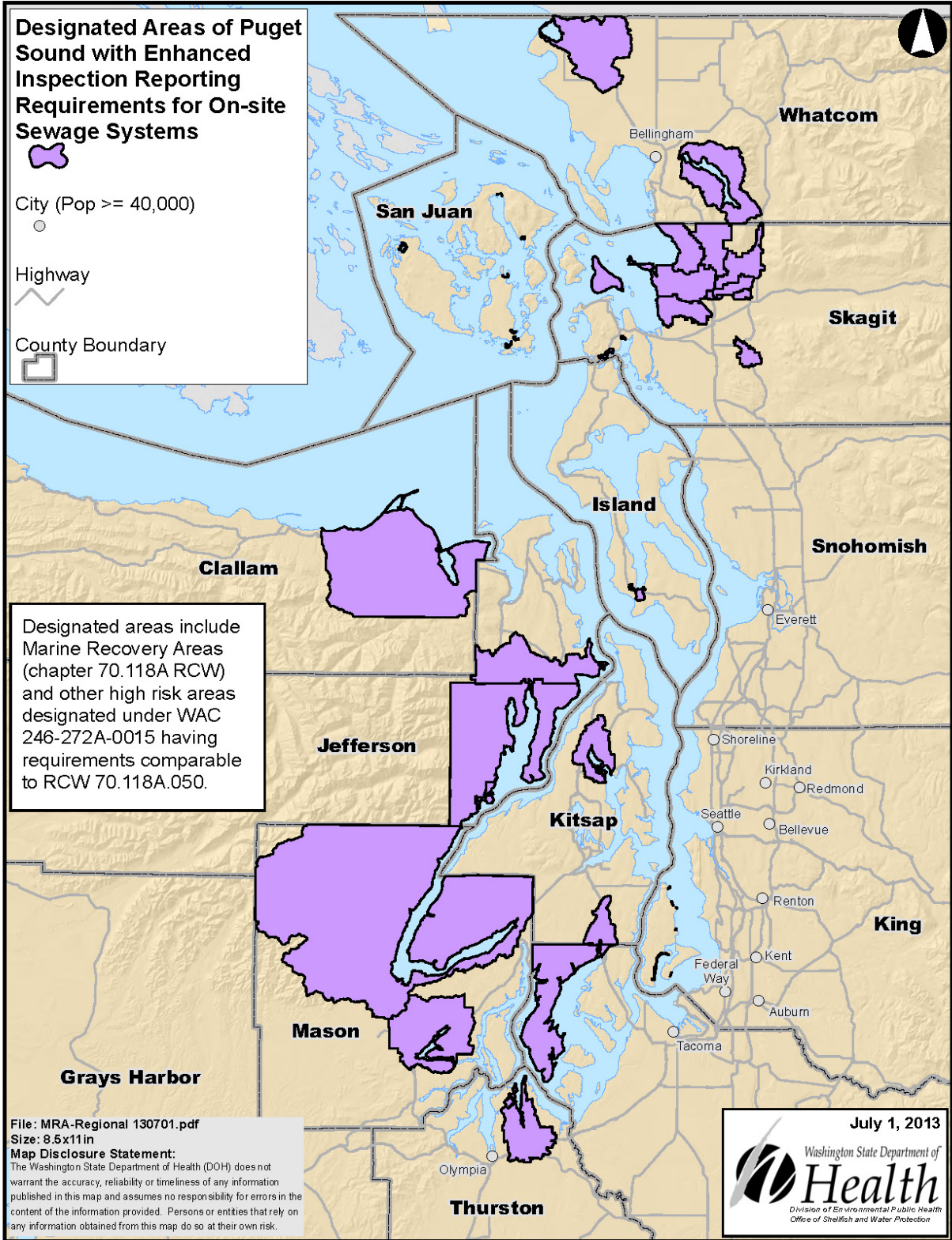
Strategies in this area focus on implementing the Washington Shellfish Initiative. The collective actions support working aquatic lands and improve water quality to protect and restore shellfish beds for human consumption. Strategies related to wastewater, stormwater, and toxics also contribute to the health and recovery of shellfish beds.

CLIMATE CHANGE

Increased acidity in marine waters from carbon dioxide emissions and upland runoff is threatening the aquaculture and shellfish industry. Ocean acidification is related to, but distinct from climate change, although they share a common cause, increasing carbon dioxide in the atmosphere. Ocean acidification is also a concern for harvest of wild shellfish and fish species that use marine plankton as a food source.

Adaptation strategies outlined in *Preparing for a Changing Climate: Washington State's Integrated Climate Response Strategy* (Washington State Department of Ecology 2012a) include enhancing our understanding and monitoring of ocean acidification in Puget Sound and coastal waters, as well as our ability to adapt to and mitigate effects of seawater acidity on shellfish, other marine organisms, and marine ecosystems.

The Action Agenda includes support of a key action in the state response strategy: Supporting the work of newly created Blue Ribbon Panel on Ocean Acidification.



Recovery Targets

The strategies and actions in this section will contribute to achieving the recovery target listed below for shellfish beds.

Vital sign	Indicator	Recovery target(s)
Shellfish Beds	Acres of harvestable shellfish beds	A net increase of 10,800 harvestable shellfish acres, including 7,000 acres where harvest had been prohibited between 2007 and 2020.

Local Priorities

LIOs identified near-term actions that address shellfish. These local actions are presented in the *Strategies and Actions* section along with Soundwide actions under the sub-strategy shaded below. The local action numbering contains the area abbreviation shown in parentheses after each LIO name. See Section 4, *Local Recovery Actions*, for detailed information about local planning.

Local Integrating Organization	Sub-Strategy				
	C7.1	C7.2	C7.3	C7.4	C7.5
Hood Canal Coordinating Council (HC)					
Island (ISL)					
San Juan (SJI)					
Snohomish-Stillaguamish (SNST)					
South Central Caucus Group (SC)					
Alliance for a Healthy South Sound (SS)					
Strait ERN (STRT)					
West Central (WC)					
Whatcom (WH)					

Strategies and Actions

C7. Ensure Abundant, Healthy Shellfish for Ecosystem Health and for Commercial, Subsistence, and Recreational Harvest Consistent with Ecosystem Protection

OCEAN ACIDIFICATION

As stated in *Ocean Acidification: From Knowledge to Action, Washington State’s Strategic Response* (Washington State Blue Ribbon Panel on Ocean Acidification 2012), ocean acidification produces conditions that make it difficult for shellfish and other calcifiers to form, build, and maintain calcium shells. If the acidification of Washington’s marine waters follows its projected pace, it will become more difficult for some calcifiers to make or maintain their shells. Growth rates can be expected to decrease and mortality rates increase. Larval and juvenile shellfish are especially vulnerable. In order to adapt to and remediate the impacts of ocean acidification and limit future losses to shellfish, a comprehensive approach is needed. This approach includes monitoring and maintaining the water quality of hatcheries and commercial shellfish beds.

The Blue Ribbon Panel recommends strategies for preserving and enhancing the resilience of native shellfish. These recommendations include innovative approaches and technologies to maintain and enhance cultivated shellfish production through water quality monitoring in hatchery facilities, post-hatchery facilities, and shellfish farms, developing commercial-scale water treatment methods or hatchery designs to protect larvae from corrosive seawater, and supporting programs to reduce sources of pollutants in commercial shellfish beds. The Action Agenda strategies in this section directly support these Blue Ribbon Panel recommendations.

C7.1 Improve water quality to prevent downgrade and achieve upgrades of important current tribal, commercial and recreational shellfish harvesting areas

Protection and improvement of water quality and control of pollution will be critical to meeting the recovery target for shellfish beds.

DOH monitors shellfish harvesting areas and classifies them as safe or unsafe for harvest. As of the end of 2011, DOH managed the classification of 326,000 commercial shellfish harvesting acres throughout the state, approximately 190,000 in Puget Sound. There were 252,000 acres in ‘Approved’ classification, 12,000 acres ‘Conditionally Approved,’ 300 acres with ‘Restricted’ classifications, and 61,000 acres with ‘Prohibited’ classifications (see table below).

Department of Health Shellfish Harvesting Area Classifications, as of the End of 2011 (acres)					
	Approved	Conditionally Approved	Restricted	Prohibited	Total
Washington State	252,000	12,000	300	61,000	326,000
Puget Sound					190,000
Note: figures may not add up to total due to rounding.					

In 2011, DOH upgraded the classification of 697 acres in five commercial shellfish areas. Over the same time, 4,960 acres were downgraded in two areas. Poor water quality in the Samish Bay (Samish River) and Pacific coast growing areas resulted in significant classification downgrades.

Over the past 30 years, DOH has downgraded the classification of about 56,000 acres and upgraded the classification of about 46,000 acres (see table below). Most of the downgrades took place between 1981 and 1995, when 45,000 acres were downgraded and 7,000 acres were upgraded. Since 1995, Health has downgraded 11,000 acres while upgrading 40,000 acres. In Puget Sound, approximately 36,000 acres—or about 19% of commercial and recreational shellfish beds—are closed due to pollution sources.

Department of Health Shellfish Harvesting Area Classifications, 1981—2011 (acres)			
	1981—1995	1995—2011	Total: 1981—2011
Area Upgrades	7,000	40,000	46,000
Area Downgrades	45,000	11,000	56,000
Note: figures may not add up to total due to rounding.			

DOH also lists shellfish beds that are threatened with downgrade each year. In 2011, seven areas in Puget Sound were “threatened” with a downgrade in classification: Burley Lagoon, Dyes Inlet, Filucy Bay, Padilla Bay, Pickering Passage, Port Townsend Bay, and South Skagit Bay.

Even with significant downgrades in 2011, in recent years, through efforts of state and local government, tribes, private landowners, and shellfish growers, we have had a net increase of about 1,400 acres of shellfish areas reopen for harvest due to pollution control. Strategies and actions in this area are focused on capitalizing on the lessons learned from these experiences and increasing this trend.

Ongoing Programs

DOH is responsible for assuring that marine water is monitored and all potential pollution sources are evaluated to ensure a safe shellfish harvest. To evaluate shellfish growing areas and protect public health, each year Health commonly collects over 10,000 marine water samples, evaluates about 125 miles of shoreline, and inspects numerous wastewater treatment plants and marinas.

Based on water quality and pollution source evaluations, Health identifies specific locations where shellfish harvest is “threatened” or “of concern” due to pollution. These areas meet the marine water quality standards; however, if pollution problems are not addressed, a downgrade is probable. Often these areas require special attention to prevent a downgrade.

DOH, Ecology, WSDA, Partnership, WSCC and conservation districts, Washington Sea Grant and WSU Extension, tribes, local health departments, shellfish growers and many other stakeholders work together to maintain and improve water quality to protect and restore shellfish areas. Local and tribal governments play significant roles in protecting and restoring water quality in shellfish harvesting areas. Pollution identification and correction programs are locally driven processes focusing on specific geographic areas to find and fix nonpoint water pollution problems. These programs consist of a complete survey of all individual properties to identify nonpoint pollution sources, comprehensive education and outreach activities, technical assistance to homeowners, and financial incentives to encourage pollution control. These programs are widely considered one of the best approaches to protecting and reopening shellfish beds. Pollution identification and correction programs have been successful in reopening beds in Henderson Inlet in Thurston County, Oakland Bay in Mason County, and in several growing areas in Kitsap County where the Pollution Identification and Correction program is most developed. These programs are resource-intensive to accomplish all necessary aspects of the comprehensive program, but experience shows that this is necessary and effective in the long run. A major pollution identification and correction program effort is underway in Skagit County in Samish Bay to recover 4,000 acres of downgraded beds.

Current funding for pollution identification and correction programs comes from local and tribal sources and from state and federal grants. In 2011 and 2012, over \$3 million in EPA funds was dispersed to

counties to develop sustainable pollution identification and correction programs; stable long-term funding and support from local and tribal governments and citizens are also necessary for these programs to continue to protect and reopen important commercial and recreational shellfish harvest areas.

When shellfish growing areas are downgraded from nonpoint source pollution, counties are required to form Shellfish Protection Districts. In order to protect important shellfish resources, counties may also voluntarily form Shellfish Protection Districts. The purpose of Shellfish Protection Districts is to bring stakeholders together under a prescribed process to identify sources of pollution, develop a plan, and then implement that plan with accountability steps identified. The district may provide a funding mechanism for local and state resources to contribute to the implementation, but the district may also have a strong education and public involvement elements to change public behavior in such areas as onsite sewage system correction, improved agricultural practices, or stormwater control. In most cases, generation of funds is required to implement a Shellfish Protection District, and often districts incorporate pollution identification and correction programs as part of the restoration process.

Near-Term Actions

The near-term actions¹⁰ identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

- C.7.1.1 Shellfish best practices library.** DOH will work with the PSP, Ecology, WSCC, and conservation districts and local governments to create a best practices library or menu highlighting successful locally driven efforts to assist in the development of shellfish protection districts, shellfish protection programs, and shellfish growing area restoration activities, such as the Henderson Inlet, Oakland Bay, and Samish Bay efforts.
- C.7.1.3 Local clean water programs.** Ecology, working with WSDA, DOH, EPA, and the tribes will form a Pollution Control Action Team to respond quickly when areas are identified where water quality problems threaten shellfish areas. They will initiate community outreach and education, pollution identification, inspection, technical assistance to local agencies and landowners and finally, enforcement. The team will focus its work in priority areas and support pollution identification and correction programs where they are established. The first effort will be in Drayton Harbor and Portage Bay.
- C.7.1 WC26 South Dyes Inlet wastewater infrastructure.** With an ultimate goal of making Oyster Bay viable for commercial shellfish harvest, the City of Bremerton will assess, improve, and expand sewer infrastructure in South Dyes Inlet.

In addition, strategies and actions related to controlling pollution from runoff and wastewater described in strategies C3, C4, C5, and C6, and to establishment of pollution identification and correction programs in strategy C9 are directly related to improving water quality and recovery of shellfish beds.

¹⁰ Gaps in numbering reflect near-term actions that have been completed or otherwise retired.

C7.2 Restore and enhance native shellfish populations

Native shellfish restoration efforts will focus on two species: native Olympia oysters and pinto abalone.

The Olympia oyster, the Pacific Northwest coast's only native oyster, ranges from southeastern Alaska to Baja, California. For thousands of years, Olympia oysters provided sustenance for tribes and habitat for a host of marine organisms. Until the late 1800s, Olympia oysters were the most abundant bivalves in Puget Sound, where they occupied thousands of acres of productive, diverse habitat. Over-harvesting, sediment loads, and pollution drove the oyster to near extinction. Today, it occupies a fraction of its former range and is a Candidate Threatened Species in Washington State and a priority species for restoration.

Pinto abalone were once widely distributed throughout the waters of British Columbia and Washington state. In recent decades, populations have undergone sharp declines. Known for their large, muscular foot and their pearlescent oval shell, pinto abalone are slow-growing, long-lived marine snails and are typically found in nearshore rocky habitats in semi-exposed or exposed coastal regions. More than 60 abalone species are found worldwide but the pinto, or northern, abalone is the only species found in Washington State, where they range from Admiralty Inlet to the San Juan Islands and the Strait of Juan de Fuca and are typically found at depths to about 20 m.

WDFW regularly monitors the abundance of pinto abalone at 10 index stations throughout the San Juan Archipelago. Data from surveys made in 2006 showed an overall mean abalone density of 0.04 m², which is well below the minimum densities for successful reproduction.

Ongoing Programs

WDFW, NOAA, tribes, and many other small and large local groups are involved in native shellfish restoration. Programs focused on Olympia Oyster restoration are oriented around the *Native Oyster Rebuilding Plan*, which will result in restoration of 19 historical large natural oyster beds and associated local ecosystems throughout Puget Sound by 2022. Abalone programs are focused on the work needed to ensure there is adequate abalone production capacity to support restoration. DNR is involved in native shellfish restoration efforts through the aquatic leasing program and the wildstock geoduck fishery management program.

Key Ongoing Program Activities

- WDFW, in collaboration with partners such as Puget Sound Restoration Fund, shellfish growers, the Northwest Straits Commission and The Nature Conservancy, and in collaboration with individual tideland owners, tribes, Marine Resources Committees of the Northwest Straits Commission, Health and other state and local partners, will revise, update, and continue to implement the *Native Oyster Rebuilding Plan* including accelerating restoration of the Olympia oyster.
- WDFW, Puget Sound Restoration Fund, Washington Sea Grant, and university researchers, and SeaDoc Society in conjunction with others will use a 3-year NOAA grant to improve wild stock abalone hatchery methods and increase production of genetically diverse and disease free juveniles for out-planting. They also will seek additional funding to staff and expand abalone hatchery capacities and to develop remote nurseries and abalone food resources, thereby improving the opportunity to build local stocks to naturally reproducing levels.

Near-Term Actions

The near-term actions identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

C.7.2 WC13 West Sound shellfish gardening. Kitsap Public Health will continue to work with the Puget Sound Restoration Fund on the expansion of community shellfish gardens in Kitsap County. This dovetails with the Health District's plans to implement a permanent marine shoreline survey program throughout Kitsap County in 2014.

C7.3 Ensure environmentally responsible shellfish aquaculture based on sound science

Intensive shellfish aquaculture can put pressure on Puget Sound and there are concerns that these activities may increase pollution, change the physical beach structure and substrate to the detriment of native species abundance and diversity, disrupt the food web, and affect other resource-based jobs such as fishing or crabbing. In particular, the effects of geoduck aquaculture on the benthic environment and fauna, food webs, water quality, and aesthetics are a concern. In 2007, the Legislature passed HB 2220 to address these issues.

HB 2220 established a Shellfish Aquaculture Regulatory Committee to advise Ecology on revisions to Chapter 173-26, Part III WAC (Shoreline Master Program Guidelines) regarding geoduck aquaculture. Effective March 2011, Ecology published provisions that require future local Shoreline Master Programs include an inventory of water quality data; known sediment contamination; existing shellfish cultivation areas and shellfish protection districts; and other data that inform the siting of aquaculture. These provisions also require local shoreline conditional use permits for new commercial geoduck aquaculture, provide guidance for permit content and administration, and ensure public and tribal notification of proposed geoduck aquaculture projects.

HB 2220 also directed Washington Sea Grant to review existing scientific information and commission scientific research, with Shellfish Aquaculture Regulatory Committee input, to examine key uncertainties related to geoduck aquaculture that have implications for the health of the Puget Sound ecosystem and the wild geoduck population. Ongoing studies include investigations of: the ecological and geochemical consequences of disturbances associated with geoduck aquaculture; cultured-wide interactions; and resilience of soft-sediment communities after geoduck harvest in Samish Bay.

In March 2010, the Legislature passed and the governor enacted a law on marine spatial planning in Puget Sound and along the Washington Coast requiring an interagency assessment and report on information related to marine spatial planning and recommendations. This report was completed in January 2011 and contains 21 recommendations related to implementing marine spatial planning in Washington, including Puget Sound. Implementation of marine spatial planning will give shellfish growers and upland owners greater certainty about where aquaculture will be permitted and further reduce the likelihood of conflicts related to aquaculture. Continuing work is needed to clarify the potential impacts of shellfish aquaculture and to help communities build consensus and collaboration on the role of shellfish aquaculture in Puget Sound.

Ongoing Programs

Key Ongoing Program Activities

- Washington Sea Grant and university researchers completed the Geoduck Aquaculture Research Program December 2013. The report includes recommendations for continuing research and for monitoring environmental effects for geoduck aquaculture (Washington Sea Grant 2013).
- DNR is initiating a small pilot program to allow geoduck aquaculture on state-owned aquatic lands in Hood Canal and southern Puget Sound. DNR plans to require monitoring at geoduck cultivation sites on state-owned aquatic land to provide further opportunity to study the effects of geoduck aquaculture on the aquatic environment (Washington State Department of Natural Resources 2014).
- Pacific Coast Shellfish Growers Association, Pacific Shellfish Institute, World Wildlife Fund and the Food Alliance will promote and implement sustainable aquaculture standards and work with grower members to incorporate environmental codes of practice in members' sustainable aquaculture activities.
- Ecology will review any new aquaculture proposals for consistency with the Coastal Zone Management Act.

Near-Term Actions

The near-term actions identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

- C.7.3.1 Aquaculture Shoreline Master Program Handbook.** Ecology will publish an aquaculture Shoreline Master Program Handbook section with special emphasis on geoduck aquaculture and finfish net pen operations, update its aquaculture web resources to make them more comprehensive, and provide direct assistance and training to local governments on the aquaculture handbook.
- C.7.3.2 Areas suitable for future shellfish aquaculture.** Ecology will coordinate with interested local governments, DNR, and stakeholders to support pre-planning and implementation of marine spatial planning and local shoreline master program updates by gathering, compiling an ground-truthing baseline information on current aquaculture and filling data gaps and completing research to identify areas that are suitable and unsuitable for future shellfish aquaculture. Ecology will support marine spatial planning related to aquaculture by coordinating with interested local governments, DNR, and stakeholders on gathering, compiling, and ground-truthing baseline information on current aquaculture and filing data gaps.
- C.7.3.3 Shellfish Model Permitting Program.** Ecology will work with the Governor's Office of Regulatory Assistance to lead and facilitate a state team to develop and implement a Model Permitting Program that ensures early and continued coordination among state and federal agencies, tribes and local governments for permitting and licensing of shellfish aquaculture.

C.7.3.4 Nitrogen control pilots using shellfish. Ecology will work with DNR, the shellfish industry and researchers to create pilot projects testing the use of mussel culture or other suspended or beach culture to help address nitrogen pollution in sensitive areas, such as Quartermaster Harbor.

C7.4 Enhance the public's connection to shellfish and increase recreational harvest opportunities

When the public goes to Puget Sound beaches, they want to dig shellfish that are safe to eat and swim in safe waters. Annually, tourists and residents purchase 160,000 licenses to harvest shellfish from Washington waters, providing more than \$1 million in state revenues. WDFW estimates that the 125,000 shellfish harvesting trips made each year to Puget Sound beaches provide a net economic value of \$5.4 million to the region. It will be important to increase this connection to shellfish and to help people understand the connections between water quality and clean, healthy shellfish beds.

Near-Term Actions

The near-term actions identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

C.7.4.1 Shellfish interpretive programs and events. Washington State Parks, in collaboration with other public, tribal and private interests, will conduct shellfish interpretive programs and events to help forge personal connections between clean, productive Puget Sound waters, the shellfish we eat, and the iconic role shellfish occupy in Washington's cultural and culinary identity.

C7.5 Answer key shellfish safety research questions and fill information gaps

Some obstacles to expanding shellfish harvest opportunities are lack of knowledge to better estimate risk and delineate where and when shellfish are safe to eat. Actions under this sub-strategy will assist implementing agencies to better evaluate food safety issues related to shellfish and to make better decisions on shellfish area classification and status. Research to better define collateral environmental benefits of shellfish aquaculture (like nutrient removal) is also included in this sub-strategy.

Near-Term Actions

The near-term actions identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

C.7.5.1 Point source dilution analyses modeling. Ecology and DOH will work cooperatively under an existing EPA grant to evaluate use of Ecology environmental models for point source dilution analyses in DOH's commercial shellfish area classification program.

C.7.5 SNST6 Water quality monitoring for ocean acidification. Collect water quality data for temperature, salinity, dissolved oxygen, pH, CO₂ (pCO₂) to identify local trends.

Emerging Issues and Future Opportunities

- Implementation of the Blue Ribbon Panel on Ocean Acidification recommendations.

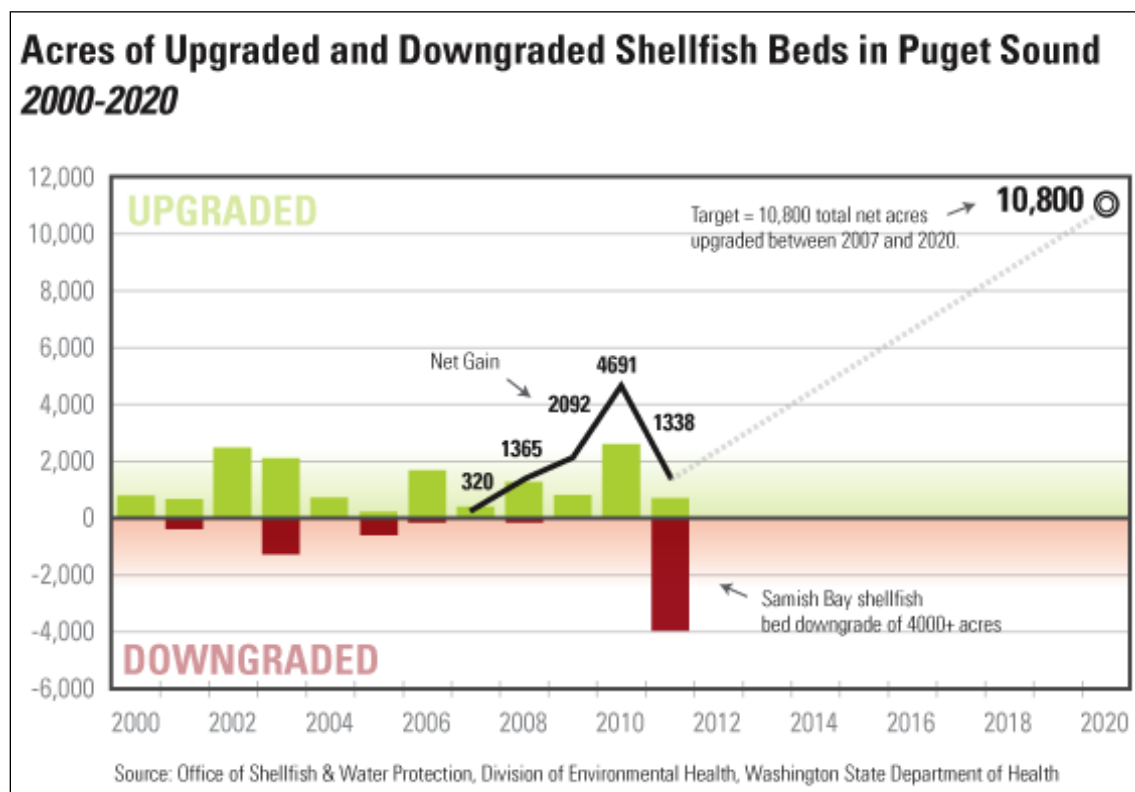
Target View: Shellfish Beds

Around Puget Sound, there are an estimated 190,000 acres of classified commercial and recreational shellfish beds. According to the DOH, about 36,000 acres—approximately 19%—are closed due to pollution. The pollution is from a variety of sources, but mostly from fecal bacteria from humans, livestock and pets that gets into the water and threatens the areas where oysters, clams and other bivalve shellfish grow.

Recovery Target

- A net increase of 10,800 harvestable shellfish acres, including 7,000 acres where harvest had been prohibited between 2007 and 2020.

The graph below illustrates recent data on the status of shellfish beds in Puget Sound, and relationship to the recovery target. Green and red bars represent the annual upgraded and downgraded acres, respectively, while black line represents the net increase in harvestable acres of commercial and recreational shellfish beds in Puget Sound toward the recovery goal of 10,800 total net acres. Net increase is the upgraded acres in existing shellfish growing areas (or the restoration of unclassified acreage) to allow harvest, minus any downgrades in classification that prevent harvest. Downgrades of the shellfish beds are generally caused by fecal bacteria or other pollutants in the water that makes the shellfish unsafe to eat.



Relevant Strategies (and Sub-Strategies)

- A4.2. Provide infrastructure and incentives to accommodate new and re-development within urban growth areas
- B1. Focus development away from ecologically important and sensitive nearshore areas and estuaries (B1.1, B1.2, B1.3)
- B4.1 Use, coordinate, expand and promote financial incentives and programs for best practices at ports and in the marine industry that are protective of ecosystem health
- B5. Prevent and respond to the introduction of terrestrial and aquatic invasive species (B5.3, B5.4)
- C1. Prevent, reduce, and control the sources of contaminants entering Puget Sound (C1.1, C1.5, C1.6)
- C2.4. Prevent problems from new development (C2.4)
- C3. Prevent, reduce, and control agricultural runoff (C3.1, C3.2)
- C5. Prevent, reduce and/or eliminate pollution from decentralized wastewater treatment systems (C5.1, C5.2, C5.3)
- C6. Prevent, reduce and/or eliminate pollution from centralized wastewater treatment systems (C6.1, C6.2, C6.3, C6.4)
- C7. Ensure abundant, healthy shellfish for ecosystem health and for commercial, subsistence, and recreational harvest consistent with ecosystem protection (C7.1, C7.2, C7.3, C7.4, C7.5)
- C8. Effectively prevent, plan for and respond to oil spills (C8.1, C8.2, C8.3)
- C9. Address and clean up cumulative water pollution impacts in Puget Sound (C9.1, C9.3, C9.4)

Figure C-14 (Appendix C, *Results Chains*) depicts how the strategies (and related sub-strategies) contribute to reducing pressures on shellfish beds and achieving the shellfish beds recovery target. Appendix C also contains a results chain for each individual strategy in the Action Agenda, showing how that strategy (and its related sub-strategies) reduces pressures and contributes to achieving numerous recovery targets.

Oil Spills

The Challenge

Over 20 billion gallons of oil and hazardous chemicals are transported through Washington State each year by ship, barge, pipeline, rail, and road. Organizational failure, equipment failure, and human error can all lead to unintended and potentially disastrous consequences. Oil and chemical spills can threaten Puget Sound's productive and valuable ecosystems.

These incidents can kill fish, birds, and marine animals and contaminate beaches and shellfish. All spills whether on land or water can threaten public health, safety, the environment, and ultimately damage the state's economy and quality of life.

CLIMATE CHANGE

The risk of vessel incidents and oil spills could increase with climate change. Increased storm frequency and severity could increase the risk of vessel incidents and oil spills, as well as reduce the ability to respond quickly. Oil dispersion, movement on shore, and fate and effects could change as a result of changing ocean temperature and chemistry, as well as onshore conditions and habitats. Strengthened prevention and response readiness are part of adaptation needs.

Recovery Targets

The strategies and actions in this section will contribute to achieving virtually all the Puget Sound recovery targets, and are particularly important for achieving the target for orcas. The NOAA listing document for the species identified major oil spills as the single greatest acute threat to the survival of this species. The indicator and recovery target for orcas are listed below.

Vital Sign	Indicator	Recovery Target(s)
Orcas	Number of southern resident killer whales	By 2020, achieve an end-of-year census of 95 individual southern resident killer whales, which would represent a 1% annual average growth rate from 2010 to 2020.

Local Priorities

LIOs identified near-term actions that address oil spills. These local actions are presented in the *Strategies and Actions* section along with Soundwide actions under the sub-strategy shaded below. The local action numbering contains the area abbreviation shown in parentheses after each LIO name. See Section 4, *Local Recovery Actions*, for detailed information about local planning.

Local Integrating Organization	Sub-Strategy		
	C8.1	C8.2	C8.3
Hood Canal Coordinating Council (HC)			
Island (ISL)			
San Juan (SJI)			
Snohomish-Stillaguamish (SNST)			
South Central Caucus Group (SC)			
Alliance for a Healthy South Sound (SS)			
Strait ERN (STRT)			
West Central (WC)			
Whatcom (WH)			

Strategies and Actions

C8. Effectively Prevent, Plan for, and Respond to Oil Spills

The 2009 Legislature directed the Partnership to provide independent advice and assessment of Washington State’s oil spill programs and make recommendations for any necessary improvements. To that end, the Legislature recommended the appointment of a special advisory body with statewide representation. As a result, the Partnership’s Leadership Council (Leadership Council) authorized the formation of the Cross Partnership Oil Spill Work Group (Work Group) in summer 2010.

That broadly based stakeholder work group met for 3 days during September and October 2010. At the conclusion of the third day, the group adopted four recommendations by consensus of the attending members. The Leadership Council passed Resolution 2010–04 on November 19, 2010, supporting the four work group recommendations.

Ongoing Programs

Engrossed Second Substitute HB 1186 was signed into law by Governor Gregoire in April 2011. Each of the four original work group recommendations was represented in the legislation and/or final state budget. In a letter to the, Director of Ecology, Governor Gregoire requested that the state oil spill programs continue to work closely with the Partnership and the work group during rulemaking for HB 1186. In January 2013, Chapter 173-183 WAC was amendment to implement HB1186.

In addition, the 2011 Legislature called for the Partnership and the Cross Partnership Work Group to continue their efforts to independently assess the state’s oil spill programs during the 2011–2013 biennium. To that end, the work group met in May 2011 to establish the following consensus priorities for future work.

- Use of risk assessments to develop measures to reduce the risk of major oil spills.
- Enhance transboundary coordination and marine safety in our shared waters with Canada.
- Support the involvement of the state and local governments at tabletop oil spill drills.

These priorities provide the foundation from which the Partnership, Ecology, and WDFW developed the sub-strategies and near-term actions identified below.

In October 2012, the Puget Sound Partnership Oil Spill Work Group and Puget Sound Harbor Safety Committee (HSC) formed a joint Vessel Traffic Risk Assessment (VTRA) Steering Committee, co-chaired by Partnership and HSC, comprising about a dozen representatives; drawn from several maritime industry sectors, the Makah Nation, Washington Association of Counties, environmental NGO's, Ecology and the US Coast Guard.

In November 2012, the Partnership awarded a grant to George Washington University to update the VTRA for north Puget Sound. The VTRA Steering Committee met almost monthly between Dec. 2012 and February 2014 to update the assessment.¹¹

Key Ongoing Program Activities

- Strengthen marine safety standards in our shared waters with Canada by consulting with industry, federal agencies, tribes and others.
- Report on deployments of the industry-funded emergency response tug at Neah Bay.
- Engage the Partnership's Oil Spill Work Group in the short-term work priorities described above.
- Continue the EPA and Ecology's Spill Prevention Control and Countermeasures Programs under the Clean Water Act.

C8.1 Prevent and reduce the risk of oil spills

While the relative rarity of major spills and catastrophic has not led to obvious complacency by industry or a lack of vigilance by government, two decades of success has led to limited funding for State Programs to systematically analyze regional and industry-specific patterns in oil spill risk by regulated industries, which would allow for subsequent targeting of prevention efforts. This funding shortage is a particularly concern considering the dramatic increase in ship and crude oil traffic that is projected to occur over the next 10 years. Ongoing changes in marine transportation patterns, including the substantial increase in crude oil exportation from Vancouver, BC, and the proposed Gateway Pacific Terminal at Cherry Point in northern Puget Sound, increase the risk of major spills to Washington's marine waters.

Ecology's *Spills Program 2009–2015 Strategic Plan* for its oil spill program identifies "improving marine safety by emphasizing a risk-based approach" as one of its five strategic initiatives. The first recommendation in the joint report by Ecology and the Partnership on lessons learned from the 2011 National Commission on the Deepwater Horizon spill is to "complete a rigorous risk analysis on higher risk industry sectors to ensure that there is an appropriate level of investment reducing the risk of oil spills." The following near-term actions are necessary for Ecology and the broader spills community to fulfill legislation direction, accomplish Ecology's strategic plan and implement the Cross Partnership Oil Spill Work Group's recommendations.

¹¹ The final report was released on 3/31/14. It is 128Mb and can be downloaded at: http://www.seas.gwu.edu/~dorpjr/tab4/publications_VTRA_Update_Reports.html

Near-Term Actions

The near-term actions¹² identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

C.8.1.2 Promote and coordinate the proactive use of maritime risk assessments. The Puget Sound Partnership will share findings from its 2010 Vessel Traffic Risk Assessment and related studies in policy forums: like the Puget Sound Harbor Safety Committee, the National Energy Board of Canada (supporting Ecology, the Makah Tribe and other interveners) and various other regional and local groups in order to further develop and inform vetted recommendations that promote continuous improvements in safe shipping.

C.8.1 SJ14 Expand and maintain Derelict Vessel Compliance Program (Near-Term Major Oil Spills Action IV).

C8.2 Strengthen and integrate spill response readiness of the state, tribes, and local government

In 2010, the Cross Partnership Oil Spill Work Group recommended the state’s participation in tabletop and worst case oil spill drills be restored to make the oil spill response system more robust. The Work Group recognized that the response system is enhanced when spill responders sharpen their technical skills and build trust in one another by practicing in drills together. Given the rarity of major spills requiring a Unified Command, and the recent reduction in the participation of state and local governments in drills due to budget cuts, some relationships and expertise has deteriorated over time. The following near-term actions seek to strengthen those relationships and the effectiveness of actual response actions.

Ongoing Programs

Key Ongoing Program Activities

- Support an appropriate level of tabletop drill participation by Ecology and local government.
- Support the involvement of local government in Northwest Area Committee meetings and updates of the Area Contingency Plan.

Near-Term Actions

The near-term actions identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

C.8.2 SJ11 Coordinate actions and prepare to respond to major oil spills (Near-Term Major Oil Spills Action I).

C.8.2 SJ12 Integrate and define parameters for responses to increased vessel traffic and potential vessel spills (Near-Term Major Oil Spills Action II).

¹² Gaps in numbering reflect near-term actions that have been completed or otherwise retired.

- C.8.2 STRT12 Expand oil spill drills along the Strait of Juan de Fuca and coast.** Regularly conduct worst-case oil spill exercises, including equipment deployment, in this region. The combined spill response assets housed in Neah Bay and Port Angeles afford substantial opportunities to drill. In addition, consider coordinating efforts with the Northwest Maritime Center in Port Townsend to host and expand drills and table-top exercises along the Strait of Juan de Fuca, outer Coast, and Puget Sound waterways utilizing their Pilothouse/Oil Spill Training Center. Drills and exercises should incorporate vessels of opportunity, publicly funded response equipment caches, and maritime industry participants as well. All of these assets are owned by various different organizations, that if drilled together, would afford opportunities to improve efficiencies through coordination.
- C.8.2 STRT13 Improve trans-boundary coordination on oil spill preparedness and response.** Support enhancement of the U.S. and Canadian Coast Guards' annual joint spill response exercises, known as U.S./Canadian Joint Response Team (CANUSPAC), on both sides of the border with additional equipment and personnel. Also, support implementation of the U.S. Coast Guard Reauthorization Act that called for both countries to reevaluate the comparability of spill response, tug escort, and rescue towing assets on either side of the border as cited within the Combined Vessel Traffic Service Treaty. Additionally, the current estimates of Canadian vessel traffic projections need to be incorporated into updates of vessel traffic risk assessments.
- C.8.2 STRT14 Support the establishment of a Neah Bay Vessel of Opportunity Program.** Once established in Neah Bay, support expansion of the program to other locations along the Strait of Juan de Fuca, including the Ports of Port Angeles and Port Townsend.

C8.3 Respond to spills and seek restoration using the best available science and technology

The Cross Partnership Work Group's overarching recommendation was to improve the state's response capacity by requiring the regulated community to have timely access to the best achievable technology and training necessary to safely, promptly and properly respond to a worst-case oil spill. The following near-term actions support implementation of legislative direction under HB 1186, Ecology's rulemaking efforts, and strengthen coordination with Canada during transboundary spills.

The 2011 National Commission's Report on the Deepwater Horizon Spill generally recommended that restoration decisions be based on transparent, independent science and also provide compensation for poorly understood marine impacts. In addition, it recommended that long-term monitoring of affected resources take place for years following catastrophic spills.

Ongoing Programs

Key Ongoing Program Activities

- Implement Ecology's recommendations from the Pacific States/BC Oil Spill Task Force transboundary report.

Near-Term Actions

The near-term actions¹³ identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

C.8.3.4 Identify species and locations at risk in spills. WDFW will establish planning efforts for coordinated, scientific collection of ephemeral data by local and regional entities for key species and locations at risk in oil spills to enhance response and Resources Damage Assessment and Restoration program.

Emerging Issues and Future Opportunities

Preparing for a Changing Climate: Washington State's Integrated Climate Response Strategy (Washington State Department of Ecology 2012a) calls for revising oil spill geographic response plans to account for changes in shorelines, river conditions, and environmental conditions caused by climate change. These revisions should include geographic specific response strategies based on risk assessments and considerations of changes in infrastructure and logistical support.

¹³ Gaps in numbering reflect near-term actions that have been completed or otherwise retired.

Cumulative Impacts

The Challenge

Water pollution in the marine waters and freshwater of Puget Sound comes from the introduction of toxic chemicals, pathogens, nutrients, and suspended sediments. These contaminants can harm aquatic life and pose health and safe problems in seafood, public water supplies, and beaches. There are many contaminated sites within and near Puget Sound that have resulted from past and ongoing releases of pollutants into the environment.

Water quality data indicate that the region's marine and fresh waters continue to have pollution challenges, but cleanup efforts have made some improvements.

- Ecology's Long Term Ambient Monitoring Program tracks water quality in 14 major rivers in Puget Sound using a Water Quality Index, which evaluates common pollutants such as temperature, bacteria, and dissolved oxygen, but not toxic pollutants. The Index shows that conventional water quality pollution has made small general improvements since 1995, but a majority of freshwater monitoring locations do not have good water quality (see chart).

Annual Water Quality Index (WQI) Scores at Freshwater Monitoring Locations, 2000–2010

Rivers Meeting Goals	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Average
Duckabush	93	95	94	90	74	94	89	85	88	96	86	89
Elwha	86	88	83	76	73	74	86	67	66	81	81	78
Skokomish	95	95	94	85	70	67	92	89	89	94	86	87
Snohomish	92	91	89	81	74	75	89	75	81	85	76	83
Borderline Rivers	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Average
Cedar	87	76	60	78	72	84	81	79	79	81	77	78
Upper Skagit	87	86	59	85	64	81	84	75	75	81	56	76
Lower Skagit	89	91	71	76	61	73	77	77	75	76	74	76
Deschutes	62	72	70	73	61	83	88	88	83	76	74	75
Nisqually	40	60	79	79	69	71	74	75	91	74	83	72
Rivers Not Meeting Goals	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Average
Green	82	73	66	67	75	49	72	68	60	69	63	68
Nooksack	65	68	58	57	52	54	61	51	60	69	56	59
Puyallup	60	58	57	55	51	58	59	58	61	49	62	57
Samish	86	75	32	49	34	71	67	74	59	80	63	63
Stillaguamish	81	60	44	72	55	67	71	69	75	75	71	67

Note: The Water Quality Index (WQI) is an aggregation of monthly measurements of typical water pollutants reported on a scale of 1 to 100. A higher number indicates better quality. An index score of 80 or above indicates that water quality is generally meeting our goals; between 70 and 80 is considered "fair" or "borderline;" 40-70 is failing to meet water quality goals and less than 40 is "poor."

Source: River and Stream Ambient Monitoring Program, Washington State Department of Ecology

- Ecology's 2008 water quality assessment identifies 501 different rivers and streams in the Puget Sound basin that require cleanup plans (TMDLs). Some waterbodies have multiple segments listed and many segments are listed for more than one pollutant. Ecology's 2008 list included a total of 1,272 Puget Sound river and stream impairments (individual segment and parameter combinations).

Bacteria (398 listings), dissolved oxygen (392), and temperature (341) are the most frequently occurring impairments of Puget Sound rivers and streams. Impairments occur in rivers and streams each of the 19 water resource inventory areas (WRIAs) in the Puget Sound basin. More than 60% of the total number of listings for Puget Sound rivers and streams are in five watersheds: Nooksack (238 listings), Kitsap (160), Cedar/Sammamish (154), Duwamish-Green (131), and Lower Skagit-Samish (113).

- Ecology's 2008 water quality assessment identifies an additional 129 impairments to Puget Sound lakes. Approximately one-half of these listings relate to toxic chemical contamination. These 67 toxics-related impairments of lakes combined with 24 toxics-related listings for Puget Sound rivers and streams indicate that toxic chemicals are the fourth most common type of impairment in Puget Sound freshwaters.
- Almost half of routinely monitored beaches in Puget Sound (50–70 beaches) consistently met water quality standards every year from 2004 to 2010, and another third met standards every year except for 1 or 2 years. Pollution sources have been addressed at several beaches since 2004, and two permanent beach closures were lifted in Island County in 2008. Despite these efforts, problems remain. In 2010, 26% of monitored beaches in Puget Sound failed to meet water quality standards and thus were unsafe for swimming.
- Ecology has been working to clean up 1,580 toxic-contaminated sites located within a half-mile of Puget Sound, including 150 contaminated sediment sites. As of December 2011, 664 of these sites had been cleaned up or reported as cleaned up by Ecology, potentially responsible parties, and other entities.

In urban bays and harbors in Puget Sound, marine sediment quality data indicate mixed trends over time. Ecology's Urban Waters Initiative represents a major effort to reduce toxics entering urban bays and prevent re-contamination of sediments at cleanup sites including Elliott Bay and the Lower Duwamish in Seattle and Commencement Bay in Tacoma. Marine Sediment Chemistry Index (SCI) scores have improved in Elliott Bay and Commencement Bay, but declined in Bellingham Bay and Bainbridge basin from 1997–1999 to 2007–2010. The recent SCI scores for the Bainbridge basin and Bellingham Bay just meet the target score of 93.3, but the scores for Elliott Bay and Commencement Bay are still below the target score (Washington State Department of Ecology 2011b). The SCI score for Bellingham Bay does not reflect sediment cleanup efforts that commenced after this sampling was conducted. This strategy is focused on efforts to correct water quality and sediment quality problems related to toxic chemicals, nutrients, and pathogens by diagnostic studies and targeted cleanup activities. Implementing corrective actions to clean up impaired marine and fresh waters is essential for reducing the harm from pollution in the Puget Sound ecosystem. Sub-strategies in this section include completing TMDL studies that serve as water column cleanup plans for water bodies, completing cleanup action plans to restore and clean up contaminated upland and sediment sites within and near Puget Sound, addressing water quality issues at swimming beaches and recreational areas, implementing local pollution identification and correction programs, and developing a long-term effectiveness monitoring program for water quality improvement efforts.

Many of the sub-strategies presented here are important components of programs to address water quality problems that might be caused by pollution from urban runoff, wastewater discharge, and agricultural and forest runoff. Other strategies in priority C deal with efforts to reduce the release of

chemicals to the environment and to control pathways by which pollutants are delivered to Puget Sound waters.

CLIMATE CHANGE

Reducing existing stresses on the ecosystem is an important part of climate change adaptation strategies. Strategies in the Action Agenda to reduce pressure from cumulative water pollution help implement the state climate response strategies to achieve the following.

- Safeguard fish and wildlife and protect critical ecosystem services that support human and natural systems.
- Reduce the vulnerability of coastal communities, habitat, and species.

Future sea level rise will need to be considered in the prioritization, design, and post-project maintenance of cleanup sites near the shoreline.

Recovery Targets

The strategies and actions in this section will contribute most significantly to achieving the recovery targets listed below with their associated vital signs and indicators. They will also help achieve targets for shellfish beds, toxics in fish, freshwater quality (Benthic Index of Biotic Integrity), eelgrass, Pacific herring, and orcas.

Vital Sign	Indicator	Recovery Target(s)
Marine Water Quality	Dissolved oxygen levels	Prevent dissolved oxygen levels from declining more than 0.2 milligrams per liter in any part of Puget Sound as a result of human input.
Marine Sediment Quality	Sediment Chemistry Index	By 2020, all Puget Sound regions and bays achieve chemistry measures reflecting minimum exposure with Sediment Chemistry Index scores >93.3.
	Sediment Quality Standards	Have no sediment chemistry measurements exceeding the Sediment Quality Standards set for Washington State.
	Sediment Quality Triad Index	All Puget Sound regions and bays, as characterized by ambient monitoring, achieve the following: Sediment Triad Index scores reflect unimpacted conditions (i.e., SQTl values >81).
Freshwater Quality	Number of <i>impaired</i> waters	Reduce the number of <i>impaired</i> waters.
Swimming Beaches	Conditions of swimming beaches.	Have all monitored beaches in Puget Sound meet EPA standards for what is called enterococcus, a type of fecal bacteria.

Local Priorities

LIOs identified near-term actions that address cumulative impacts. These local actions are presented in the *Strategies and Actions* section along with Soundwide actions under the sub-strategy shaded below. The local action numbering contains the area abbreviation shown in parentheses after each LIO name. See Section 4, *Local Recovery Actions*, for detailed information about local planning.

Local Integrating Organization	Sub-Strategy			
	C9.1	C9.2	C9.3	C9.4
Hood Canal Coordinating Council (HC)				
Island (ISL)				
San Juan (SJI)				
Snohomish-Stillaguamish (SNST)				
South Central Caucus Group (SC)				
Alliance for a Healthy South Sound (SS)				
Strait ERN (STRT)				
West Central (WC)				
Whatcom (WH)				

Strategies and Actions

C9. Address and Clean up Cumulative Water Pollution Impacts in Puget Sound

OCEAN ACIDIFICATION

Ocean acidification is characterized by a decrease in the pH of ocean water. Other factors, such as nutrients and organic carbon exacerbate local ocean acidification. Efforts to reduce acidification should include programs that address pollution, such as nutrients and organic carbon, and also address other potential indicators of the water’s health. *Ocean Acidification: From Knowledge to Action, Washington State’s Strategic Response* (Washington State Blue Ribbon Panel on Ocean Acidification 2012), states that although pH is the only water quality criteria that is readily associated with ocean acidification, low dissolved oxygen is also associated with acidification, and recent scientific research suggests that other chemical parameters and biological indicators in the ocean may be relevant to local ocean acidification.

Programs that reduce nutrient and organic carbon protect people and shellfish from bacterial contamination, remove pollutants that lower dissolved oxygen levels, and remove pollutants that reduce pH. The Blue Ribbon Panel recommends expanding such programs to locations where local inputs are contributing to acidification. The Panel also recommends reviewing existing water quality standards to determine whether they are sufficient in controlling the impacts of local sources. The Action Agenda strategies in this section directly support these recommendations.

C9.1 Complete Total Maximum Daily Load (TMDL) studies and other necessary water cleanup plans for Puget Sound to set pollution discharge limits and determine response strategies to address water quality impairments

In Washington State, Ecology administers the water quality improvement program known as the TMDL process under Section 303(d) of the Clean Water Act. TMDLs establish limits on pollutants that can be discharged to water bodies. For impaired waters, TMDLs serve as water cleanup plans, articulating the sources of pollution, how much pollution needs to be reduced to meet water quality standards, pollution-reduction targets, and strategies to control the pollution. The TMDL process is the primary

regulatory program that EPA and Ecology use to protect and restore water bodies from the cumulative impacts of multiple sources of pollution, including point and non-point sources.

Common water quality parameters evaluated in TMDLs include dissolved oxygen and the nutrients responsible for reducing available oxygen, suspended solids, temperature, metals, pesticides, and other toxic chemicals and pollutants, all of which can harm aquatic organisms and their habitat. One of the important cumulative effects of pollution from multiple sources is reductions in the availability of oxygen in the water, known as dissolved oxygen. When an excess amount of nitrogen, phosphorus, and/or other nutrients enters a water body, it can result in a condition of depleted oxygen levels known as hypoxia that causes stress to the environment depending on the severity and duration of the event. In Puget Sound, there are chronic hypoxia zones including areas of Hood Canal, Budd Inlet, and Sequim Bay.

This sub-strategy helps ensure that Puget Sound marine and fresh waters support aquatic life and provide for other beneficial uses by ensuring that Ecology implements its responsibilities to develop and implement TMDLs so that pollution sources are identified and corrective actions are taken to address problems. These efforts to implement water cleanup plans to improve water quality in specific water bodies through the TMDL process complement the source-specific strategies discussed elsewhere in the Action Agenda. In particular, strategies to control the sources and pathways that excess nutrients and toxic chemicals enter Puget Sound include toxics source reduction (C1), stormwater runoff (C2), agricultural runoff (C3), and wastewater (C5 and C6) strategies. These strategies outline particular requirements, BMPs, assistance, enforcement, and education efforts to reduce sources of toxic pollutants, pathogens, nutrients, and other contributors to water quality issues in Puget Sound and its watersheds.

Ongoing Programs

Ecology and EPA's water quality programs are key ongoing programs that advance this sub-strategy to address water quality impairments in Puget Sound. These include the programs to develop and implement TMDL studies for dissolved oxygen, temperature, suspended solids, and other water quality contaminants; state and federal water quality financial assistance programs; and state and local non-point source control programs. Puget Sound-specific funding to advance this sub-strategy may be available from the Pathogens Lead Organization grant award from EPA to DOH and Ecology and the Toxics and Nutrients Lead Organization grant award from EPA to Ecology.

Overall, there is a backlog of TMDLs needing to be completed, and Ecology is also in the process of prioritizing future TMDL studies and implementation plans. Ecology's ongoing TMDL development and implementation activities in Puget Sound include the following.

TMDL Development (Continuing work to complete a TMDL)

- Bacteria TMDLs for Sinclair-Dyes Inlets and Liberty Bay.
- Dissolved Oxygen TMDL for Clark's Creek.
- Temperature TMDLs for Cranberry, Johns, Mill, and Soos Creeks.
- pH TMDL for White River.
- Multi-parameter TMDL for Deschutes River/Budd Inlet.

TMDL Implementation (Ongoing staff support for implementation plan activities for a completed TMDL)

- Bacteria TMDLs for Henderson Inlet watershed, Puyallup River, Skokomish River, Nisqually/McAllister Creek, Oakland Bay, South Prairie Creek, Lower Skagit River watershed, Samish basin, Union River, North Creek, Swamp Creek, Piper’s Creek, Issaquah Creek basin, Little Bear Creek, and Fauntleroy Creek.
- Temperature TMDLs for Upper White River, Skagit River, Snoqualmie River, Green River, and Newaukum Creek.
- Phosphorus TMDLs for Campbell and Erie Lakes, Lake Sammamish, Lake Ballinger, Cottage Lake, Lake Sawyer, and Fenwick Lake.
- Water bodies with multiple TMDLs are listed below.
 - Bacteria and temperature TMDLs for tributaries to Totten, Eld, and Skookum Inlets.
 - Multi-parameter and temperature TMDLs for Stillaguamish River.
 - Multi-parameter and bacteria TMDLs for Snoqualmie River.
 - Biological oxygen demand and ammonia TMDLs for Snohomish River estuary and bacteria TMDL for Snohomish River tributaries.
- Bacteria, dissolved oxygen, and temperature TMDLs for the Bear-Evans watershed.

Other Studies

- South Puget Sound Dissolved Oxygen Study (the results from the study will determine if a TMDL, or other action, is needed).
- Quartermaster Harbor Dissolved Oxygen Study (Ecology is evaluating available data and modeling to determine whether a TMDL is needed to address the dissolved oxygen impairment).

Key Ongoing Program Activities

- Ecology will continue ongoing work to complete TMDL assessments for high-priority water bodies in Puget Sound watersheds. Ecology also will continue to support implementation plan activities for completed TMDLs for Puget Sound and adjacent watersheds.
- *South Puget Sound Dissolved Oxygen Study: Water Quality Model Calibration and Scenarios* found that although low oxygen concentrations naturally occur through much of South and Central Puget Sound, human contributions from marine point sources and within watershed inflows decrease oxygen by 0.2 to 0.4 mg/L in some area (Washington State Department of Ecology 2014b). Additional modeling will be necessary to guide management actions and Ecology will coordinate subsequent modeling with the Salish Sea Dissolved Oxygen Modeling efforts.
- Ecology will accelerate other ongoing efforts, including prioritizing watersheds needing TMDLs, to identify areas where enhanced wastewater treatment may be needed. In Puget Sound. Ecology is using a phased approach to developing the *Deschutes River, Capitol Lake, and Budd Inlet Water Quality Improvement Report/Implementation Plan* that involves development of freshwater sections

of the TMDL in 2014. Ecology will address the marine section of the TMDL (Capitol Lake and Budd Inlet) after additional modeling is finished.¹⁴

- The Hood Canal Aquatic Rehabilitation Program is working to address the human contributions to low dissolved oxygen problems in Hood Canal, using the scientific findings from the Hood Canal Dissolved Oxygen Program and others, to develop and advance corrective actions.

Near-Term Actions

No near-term actions identified. Work in the near-term will focus on implementation of ongoing programs.

C9.2 Clean up contaminated sites within and near Puget Sound

This sub-strategy helps reduce the risk to humans and the Puget Sound ecosystem from toxic chemicals by cleaning up contaminated sites, focusing on contaminated sediment in the nearshore and contaminated upland sites near marine and freshwater. Sediment sites are contaminated with chemicals that have built up over time. These pollutants can enter the food chain and contaminate fish, shellfish, seals, orcas, and humans that eat the fish and shellfish. Sediment sites also contain contaminants that harm or kill the benthic community affecting the aquatic ecosystem and food sources of other animals. Contaminated sites along Puget Sound shorelines and in upland areas of watersheds also contribute to pollution in Puget Sound, since stormwater runoff from those sites can contain toxic chemicals and contaminants can leach into groundwater. Several regulatory programs govern the cleanup of contaminated sites, including the federal Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, known as Superfund) for cleanup of hazardous waste sites and the Resource Conservation and Recovery Act governing the management and disposal of wastes, as well as the state cleanup program administered under the Model Toxics Control Act and the state Sediment Management Standards. Ecology is the primary regulatory agency that oversees sediment and upland cleanup efforts. Washington DNR, as the land manager, works cooperatively with Ecology on cleanup of state-owned aquatic lands.

Cleanup activities are made more effective and efficient by efforts to (1) integrate with source control (e.g., in agency water quality programs) to facilitate and protect investments in cleanup, and (2) link cleanup activities and habitat restoration efforts. This linkage can be accomplished through Shoreline Management Act restoration plans, Natural Resource Damage Assessment actions, and WRIA restoration actions. However, there are significant barriers to optimally integrating source control, cleanup, and restoration activities—for example, source control efforts on private property (e.g., private pipes that connect to sewer systems) tend to be limited, funding is very limited for Shoreline Management Act and WRIA activities (among other agency programs), and NRDA trustees can be resistant to accept habitat related to cleanup sites as creditable habitat for NRDA purposes.

Preparing for a Changing Climate: Washington State's Integrated Climate Change Response Strategy (Washington State Department of Ecology 2012a) includes the recommendation to incorporate future sea level rise in the prioritization, design, and post-project maintenance of shoreline toxic cleanup sites.

¹⁴ <http://www.ecy.wa.gov/programs/wq/tmdl/deschutes/technical.html>

Since 1988, a total of 664 contaminated sites (both upland and sediment sites) have been cleaned up within a half mile of Puget Sound, including over 100 since the Puget Sound Initiative began in 2006. A specific emphasis has been placed on contaminated sediment sites in Puget Sound. Forty-four percent of the known contaminated sediment sites in Puget Sound have been cleaned up or reported cleaned up and 41% of contaminated sediment sites are in the process of being cleaned up. One hundred percent of publicly funded toxic site cleanups are currently on schedule, exceeding the 90% target. The number of cleanups that are completed each year has been declining over time, however. One contributor to this decline may be the reduced availability of private-sector funding to voluntarily cleanup sites; another factor may be that sites have become more complex.

One of the ways that contaminated sediment can be managed for cleanup and maintenance dredging is through the appropriate disposal of dredged material. Dredging supports site cleanup activities or other purposes, such as navigation and maritime commerce. The Washington Dredged Materials Management Program, an interagency program of the Corps (Seattle District), EPA Region 10, Ecology, and DNR, works to facilitate navigation and marine commerce while also protecting the aquatic environment. DNR manages and monitors 12 aquatic land disposal sites for dredged materials on state-owned aquatic land, including eight in Puget Sound and the Strait of Juan de Fuca. Statewide, annual volumes of dredged material disposal range from 120,000 cubic yards to over 1.5 million cubic yards. The program implements sediment sampling, chemical and biological testing, and test interpretation to evaluate the suitability of dredged material before approving it for in-water disposal.

Ongoing Programs

Major ongoing programs related to this sub-strategy include Ecology's Toxics Cleanup Program and EPA's cleanup programs including Superfund and the Resource Conservation and Recovery Act. These programs include targeted work within the Puget Sound basin as well as base program cleanup activities that occur elsewhere around the state and nation. Funding for contaminated site cleanup comes from the federal Superfund program, the State and Local Toxics Control Accounts established by state law, and responsible parties. Efforts are underway to update the fish consumption rate used for state cleanups Model Toxics Control Act; this will result in changes to sediment cleanup and other standards.

One of initiatives highlighted in EPA's 2011–2015 Strategic Plan is an Urban Waters effort in which the cleanup and reuse of contaminated land in urban watersheds is coordinated with regional water quality improvement efforts including TMDLs, CSO long term control plans, and green infrastructure to reduce stormwater pollution, thereby connecting source-control efforts with cleanup and restoration efforts. Ecology's Urban Waters Initiative, which originated with \$2.7 million in funding from the Legislature in 2007, focuses specifically on addressing the contamination of three major urban waters—the Lower Duwamish and Commencement Bay in Puget Sound, as well as the Spokane River. Federal, state, tribal, and local cleanup activities are also occurring throughout the Puget Sound region, including major cleanup locations in Bellingham, Bremerton, and Elliott Bay and the Lower Duwamish Waterway in the Seattle area. In Bellingham Bay, for example, a partnership of 15 federal, state, tribal, and local stakeholders are working to expedite sediment cleanup, source control, and habitat restoration for cleanup sites around the bay through the Bellingham Bay Demonstration Pilot organized by Ecology in 1996. Ecology has also identified a series of "priority bays" for accelerated cleanup and restoration efforts for the Puget Sound Initiative, these include the following.

- Anacortes Area (Fidalgo/Padilla Bays)
- Budd Inlet
- Dumas Bay
- Everett Area (Port Gardner Bay)
- Oakland Bay
- Port Angeles Bay
- Port Gamble Bay

In recent years, funding set aside for the State and Local Toxics Control Accounts to support remediation and related activities has also been used to support other causes related to the general fund. For the 2011–2013 fiscal biennium, for example, the Legislature specified that the Local Toxics Control Account could be used for shoreline update grants and actions for reducing public exposure to toxic air pollution; this means that there has been less money remaining to support site cleanup activities.

Key Ongoing Program Activities

- Performance measures for EPA include number of remedial action projects completed at Superfund National Priority List sites, number of Superfund remedial site assessments completed, number of brownfields properties cleaned up using brownfields funding (and other brownfields measures), and Resource Conservation and Recovery Act cleanup measures such as control migration of contaminated groundwater and complete construction of final remedies.
- Ecology continually evaluates reported contaminated sites and their priority for cleanup and restoration around Puget Sound. This includes an initial investigation and an assessment to determine the contaminated site’s hazard ranking. As appropriate, Ecology will initiate cleanup planning, implementation, and monitoring activities for those contaminated areas as funding and resources are available.
- Ecology recently adopted revised rules in the Sediment Management Standards (WAC 173-204, Part V) to address contaminated sediments encountered during development. These rules include conferring with a sediment specialist if contamination is encountered, to determine if the area is, or should be designated for cleanup; and for contaminants that do not have numeric criteria, Ecology works with stakeholders to establish levels according to the rules, including a process for defaulting to background value. Ecology is developing guidance for these rules, which will provide more detail for establishing background concentrations and establishing site-specific standards. Ecology is also engaged in establishing background concentrations for bioaccumulative contaminants, such as dioxin, throughout the Puget Sound.
- Ecology will continue to work with other organizations clean up and restore contaminated sites located within one-half mile of Puget Sound. This includes the following “priority bays” for the Puget Sound Initiative: Anacortes Area (Fidalgo/Padilla Bays), Budd Inlet, Dumas Bay, Everett Area (Port Gardner Bay), Oakland Bay, Port Angeles Bay, and Port Gamble Bay. It also includes the following other major Puget Sound cleanup locations: Bellingham Bay, Bremerton area (Port Washington Narrows), Elliott Bay, and Lower Duwamish Waterway. Ecology will consult with DNR regarding cleanup activities on state-owned aquatic lands. Ecology will also ensure that these and other

cleanup sites within the Puget Sound area have post-construction monitoring plans in place that provide data on the effectiveness of the cleanup remedy.

- Maintain adequate funding to ensure continued, timely cleanup and remediation of toxic sites. Ensure that funding to Ecology provides an appropriate level of state match to approved Remedial Action Grant projects and that the LTCA is protected for its intended statutory purposes.

Near-Term Actions

None; work in the near-term will focus on implementation of ongoing programs.

C9.3 Restore and protect water quality at swimming beaches and recreational areas

Swimming in water contaminated with pathogens and other pollutants can cause illness in humans, as can contact with contaminated water through water-based recreational activities such as surfing, paddle boarding, kayaking, kite boarding, and scuba diving. Water at beaches can be contaminated by fecal matter, which can contain harmful bacteria, parasites, and viruses. Sources of contamination vary and include improperly disposed diapers or animal waste, stormwater runoff containing human or animal waste, malfunctioning septic systems or sewage treatment plants, CSOs, and wildlife (issues with agricultural runoff, stormwater pollution, onsite sewage systems, and centralized wastewater treatment systems are discussed in strategies C3 through C6). Marine waters can be contaminated through pollution carried by freshwater streams as well as through other pathways. While swimming beaches are most often used by bathers during warmer months of the year, other popular water-based recreational activities like surfing, scuba diving, and kite boarding occur throughout the year in Puget Sound. As noted in the Challenge section, 26% of monitored marine beaches in Puget Sound failed to meet water quality standards in 2010, and others have failed to meet the standards in some of the last few years.

Additional funding is needed to create and implement a freshwater swimming beach monitoring and notification program in the Puget Sound region. Today, only six of 39 counties throughout the state monitor bacteria at freshwater swimming beaches. These locally funded programs provide information to the public regarding health at public swimming beaches. Over the past few years, cities and counties have discontinued these programs due to lack of funding.

Ongoing Programs

Ecology's and EPA's water quality programs, including the programs to develop and implement TMDL studies, state and federal water quality financial assistance programs, and state and local non-point source control programs are key ongoing programs that advance this sub-strategy. Under the TMDL program, Ecology completes a Water Quality Assessment for EPA every 2 years that produces a list of water bodies (called a 303[d] list) that do not meet water quality standards. In 2010, this assessment focused on marine waters; the next assessment will focus on fresh water.

The DOH- and Ecology-administered Beach Environmental Assessment, Communication, and Health (BEACH) program is the primary state program for monitoring and notification of water quality contamination at marine beaches. This program protects people who enjoy Washington's saltwater beaches. The BEACH program monitors marine beaches for fecal bacteria, notifies the public when the

results are high, and educates the public on how to avoid getting sick from playing in saltwater. There is no comparable statewide program for freshwater beaches; however, local public health agencies may have their own programs for freshwater areas. This sub-strategy helps ensure that swimming and other contact recreational activities in both marine and fresh waters in Puget Sound does not pose risks to human health. It provides for corrective actions to address pollution problems that cause swimming beaches and other contact recreation areas to not meet water quality standards for pathogens or other forms of contamination.

Near-Term Actions

The near-term actions identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

- C.9.3.1 Freshwater swimming beach program.** By 2014, Ecology and DOH will develop a proposal to coordinate a monitoring and notification freshwater swimming beach program for the Puget Sound region.
- C.9.3.2 Correct pollution problems at marine beaches.** Ecology and DOH will develop a plan to conduct pollution source surveys and correct pollution problems at marine beaches used for swimming, surfing, diving and other recreational uses. Ecology and DOH will coordinate with local, state and tribal programs that address point source and nonpoint source pollution to assure that activities are not duplicative.

In addition, near-term actions to address wastewater pollution, a key source of contamination of swimming beaches, are discussed in strategies C5 and C6. Sub-strategies C9.1 (covering TMDLs) and C9.4 (covering local and tribal pollution identification and control programs) also are very important for addressing water quality and public health issues at swimming beaches and recreational areas.

C9.4 Develop and implement local and tribal pollution identification and correction programs

Local agencies and tribes across Puget Sound implement pollution identification and correction programs to determine the causes and sources of nonpoint water pollution in specific geographical areas, and to take corrective actions to address the pollution sources, such as outreach and education, technical assistance, incentives for BMPs, and enforcement. For example, the Kitsap County Health District's pollution identification and correction program, which is funded by the County's Surface and Stormwater Management program and grants from Ecology, developed a 2010 priority area work list to identify priority pollution identification and correction project locations to address bacterial water pollution, thereby protecting public health, protecting shellfish resources, and restoring surface water quality. This sub-strategy helps ensure that Puget Sound marine and freshwaters support aquatic life and provide for other beneficial uses by ensuring that pollution sources are identified and corrective actions are taken to address problems. These activities are closely associated with state requirements for local health jurisdictions to carry out comprehensive plans to ensure that onsite sewage systems are properly managed to protect public health and sensitive waters; sub-strategies and actions related to onsite sewage systems are further discussed in strategy C5.

Ongoing Programs

With funding from EPA available from November 2011 through September 2014, DOH and Ecology are offering grants to county governments, local health jurisdictions, and tribal governments adjacent to Puget Sound to establish or enhance pollution identification and correction programs to identify and address pathogen and nutrient pollution from a variety of nonpoint sources, including onsite sewage systems, farm animals, pets, sewage from boats, and stormwater runoff. Although this grant opportunity is focused on pathogens, pollution identification and correction programs can also be an important way that local communities can monitor and protect against other pollutants, including toxic chemicals. The goal with federal funding of these programs is support for the establishment and/or enhancement of programs that can eventually be sustainable programs that integrate across various local water quality programs, interests, and concerns. Local and tribal water quality improvement programs funded from utility fees, Ecology and EPA's water quality programs, and other water quality financial assistance may have similar objectives of identifying and addressing water pollution issues.

Key Ongoing Program Activities

- Local jurisdictions and tribes will establish or enhance pollution identification and correction programs to identify and address pathogen, nutrient, and toxic pollution problems in specific geographical areas that may arise from a variety of sources, including onsite sewage systems, stormwater runoff, agricultural sources, and other nonpoint sources. Grant funding available through 2014 can help these agencies to design programs that integrate across multiple local water quality interests.
- Ecology will continue to provide guidance and financial assistance to local governments to establish and carry out pollution identification and correction programs.

Near-Term Actions

The near-term actions identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

C.9.4.1 Pollution Identification and Correction Programs. DOH and Ecology will administer EPA grants to help counties and tribes set up sustainable programs to identify and correct nonpoint pollution sources to improve and protect water quality in shellfish growing areas and at marine swimming beaches. These sustainable programs will have ongoing monitoring to identify pollution sources and assess effectiveness of efforts, a local sustainable funding source, and a compliance assurance component.

C.9.4 HC3 Hood Canal Pollution Identification and Correction Program. By April 2014, HCCC will complete Phase I of a regional Hood Canal Pollution Identification and Correction Program to determine the needs for a comprehensive regional program and advance funding proposal(s) for implementation. If funding is secured, Phase II of the program will be advanced. Phase II may include (depending on funds), program work in priority areas, monitoring, and education and outreach. The program will provide information about the sources of pollution, including failing septic systems.

- C.9.4 HC8** **Seepage pits and cesspools.** Reduce the use of seepage pits and eliminate cesspools as discovered in all Hood Canal shoreline (marine and freshwater) properties.
- C.9.4 STRT2** **Implementation of water quality cleanup plans for Sequim-Dungeness Bay and East Jefferson County Clean Water Districts.** Implement Sequim-Dungeness Bay and East Jefferson County Clean Water District Cleanup Plans and projects according to implementation strategies, onsite sewage system management plans, monitoring, and other activities required in Marine Recovery Areas under RCW 70.118A.
- C.9.4 WH9** **Implement a pollution identification and control project in northern Chuckanut Bay (Mud Bay) to restore the recreational shellfish area.** Through a partnership of community groups and local agencies, identify bacteria sources and implement water quality improvement projects to reduce bacteria levels in Mud Bay and restore the recreational shellfish area. This program includes:
- Monitoring.
 - Community outreach.
 - Technical and financial assistance for onsite sewage system operation and maintenance.
 - Stormwater retrofits.
- C.9.4 WH10** **Implement Whatcom County Pollution Identification and Control Program.** Through a partnership of local, state, and tribal agencies identify priority areas and implement projects to decrease bacteria levels in local marine waters, rivers, and streams. This program includes:
- Monitoring and focus area identification.
 - Community outreach and engagement.
 - Technical and financial assistance for agricultural operations.
 - Technical and financial assistance for onsite sewage system operation and maintenance.
 - Stormwater retrofits.
 - Regulatory backstop.
 - Nutrient Management, TMDL Implementation.

Emerging Issues and Future Opportunities

Specific longer-term activities to address Puget Sound water quality impairments that were identified during the Action Agenda update process include the following.

- Microplastics.** There is increasing evidence of plastic pollution in Puget Sound marine and nearshore areas. Plastics have the potential to strangle marine wildlife. Mammals, birds, and fish also ingest small microplastics and the toxics they contain. The Strait ERN for the Strait Action Area has identified a priority action led by the Port Townsend Marine Science Center for microplastics (as part of a “toxic source reduction programs” priority strategy). Ecology will work with the Port Townsend Marine Science Center and other partners to continue to assemble information on plastics pollution and microplastics, including any data specific to Puget Sound, and will recommend actions to (1) better understand the threats to Puget Sound, and then (2) address the highest priority problems.
- Incentives and binding mechanisms for reducing pollution from non-point sources.** Ecology, EPA, and local organizations will confer on possible incentives and/or binding mechanisms for ensuring that non-point pollutant reductions strategies called for in TMDLs are actually implemented for high priority TMDLs.
- Dredged materials management.** The Dredged Materials Management Program (DNR, Ecology, EPA Region 10, and the Corps Seattle District) will continue to update standards, sampling and analysis protocols, and risk assessment procedures based on best available science through the Sediment Management Annual Review Meetings. Stakeholders have identified the need for additional analysis of dioxins in disposed material.
- Interagency coordination.** Ecology, DNR, WDFW, and other agencies will seek to remove barriers and conflicts between programs with similar goals—including the Model Toxics Control Account and NRDA cleanup programs and the Shoreline Management Act and WRIA restoration efforts—to facilitate improved integration of habitat restoration and cleanup activities in and near Puget Sound. This will include examining whether NRDA credits can be more easily obtained for work completed under other restoration programs.
- Local funding.** State and local agencies should collaborate to develop sufficient, stable funding for local governments to implement pollution identification and correction programs, implement actions called for in TMDLs, and undertake other efforts to improve water quality.
- Cleanup program evaluation and improvements.** Stakeholders have suggested (1) an analysis of how interim cleanups have been used in the past, including whether they have slowed or sped up the pace of entire cleanup, and/or have influenced the cleanup decision and (2) evaluating how to better implement public participation and include all stakeholders in the early stages of clean ups.
- Viruses in wastewater discharges.** DOH will evaluate the application of male specific coliphage (MSC) for use in the management of shellfish harvest areas affected by raw or partially untreated sewage discharges from wastewater treatment plants or community sewage collection systems. This supplements work by the U.S. Food and Drug Administration to develop a reliable viral risk indicator and to evaluate if virus uptake and persistence are different in Puget Sound than other areas of the country. This research could help better evaluate when to open shellfish harvest sites after a transient pollution event and to better delineate Prohibited areas where there is chronic pollution.

In addition, this research could help better understand the efficiency of various wastewater treatment systems to inactivate/remove enteric viruses prior to discharge.

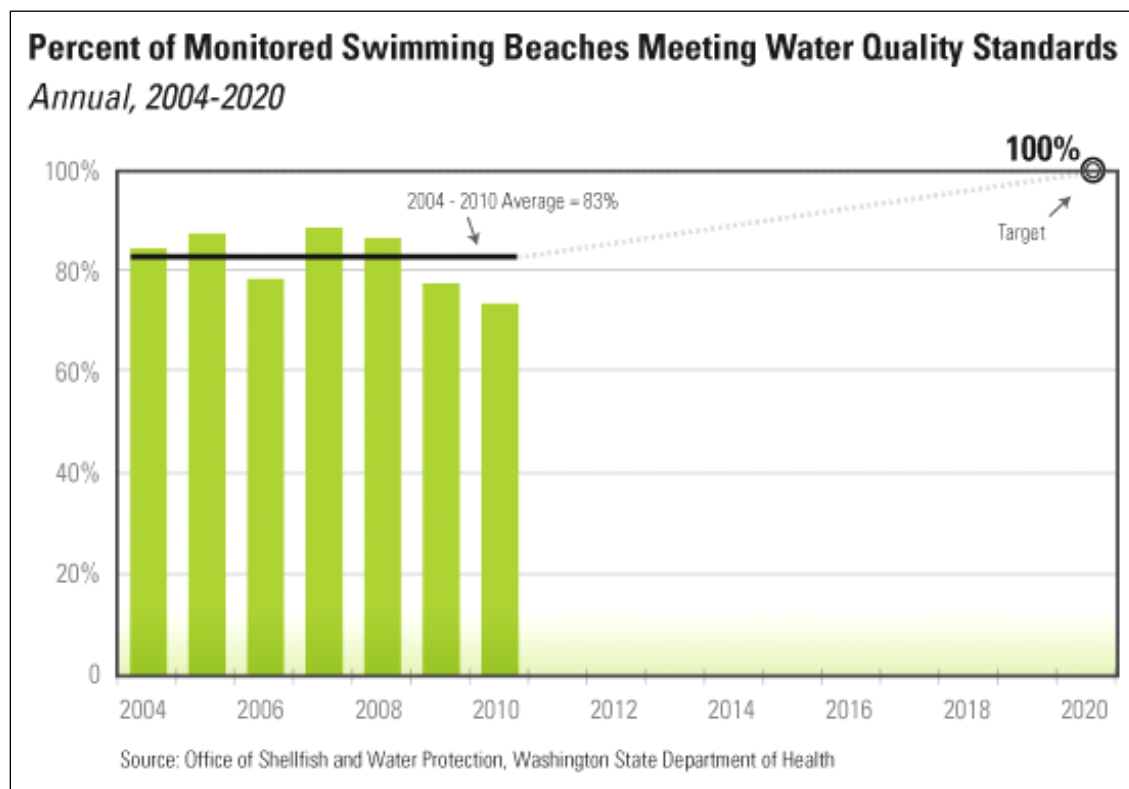
- **Predict pathogens to protect public health.** DOH is using their 2013–2014 Hershman Fellow to assist the University of Washington and NOAA’s Northwest Fisheries Science Center to identify environmental criteria to develop and implement a predictive model for *Vibrio parahaemolyticus*, a naturally occurring bacteria that can make people sick from eating raw oysters (Washington Sea Grant 2013). The model would help us take action where problems occur and ultimately prevent illnesses.
 - Future sea level rise should be considered in the prioritization, design, and post-project maintenance of cleanup sites near the shoreline.
-

Target View: Swimming Beaches

Fecal bacteria are found in human and animal waste. These contaminants can enter the water through a variety of means, including leaky or inadequate septic systems, wastewater treatment overflows, boat and vessel discharges, and stormwater contaminated by pet and animal waste. Controlling these sources of pollution is the key to improving water quality at swimming beaches.

Luckily, many of Puget Sound's swimming beaches already meet high standards for clean water—almost half of routinely monitored beaches consistently met the standards between 2004 and 2010; another third met the standard except for 1 or 2 years. At the same time, there is room for improvement. In any given year from 2004—2010, 7 to 15 beaches failed to meet standards, resulting in the issuance of health advisories to the public.

Percent of Puget Sound marine swimming beaches meeting water quality standards for healthy human use, allowing for one exception per swimming season. In general, samples are collected weekly. The basic measure is for enterococcus, but fecal coliform bacteria and *E. coli* are also sampled if warranted.



Recovery Target

Have all monitored beaches in Puget Sound meet EPA standards for what is called enterococcus, a type of fecal bacteria.

Relevant Strategies (and Sub-Strategies)

- B1.2. Support local governments to adopt and implement plans, regulations, and policies that protect the marine nearshore and estuaries, and incorporate climate change forecasts
- B4.2. Increase access to and knowledge of publicly owned Puget Sound shorelines and the marine ecosystem
- C1. Prevent, reduce, and control the sources of contaminants entering Puget Sound (C1.5, C1.6)
- C2.4. Prevent problems from new development
- C3. Prevent, reduce, and control agricultural runoff (C3.1, C3.2)
- C5. Prevent, reduce and/or eliminate pollution from decentralized wastewater treatment systems (C5.1, C5.2, C5.3)
- C6. Prevent, reduce and/or eliminate pollution from centralized wastewater treatment systems (C6.1, C6.2, C6.4, C6.3)
- C7.1. Improve water quality to prevent downgrade and achieve upgrades of important current tribal, commercial and recreational shellfish harvesting areas
- C8. Effectively prevent, plan for and respond to oil spills (C8.1, C8.2, C8.3)
- C9. Address and clean up cumulative water pollution impacts in Puget Sound (C9.1, C9.3, C9.4)

Figure C-15 (Appendix C, *Results Chains*) depicts how the strategies (and related sub-strategies) contribute to reducing pressures on swimming beaches and achieving the swimming beaches recovery target. Appendix C also contains a results chain for each individual strategy in the Action Agenda, showing how that strategy (and its related sub-strategies) reduces pressures and contributes to achieving numerous recovery targets.

Target View: Freshwater Quality

Clean water is vital to people and key to healthy fish and wildlife populations. But when our rivers and streams pick up pollutants, toxic contaminants, or excessive sediments and nutrients, it not only affects the health of our watersheds, but impacts our marine waters, swimming beaches, and shellfish beds as well. Our fresh waters should be safe for drinking and swimming, able to support farms, fish, and wildlife, and not harm our beaches, shellfish beds, or marine waters.

Walk along a small stream or creek in the region, and on the rocks and sediments of the streambed you may find a lively community of aquatic insect larvae, snails, and other small invertebrates. These small creatures thrive in clean, cool waters and form a critical part of the aquatic food chain. But this unique biological community is sensitive to many things, including pollution and runoff from agricultural and developed lands, reduced water levels and high temperatures in the summer, and the clearing of trees and vegetation along streambanks. Scientists often measure the condition of the aquatic community as an indicator of overall water quality and stream health.

The Water Quality Index is an aggregation of monthly measurements of typical water pollutants reported on a scale of 1 to 100. A higher number indicates better quality. An index score of 80 or above indicates that water quality is generally meeting our goals for sediments, nutrients, temperature, dissolved oxygen, fecal coliform bacteria, and other conventional pollutants (the index does not address toxic contaminants for a number of technical reasons). A score between 70 and 80 is considered “fair” or “borderline”; 40 to 70 is failing to meet water quality goals and less than 40 is “poor”. In general, fresh water quality index scores for the major rivers in Puget Sound have slowly improved since the index was first established in 1995 and now average in the mid-70s range. Scores in small urban streams are lower.

The Water Quality Index graph below shows that stations meeting water quality goals are all in the relatively undeveloped Olympic Peninsula (except for the Snohomish River). Stations not meeting water quality goals tend to be in watersheds with more people and more agricultural development.

Recovery Target

- At least half of all monitored streams should score 80 or above on the fresh water quality index.
- Reduce the number of “impaired” waters.
- Protect (i.e., allow no degradation of) any small streams that are currently ranked “excellent” for biological condition, and improve water quality in streams ranked “fair” so their average scores become “good.”

Water Quality Index

Annual, 2000-2010

Meeting Goals	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Avg
Duckabush	93	95	94	90	74	94	89	85	88	96	86	89
Elwha	86	88	83	76	73	74	86	67	66	81	81	78
Skokomish	95	95	94	85	70	67	92	89	89	94	86	87
Snohomish	92	91	89	81	74	75	89	75	81	85	79	83
Borderline	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Avg
Cedar	87	76	60	78	72	84	81	79	79	81	77	78
Upper Skagit	87	86	59	85	64	81	84	75	75	81	56	76
Lower Skagit	89	91	71	76	61	73	77	77	75	76	74	76
Deschutes	62	72	70	73	61	83	88	88	83	76	74	75
Nisqually	40	60	79	79	69	71	74	75	91	74	83	72
Not Meeting Goals	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Avg
Green	82	73	66	67	75	49	72	68	60	69	63	68
Nooksack	65	68	58	57	52	54	61	51	60	69	56	59
Puyallup	60	58	57	55	51	58	59	58	61	49	62	57
Samish	86	75	32	49	34	71	67	74	59	80	63	63
Stillaguamish	81	60	44	72	55	67	71	69	75	75	71	67

Source: River and Stream Ambient Monitoring Program, Washington State Department of Ecology

Relevant Strategies (and Sub-Strategies)

- C1. Prevent, reduce, and control the sources of contaminants entering Puget Sound (C1.1, C1.2)
- C2. Use a comprehensive approach to manage urban stormwater runoff at the site and landscape scales (C2.1, C2.2, C2.3, C2.4, C2.5)
- C3. Prevent, reduce, and control agricultural runoff (C3.1, C3.2)
- C4. Prevent, reduce, and control surface runoff from forest lands (C4.1, C4.2)
- C6. Prevent, reduce and/or eliminate pollution from centralized wastewater treatment systems (C6.1, C6.2, C6.3, C6.4, C6.5)
- C9. Address and clean up cumulative water pollution impacts in Puget Sound (C9.1, C9.3).

Figure C-16 (Appendix C, *Results Chains*) depicts how the strategies (and related sub-strategies) contribute to reducing pressures on freshwater quality and achieving the freshwater quality recovery target. Appendix C also contains a results chain for each individual strategy in the Action Agenda, showing how that strategy (and its related sub-strategies) reduces pressures and contributes to achieving numerous recovery targets.

Target View: Marine Sediment Quality

In a healthy, well-functioning estuary, marine sediments support an important and healthy biological community. But in Puget Sound and many estuaries around the world, sediments have become contaminated with toxic chemicals from industrial discharges, contaminated run-off from urban roads, discharges from wastewater treatment plants, agricultural and forest chemicals carried down rivers and streams, oil spills, and even chemicals carried long distances through the atmosphere that eventually fall with rain. As the forests around Puget Sound have been logged, streams and rivers channelized, and towns and cities built up, the amount, rate, and quality of sediment deposited into Puget Sound have changed dramatically.

All eight regions of Puget Sound monitored from 1997 to 2009 demonstrated minimum exposure to toxic chemicals in sediment. Four of eight regions demonstrated unimpacted benthic invertebrate communities. The other four demonstrated likely impacted communities.

Two of four Puget Sound urban bays monitored from 1998–2010 demonstrated minimum exposure to toxic chemicals in sediment. The other two urban bays that have been monitored showed improving chemistry index scores but low levels of exposure. Benthic community results are available for only three urban bays: One appears unimpacted, one has likely impacted communities and the third is on the border of unimpacted-likely impacted. According to both chemistry and benthos measures, the targets are not met in all urban bays.

Recovery Target

- By 2020, all Puget Sound regions and bays achieve chemistry measures reflecting minimum exposure with Sediment Chemistry Index scores >93.3.
- Have no sediment chemistry measurements exceeding the Sediment Quality Standards set for Washington State.
- All Puget Sound regions and bays, as characterized by ambient monitoring, achieve the following: Sediment Triad Index scores reflect unimpacted conditions (i.e., SQTI values >81).

Relevant Strategies (and Sub-Strategies)

- C1. Prevent reduce, and control the sources of contaminants entering Puget Sound (C1.1, C1.2, C1.3)
- C2. Use a comprehensive approach to manage urban stormwater runoff at the site and landscape scales (C2.1, C2.2, C2.3, C2.4, C2.5)
- C3. Prevent, reduce, and control agricultural runoff (C3.1, C3.2)
- C6. Prevent, reduce and/or eliminate pollution from centralized wastewater systems (C6.1, C6.2, C6.3, C6.4, C6.5)
- C8. Effectively prevent, plan for and respond to oil spills (C8.1, C8.2, C8.3)
- C9. Address and clean up cumulative water pollution impacts in Puget Sound (C9.1, C9.2, C9.3)

Figure C-17 (Appendix C, *Results Chains*) depicts how the strategies (and related sub-strategies) contribute to reducing pressures on marine sediment quality and achieving the marine sediment quality recovery target. Appendix C also contains a results chain for each individual strategy in the Action Agenda, showing how that strategy (and its related sub-strategies) reduces pressures and contributes to achieving numerous recovery targets.

Target View: Toxics in Fish

Toxic pollutants in Puget Sound bays, rivers and streams can show up in native fish, causing them to become diseased and posing a health threat to humans if consumed. One of the most worrisome pollutants in the Puget Sound ecosystem is a group of chemicals called PCBs. Concern over these chemicals in Puget Sound is high because they are toxic, they last for a long time in the ecosystem, and their levels increase in predators as the chemicals move up the food chain. Measuring these pollutants in fish tissues tells us whether present-day levels are harmful to the fish or the predators that consume them, and whether they are safe for us to eat.

PCBs were originally used in many industrial applications, but many of these uses were banned in the US in the 1970s. Although PCB levels have decreased in some fish since then, they remain high in certain areas and species. In Puget Sound, PCBs are high in bottom fish that live near urban or industrial areas with contaminated sediments. Surprisingly, PCBs are also high in many species from Puget Sound's pelagic, or open-water food web, including herring, salmon, seals, and orcas. Exposure to PCBs may be harming these species, and concern for human health from this contamination has led the DOH to issue consumption advisories for some Puget Sound salmon and bottom fish. Scientists have been tracking PCBs and other chemicals in Puget Sound fish since 1989, and have established threshold limits for these chemicals in fish tissues. These thresholds provide a guideline for the level of toxic chemicals that fish can tolerate, before they become diseased or show other harmful effects, or that presents elevated levels of risk to humans consuming these fish.

Current data on contaminants in Puget Sound fish are displayed in the graph below. Average concentration of PCBs as a summation of congeners, compared to a tissue threshold of 2400 ng PCBs/g lipid. English sole data from 2007, 2009, n=137; herring data from 2007–2010, n=70; Coho data from 2006, 2008, n=86; adult Chinook data from 2003, 2004, n=48; juvenile Chinook data from 2010, n=5; pink, chum, and sockeye salmon data from 2003, 2004, n=5 each.

Recovery Target

- By 2020, contaminant levels in fish will be below health effects thresholds (i.e., levels considered harmful to fish health or harmful to the health of people who consume them).
- By 2020, contaminant-related disease or impairments in fish are reduced to background levels.

Relevant Strategies (and Sub-Strategies)

- C1. Prevent, reduce, and control the sources of contaminants entering Puget Sound (C1.1, C1.2, C1.3)
- C2. Use a comprehensive approach to manage urban stormwater runoff at the site and landscape scales (C2.1, C2.2, C2.3, C2.4, C2.5)
- C3. Prevent, reduce, and control agricultural runoff (C3.1, C3.2)
- C6. Prevent, reduce and/or eliminate pollution from centralized wastewater systems (C6.1, C6.2, C6.3, C6.4, C6.5)
- C8. Effectively prevent, plan for and respond to oil spills (C8.1, C8.2, C8.3)
- C9. Address and clean up cumulative water pollution impacts in Puget Sound (C9.2, C9.1, C9.3)

Percentage of samples exceeding harmful effects threshold for PCBs

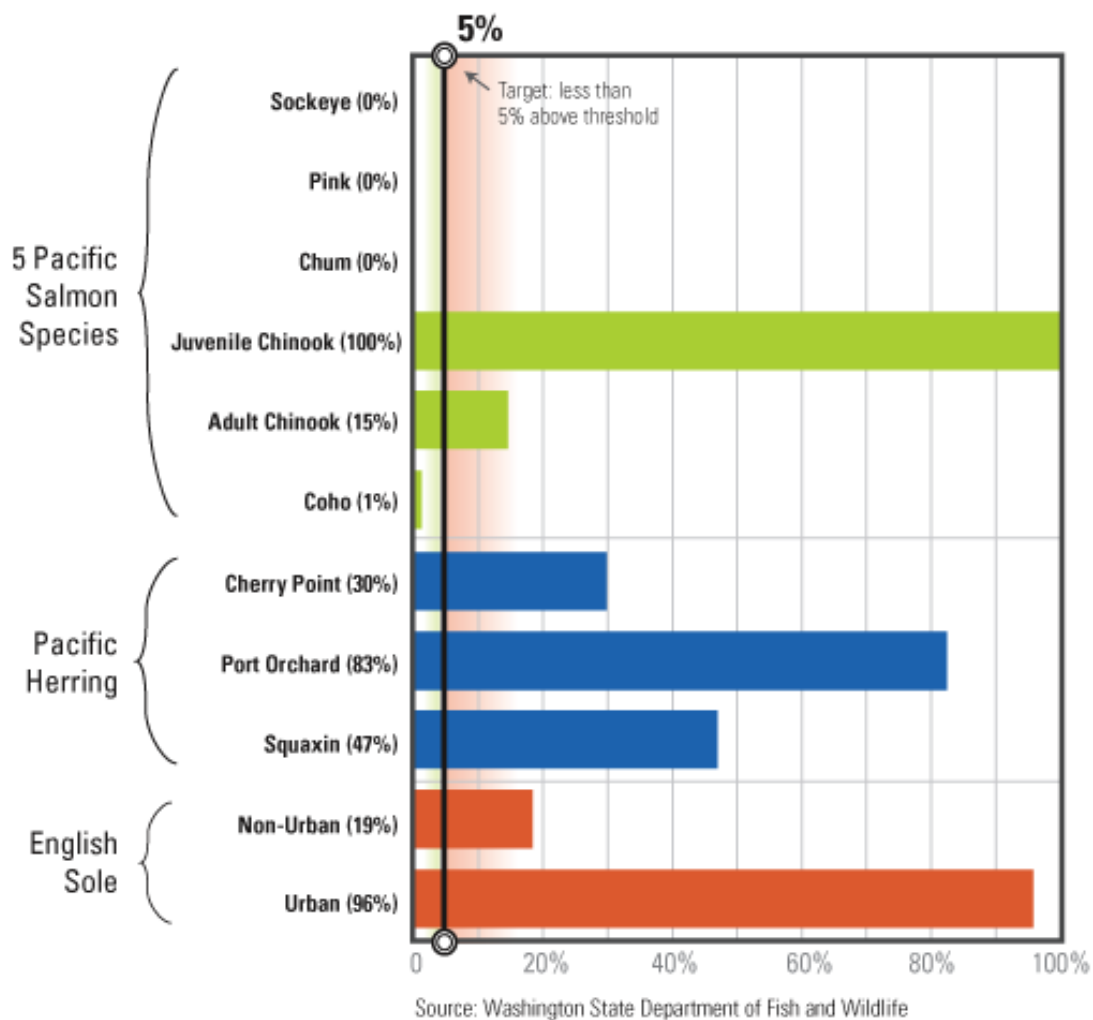


Figure C-18 (Appendix C, *Results Chains*) depicts how the strategies (and related sub-strategies) contribute to reducing pressures related to toxics in fish and achieving the toxics in fish recovery target. Appendix C also contains a results chain for each individual strategy in the Action Agenda, showing how that strategy (and its related sub-strategies) reduces pressures and contributes to achieving numerous recovery targets.



STRATEGIES AND ACTIONS

D: STRATEGIC LEADERSHIP AND COLLABORATION

Ecosystem recovery and long-term protection is a responsibility shared by government agencies, tribes, business and private sector interest groups, non-governmental organizations, and citizens. Successful collective action by the tremendous number of involved organizations and individuals in our region requires dedicated and ongoing coordination. Elements of necessary coordination include creating and maintaining a common agenda, shared measurement and reporting of progress, continuous and coordinated communication regarding the challenge and solutions and, of course, political support and funding.

The Partnership, working with its many partners, leads tasks that are critical for steering technical work, fostering changes in practice, and generating public support for recovery of Puget Sound. These include setting recovery targets, identifying priority actions to achieve these targets, providing credible technical solutions, building the resource and fiscal capacity of government agencies and private sector interests, and measuring outcomes to ensure accountability and success.

THIS SECTION DESCRIBES SEVEN STRATEGIES—and associated sub-strategies, ongoing programs, and actions—that are essential to strategic leadership and collaboration. The strategies and actions are organized under the following headings.

Leadership

- D1.** Provide the Leadership Frameworks to Guide the Puget Sound Recovery Effort and Set Action and Funding Priorities

Partnerships

- D2.** Support and Build Strategic, Collaborative Partnerships

Performance Management

- D3.** Implement Performance Management

Science and Monitoring

- D4.** Coordinate and Advance Science and Monitoring

Stewardship

- D5.** Cultivate Broad-Scale Stewardship Practices and Behaviors among Puget Sound Residents that Benefit Puget Sound
 - D6.** Build Issue Awareness and Understanding to Increase Public Support and Engagement in Recovery Actions
 - D7.** Build Social and Institutional Infrastructure that Supports Stewardship Behaviors and Removes Barriers
-

Leadership

Local Priorities

No LIOs identified near-term actions that address leadership.

Strategies and Actions

D1. Provide the Leadership Frameworks to Guide the Puget Sound Recovery Effort and Set Action and Funding Priorities

OCEAN ACIDIFICATION

As stated in *Ocean Acidification: From Knowledge to Action, Washington State's Strategic Response* (Washington State Blue Ribbon Panel on Ocean Acidification 2012), ocean acidification is an urgent local, national, and international problem. Global carbon dioxide emissions must be reduced significantly and quickly. Washington State has proven to be a global and national leader in this effort and should continue to lead by enacting policies and practices that address the multiple risks posed by the accumulation of carbon dioxide in the atmosphere.

The Blue Ribbon Panel recommends taking action to reduce global, national, and local emissions of carbon dioxide by working with partners at local, national, and international levels to advocate for a comprehensive strategy to reduce the emissions of carbon dioxide. Additionally, the Blue Ribbon Panel recommends enlisting key leaders and policymakers to act as ambassadors for Washington's marine resources by advocating for reductions in carbon dioxide emissions and protection from acidification. The Action Agenda directly supports these strategies.

D1.1 Provide backbone support for the recovery effort and management conference

Recovery of Puget Sound is a collective, long-term endeavor that requires focused and dedicated leadership. Building and maintaining strategic partnerships and collaboration are critical to the success of Puget Sound recovery.

Successful collective efforts require a dedicated backbone organization. The Partnership fulfills this key role for the region. It provides leadership to advance the vision and promise put forth by the Governor and Legislature, builds and nurtures strategic coalitions tribes, local, state, and federal agencies, private partners and citizens, convenes regional and transboundary partners to set priorities and share information, avoids duplicative and inconsistent actions and spending, and provides transparent reporting to decision-makers and the public on recovery progress. As part of the National Estuary Program, the Partnership is designated to lead the overall Management Conference. For more information on the Management Conference, see Appendix A, *Puget Sound National Estuary Program Management Conference Overview*.

Ongoing Programs

Key Ongoing Program Activities

- The Partnership administers the statutorily required Partnership boards: the Leadership Council is the decision-making body for the recovery effort; the ECB provides strategic advice to the Leadership Council and Science Panel; the Science Panel leads the region in providing scientific direction and policy to guide regional decision-making; the Salmon Recovery Council provides policy direction on the regional effort to recover salmon; as well as a statutorily assigned Oil Spill Workgroup.
- Partners participate on the Partnership boards and related sub-committees.
- The Partnership maintains communications and operating resources to facilitate the work of boards, partners and implementers; highlight progress and challenges related to the recovery effort; provide timely access to relevant information; and an effective working nexus with staff, partners and programs.

Near-Term Actions

None; work in the near-term will focus on implementation of ongoing programs.

D1.2 Maintain and update the Action Agenda as the shared recovery plan

The Action Agenda is a recovery plan that is shared by all of our partners in the region. By statute, the strategies and actions are updated on a 2-year cycle, and the overall Action Agenda is modified as needed. The Partnership provides oversight and technical support to the development and adaption of the Action Agenda, including facilitating substantial input from partners and the public.

Ongoing Programs

Key Ongoing Program Activities

- The Partnership leads the regional effort to update the Action Agenda, track implementation progress for near-term actions, and provide feedback regarding changes to strategies and actions based upon the adaptive management process. Many of the ongoing activities under Performance Management and Science and Monitoring (strategies D3 and D4, respectively) relate to the implementation of the adaptive management process.

Near-Term Actions

None; work in the near-term will focus on implementation of ongoing programs.

Partnerships

Local Priorities

LIOs identified near-term actions that address partnerships. These local actions are presented in the *Strategies and Actions* section along with Soundwide actions under the sub-strategy shaded below. The local action numbering contains the area abbreviation shown in parentheses after the LIO name. See Section 4, *Local Recovery Actions*, for detailed information about local planning.

Local Integrating Organization	Sub-Strategy	
	D2.1	D2.2
Hood Canal Coordinating Council (HC)		
Island (ISL)		
San Juan (SJI)		
Snohomish-Stillaguamish (SNST)		
South Central Caucus Group (SC)		
Alliance for a Healthy South Sound (SS)		
Strait ERN (STRT)		
West Central (WC)		
Whatcom (WH)		

Strategies and Actions

D2. Support and Build Strategic, Collaborative Partnerships

Effective partner relationships are essential for achieving a shared vision of recovery and working through challenging issues. This strategy highlights three important areas of broad collaboration—that differ from the issue-specific collaboration described elsewhere in Section 3. A description of Partnership-related collaborative structures and partnerships is included in Appendix A, *Puget Sound National Estuary Program Management Conference Overview*.

D2.1 Advance the coordination of local recovery actions via local integrating organizations

Many locally based groups exist for salmon recovery, marine resource conservation through the Northwest Straits Initiative, watershed management (RCW 90.82) and protection, and water quality. In any given area, there are many local groups working on recovery-related activities, and these groups are often not adequately connected to each other. The Partnership is working with local interests to better

coordinate implementing partners, and create a more effective and collaborative approach to clarify local priorities, accomplish identified work, address problems, and provide technical support.

The Partnership's authorizing statute (RCW 90.71.260) created seven action areas to help organize regional recovery work. In areas such as Hood Canal and the Strait of Juan de Fuca, the action area is a useful scale for defining working boundaries. In other cases, the defined action area has proven to be too geographically large, or too diverse—and a smaller-scale, watershed-based approach has evolved. These scales are illustrated by the formation of LIOs discussed below and described in detail in Section 4, *Local Recovery Actions*.

Since adoption of the 2008 Action Agenda, the Partnership has supported the establishment of LIOs, which consist of local governments and other local stakeholders, to contribute to development of the Action Agenda. LIOs are established and recognized by the Leadership Council in nine of the 10 local areas that comprise Puget Sound¹.

Ongoing Programs

Key Ongoing Program Activities

- Partnership staff oversees, provides, and manages grants to support LIOs.
- The Partnership is continuing to work to create one additional LIO in the Skagit-Samish watersheds in 2014.
- Partnership staff provides regional guidance and assistance to LIOs in their work to develop and implement locally based strategic plans for Action Agenda implementation, including developing lists of priority local actions.
- The Partnership recognizes and relies upon the LIO structure for information exchange, local content for the Action Agenda, and soliciting feedback.
- Each LIO maintains an ongoing work program. Local priorities including near-term actions are presented in the profiles in Section 4, *Local Recovery Actions*, and near-term actions are listed by relevant sub-strategy throughout Section 3.
- Continuing local or sub-regional efforts such the Northwest Straits Initiative and others that also participate in the LIO process.

Near-Term Actions

The near-term actions identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

¹ It is important to note that work is ongoing in all local areas. Each area is at a unique point in the process of identifying its priorities and contributing to the Action Agenda. Most areas have prioritized strategies and actions with performance measures. Although the Skagit-Samish watershed was not able to identify near-term actions at this time, it does not mean that actions and strategies are not important in that area; instead it reflects the differences between the local area processes. The Skagit-Samish watershed continues to work toward establishing an LIO.

- D.2.1 HC1** **HCCC Integrated Watershed Plan.** In coordination with local and tribal governments, state and federal government agencies, nonprofit organizations, and other community partners, HCCC will continue to develop and implement the IWP through June 30, 2014. The IWP is the roadmap and organizing concept for ecosystem recovery, protection, and restoration in Hood Canal and will include identification of the highest priority focal components, goals, actions and strategies, and indicators for measuring progress. Based on critical, high priority strategies and actions identified in the IWP, HCCC will develop and revise local near-term actions for incorporation into the 2016 Action Agenda.
- D.2.1 HC5** **HCCC climate change adaptation.** HCCC will convene a climate change forum with our members to identify unique vulnerabilities and potential adaptation strategies for the Hood Canal Action Area. As part of the Integrated Watershed Plan process and working with our members and partners, HCCC will determine climate adaptation approaches that can be incorporated into the Integrated Watershed Plan and various plans in progress.
- D.2.1 SC1** **Support state and local partnerships to advance the Action Agenda.** Use South Central Caucus Group (LIO) as a forum to advance local actions by sharing information and supporting local governments in the following.
- Sharing approaches to developing and implementing policies, regulations, and incentives.
 - Developing model ordinances.
 - Identifying and developing incentive programs.
 - Promoting funding and technical assistance for updating, adopting and implementing policies and regulations.
 - Promoting education and outreach through ECO Net.

D2.2 Build and maintain collaborative partnerships with tribes to identify and advance recovery actions

The state and tribes recognize that, while each government is ultimately responsible for making its own decisions and taking actions within its legal authority and fiscal constraints, through mutual efforts at communication and consultation we can, as individual governments, take steps that move us toward a common goal in a coordinated and cooperative manner. In order to achieve our common goals, the Tribes and the Partnership have developed the Partnership Tribal Co-management Council. This council is convened at least quarterly.

Near-Term Actions

None; addressed by near-term actions related to other sub-strategies.

Performance Management

Local Priorities

No LIOs identified near-term actions that address performance management. Performance management is the responsibility of the Partnership.

Strategies and Actions

D3. Implement Performance Management

Implement a transparent performance management system that tracks and reports progress on achieving recovery targets, identifies barriers, and finds solutions to adaptively manage recovery.

The Partnership is responsible for designing and implementing a performance management system for Puget Sound. The system must include tracking Action Agenda implementation; establishing a financial accountability system to track expenditures for the Action Agenda as well as collective regional expenditures on Puget Sound; and, most importantly, reporting progress in achieving outcomes as measured by attainment of interim targets and recovery (2020) targets.

D3.1 Work collaboratively to track and report on implementation performance

The Partnership coordinates the effort of partners responsible for components of the Action Agenda to track and report on the achievement of milestones, outputs and expenditures.

Ongoing Programs

Key Ongoing Program Activities

- The Partnership coordinates progress reporting on near-term actions.
- The Partnership collects, analyzes, and reports data on implementation to the Leadership Council, Governor and Legislature.
- The Partnership reviews progress with the Leadership Council to identify obstacles and make adjustments to near-term actions and programs as appropriate.

Near-Term Actions

None; work in the near-term will focus on implementation of ongoing programs.

D3.2 Work collaboratively to report on recovery progress

The Partnership works collaboratively with monitoring partners to track and report progress in attaining interim targets and recovery (2020) targets. The Partnership manages the *Puget Sound Vital Signs*, an

online tool² that illustrates established targets related to Puget Sound's health. It provides measures that partners and the general public can undertake to contribute to that effort. The *Puget Sound Vital Signs* is updated annually.

The Partnership also is responsible for preparing the biennial State of the Sound report, which requires collaboration with partners to assess and describe implementation progress, ecosystem status, and recovery expenditures. In addition, the Partnership plays a leadership role in reporting progress to the EPA National Estuary Program on the ongoing work in the region and achievements under the EPA grants programs.

Ongoing Programs

Key Ongoing Program Activities

- The Partnership maintains and updates the *Puget Sound Vital Signs*.
- The Partnership produces the *State of the Sound* on a 2-year cycle designed to influence the next Action Agenda and report to the Legislature on action and funding needs for the region (most recent report released in 2013).
- The Partnership participates in the Governor's Puget Sound GMAP forum.
- The Partnership provides staff reports to the Leadership Council related to the implementation of the Action Agenda.
- The Partnership reports to EPA through the Financial and Ecosystem Accounting Tracking System (FEATS) and National Estuary Program Online Tool (NEPORT) programs.

Near-Term Actions

None; work in the near-term will focus on implementation of ongoing programs.

² <http://www.psp.wa.gov/vitalsigns/index.php>

Science and Monitoring

Local Priorities

LIOs identified near-term actions that address science and monitoring. These local actions are presented in the *Strategies and Actions* section along with Soundwide actions under the sub-strategy shaded below. The local action numbering contains the area abbreviation shown in parentheses after the LIO name. See Section 4, *Local Recovery Actions*, for detailed information about local planning.

Local Integrating Organization	Sub-Strategy	
	D4.1	D4.2
Hood Canal Coordinating Council (HC)		
Island (ISL)		
San Juan (SJI)		
Snohomish-Stillaguamish (SNST)		
South Central Caucus Group (SC)		
Alliance for a Healthy South Sound (SS)		
Strait ERN (STRT)		
West Central (WC)		
Whatcom (WH)		

Strategies and Actions

D4. Coordinate and Advance Science and Monitoring

Convene and facilitate the implementation of a strategic science and regional monitoring program that improves decisions about how to restore and protect Puget Sound. Monitoring is a critical part of ecosystem recovery.

The overall objective of the Science Program is to inform and continually improve the scientific basis for decisions of Partners and policy-makers on how to protect and restore Puget Sound. The Partnership's science and monitoring team supports the Science Panel and Monitoring Steering Committee in enlisting the assistance of the Puget Sound scientific community in the work of the regional effort and communicating findings and implications. Science Program staff work closely with the Performance Management Team in assessing the region's overall progress in attaining the recovery targets and describing the status of the recovery effort.

This strategy focuses specifically on the Partnership's role in science and monitoring over the next 2 years. Science and monitoring are shared efforts and resources. In the future, this strategy could be expanded to more fully cover partner science activities.

OCEAN ACIDIFICATION

Ocean Acidification: From Knowledge to Action, Washington State's Strategic Response (Washington State Blue Ribbon Panel on Ocean Acidification 2012), states that although knowledge about the causes and consequences of ocean acidification is advancing rapidly, important gaps remain. Support for ocean acidification research and monitoring is crucial. A sound scientific foundation is needed to guide actions aimed at reducing the risks of acidification on the Washington marine ecosystem and the organisms that it supports. The Blue Ribbon Panel recommends several strategies that advance scientific investigation and monitoring in support of efforts aimed at decreasing ocean acidification, including the following.

- Understanding the biological responses of local species to ocean acidification and associated stressors.
- Understanding the status and trends in ocean acidification in Washington's marine waters.
- Developing capabilities to identify real-time corrosive seawater conditions, as well as short-term forecasts and long-term predictions of global and local acidification effects.

The Action Agenda directly supports the Blue Ribbon Panel recommendations by supporting scientific efforts to conduct laboratory studies related to the effects of ocean acidification on organisms and ecosystems, establish an ocean acidification monitoring network, and establish the ability to forecast corrosive conditions that would be detrimental to shellfish and other organisms.

D4.1 Oversee strategic planning for Puget Sound recovery science

The Partnership, with guidance from the Science Panel, leads the technical steps identified in the Open Standards process (Section 1, *Recovery Context*) for strategic planning and prioritization, including identifying key ecosystem components, drivers and pressures on the ecosystem, assessing linkages and risks and assisting in setting of targets for reducing risks and pressures. Strategic planning can occur in both the near-term (2-year) horizon, as well as longer timeframes.

Ongoing Programs

Continue to Build Scientific Knowledge and Policy-Relevant Information for Decision Makers

The Partnership will continue to build an accessible, peer-reviewed base of scientific knowledge about ecosystem status and the effectiveness of strategies and actions and indicators, which provides policy-relevant information for decision makers.

The Partnership with the oversight of the Science Panel and collaboration with the Puget Sound Institute works to build the scientific knowledge to inform decision-making and to update and revise the Action Agenda. This includes setting expectations for the quality of the work; preparing key technical documents, reports, and peer-reviewed publications based on that work; and coordinating with the Puget Sound Institute at the University of Washington Tacoma to develop a web-based compendium of research and information for policy makers and stakeholders. In addition, the Partnership strives to learn from the experiences of other ecosystem restoration programs, as well as share lessons learned.

Science Program staff support the Science Panel to provide synthesis of scientific findings and effectively communicate these findings to the Puget Sound Management Conference.

Maintain and expand a network of scientific expertise for informing decision makers

The Partnership will maintain and expand a network of scientific experts for informing decision makers. A key role of the Partnership is to build and catalyze capacity for scientific efforts by convening, coordinating and enlisting the Puget Sound scientific community (agencies, tribal nations, universities, citizen groups) in implementing a strategic science program. The responsibilities for this biennium include enlisting the scientific community in the review indicators, analysis of recovery targets, and assessment of pressures on the ecosystem.

Key Ongoing Program Activities

- Updating the Biennial Science Work Plan on a 2-year cycle in conjunction with the Action Agenda. The Biennial Science Work Plan is the mechanism by which the Partnership and its partners identify, prioritize and direct monitoring, research, support of decisions, and funding to focus on the key scientific uncertainties that are hindering political or technical actions to recover and protect Puget Sound.
- Building the Puget Sound Partnership Technical Memorandum Series.
- Publishing and updating the Puget Sound Science Review.
- Participating in the formulation of the *State of the Sound*.
- Overseeing peer review of technical documents and products.
- Facilitating collaboration among the members of the Science Panel, Puget Sound Institute, Nearshore Science Team, Recovery Implementation Technical Team, and other regional partners, including Canada.

Near-Term Actions

None; work in the near-term will focus on implementation of ongoing programs.

D4.2 Implement a coordinated, integrated ecosystem monitoring program

The Partnership is required by statute to implement and coordinate a Puget Sound assessment and monitoring program. The purpose of the Puget Sound Ecosystem Monitoring Program is to coordinate and integrate the work of existing and future monitoring efforts to determine the status and trends of key components and indicators of the health of the Puget Sound, and to inform subsequent decisions about whether recovery actions have been effective. Monitoring is the mechanism that provides the actual data required to both target and track the effectiveness of the actions recommended in this Action Agenda. Monitoring also allows the Partner agencies to improve (adapt) management actions at both local and regional scales, and it provides an on-going and objective record of the condition, status, and changes over time of key ecosystem components and attributes—including the indicators and recovery targets adopted by the Leadership Council.

The monitoring program is structured to engage a broad range of partners via the Monitoring Steering Committee and the organization and facilitation of topical work groups. The monitoring program relies primarily on existing efforts as the building blocks for a coordinated program. Decision-making for monitoring rests with the Monitoring Steering Committee and is responsive to the Leadership Council. The Science Panel provides independent review and critique of the program. More information on the monitoring program activities can be found at <https://sites.google.com/a/psemp.org/psemp/>.

Ongoing Programs

Coordinate the Development of Monitoring Plans

The Partnership will coordinate committees and the process of developing monitoring plans. Staff is responsible for coordinating and supporting the complex, multi-partner effort around monitoring for Puget Sound. The Monitoring Program coordinates the work of existing and future monitoring efforts to assess the effectiveness of recovery action, evaluate progress towards ecosystem recovery, and inform decision-making through adaptive management to achieve the goals of the Action Agenda. This task involves leveraging existing resources at the local and regional levels.

Adaptive Management Leadership

Partnership staff will lead efforts to coordinate, compile, manage, analyze, and report data on indicators to support the Partnership's adaptive management plan. This task is intended to enhance the programmatic approach to monitoring ecosystem health to better integrate data collection on indicators and recovery targets, analysis, and interpretation with performance management and decision-making systems.

The Partnership relies on federal, tribal, state agency, local government, and other partners for collecting and reporting data. Many of these ongoing monitoring programs have faced serious declines in program funding.

Key Ongoing Program Activities

- Staffing committees and topical workgroups.
- Ensuring that there is a consistent approach to assessing monitoring gaps and priorities, and development of monitoring plans.
- Facilitating communication among committees and between the Science Panel and Partnership decision-making bodies.
- Work with partners to provide data for the *Puget Sound Vital Signs*.
- Work with partners to increase the quality and efficiency of data collection and analysis.
- Work with partners to refine efforts to report on the effects of key actions and suites of actions.
- Collaborate with partners and other Partnership teams in the drafting of the *State of the Sound* report.
- Continue existing monitoring efforts by partners in Puget Sound.

Near-Term Actions

The near-term actions identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

D.4.2 ISL10 **Develop and implement a stormwater monitoring program.** Island County will enhance its stormwater monitoring program to address stormwater discharges from the built environment. The monitoring is intended to focus community attention on source

identification and key areas of concern. Based on the monitoring data, technical assistance will be provided to landowners.

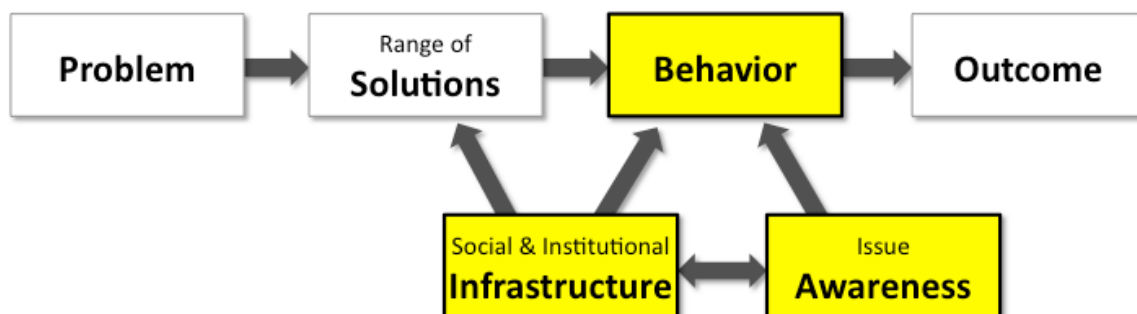
- D.4.2 SJI3** **Implement the Marine Stewardship Area Monitoring Plan to track key species (Near-Term Major Oil Spills Action III).**
- D.4.2 SJI8** **Devise monitoring and management plans for priority and/or focus basins (Near-Term Run Off Action IV).**
- D.4.2 SJI12** **Continue development of Salmon Recovery Adaptive Management and Monitoring Plan (Near Term Shoreline Action IV).**
- D.4.2 WC25** **Continued funding for shoreline monitoring programs in Kitsap and Pierce Counties.**
Help fund routine marine shoreline E. coli bacteria monitoring program in Kitsap and Pierce Counties to protect and restore commercial shellfish areas. Provide 100% funding for 2-year shoreline monitoring program on Bainbridge Island. Provide 50% match for shoreline monitoring program along unincorporated Kitsap and Pierce Counties, within all classified areas (including Port Orchard Passage).

Stewardship

Stewardship of Puget Sound resources by the region's 4.5 million residents is critical to the long-term recovery and protection of Puget Sound. Cumulative impact from these millions of individuals and their daily actions can both positively and negatively affect the ecosystem. Public engagement and stewardship strategies foster broad-scale actions to address polluted water, degraded land and habitat, and imperiled species.

The regional approach to public stewardship of Puget Sound is an integrated three-pronged strategy.

- **Changing Practices and Behaviors.**
- **Building Issue Awareness and Understanding.**
- **Changing Social and Institutional Infrastructure.**



Changing practices and behaviors (D5) of individuals can reduce or eliminate negative cumulative effects on ecosystem resources. This may occur through one-time action or through shifts in lifelong habits. It may involve participating in a community effort or adopting different practices at home.

Issue awareness and understanding (D6) is needed among individuals and groups who have the capacity to institute and sustain desired changes. Issue awareness can support beneficial practices and behaviors. It can also promote the social and institutional infrastructure needed to achieve these changes.

Social and institutional infrastructure (D7) provides the interpersonal, service and communication networks we rely on to enable change. It includes the social processes and procedures (e.g., services, utilities, regulations) that influence and support the way people function every day. These structures affect the range of available solutions, and provide the foundation to support both awareness-building and targeted behavior change efforts.

Across Puget Sound exists a broad and dedicated range of organizations engaged in stewardship-building activities and programs. The regional strategy described in this section works with and through a coalition of over 600 organizations which includes place-based facilities like museums, aquariums, parks and environmental learning centers; conservation and environmental organizations; cities, counties, tribes, state and federal agencies; conservation districts, health districts and schools, stream teams, watershed groups and many others.

This integrated strategy challenges those working to recover the Puget Sound ecosystem to go beyond traditional approaches to education, public information, and behavior change. It calls for a deeper understanding, including formative research, of the practices we need to influence and the specific audiences, motivators, and barriers behind those practices. It encourages innovation, challenges assumptions, and seeks clear chains of reproducible results.

Local Priorities

The Snohomish-Stillaguamish LIO identified near-term actions that address stewardship. These local actions are presented in the *Strategies and Actions* section along with Soundwide actions under sub-strategies D5.2 and D6.5. The local action numbering contains the area abbreviation SNST. See Section 4, *Local Recovery Actions*, for detailed information about local planning.

Strategies and Actions

D5. Cultivate Broad-Scale Stewardship Practices and Behaviors among Puget Sound Residents that Benefit Puget Sound

Program evaluation and social science repeatedly find that awareness of a problem often does not produce desired behavior change. We cannot rely on education alone to reliably bring about the kind of broad-scale stewardship needed to recover Puget Sound.

Behavior change methods like social marketing, incentive programs, and persuasive framing of choices can foster beneficial behaviors and discourage detrimental ones. These methods have been used effectively in health and disease-prevention programs for decades. These methods are now being applied to Puget Sound ecosystem recovery.

Ongoing Programs

Key Ongoing Program Activities

- The Partnership, Lead Organizations³, and local partners are identifying priority BMPs based on Action Agenda prioritization, problem severity, problem frequency, availability of and confidence in science, and ability to influence change. These priority BMPs are then used to focus and guide regional behavior change programs, grants, other resources, and local program development.
- Local implementers⁴ and Lead Organizations are ensuring—through formative research, strategy development and critical evaluation—that local stewardship programs are science-based and measurably effective in achieving identified behavior change outcomes.

³ Under the National Estuary Program, EPA provides funding to Washington state agencies as Lead Organizations to implement the Action Agenda. These Lead Organizations develop and implement 6-year strategies for four categories of ecosystem protection and restoration.

⁴ Local implementers are groups or individuals charged with implementing programs, policies, or regulations and can include governmental or non-governmental organizations, commissions, committees, or groups.

- Local implementers are conducting behavior change programs that advance BMPs related to infiltration, pollution reduction, habitat improvement, forest cover, soil development, critical area protection, shoreline function and other priority issues.
- The Partnership is implementing a grant program to support regional and local emphasis on priority BMPs.

D5.1 Prioritize targeted stewardship issues, actions and audiences based on (1) problem severity, (2) problem frequency, (3) availability of and confidence in science (natural and social) behind the problem, and (4) ability to influence change

Near-Term Actions

None; work in the near-term will focus on implementation of ongoing programs.

D5.2 Collaboratively develop and promote science-based targeted communications and behavior change strategies across the region

Near-Term Actions

The near-term actions identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

D.5.2.1 Strategic social marketing frameworks. The Partnership works with partners to develop strategic social marketing frameworks to support soundwide behavior change initiatives by conducting, synthesizing and disseminating formative research relative to the adoption of specific priority practices.

D.5.2 SNST11 Coordinated education and outreach leading to behavior change. Snohomish County, together with local and regional partners, will develop a prioritized list of BMPs to promote through education and outreach programs. Implement strategies that target specific audiences and use targeted messages to achieve awareness and meet behavior change goals. The following programs will be considered.

- Forest stewardship and sustainable agriculture.
- Riparian solutions program.
Community and youth education/outreach program.
Stormwater management training.
- Nearshore and bluff behavior change outreach (WSU Extension) Connection of upland farmers with shellfish farmers to discuss clean water for safe shellfish harvest and consumption.
- Development and implementation of multiparty integrated water quality themed education and behavior change programs to address shellfish protection.

- D5.3 Enable and encourage residents to take informed stewardship actions addressing infiltration, pollution reduction, habitat improvement, forest cover, soil development, critical areas, reductions in shoreline armoring, and specific actions identified in D5.1**

Near-Term Actions

The near-term actions identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

- D.5.3.1 Stewardship BMPs.** The Partnership and partners analyze priority BMPs as early-action initiatives. Complete five regional model programs addressing those priority BMPs by July 2015.

- D5.4 Improve effectiveness of local and regional awareness-building and behavior change programs through vetted messages, proven strategies and outcome-based evaluation; guide partners in use of formative research and diffusion of priority BMPs**

Near-Term Actions

None; work in the near-term will focus on implementation of ongoing programs.

- D5.5 Enhance resources to sustain and expand effective behavior change and volunteer programs that support Action Agenda priorities and that have demonstrated, measurable outcomes**

Near-Term Actions

None; work in the near-term will focus on implementation of ongoing programs.

- D5.6 Create a repository of market, social, and audience research to support stewardship work; include research and data from local, state, and federal governments, nonprofit, and private sector sources; synthesize and disseminate to partners**

Near-Term Actions

None; work in the near-term will focus on implementation of ongoing programs.

- D5.7 Review practices and issues that require solutions beyond the Puget Sound region such as automotive, manufacturing and distribution of toxins, and pharmaceutical waste management; develop strategies and partnerships outside the Puget Sound region to address issues**

Near-Term Actions

None; work in the near-term will focus on implementation of ongoing programs.

D6. Build Issue Awareness and Understanding to Increase Public Support and Engagement in Recovery Actions

Polls show that a majority of residents are not aware that Puget Sound is in trouble. This lack of awareness limits support for Puget Sound recovery and the public's willingness to change contributing behaviors. Increasing public awareness of ecosystem problems and solutions is an essential component of Puget Sound recovery.

While we cannot rely on public awareness alone to promote changes in behavior, it can be an early step in the process of behavior change. Broad public awareness also fosters improved civic processes, engages citizens in government, and enables public officials to make well-informed decisions on resource issues.

Issue awareness in this context falls into three categories.

- Broad public awareness of issues and solutions.
- Targeted awareness—among specific audiences or sectors of people—of actions required to address specific problems.
- Awareness among key decision-makers of the role stewardship programs play in the overall recovery effort.

OCEAN ACIDIFICATION

As stated in *Ocean Acidification: From Knowledge to Action, Washington State's Strategic Response* (Washington State Blue Ribbon Panel on Ocean Acidification 2012), recent national surveys show low public awareness of ocean acidification; only 7% of Americans say they have heard of it. Educating elected officials, resource managers, business and industry leaders, and the general public (including youth) is a key prerequisite to action. To improve understanding of ocean acidification and engage stakeholders in solutions, information describing how ocean acidification is affecting jobs and resources Washington State must be communicated and the importance of the ocean to our health, coastal economies, and well-being will need to be emphasized. In addition, the rapid changes in ocean chemistry, the consequences of this change for marine life in Washington, and what it means for individuals and Washingtonians collectively will need to be explained. Finally, the information needs to show the value of early action and highlight the role that Washingtonians can play in developing and implementing solutions.

The Blue Ribbon Panel recommends strategies for sharing information showing ocean acidification is a real and recognized problem in Puget Sound. The Action Agenda strategies in this section directly support the Blue Ribbon Panel recommendations by developing and implementing a public awareness effort and connecting the public with engagement and volunteer programs.

Ongoing Programs

Key Ongoing Program Activities

- The Partnership, STORM, and Ecology continue to implement the Puget Sound Starts Here regional media effort to complement and support local campaign efforts. This work includes both traditional media (broadcast and cable television, radio, online ads) and social media (social networking, alternative media, web-based and mobile technologies). Partners are incorporating Puget Sound

Starts Here campaign messages and brand into locally targeted communications to increase issue relevance and local identity.

- Partners are implementing locally based programs that build public understanding of Puget Sound’s health, status, threats, and impacting activities. Programs connect individual actions to the overall ecosystem, link residents with resources and 90 engagement opportunities, and inspire action.
- The Partnership, STORM and ECO Net are providing technical support to and among partners including collaborative development and dissemination of tested, vetted messages and communications resources.
- The Partnership and other funders are implementing grant programs to support locally and regionally targeted awareness programs. Support is directed to proven and measurably effective programs that address priority issues and audiences. Funding is also designed to stimulate innovation, collaboration, and connections with new audiences to advance recovery efforts.

D6.1 Implement a long-term, highly visible, coordinated public-awareness effort using the Puget Sound Starts Here brand to increase public understanding of Puget Sound’s health, status, and threats; conduct regionally scaled communications to provide a foundation for local communications efforts; conduct locally scaled communications to engage residents in local issues and recovery efforts

Near-Term Actions

The near-term actions identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

- D.6.1.1 Phase 2 of Puget Sound Starts Here.** The Partnership and partners implement Phase 2 of Puget Sound Starts Here campaign. The Partnership, STORM, and Ecology ensure that messages reflect the demography, regional identity and issues facing the Puget Sound.

D6.2 Incorporate and expand Puget Sound related content in diverse delivery settings (e.g., recreation, education institutions, local government, neighborhood and community groups, nonprofit organizations, businesses); connect residents with public engagement and volunteer programs

Near-Term Actions

None; work in the near-term will focus on implementation of ongoing programs.

D6.3 Incorporate Puget Sound place-based content into K–12 curricula throughout the Puget Sound region; connect schools with technical assistance, inquiry-based learning opportunities, and community resources; implement student service projects connected to ecosystem recovery; and link schools to organizations with structured volunteer opportunities

Near-Term Actions

The near-term actions identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

D.6.3.1 K-12 curricula. Incorporate Puget Sound place-based content into K-12 curricula by continuing to support existing partnerships with teachers, curriculum directors and school leaders, and developing new partnerships with additional Puget Sound school districts.

D6.4 Foster a long-term sense of place among Puget Sound residents; encourage direct experiences with Puget Sound’s aquatic and terrestrial resources through recreation, informal learning, and public access sites

Near-Term Actions

None; work in the near-term will focus on implementation of ongoing programs.

D6.5 Build awareness of stewardship-building efforts among elected officials, executive staff, funders, resource managers, and others with resource allocation ability; emphasize program roles, needs, relationship with other Action Agenda strategies and program outcomes

Near-Term Actions

The near-term actions identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

D.6.5 SNST9 Fisheries/watershed ecology education for officials and decision-makers. Sound Salmon Solutions and partners will develop a branded education curriculum and program on ecology issues necessary for salmon recovery, targeted at elected officials. This is not a lobbying campaign but a science-based, politically neutral curriculum, allowing officials to make informed decisions about land use and development, with Puget Sound and salmon recovery in mind. The training will also initiate a relationship between decision-makers and organizations with the expertise to provide information and decision support. By completing the training, officials earn a Salmon Savvy Certification, a brand they can use to demonstrate their efforts to constituents. The program would result in ongoing classes in Snohomish County and could serve as a model for other areas.

D7. Build Social and Institutional Infrastructure that Supports Stewardship Behaviors and Removes Barriers

Social and institutional infrastructure strongly influences the ability of residents to make and sustain changes in behavior. “Social Infrastructure” consists of the social connections and frameworks that enable society to function. Referred to in social science as “Social Capital,” it consists of the bonds that connect individuals within groups, and the bridges that connect those groups to each other. Social capital correlates to a society’s ability to solve complex problems. As such, social capital is a key part of the infrastructure needed to recover and maintain Puget Sound’s health.

Whereas social infrastructure consists of the social networks upon which people rely, “Institutional Infrastructure” consists of processes, procedures, and physical tools. Whether public or private, large or

small, elements of institutional infrastructure can enable, motivate, or impede desired actions or behaviors.

Examples are listed below.

- The ability of community restoration groups to replant shoreline buffers depends on an infrastructure of native plant nurseries.
- The ability of farmers to better manage animal waste may be aided by alternate disposal options.
- The ability of builders to construct Low Impact Development may be impeded by outdated municipal engineering design and development standards.

Ongoing Programs

Key Ongoing Program Activities

- Local organizations actively collaborate to increase consistency and coverage, share knowledge and resources, and enhance effectiveness of individual programs. Partners use and enhance existing social, informational, and institutional infrastructure to expand partnerships and implement effective, efficient strategies.
- The Partnership provides training for partners on effective tools and techniques for behavior change programs, such as social marketing, diffusion, program development, new technologies, and program evaluation.
- The Partnership and other funders provide financial support to local and regional stewardship efforts. The funding promotes innovation, regional program alignment, collaboration, implementation of targeted strategies, and audience expansion.
- The Partnership and partners develop and disseminate portfolios of vetted outreach content and tools for use by local organizations in their programs.
- The Partnership and local partners maintain and enhance the ECO Net to build and strengthen relationships among Puget Sound organizations working on social strategies, and support their respective programs.
- Maintain and enhance tools such as MyPugetSound.net to support effective partner collaboration.

D7.1 Apply appropriate social science to Puget Sound recovery to increase clarity and effectiveness of targeted actions, audiences, opportunities, strategies, and evaluation metrics

Near-Term Actions

None; work in the near-term will focus on implementation of ongoing programs.

D7.2 Build capacity among partner organizations to advance priority stewardship actions; provide technical support and training to advance program effectiveness, evaluation, and support of Action Agenda priorities

Near-Term Actions

The near-term actions identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

D.7.2.1 Behavior Change Program Guidance. The Partnership provides uniform guidance for partners conducting behavior change programs to (1) enhance priority practices, (2) ensure that programs intended to address these priority practices are based on proven methods, (3) incorporate the necessary formative research to help programs achieve desired outcomes, and (4) incorporate effective evaluation strategies.

D7.3 Maintain centralized capacity to sustain and enhance the regional Puget Sound Starts Here campaign

Near-Term Actions

None; work in the near-term will focus on implementation of ongoing programs.

D7.4 Provide public information conduits connecting individuals to local activities, resources and decision-making processes, including cost-share programs, technical assistance, volunteer experiences and ways to engage in civic structures and processes

Near-Term Actions

The near-term actions identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

D.7.4.1 Citizen Action Training School. The Partnership and grantee(s) establish a Citizen Action Training School to (1) build awareness of Puget Sound issues and related governmental structures and processes, and (2) increase citizen participation in local, state and federal decision-making processes affecting Puget Sound.

D7.5 Enhance strategic networks and tools that support stewardship partners and outcomes, including ECO Net, STORM, The Northwest Straits Initiative and Marine Resource Committees, tribes, municipalities not covered by stormwater permits, public agencies, funders, universities, non-governmental organizations and others

Near-Term Actions

None; work in the near-term will focus on implementation of ongoing programs.

D7.6 Work regionally and locally to remove implementation barriers (e.g., physical, economic, regulatory, enforcement, policy), and enable and incentivize adoption of stewardship actions

Near-Term Actions

None; work in the near-term will focus on implementation of ongoing programs.



STRATEGIES AND ACTIONS

E: FUNDING STRATEGY

In order to achieve the recovery of Puget Sound by 2020, increased financial capacity to implement priority ongoing and new actions in the Action Agenda is required. Increased capacity can be achieved through new sources of funding, using existing funding more strategically and efficiently, and through the development of innovative, market-based programs. The goal of the funding strategy is to develop and secure stable and diverse funding sources of funding to implement Action Agenda priorities.

Federal, state, local, and tribal governments currently generate a significant portion of the money being spent on recovery efforts. Other significant sources of funding include private foundations, businesses, and individuals. Several market-based mechanisms to achieve recovery goals are also being experimented with in the Puget Sound region; these include transfer of development rights programs, ecosystem services markets, and in-lieu-fee compensatory mitigation programs.

In addition, several subject-specific funding strategies are identified in other parts of the Action Agenda. For example, onsite sewer systems and salmon recovery have unique funding requirements that need bolstering. Those actions are included at the end of this section to present a full funding picture.

At the direction of the Leadership Council, the ECB has formed a funding subcommittee to develop a strategy for each of the three strategic initiatives—stormwater, habitat, and shellfish (Section 2, *The Strategic Initiatives*). The purpose of this effort is to increase understanding and agreement on key funding issues among subcommittee members and the full ECB in order to gain broad support. The primary objectives are as follows.

- Characterize the current state of program development and the extent and quality of cost estimates for Strategic Initiatives.
- Identify the nature and extent of funding sources currently used to support Strategic Initiatives.

THIS SECTION DESCRIBES SIX

STRATEGIES—and associated sub-strategies, ongoing programs, and actions—that are essential to the funding recovery efforts.

- E1.** Maintain and Enhance Federal Funding for Implementation of Action Agenda Priorities
 - E2.** Focus Federal Agency Budgets and National Programs on Action Agenda Priorities
 - E3.** Maintain, Enhance, and Focus State Funding for Implementation of Action Agenda Priorities
 - E4.** Maintain and Enhance Local Funding for Implementation of Action Agenda Priorities
 - E5.** Develop Opportunities for Private Sector and Philanthropic Funding for Implementation of Action Agenda Priorities
 - E6.** Develop and Implement Market-Based Mechanisms for Implementation of Priorities in the Action Agenda
-

Recovery actions, both ongoing and new, need funding. Those working on specific issue and program areas covered by the Action Agenda have identified the need for more, stable, and even dedicated sources of funding unique to their interest. Examples include, but are not limited to salmon recovery including watershed groups, Soundwide stewardship, outreach and behavior change, stormwater control, invasive species prevention and eradication, and Puget SoundCorps. The Partnership is focused on developing an overall funding strategy rather than creating multiple, new dedicated funding sources.

- Identify opportunities to use existing sources to support multiple Strategic Initiatives.
- Refine the funding strategy that the Partnership and its partners will employ to support the Strategic Initiatives, including actions, roles and responsibilities, and implementation schedule.
- Develop a plan to communicate the funding strategy to stakeholders and elected officials.

A report to the full ECB is expected in the summer of 2014.

Local Priorities

LIOs identified near-term actions that address funding. These local actions are presented in the *Strategies and Actions* section along with Soundwide actions under the sub-strategy shaded below. The local action numbering contains the area abbreviation shown in parentheses after each LIO name. See Section 4, *Local Recovery Actions*, for detailed information about local planning.

Local Integrating Organization	Sub-Strategy					
	E1.1	E1.2	E1.3	E1.4	E1.5	E1.6
Hood Canal Coordinating Council (HC)						
Island (ISL)						
San Juan (SJI)						
Snohomish-Stillaguamish (SNST)						
South Central Caucus Group (SC)						
Alliance for a Healthy South Sound (SS)						
Strait ERN (STRT)						
West Central (WC)						
Whatcom (WH)						

Strategies and Actions

E1. Funding Strategy

E1.1 Maintain and enhance federal funding for implementation of Action Agenda priorities

The federal government provides a significant source of funding for implementation of priorities in the Action Agenda. This is accomplished through direct funding of federal agencies to engage in protection and restoration activities, sub awards and grants to support and match the work of non-federal partners, including the Partnership, other state agencies, tribes, and others.

Ongoing Programs

- Engagement in annual budget development and appropriation process to maintain funding levels for important Puget Sound related programs including the EPA Geographic Programs for Puget Sound, National Estuary Program Base Grants, NOAA’s Restoration Center, NOAA Pacific Coast Salmon Recovery Fund grant programs, and programs administered by USFWS, USGS, National Park Service,

U.S. Coast Guard, DOD, the Corps, USFS, NRCS, FEMA, Federal Housing Administration, Federal Transit Administration, and other federal agencies who lead work related to Puget Sound recovery.

- Annual federal funding prioritization process with state agencies.
- Funding for nearshore restoration and protection via the completion of the Corps Puget Sound Nearshore Ecosystem Restoration Project's General Investigation in preparation for a Water Resources Development Act reauthorization process, implementation of early action nearshore restoration projects within the Corps' Puget Sound and Adjacent Waters Construction Program and other federal agency match for the Estuarine and Salmon Restoration Program.
- Maintain focus on passage of the Puget Sound Recovery Act.

Near-Term Actions

The near-term actions identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

E.1.1.1 Puget Sound Recovery Act passage. The Partnership to continue work with Washington, coastal, and other key delegation staff to encourage passage of the Puget Sound Recovery Act by December 31, 2016.

E.1.1.2 Pacific coast salmon recovery funds. Increase Pacific Coast Salmon Recovery Fund and other federal habitat protection and restoration funding sources to implement Puget Sound Chinook Recovery plan. The Partnership, in collaboration with the PSSRC, the Recreations and Conservation Office, the WDFW, and the Northwest Indian Fisheries Commission will craft and lead an outreach strategy to secure funding necessary to implement the Puget Sound Chinook Recovery plan's protection and restoration priorities by securing federal funds from multiple agency sources to leverage local and state dollars, to fully fund the at \$120M per year. Federal habitat and restoration funding sources include NOAA, USFWS, and EPA agency programs among other, with special focus on the NOAA Pacific Coast Salmon Recovery Fund.

SALMON RECOVERY PLAN PRIORITY: FUNDING

When the *Puget Sound Salmon Recovery Plan* (Salmon Recovery Plan) was completed in 2005, the estimated annual investment for the first 10 years was \$120 million for Chinook salmon and bull trout for capital and some non-capital actions. The investment rate has consistently been less than half of this estimated need. The estimated need for summer chum was \$136 million for the first 10 years for capital and non-capital actions. In addition, there is minimal funding for the programmatic capacity of stakeholders to continue their engagement in locally led salmon recovery actions.

How are these priorities integrated into the Action Agenda? The annual investment rate has consistently been less than half of the estimated need for salmon recovery with recent decreases to the federal Pacific Coast Salmon Recovery Fund and other programs causing delays in implementation of the Salmon Recovery Plan and related ongoing programs described in the Action Agenda. Near-term action A6.1.1 secures the annual amount required to fully implement the approved Salmon Recovery Plan investment of \$120 million for Chinook salmon and bull trout. Near-term action A6.4.1 (completed) bolstered support for the lead entity and associated partner programs. These investment strategies will be developed as part of the overall Puget Sound recovery funding strategy. The Puget Sound recovery funding strategy also includes actions to renew and increase the Pacific Coast Salmon Recovery Fund and the Puget Sound Acquisition and Restoration Fund.

E1.2 Focus federal agency budgets and national programs on Action Agenda priorities

Federal agencies have many existing programs that are funded on an annual basis that could be focused on implementation of priorities in the Action Agenda. Creating a focus for this type of program on Puget Sound recovery actions could direct existing funds for national programs in this region without the need for increasing funding through an act of Congress.

Ongoing Programs

- Annual federal funding prioritization process with state agencies.
- Recommendations to federal agencies for priority actions to include in federal agency budget requests focusing on EPA, Department of Interior agencies, NMFS, NRCS, USFWS, the Corps, and DOD.
- Use results from the collaborations with LIOs and stakeholders to cultivate high priority projects that can achieve multiple benefits for recovery and are successful in garnering funds from national programs.

Near-Term Actions

The near-term actions identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

- E.1.2.1 Farm Bill and water quality.** WSCC will work with NRCS and Partners to identify and increase funding to Puget Sound through the Farm Bill to improve water pollution prevention efforts and habitat protection and restoration efforts in rural areas in this biennium. Program targets will be based upon the level of funding and effort that is advanced.

E1.3 Maintain, enhance, and focus state funding for implementation of Action Agenda priorities

Significant portions of state natural resource agency budgets are directed to implementation of priorities in the Action Agenda. The Partnership is required by statute to review state agencies' budgets and make recommendations, if necessary, to align budgets with priorities in the Action Agenda. In addition, the state makes significant annual investments in capital projects that contribute to Puget Sound recovery including wastewater treatment plants, stormwater retrofits, and nearshore and salmon habitat restoration and protection projects.

Ongoing Programs

- Implementation of statutory requirements by the Partnership including the following.
 - Aligning and prioritizing state agency budget requests and proposed cuts with priorities in the Action Agenda for use by the Washington State Office of Financial Management and the Legislature.
 - Alignment of grant criteria and project selection with priorities in the Action Agenda.
- Work with state agencies to develop natural resource agency budget proposals, based on priorities in the Action Agenda.

Near-Term Actions

The near-term actions¹ identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

E.1.3.2 Puget Sound Acquisition and Restoration Fund. The Partnership, in collaboration with the PSSRC and the Recreation and Conservation Office, will craft and lead an outreach strategy to renew and increase Washington State’s Puget Sound Acquisition and Restoration Fund with a goal of securing state match towards goal of fully funding the Puget Sound Chinook Salmon Recovery Plan at \$120M per year by December 2015.

E.1.3 SC10 Support restoration of the voter approved local Model Toxics Control Account.

- Advocate for fund protection. Support the use of the Model Toxics Control Account for grants and programs that expedite multiparty cleanup efforts.
- Support and promote programs that leverage other grants to expedite cleanups.
- Educate and promote the protection of the Local Toxics Control Account and identify opportunities for acquisition and redevelopment of vacant, orphaned, or abandoned property.

E1.4 Maintain and enhance local funding for implementation of Action Agenda priorities

Local governments and special purpose districts account for a significant portion of funds spent on critical activities that contribute to Puget Sound Recovery. Examples include funding spent on wastewater treatment and stormwater pollution control, and habitat acquisition and restoration. Local governments should be supported and incentivized to increase funding to address local priorities that are also Puget Sound recovery priorities.

Ongoing Programs

Implementation of pollution prevention, habitat protection and restoration, and other recovery-related activities by local governments using locally generated funds from utility rates, fees, assessments, and other funding mechanisms available to local governments.

Near-Term Actions

The near-term actions identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

E.1.4.1 Strategic initiatives funding mechanism. The Partnership, working with the ECB funding committee, will lead the development of a legislative strategy to adopt a funding mechanism for the three strategic initiatives (habitat, stormwater, and shellfish), which local governments around Puget Sound could elect to use to address Puget Sound recovery priorities.

¹ Gaps in numbering reflect near-term actions that have been completed or otherwise retired.

E.1.4 SC12 Secure additional funding necessary to implement priority fish and wildlife habitat and high-value aquatic habitat area enhancement projects.

- Provide input to the Partnership’s work to develop a gap analysis and funding strategy for implementation of the Action Agenda, including the following.
- Articulate need for better funding coordination of habitat, water quality, and flood investments at a watershed level.
- Describe specific financial needs and challenges of urbanized watersheds in protecting and restoring habitat and in prioritizing and carrying out stormwater retrofits.
- Involve research and analysis conducted by WRIAs 8 and 9 on watershed funding options and models.
- Provide examples of successful watershed-based decision-making models and successful multi-benefit projects that help “tell the story.”
- Provide the WRIA 9 issue paper on watershed investment concepts for consideration.
- Provide input on state legislative proposals for potential new watershed-based governance structures and funding authorities.
- Develop specific project proposals in support of federal and state appropriation requests to support salmon habitat restoration, habitat acquisition, major floodplain restoration, and stormwater retrofits.
- Support WRIAs 8, 9, and 10 in maintaining and refining the 3-year list of habitat protection and restoration implementation priorities.
- Support the King Conservation District in securing additional funding to address regional and local aquatic area enhancement and water quality protection priorities, with special emphasis on private property, subject to the outcome of joint task force recommendations.
- Support the work of WRIA 9 in preparing issue papers on key watershed-based investment concepts, including governance, geography, multiple benefit projects, and funding, and in preparing legislation for the session.

E.1.4 SS4 NPDES municipal stormwater permit implementation funding strategy development.

Municipal stormwater jurisdictions will develop a funding strategy to achieve a balance of local, state and federal funding for their stormwater programs, as needed.

E1.5 Develop opportunities for private sector and philanthropic funding for implementation of Action Agenda priorities

The private sector, including individuals, businesses, and philanthropies, recognizes the benefit of a healthy Puget Sound to a healthy economy. Businesses and private landowners are also faced with addressing certain recovery priorities such as controlling polluted runoff from private property. Opportunities should be provided for the private sector to invest in Puget Sound recovery. Opportunities for forming public/private partnerships to address priority issues should also be considered.

Near-Term Actions

The near-term actions identified for this sub-strategy are described below. Appendix D, *Near-Term Actions*, provides a consolidated table of all near-term actions, performance measures, and owners.

E.1.5.1 Coordination with philanthropic community. The Partnership will coordinate with the philanthropic community to encourage collaboration on implementation of highest priority actions in the Action Agenda.

E1.6 Develop and implement market-based mechanisms for implementation of priorities in the Action Agenda

Significant amounts of money are currently spent on environmental mitigation related to growth and development in the region. Ecosystem structure and function continues to be degraded by land conversion in part due to a higher-than-acceptable rate of failure of mitigation projects.

In addition, property owners in rural areas are often faced with converting working resource lands such as forests and farms into more intensive uses such as residential. Environmental, aesthetic, and economic value is thereby lost. Ecosystem markets have the potential to compensate rural landowners for values that they provide by maintaining their lands in rural resource uses.

Ongoing Programs

- Puget Sound Regional Council, Commerce, local governments, and the Partnership are working on the development of a transfer of development rights program in the central Puget Sound area. For more detail, see strategy A3.
- The Partnership helped foster in-lieu-fee compensatory mitigation projects in Hood Canal, and Pierce, King, and Thurston Counties. Support for the programs continues through program adoption at the regional and local level. For more detail, see sub-strategy A1.4.

Near-Term Actions

None; near-term work will focus at the programmatic level.

Funding Actions Identified in Other Sections of the Action Agenda

The following near-term actions represent subject-specific funding actions that have been identified in other parts of Section 3. They are duplicated here provide a full picture of funding-related strategies.

A1.2.3 Fund local Growth Management Act comprehensive plan updates. Commerce will seek funding to assist local governments in conducting Growth Management Act comprehensive plan updates.

A2.1.3 Port Gamble land conservation. Forterra, working in collaboration with Kitsap County, the Port Gamble S’Klallam Tribe, and the Suquamish Tribe, will coordinate funding and participation to secure the conservation of ~6,700 acres of land near Port Gamble, including 1.5 miles of shoreline.

A2.1 SC2 Identify and protect high-value salmon recovery habitat and lands at immediate risk of conversion. Secure funding to acquire high-priority, high-threat land as identified in salmon recovery plans and seek funding to secure property.

- A2.1 WC14** **Kitsap Forest & Bay Divide Property acquisition.** The West Central LIO, along with Great Peninsula Conservancy and other partners, will seek and secure funding to complete acquisition of the Kitsap Forest & Bay Divide Property, part of a larger effort to protect over 7,000 acres of forest and wetland habitat in north Kitsap County.
- A2.2 WC12** **West Sound Priority Watersheds for Protection.** The Suquamish Tribe will develop a detailed protection and restoration plan for the upper Chico Creek watershed. The Tribe will seek funding to undertake similar work for the high priority refugia, Curley and Blackjack Creek watersheds.
- A2.2 WC15** **Springbrook Creek fish passage enhancement and water quality retrofit.** The City of Bainbridge Island will seek funding to complete study and design for a watershed scale project that would ultimately replace two stream crossing culverts to improve fish passage; eliminate stream bank erosion through habitat enhancement; and reduce pollutants from road runoff by adding water quality retrofits, including addressing fecal coliform sources upstream of an important shellfish growing area and eliminating impound ponds.
- A3.1.1** **Use of Agriculture Conservation Program funds.** WSCC will enhance use of conservation and habitat restoration program funding from a variety of sources, (i.e., Conservation Reserve Enhancement Program and Environmental Quality Incentives Program) that are currently underused by and not tailored for western Washington growers.
- A3.1.2** **Landowner incentives for transfer of development rights and ecosystem markets.** Commerce and Ecology, in coordination with DNR and WSCC, will provide technical support and fund local projects to identify and implement landowner incentives, including transfer of development rights and ecosystem services markets.
- A5.1.2** **Regional floodplain vision and program.** Identify the goals, capital project plans and funding needs associated with achieving PS floodplain recovery goal.
- A5.4.4** **Implement priority multiple-benefit floodplain restoration projects.** Secure funding for high-priority projects listed.
- A6.1.1** **Secure annual Chinook investment.** The Partnership, in collaboration with the Salmon Recovery Council, the Governor’s Salmon Recovery Office in the Recreation and Conservation Office, WDFW, and the Northwest Indian Fisheries Commission will develop and implement a strategy to secure from a combination of sources, the annual investment of \$120 million to fully implement the approved *Puget Sound Chinook Salmon Recovery Plan*. The Partnership will work with its salmon recovery partners to align that funding in support of the highest priority protection and restoration projects as identified by salmon recovery lead entities.
- A6.1 SC3** **Implement high-priority projects listed in local salmon recovery plans.** Secure funding for high-priority projects listed in the salmon recovery 3-year work plans for WRIAs 8, 9, and 10.
- A6.1 SJI10** **Salmon recovery, habitat protection and restoration (Near Term Shoreline Action II).**
- A6.1 HC6** **Hood Canal salmon recovery funding.** HCCC is both the Lead Entity for Chinook salmon and the regional recovery organization for Hood Canal and eastern Strait of Juan de Fuca summer chum. HCCC will develop a process for prioritizing acquisition, protection, and restoration actions and continue to target funding to the highest priority salmon recovery actions.
- A6.1 WC9** **West Sound SR3 Chico Creek culvert replacement.** The WSDOT will develop a funding strategy and schedule for replacing the SR3 culvert with a bridge on Chico Creek. Chico is the most productive salmon stream in West Sound and a high priority watershed for protection and restoration, and replacing the culvert with a bridge will improve fish passage and restore estuarine functions.

- A6.4.2 Steelhead recovery plan.** In collaboration with the NMFS Steelhead Recovery Team, the Partnership and the Puget Sound Salmon Recovery Council will support the development of a Puget Sound steelhead recovery plan. This will include creating a framework for use by all watersheds in developing local chapters of the recovery plan, and securing sufficient funding to support watersheds in populating these local chapters. The overall planning process will be inclusive and integrated with regional work by NMFS and the co-managers, and will look at various actions to achieve recovery, including full funding and implementation of a 5-year, joint U.S.-Canada marine survival research program developed by the Salish Sea Marine Survival Project Technical Team. It will also include actions like the designation of Wild Steelhead Management Zones where consistent with the objectives identified in watershed recovery chapters. WDFW and the tribes, by agreement of the co-managers, will work to establish three streams (one in each Technical Recovery Team identified Major Population Group) where no juvenile hatchery steelhead would be released, no recreational fisheries for steelhead would occur, and habitat protection and restoration actions would be accelerated. This early steelhead recovery action would consider information already compiled for the steelhead recovery plan that is under development.
- A6.5.1 Lead entity and partner funding strategy.** The Partnership, in collaboration with the Salmon Recovery Council, the Governor’s Salmon Recovery Office in the Recreation and Conservation Office and WDFW, will identify a funding strategy and approach to support salmon recovery lead entities and the associated partner programs essential to implementing the salmon and steelhead recovery.
- A7.3 SNST16 Groundwater study.** Identify the costs and potential funding sources for conducting an impairment analysis for groundwater resources in the Stillaguamish and/or Snohomish River basins.
- C2.3 SC6 Identify, guide, and fund stormwater retrofits.**
- Complete WRIA 9 retrofit study and promote it as a model.
 - Advocate locally and Soundwide through the LIO for increased funding for priority stormwater retrofit projects.
 - Develop a list of high-priority stormwater retrofit projects to support local investments and state funding request in 2014 and 2015, using upcoming guidance from Ecology and findings from the WRIA 9 study on stormwater retrofit priorities.
 - Participate in the Commerce’s technical assistance and study of examples of urban-specific implementation or stormwater retrofit projects.
 - Support ECO Net endorsed education and outreach efforts for this near-term action.
- C2.3 WC22 Poulsbo Low Impact Development retrofit study for Upper South Fork Dogfish Creek basin and downtown Poulsbo.** City of Poulsbo will seek funding and complete stormwater retrofit plans for the Upper South Fork Dogfish Creek Basin and Downtown Poulsbo basins.
- C3.1.3 Voluntary stewardship program.** WSCC, Ecology, and WSDA should support implementation, funding, and assistance to those counties participating in the VSP, as well as new capacity for enforcement of state and federal water quality regulations.
- C5.3.1 Regional onsite sewage system homeowner loan program.** DOH, Ecology, and the Partnership will help evaluate options and support proposals to fund a unified, self-sustaining, low-interest loan program in the Puget Sound region to help onsite sewage system owners repair and replace their systems.
- C5.3.2 Regional onsite sewage system program funding source.** DOH will evaluate approaches and mechanisms (e.g., a regional flush tax or sewer surcharge) to generate and distribute funds to Puget Sound counties to implement their onsite sewage system management plans and programs.
- C5.3 SNST5 Onsite septic systems maintenance and retrofit.** Seek stable funding and expand Snohomish Health District program to provide technical assistance to property owners with septic systems. Investigate role of failing onsite septic systems in elevating stream bacteria and nutrient loads in Kimball and Coal Creek subbasins. Explore upgrading or decommissioning septic systems and connecting to municipal sewer systems.

- C9.4.1** **Pollution Identification and Correction Programs.** DOH and Ecology will administer EPA grants to help counties and tribes set up sustainable programs to identify and correct nonpoint pollution sources to improve and protect water quality in shellfish growing areas and at marine swimming beaches. These sustainable programs will have ongoing monitoring to identify pollution sources and assess effectiveness of efforts, a local sustainable funding source, and a compliance assurance component.
- C9.4 HC3** **Hood Canal Pollution Identification and Correction Program.** By April 2014, HCCC will complete Phase I of a regional Hood Canal Pollution Identification and Correction Program to determine the needs for a comprehensive regional program and advance funding proposal(s) for implementation. If funding is secured, Phase II of the program will be advanced. Phase II may include (depending on funds), program work in priority areas, monitoring, and education and outreach. The program will provide information about the sources of pollution, including failing septic systems.
- D4.2 WC25** **Continued funding for shoreline monitoring programs in Kitsap and Pierce Counties.** Help fund routine marine shoreline E. coli bacteria monitoring program in Kitsap and Pierce Counties to protect and restore commercial shellfish areas. Provide 100% funding for 2-year shoreline monitoring program on Bainbridge Island. Provide 50% match for shoreline monitoring program along unincorporated Kitsap and Pierce Counties, within all classified areas (including Port Orchard Passage).

Emerging Issues and Future Opportunities

Securing and stabilizing funding will be an ongoing need. Work that will need continued development and other ideas suggested during the Action Agenda update process that could be considered include the following.

- Continuing to build on private and philanthropic partnerships.
- Allocation between local watershed areas.
- Adding criteria to state and federal grant programs to prioritize projects that encourage compact growth patterns, density and redevelopment, and rural lands protection.
- Establishing a center to organize and stimulate conservation markets for resource lands.
- Changing state law to allow cities to use enterprise funds for retrofitting streets for stormwater improvements and water crossing structures that currently disrupt ecosystem processes.
- Prioritization of restoration projects over protection projects by funders.
- Addressing match requirements and local government or non-governmental organization funding constraints.



SECTION 4

LOCAL RECOVERY ACTIONS

Puget Sound is a vast and beautiful region that is extremely diverse. The unique attributes of Puget Sound have created highly variable conditions in climate, habitat types, and species from alpine forests to the depths of the marine waters, and have contributed to the diverse communities of people that call it home. This section focuses on outlining the differences across the Puget Sound region and providing detailed descriptions of the process and outcome of identifying and prioritizing strategies and actions that are tailored to local conditions and goals.

Background on the Local Integration Concept

The Action Agenda integrates existing basin-wide and watershed-scale plans into the recovery of Puget Sound. Groups sponsoring or administering local watershed and nearshore programs—including but not limited to local governments, tribes, private sector entities, watershed planning units, watershed councils, shellfish protection districts, conservation districts, regional fishery enhancement groups, marine resource committees (including those working with the Northwest Straits Commission), and watershed lead entities—are working to implement the Action Agenda. However, closer cooperation and further integration is needed to inform local implementation priorities and approaches. Local integrating organizations, also referred to as LIOs, provide a mechanism for the Partnership to work directly, in a coordinated way, with local communities to help prioritize actions and implement the Action Agenda. LIOs are part of the Puget Sound Management Conference and relate directly to the Leadership Council.

Action Areas and Local Integrating Organizations

The Partnership's authorizing statute (RCW 90.71.260) created the following seven action areas to help organize regional recovery work.

- Hood Canal Action Area
- North Central Puget Sound Action Area (locally called West Central Puget Sound)
- San Juan/Whatcom Action Area (now covered as two separate areas)
- South Central Puget Sound Action Area
- South Puget Sound Action Area
- Strait of Juan de Fuca Action Area
- Whidbey Action Area (now covered as three separate areas)

While the action area concept is useful for sharing information and working to implement the Action Agenda and priority local actions, in some cases, the defined action area has proven to be too geographically large, or too diverse—and a smaller-scale, watershed-based approach has evolved.

As of May 2014, LIOs have been formed (and are recognized by the Leadership Council) for the following areas.

- Strait of Juan de Fuca Action Area: Strait Ecosystem Recovery Network
- Hood Canal Action Area: Hood Canal Coordinating Council

- South Puget Sound Action Area: Alliance for a Healthy South Sound
- South Central Puget Sound Action Area: South Central Puget Sound Caucus Group
- Island County Watershed (in the Whidbey Action Area) LIO
- Snohomish-Stillaguamish watersheds (in the Whidbey Action Area): Snohomish-Stillaguamish LIO
- Whatcom County/Nooksack Watershed (in the San Juan/Whatcom Action Area): Consolidated WRIA 1 Policy Boards
- San Juan County Watershed (in the San Juan/Whatcom Action Area): San Juan Agenda Oversight Group (or San Juan LIO)
- West Central (North Central Puget Sound Action Area): West Central LIO

Each LIO has different membership. Example members include salmon recovery watershed groups, marine resource committees, tribes, local governments, local utilities, farming interests, environmental interests and others. The implementation structures of the LIOs are included in the profiles that follow.

One area is still in formation.

- Skagit-Samish watersheds (in the Whidbey Action Area)

Each area has many distinctive local features and communities. These differences are due to physical and biological conditions such as geology, rainfall, habitat for plants and animals, and the history of the people who have lived there. Each corner of Puget Sound also has its own set of issues and constraints. For example, the South Puget Sound and Hood Canal action areas are world-renowned shellfish growing areas. The areas are also subject to poor water circulation and high nutrient inputs that result in low dissolved oxygen conditions and can lead to massive fish kills. The Strait of Juan de Fuca Action Area, Whatcom County, and other rural areas struggle to retain working forests and productive agricultural lands in the face of increased development pressure. Water supply is a critical issue in the eastern Strait of Juan de Fuca and the San Juan Islands. The Whidbey Action Area contains three of the top five salmon-producing rivers in Puget Sound—the Skagit, Snohomish, and Stillaguamish; here the drastic modification to the river deltas and estuaries is particularly problematic for salmon recovery. The South Central Puget Sound Action Area contains the ports of Seattle and Tacoma, is home to approximately 3 million residents, and is the heart of the Puget Sound economy. In the South Central and the West Sound, many ecosystem challenges result from shoreline armoring, transportation infrastructure, stormwater runoff, and other urban issues—yet these areas have important nearshore habitat for migrating salmon and other species.

How Local Integrating Organizations Are Formed

LIOs are recognized by the Leadership Council when they have achieved the following.

- Have strong support from the local community and are broadly inclusive.
- Have a strong capacity to execute roles, responsibilities, and the necessary scope of work.

ACTION AGENDA LOCAL AREAS



Local governments and tribes were invited to consult with each other and with groups sponsoring or administering watershed and nearshore programs to evaluate options for organizing an LIO. In some cases, an existing organization was supported to undertake this role. In other cases, a new organization was formed.

After consulting locally, tribes and local governments from respective areas made a joint recommendation regarding local coordination and integration approaches. The recommendations

identified a proposed LIO, fiscal agent, and geographic scope. Based on the local recommendation and Partnership staff analysis, the Leadership Council decided whether to recognize the proposed LIO and its proposed approach and geography.

Vision for Local Integrating Organizations

LIOs have been formed to help bolster consensus and momentum around locally relevant Puget Sound recovery actions. They are a coordinating body, helping to integrate and advance efforts from various entities in each action area. They are formed to help identify leverage points and create increased opportunity for Puget Sound recovery locally. LIOs also serve an advisory function for the Partnership by identifying recommendations on local priorities for funding decision and consideration. LIOs advance the specific actions necessary for achieving the high-level Puget Sound strategies of habitat protection, restoration, and pollutant reduction in the following ways.

- LIOs enable communities to develop and own a dynamic decision making process, to guide implementation of Action Agenda priorities including restoration, protection and pollutant reduction, and to prioritize local actions for investment.
- Local strategies and systems are linked to Soundwide sub-strategies and regional performance management and monitoring systems through the LIO. LIO operations contribute toward the development and implementation of local priorities in the Action Agenda.

LIOs, by design, represent the perspectives of many different actors within their local areas that hold implementation responsibilities in different ecosystem scale and watershed scale plans. These actors include, but are not limited to, local governments, tribes, private sector entities, watershed planning units, watershed councils, shellfish protection districts, conservation districts, regional fishery enhancement groups, marine resource committees (including those working with the Northwest Straits Commission) nearshore groups, and watershed lead entities, all working to implement the Action Agenda.

Funding the Local Integrating Organizations

The Partnership will fund LIOs for organizational capacity to complete the following activities.

- Maintain, organize, facilitate, and administer a LIO.
- Update local strategies and local near-term actions.
- Identify and coordinate implementation of local priorities.
- Performance management.

Local Profiles

Crafting solutions to the pressures facing Puget Sound must occur with the input and cooperation of the local people who have detailed knowledge of the problems, must implement the solutions, and will carefully monitor the success. The LIOs have helped to update the Action Agenda by developing prioritized local actions that are integrated into the Action Agenda strategies, sub-strategies, and strategic initiatives.

Each of the local area profiles that follow includes a description of the geography and unique ecosystem characteristics and assets of the area, and map of the area, an overview and status update of the local planning process and implementation structure, locally significant pressures, and a table of local near-term actions with associated performance measure and owners. All areas agree that implementation of the funding strategy is needed to support local recovery efforts, and this need will be discussed by the Ecosystem Coordination Board funding committee. In addition, common outreach messages are a key to understanding in all communities. Over the next 2 years, each local area will continue to move forward implementing actions, and contributing to a cleaner, more vibrant, and community oriented Puget Sound.

Linking to Recovery Targets

In developing local near-term actions for inclusion in the Action Agenda, each of the LIOs made a conscious effort to link and integrate local actions with the strategies, sub-strategies and Strategic Initiatives. Local pressures on the ecosystem were considered, in addition to restoration opportunities that would provide ecosystem benefits and help achieve recovery targets.

Hood Canal Action Area

Description of the Action Area

Hood Canal is a long, narrow, natural L-shaped fjord that separates the Olympic and Kitsap Peninsulas. This marine water body extends southward from Foulweather Bluff, at the northern tip of the Kitsap Peninsula, and Tala Point to its southern terminus at Lynch Cove. Hood Canal is approximately 68 miles long and 1.5 to 2 miles wide. The Hood Canal Action Area¹ includes the canal and the uplands and streams that enter into the canal from both sides and extends north to Point Wilson in the city of Port Townsend. On the west side of the canal, major rivers including the Skokomish, Dosewallips, and Big Quilcene drop rapidly from the Olympic Mountains, while smaller streams such as the Dewatto and Tahuya drain the west side of the Kitsap Peninsula. Precipitation along the canal varies from 75 inches annually at Skokomish to only 19 inches in Port Townsend.

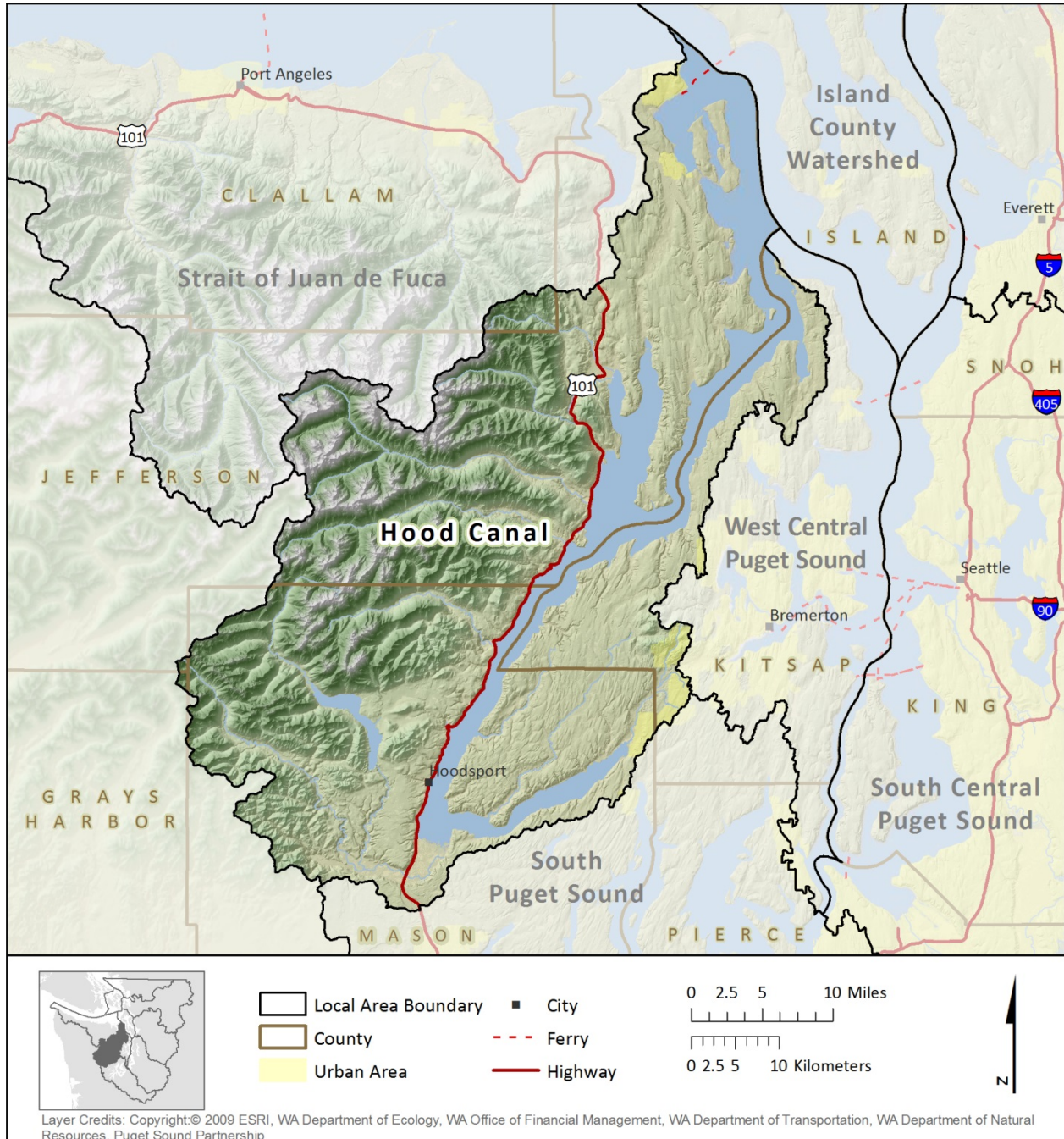
Although the average depth of Hood Canal is 177 feet, the underwater topography can be as deep as 600 feet. Marine water circulation in Hood Canal is naturally poor, particularly in the southern 20 miles. A relatively shallow, underwater sill south of the Hood Canal Bridge limits water exchange with incoming marine water from the Strait of Juan de Fuca. Hood Canal also has poor vertical mixing as fresh water entering from rivers and streams can form a distinct layer at the surface. Dense algal blooms die off, sink, and decay, reducing the dissolved oxygen in deeper layers and degrading water quality for many marine species. In general, these oceanographic conditions present special challenges in managing nutrient and other inputs deriving from human activities, in pursuit of water quality that supports both a healthy ecosystem and a healthy economy in the communities surrounding Hood Canal.

NOTABLE ACCOMPLISHMENTS

- Skokomish and Quilcene River estuary restoration projects
 - Regional Hood Canal Pollution, Identification, and Correction Program
 - Development of the In Lieu Fee Mitigation Program
 - Stormwater Retrofit Prioritization Project
 - Regional Riparian Planting and Invasive Species Control Programs
 - Regional conservation planning including the Kitsap Forest and Bay Project of up to 7,000 acres of forest and 1.8 miles of shoreline
-

¹ Three water resource inventory areas (WRIAs) are within the action area: WRIAs 15, 16, and 17.

HOOD CANAL ACTION AREA



The Skokomish, Port Gamble S’Klallam, Jamestown S’Klallam, Lower Elwha Klallam, and Suquamish Tribes retain treaty fishing rights in the Hood Canal region. The Port Gamble S’Klallam Reservation is located at the north end of Hood Canal, and the Skokomish Reservation is located at the south end. The eastern shore of Hood Canal is home to the U.S. Navy Submarine Base at Bangor, the largest industry and development on the canal. Populated centers in west Kitsap County include Port Gamble and Seabeck. Southern Hood Canal begins in Belfair and the Tahuya Peninsula and runs along relatively developed lower Hood Canal toward the Skokomish estuary and Potlach.

Much of the west side of Hood Canal borders Olympic National Forest and Park. U.S. Highway 101 and the population centers of Quilcene, Brinnon, Hoodspport, and the Skokomish Valley lie along the narrow fringe of land on the west shore of the canal. The Hood Canal Bridge is a critical transportation link between the Kitsap and Olympic Peninsulas. The proximity to Olympic National Park and Forest, cultural attractions in Port Townsend and Union, and hunting, fishing, and camping opportunities have generated a significant tourism industry and the proliferation of recreational homes.

Unique Ecosystem Characteristics and Assets

Hood Canal is famous for its shellfish as it is characterized by prime growing conditions for oysters and other shellfish species. Rivers flowing from the Olympic Mountains mix with brackish waters at ideal temperature and water conditions that support some of the largest shellfish hatcheries and productive growing areas in the world. The native Olympia oysters (*Ostreola conchaphila*) of Hood Canal were largely overharvested by 1870, although several small populations in the area are being nurtured back to life. Oyster growers introduced the larger, faster-growing Pacific oysters (*Crassostrea gigas*) to compensate, and shellfish farms were staked out throughout Hood Canal. Today the oysters of Hood Canal are internationally famous, and connoisseurs identify them by place names including Quilcene, Dabob, and Hama Hama, much like fine wines from specific regions and vineyards. Oysters and other bivalve species are filter feeders, processing hundreds of gallons of water daily, and are thus highly valuable for their ability to clean the water. However, this also makes them vulnerable to pollutants and toxic contaminants.

The human population of the Hood Canal region is generally low, as a majority of the uplands are managed as private and public forestlands. Relatively larger population concentrations are found along lower Hood Canal and around Lynch Cove. Though affected by dissolved oxygen problems and other modifications to rivers and shorelines, fisheries and aquaculture remain economically significant to the Hood Canal region. Commercial and recreational fisheries exist for salmon, spot prawn, Dungeness crab, clams and oysters, and geoduck. Fishing is closed for rockfish and flatfish, due in part to recent low dissolved oxygen problems.

Hood Canal is home to several other important and unique marine and upland species. An evolutionarily significant unit of chum salmon that returns in the summer spawns only in the rivers and creeks of Hood Canal and the eastern Strait of Juan de Fuca. Skokomish and Mid Hood Canal Chinook salmon spawn, rear, and migrate in Hood Canal, along with steelhead; other populations of chum, coho, and pink salmon; and bull, and cutthroat trout. Many of these salmonid species spend a large part of their early lives in the estuary, and water quality conditions in the canal are essential to their continued survival. Hood Canal is also used by marine mammals, and has unusual timing periods for birthing and pupping of some seal species. Orca whales occasionally enter Hood Canal for short periods of time to feed on prey species indigenous to Hood Canal. In places, patches of old growth and other intact forest provide unique habitats for bird species and mammals in close proximity to the marine shoreline. Herds of elk in the eastern Olympics migrate seasonally along the river corridors.

The natural beauty and relatively warm summer water conditions of the canal draw many visitors for boating, sailing, water-skiing, swimming, and diving. A unique blend of year-round and seasonal

residents and visitors comprise the watershed's population and often promote activities to restore Hood Canal's water quality, species, and other ecosystem features.

Local Implementation Structure and Planning Process

The Hood Canal Coordinating Council (HCCC) is the local integrating organization (LIO) for the Hood Canal Action Area. The Puget Sound Partnership's Leadership Council formally recognized the HCCC as the action area's LIO in September 2010.

The HCCC is a watershed-based council of governments with a mission to advocate for and implement regional and local actions intended to protect and enhance the environmental and economic health of Hood Canal. The HCCC includes representatives from the following entities.

- Jefferson County
- Kitsap County
- Mason County
- Port Gamble S'Klallam Tribe
- Skokomish Tribe
- State and federal agencies (ex officio, nonvoting members)

The HCCC has a board of directors and two steering committees.

The HCCC Board of Directors includes the county commissioners of each member county and the tribal chairperson or a duly authorized representative of each member tribe.

The HCCC Board Integrated Watershed Plan (IWP) Steering Committee is charged with the development of an integrated strategic plan for Hood Canal. The HCCC Board IWP Steering Committee includes governmental members and non-governmental organizations, including representatives from the following entities.

- Skokomish Tribe
- Jefferson County
- Mason County
- Puget Sound Partnership
- Washington Sea Grant
- Long Live the Kings, and other community partners
- HCCC staff

An HCCC Board Steering Committee was formed in February 2013 to engage Hood Canal communities in work supporting and improving environmental and economic well-being of the action area. Objectives of the committee are to establish clear community engagement priorities, provide HCCC Board support and involvement in community engagement implementation, with implementation assistance from HCCC staff. The HCCC Board Steering Committee includes governmental members and non-governmental organizations, including representatives from the following entities.

- Skokomish Tribe
- Port Gamble S’Klallam Tribe
- Mason County
- HCCC staff

The HCCC serves a variety of functions and operates in a number of capacities. First, as an interlocal agency under Chapter 39.34 of the Revised Code of Washington (RCW), the HCCC coordinates the activities of its members and other public entities and Indian tribes in their efforts to protect and restore the Hood Canal watershed. The HCCC was formed as a nonprofit, public-benefit corporation under RCW 24.03, Washington’s Nonprofit Corporations Act, to serve as the interlocal agency’s fiscal agent. The Internal Revenue Service has recognized the HCCC’s nonprofit corporation as a public charity under Section 501(c)(3) of the Internal Revenue Code. Finally, the HCCC serves a variety of functions pursuant to RCW 90.88, the Aquatic Rehabilitation Act, which designates the HCCC as the local management board for Hood Canal rehabilitation under RCW 90.88.010(3). The HCCC is the inter-WRIA coordinator for watershed planning under RCW 90.88.030(1)(b) as well as the lead entity and regional recovery organization for summer chum salmon recovery under RCW 90.88.030(1)(a). As the lead entity, HCCC develops both short- and longer-term project lists, solicits sponsors to implement the programs, and evaluates and ranks project proposals.

Originally established in 1985, the HCCC was created to address community concerns about water quality problems and related natural resource issues in the watershed. As such, the HCCC provides an effective, well-established forum in which many of the issues anticipated to be under the purview of LIOs can be addressed. The HCCC has worked through a series of public outreach efforts, partner workshops, and consultations with its board to help the community find common ground on a vision for Hood Canal’s future. Through collaboration with partners and the community, the HCCC has also identified the most critical ecological and socioeconomic focal components that should be fostered into the future, the most imminent pressures diminishing those priorities, an initial list of key strategies and actions important to protecting and restoring the environmental and economic health of Hood Canal, and an initial set of human well-being indicators. This information is contained in the IWP.

The IWP is an organizational concept of integrating existing plans and programs, as well as identified gaps, through a strategic planning framework to meet the stated goals. The IWP is an interactive tool that provides a framework to guide strategies and actions towards reaching the HCCC vision; accounting of existing work underway to improve the health of Hood Canal and Hood Canal communities and identification of gaps where work is needed; and tools and common strategies for advancing regional planning. The development of the IWP is led by the HCCC Board, building on extensive collaboration and communication with the Hood Canal community.

For this 2014/2015 Action Agenda update, The HCCC focused on updating and refining the near-term actions presented in the 2012/2013 Action Agenda.

The IWP identifies the highest priority strategies and actions for Hood Canal recovery and will provide the basis for development and tracking of future near-term actions. However, given continued development of the IWP (scheduled for draft completion in mid-2014), the HCCC Steering Committee chose to not solicit widely for new near-term actions for this update. The list of near-term actions (see

Local Near-Term Actions and Opportunities below) primarily represents updates to the 2012/2013 list, with some new near-term actions determined to be of high priority for the HCCC Board.

Development of the near-term actions and other opportunities² focused on the pressures identified below.

Pressures

The community has defined 17 ecological and socioeconomic focal components that together cover the scope of the LIO's vision statement and must be conserved.

- **Ecological focal points:** estuaries, beaches, shellfish, rivers and streams, bottom fish, riparian areas, forest, and salmon.
- **Socioeconomic focal points:** water for human health, sustainable employment, commercial fishing, livable communities, forestry, cultural heritage, recreation, agriculture, and commercial shellfishing.

Eleven regional pressures were identified through community workshops in which participants ranked pressures that were of local significance as endangering the ability of the focal components to function and persist into the future.

The following were classified as *very high* pressures the local ecosystem.

- Residential and commercial development
- Transportation and service corridors
- Climate change and severe weather

The following were classified as *high* pressures on the local ecosystem.

- Shoreline infrastructure (marine and freshwater)
- Shoreline levees (marine and freshwater)
- Water withdrawal and diversions
- Invasive species
- Wastewater
- Stormwater
- Timber production
- Oil and hazardous spills

Local Near-Term Actions and Opportunities

The table below presents the local near-term actions for the Hood Canal Action Area. Each local near-term action is listed with an identification code—which includes the area abbreviation and a number—followed by a description of the action. The performance measures represent important, measureable,

² The prioritization of strategies and actions that most effectively alleviate these pressures still needs to be completed for the Integrated Watershed Plan.

dated components of implementing each action. The owner is the entity or entities responsible for implementation of the near-term action, with the primary owner being responsible for tracking and reporting the progress of the action. The final columns provide regional context for the local actions, identifying the pressure(s) that each action is intended to reduce and the primary sub-strategy to which it is most closely linked. Local near-term actions are also listed in Section 3, *Strategies and Actions*, in the context of their primary sub-strategies.

Local Near-Term Actions in the Hood Canal Action Area

	Near-Term Action	Performance Measures	Owner(s)	Pressure(s)	Regional Sub-Strategy
HC1	<p>HCCC Integrated Watershed Plan. In coordination with local and tribal governments, state and federal government agencies, nonprofit organizations, and other community partners, HCCC will continue to develop and implement the IWP through June 30, 2014. The IWP is the roadmap and organizing concept for ecosystem recovery, protection, and restoration in Hood Canal and will include identification of the highest priority focal components, goals, actions and strategies, and indicators for measuring progress. Based on critical, high priority strategies and actions identified in the IWP, HCCC will develop and revise local near-term actions for incorporation into the 2016 Action Agenda.</p>	<ul style="list-style-type: none"> • By spring 2014, HCCC will complete development of Phase I of the IWP website and will publicly launch the site. • By fall 2015, HCCC will publish the first State of Hood Canal report based on measuring progress towards goals as outlined in the IWP and utilizing the indicators adopted in the IWP. This analysis is anticipated to be conducted by HCCC staff with the assistance of consultants. • By fall 2015, HCCC will develop a set of new or revised near-term actions and performance measures based on the final IWP for incorporation into the 2016 Action Agenda using the Open Standards for Conservation method adopted by Puget Sound Partnership. 	HCCC	<ul style="list-style-type: none"> • Marine shoreline infrastructure • Runoff from built environment 	D2.1
HC2	<p>HCCC in lieu fee mitigation. The HCCC established an In Lieu Fee Mitigation Program and will continue to manage it to provide mitigation for unavoidable adverse impacts from development projects within the program’s service area. Specific mitigation projects and progress of the program will be reported as part of the 2016 Action Agenda.</p>	<ul style="list-style-type: none"> • Ongoing through spring 2016, HCCC (LIO) will continue to work with local jurisdictions for the implementation of the In Lieu Fee Mitigation Program as a mitigation alternative for project applicants. HCCC staff will meet with county staff at least once per year to review the implementation of the program within each local jurisdiction. • Ongoing through spring 2016, HCCC will strive to implement mitigation projects within the 3-year post-credit sale timeframe. Project implementation could include one marine project and one freshwater wetland project. 	HCCC (reporter)	<ul style="list-style-type: none"> • Freshwater shoreline infrastructure • Marine shoreline infrastructure 	A2.2

	Near-Term Action	Performance Measures	Owner(s)	Pressure(s)	Regional Sub-Strategy
		<ul style="list-style-type: none"> Ongoing through spring 2016, HCCC will continue to work with watershed partners to identify potential receiving areas and place acceptable sites on a roster of potential mitigation receiving areas. HCCC will target two receiving areas per service area for a total of eight. 			
HC3	<p>Hood Canal Pollution Identification and Correction Program. By April 2014, HCCC will complete Phase I of a regional Hood Canal Pollution Identification and Correction Program to determine the needs for a comprehensive regional program and advance funding proposal(s) for implementation. If funding is secured, Phase II of the program will be advanced. Phase II may include (depending on funds), program work in priority areas, monitoring, and education and outreach. The program will provide information about the sources of pollution, including failing septic systems.</p>	<p>Phase I</p> <ul style="list-style-type: none"> By April 2014, HCCC will complete Phase I of a regional Hood Canal Pollution Identification and Correction Program to determine the needs for a comprehensive regional program and advance funding proposal(s) for implementation. <p>Phase II</p> <ul style="list-style-type: none"> By summer 2014, HCCC will collaborate with jurisdictions to identify and secure funding. By fall 2014, or as funding is available, HCCC will collaborate with jurisdictions to develop strategy for regional coordination and documentation. By fall 2014, or as funding is available, HCCC will collaborate with jurisdictions to identify priority areas for projects. By December 2016, or as funding is available, HCCC will collaborate with jurisdictions to identify priority areas and implement six shoreline surveys. 	HCCC	<ul style="list-style-type: none"> Runoff from the built environment Onsite sewage systems 	C9.4
HC4	<p>HCCC stormwater retrofit plan. Stormwater retrofit and Low Impact Development practices improve water quality, help protect shellfish beds, decrease flooding risks, and increase aquifer recharge. HCCC is developing a Hood Canal Regional Stormwater Retrofit Plan to coordinate stormwater and Low Impact Development retrofit efforts on a regional</p>	<ul style="list-style-type: none"> By fall 2014, HCCC will complete and distribute the Hood Canal Regional Stormwater Retrofit Plan with priority retrofit projects to jurisdictions, regional partners, and relevant state agencies. Through spring 2016, HCCC will provide support to Hood Canal jurisdictions to plan and seek funds for implementing two priority retrofit projects. 	HCCC (Coordination/Facilitation)	<ul style="list-style-type: none"> Runoff from the built environment Industrial, domestic and municipal wastewater 	C2.3

	Near-Term Action	Performance Measures	Owner(s)	Pressure(s)	Regional Sub-Strategy
	scale. The plan will include conceptual designs for 10 to 12 retrofit projects in the Hood Canal Action Area, which will be implemented by the county governments or other partners as funding is available.	<ul style="list-style-type: none"> • Through spring 2016, HCCC will track jurisdiction implementation and barriers to implementation (such as funding constraints) of priority retrofit projects. 			
HC5	HCCC climate change adaptation. HCCC will convene a climate change forum with our members to identify unique vulnerabilities and potential adaptation strategies for the Hood Canal Action Area. As part of the Integrated Watershed Plan process and working with our members and partners, HCCC will determine climate adaptation approaches that can be incorporated into the Integrated Watershed Plan and various plans in progress.	<ul style="list-style-type: none"> • By December 2014, distribute Hood Canal climate change report, summarizing the results of the conference to Hood Canal community. • By fall 2015, incorporate climate change mitigation and adaptation strategies and actions into relevant focal components of the Integrated Watershed Plan. • By fall 2015, incorporate climate change related indicators into relevant focal components of the Integrated Watershed Plan. 	HCCC	<ul style="list-style-type: none"> • Climate change/severe weather 	D2.1
HC6	Hood Canal salmon recovery funding. HCCC is both the Lead Entity for Chinook salmon and the regional recovery organization for Hood Canal and eastern Strait of Juan de Fuca summer chum. HCCC will develop a process for prioritizing acquisition, protection, and restoration actions and continue to target funding to the highest priority salmon recovery actions.	<ul style="list-style-type: none"> • By spring 2014, under direction of the Board, HCCC will complete salmon recovery prioritization to identify the list of actions in priority order for recovering summer chum, Skokomish Chinook, and Mid Hood Canal Chinook. • By 2015, HCCC will work with partners to develop a funding strategy for the 10 highest priority habitat/harvest/hatchery actions for salmon recovery and track and publish progress on funding of these projects through 2016. • By spring 2016, HCCC will work with partners to secure funding and/or develop feasibility studies for the top 10 priority projects. 	HCCC Lead Entity	<ul style="list-style-type: none"> • Dams • Culverts • Freshwater shoreline infrastructure • Marine shoreline infrastructure • Invasive species 	A6.1

	Near-Term Action	Performance Measures	Owner(s)	Pressure(s)	Regional Sub-Strategy
		<ul style="list-style-type: none"> • By fall 2015, initial construction will be completed for the Skokomish Estuary floodplain project, selected for state funding under the floodplains by design, the Skokomish Tribe, Mason Conservation District, and Ecology. • By fall 2014, North Olympic Salmon Coalition will complete final design and begin initial construction of the Kilisut Harbor restoration project as funded by Puget Sound Acquisition and Restoration large capital request and Estuary and Salmon Restoration Program. 			
HC7	<p>Hood Canal salmon recovery monitoring and adaptive management. HCCC working with many partners, state and federal agencies, and the tribes will complete a Monitoring and Adaptive Management Framework for both Skokomish Chinook and Mid Hood Canal Chinook. Monitoring protocols and plans for both Chinook salmon recovery chapters will be completed.</p>	<ul style="list-style-type: none"> • By summer 2014, the Lead Entity committees and HCCC Board will approve a Skokomish Chinook Monitoring and Adaptive Management Framework. • By summer 2014, the Lead Entity and HCCC Board will approve a Mid Hood Canal Chinook Monitoring and Adaptive Management Framework. • By spring 2015, the Lead Entity will develop a process for developing monitoring protocols for priority indicators for both Skokomish Chinook and Mid Hood Canal Chinook. • By spring 2016, monitoring protocols and plans for both Chinook salmon recovery chapters will be completed. 	HCCC (Lead)	<ul style="list-style-type: none"> • Dams • Culverts • Freshwater shoreline infrastructure • Marine shoreline infrastructure • Invasive species 	A6.1
HC8	<p>Seepage pits and cesspools. Reduce the use of seepage pits and eliminate cesspools as discovered in all Hood Canal shoreline (marine and freshwater) properties.</p>	<ul style="list-style-type: none"> • By July 2014, convene meeting of local health jurisdictions to assess and determine if Onsite Management Plan strategies relevant to cesspools and seepage pits on shoreline properties adequately address human health and safety. 	Local health jurisdictions (Mason, Kitsap ¹ , and Jefferson)	<ul style="list-style-type: none"> • Onsite sewage systems 	C9.4

	Near-Term Action	Performance Measures	Owner(s)	Pressure(s)	Regional Sub-Strategy
		<ul style="list-style-type: none"> • By July 2014, identify sites with no records available. • By July 2015, local health jurisdictions locate and verify all shoreline seepage pits and cesspools. Conduct field investigations for all shoreline properties that have no records for seepage pits available. • Local health jurisdictions create a management plan for seepage pits that includes inspection frequency and education on funding or replacement options for decommission. • By December 2015, management plan for seepage pits in Hood Canal adopted by county Boards of Health, if not in existing plans. 			
<p>¹ Kitsap Health District has completed these tasks and does not have any cesspools or seepage pits. Kitsap does not permit new seepage pits and cesspools. HCCC = Hood Canal Coordinating Council; IWP = Integrated Watershed Plan; LIO = local integrating organization.</p>					

The following opportunities have been identified by the community as important for Hood Canal recovery and will be further described through the IWP process.

Planning

- Assess the need to update county comprehensive plans to meet goals of the IWP. Empower the HCCC IWP Steering Committee to evaluate land use and advise the HCCC Board on progress.
- Participate in updating shoreline master plan for Kitsap and Mason Counties and the City of Bremerton (South Kitsap Industrial Area) to ensure consistency with goals of the IWP. Support implementation of the plans once completed.
- Recommend opportunities to implement and enforce existing regulatory programs of the counties (e.g., shoreline master plans, critical area ordinances, county comprehensive plans) and state (e.g., Revised Code of Washington and Washington Administrative Code) such as around permit enforcement on new development.
- Identify opportunities to improve planning for, and services of and between, urban and rural communities such as identifying grant opportunities and funding for improving sewer systems.
- Improve financial and technical assistance programs aimed at fostering voluntary stewardship and improving re/development standards such as participating in Low Impact Development trainings and implementations, identifying standards for soft shore protection, and engaging in sustainable working farms and forests.

Agriculture and Forestry

- Participate in and support efforts to permanently protect larger tracts of forests for their ecological and community values.
- Protect, foster, and incentivize sustainable, working forests and farms (e.g., extinguishing development rights and other programs) by engaging in the Dosewallips, East Jefferson, and Tahuya forest protection efforts.
- Implement and monitor effectiveness of programs such as Forest Practices Habitat Conservation Plans and similar agreements, the U.S. Forest Service's Northwest Forest Plan and Access and Travel Management Plans, and select salmon habitat projects.
- Form a Hood Canal forests and forestry focal group to develop and implement balanced approaches to conserving forests and forestry and support sub-regional groups to meet regional goals.
- Form a Hood Canal agriculture focal group (or three affiliated sub-regional groups) to develop and implement balanced approaches to conserving agricultural lands.

Nearshore and Estuaries

- Consult with landowners and public about potential high priority Puget Sound Nearshore Estuary Restoration Program (PSNERP) projects and advocate for funding for high priority projects with landowner support.
- Restore beaches by removing or retrofitting infrastructure, setting back structures where feasible, and revegetating shorelines. Ensure updating and implementation of priority shoreline projects across various plans.

- Restore estuaries by removing infrastructure and setting back levees/revetments where feasible. Ensure updating and implementation of priority estuary projects across various plans.

Invasive Species

- Identify and create strategies to focus on invasive species that pose the biggest threats to implementation of the IWP and salmon recovery plans.
- Educate decision makers on the need to increase funding available for Noxious Weed Control Boards to help implement local priorities.
- Work with partners to implement a regional knotweed control strategy that includes messaging and outreach to key constituents such as landowners, landscapers, and nurseries.
- Implement WDFW's and Skokomish Tribe's Aquatic Nuisance Species Management Plan for organisms such as ballast water and zebra mussels. Develop messaging and outreach to key constituents.

Water Quality and Wastewater

- Identify where in the Hood Canal watershed the highest risk onsite septic systems (OSS) are located now or could be located in the future. Develop a mechanism, such as through the regional Pollution Identification and Correction program, to evaluate the risk of contribution of nitrogen from OSS to Hood Canal and to address critical uncertainties in nitrogen loads.
- Research and register low cost, low maintenance, non-proprietary retrofits of existing OSS and new OSS that will reduce nitrogen by at least 80% from the initial septic effluent concentration (average domestic septic tank effluent is 57.7 mg/L TN, concentrations range from 26 to 124 mg/L TN) as well as remove pathogens.
- Explore the current regulations related to wastewater and water quality (nutrients and dissolved oxygen) and assess potential additional or modified local or state regulations to address nitrogen and/or dissolved oxygen in Hood Canal from septic systems, boats, and other sources.
- Continue involvement of county and state managers and planners in the Aquatic Rehabilitation Technical Advisory Committee to develop recommended actions to address water quality in Hood Canal. Finalize and implement the Aquatic Rehabilitation Communication Plan to educate and engage the public in the realization of actions.
- In coordination with state agencies (e.g., Fish and Wildlife, Parks and Recreation, Department of Natural Resources) and building from the WRIA 16 Planning Unit's prioritized list of needs, address the need for additional sanitary services at popular recreation sites around Hood Canal.
- Work with jurisdictions and the WRIA planning units to develop and implement a regional continuous monitoring program that includes groundwater; streams, shorelines, and marine waters; and stream aggradation/degradation mitigation, including a field-based assessment of uplands and individual streams on sources and amounts and how it can be mitigated. This research will also include Phases II and III of a water demand, supply, and availability study as well as community outreach and education around water quantity and quality.
- Develop and implement an appropriate monitoring and evaluation program building on available marine water monitoring.

- Improve coordination and support implementation of the Washington State Department of Ecology (Ecology) Model Toxics Control Act cleanup plan for industrial pollution in Port Gamble Bay, geographic response plans, and the Northwest Wildlife Plan.
- Work with partners to continue the clean up of marine debris throughout Hood Canal, but with a particular focus on the north end.

Stormwater

- Advise jurisdictions throughout the Hood Canal watershed on opportunities to revise development codes to incorporate current stormwater management practices, specifically by adopting and incorporating the most current Ecology stormwater manual. Work with these jurisdictions to prioritize stormwater retrofits within Hood Canal based on an analysis of current land use and the existing built environment and to promote retention of natural land cover as the most effective way to prevent stormwater runoff.
- Support the counties and tribes to implement the Pollution Identification and Correction programs that address issues of pollutant source control and illicit discharge detection and elimination.
- Provide guidance on the adoption of Low Impact Development practices to be used as a first choice to the maximum extent practicable in new development, redevelopment, and retrofitting of existing development.
- Request that Ecology provide a statewide stormwater best management practices (BMPs) training program (similar to the Certified Erosion and Sediment Control Leads program) for site inspectors to learn about compliance with stormwater BMPs.
- Track the recommendations of Ecology's Stormwater Workgroup and work with the HCCC Technical Advisory Committee Stormwater Workgroup to evaluate if additional stormwater monitoring plans specific to Hood Canal are needed.

Floodplains

- Implement comprehensive floodplain management plans where they exist.
- Restore floodplains and channel migration zones by removing infrastructure and setting back revetments where feasible and protect functioning floodplains and channel migration zones.

Outreach and Education

- Ensure incorporation of outreach and education with the public and key stakeholders in actions and initiatives identified above.
- Develop materials to convey to the public the importance/benefits of work done to multiple focal components.

Island County Watershed

Description of the Area

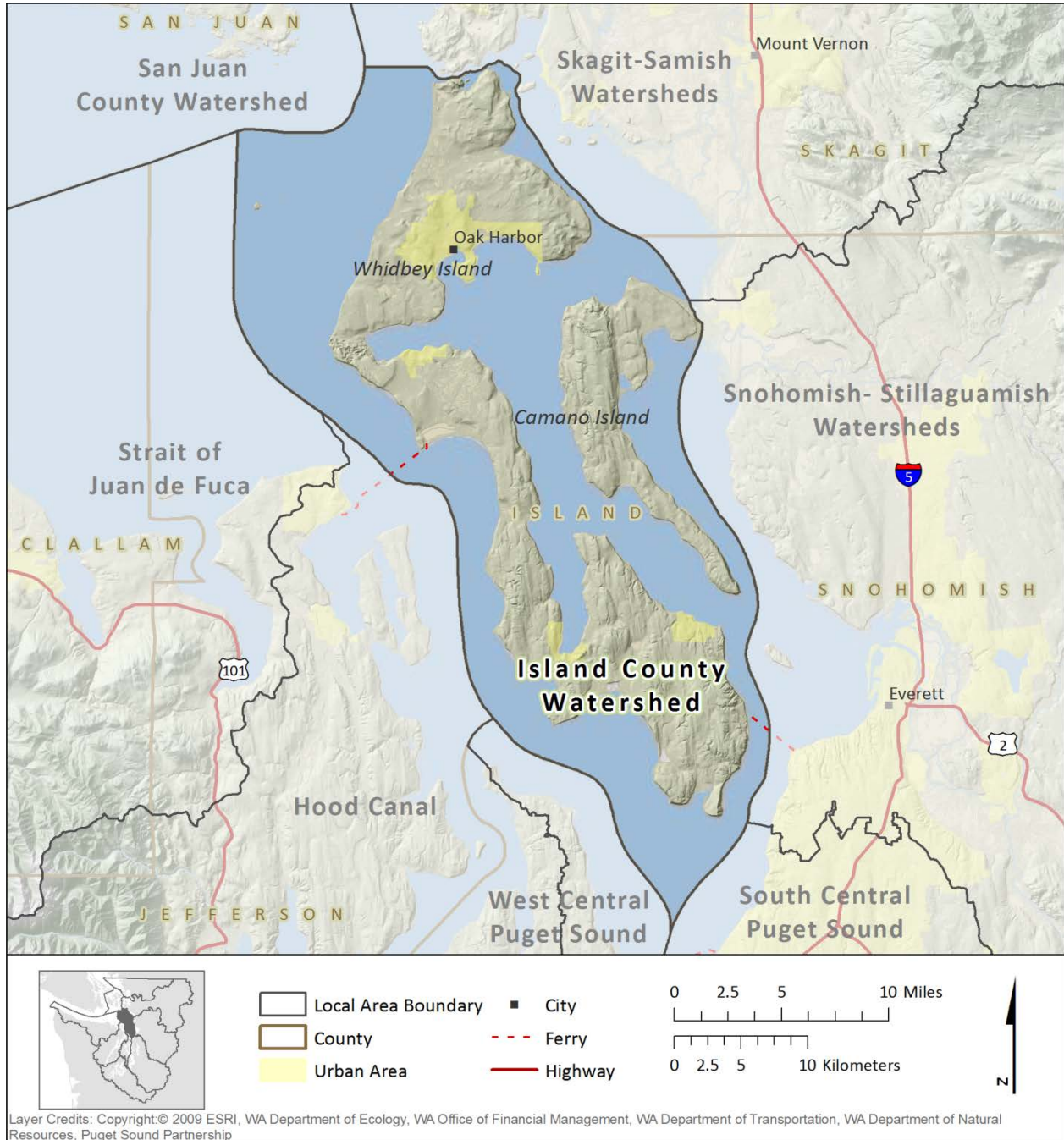
Island County Watershed³ is part of the Whidbey Action Area and encompasses the boundaries of Island County and Island Watershed. It is located in the neck of Puget Sound, off the western shores of Skagit and Snohomish Counties and the eastern shore of Kitsap County. It is home to Whidbey and Camano Islands as well as Kalamut, Minor, Deception, Baby, Ben Ure, Strawberry, and Smith Islands. Sightseers from around the world flock to Deception Pass Bridge to witness one of the Northwest's marine wonders: a 182-foot-high bridge spanning the drama of Deception Pass where powerful tides push strong currents through a narrow channel connecting the Strait of Juan de Fuca to Saratoga Passage. The bridge connects Whidbey Island to the mainland via Fidalgo Island to the north; Whidbey Island is connected to the mainland at the south end by the Clinton-Mukilteo ferry, which has the highest vehicle ridership of the Washington State Ferries system. Camano Island connects by bridge to the mainland at Stanwood in Snohomish County.

The environment and resources in this area and the surrounding marine waters continue to support salmon populations, which are critical to the long-term cultural and economic viability of local tribes. The Whidbey Basin and Admiralty Inlet are the migratory outlet to the Pacific Ocean from all of the natal streams in the Puget Sound. All migrating salmon pass by Whidbey. The juveniles use the nearshore, streams, embayments and pocket estuaries as protection and refuge during outmigration. Adults pass along the nearshore on their return to natal streams to spawn. Supporting these life stages is critical to the success of recruitment and population sustainability of all salmon, a treaty-trust resource. Local tribes have fished the areas surrounding Island County since time immemorial. They continue to rely on successful returns and recruitment to support cultural and economic programs and processes.

There are a number of state parks in this area, including those on Whidbey Island and Cama Beach on Camano Island. Whidbey Island also contains the Ebey's Landing National Historical Reserve, managed by the National Park Service; and the Smith & Minor Islands Aquatic Reserve lies just west of North Whidbey. At the request of the Island County Marine Resources Committee, the County Board of Commissioners in 2003 designated the waters of Admiralty Inlet, Saratoga Passage, and Port Susan as educational "marine stewardship areas." Already a popular place for outdoor enthusiasts, Island County is continuing to develop a system of trails on Whidbey Island for hiking, biking, and horseback riding. A water trail for kayaks and other small vessels without motors has been and continues to be developed by state and community partners.

³ Water Resource Inventory Area (WRIA) 6

ISLAND COUNTY WATERSHED



Camano Island is an unincorporated area and is included as part of the Stanwood School District. Whidbey Island includes the incorporated cities/towns of Oak Harbor, Coupeville, and Langley, and has three school districts, three port districts, two parks and recreation districts. There are also several diking and drainage districts. Employment in this area is primarily associated with the Naval Air Station Whidbey Island, near Oak Harbor, which employs around 10,000 workers and constitutes approximately 88% of all economic activity. Other significant employers within the remaining 12% of economic activity include Nichols Brother Boat Builders, Whidbey Telecom, Whidbey Island Bank, and Island County

government in the county seat of Coupeville. While the population is increasingly retired people, many workers commute to Boeing's Paine Field plant, and others use high-speed Internet connections to reach their markets. Tourism is also important to the local economy. The population in Island County is projected to increase 32% by 2020.

Unique Ecosystem Characteristics and Assets

The proximity of Island County Watershed to numerous rivers and their delta environments provides critically valuable nearshore habitat for migrating juvenile salmonids as well as for their prey, forage fish. Much of the shoreline offers periodic enclosed refuges in moderate and high energy locations. Much of the shoreline includes beach areas and eelgrass meadows ideal for forage fish. The biological communities and physical habitat provide important support to nearby salmonid refugia and nursery grounds, which are also important habitat for species protected under the Endangered Species Act: Chinook salmon, Orca whale, and bull trout. As such, the shoreline processes, such as feeder bluffs and nearshore sediment transit, are critical to supporting the habitats and biological diversity of the area.

Other important fish species in this area include multiple species of salmon, Pacific hake, rockfish, Pacific cod, and herring. It is also an important migratory area for marine mammals. A small group of gray whales spend spring and summer feeding on ghost shrimp and tubeworms offshore of southern Whidbey and Camano Islands and the eastern side of Port Susan. The giant Pacific octopus is also found in the Whidbey Basin (as well as other portions of Puget Sound); these animals attain an average length of 16 feet and weight of 110 pounds. Active shellfish culture takes place throughout the inside of Whidbey Island and Samish Bay for usual and accustomed, commercial and recreational use of mussels, clams, and oysters. Commercial and recreational fisheries occur for shrimp and Dungeness crab throughout the basin. Important marine bird populations reside on area islands, including a population of over 1,000 pigeon guillemots.

Chinook populations that originate in watersheds throughout southern and central parts of Puget Sound depend on shoreline and nearshore areas in this area for refuge and feeding as juveniles head out to the ocean and as adults returning to spawn. Juvenile salmon feed on forage fish, insects and other food in the nearshore to grow big and strong enough to weather the ocean conditions they will face as adults. Forage fish are an important link in the marine food web because they transfer energy between primary and secondary producers, such as plankton, to top predators such as seabirds and larger fish. Suitable beaches in this area are historical spawning habitats for two types of forage fish—sand lance and smelt—while a third, herring spawn directly onto the lush vegetation in the many intertidal eelgrass beds.

Island County has over 200 miles of freshwater and saltwater shorelines that are both privately and publicly owned. Nearly 80% of the parcels that make up the county's shore miles are developed or slated for residential development. According to Washington State Department of Natural Resources' shore zone data, approximately 25% of the shoreline has been modified and more than 60% of the area's coastal lagoons have been isolated from natural tidal processes. Of the remaining identified high-value shoreline areas, many—including Arrowhead Marsh, Harrington, and Race Lagoons—are held under private ownership. Working with and creating incentives for private landowners will be vital for future shoreline habitat protection and restoration.

Several collaborative efforts have been made to protect some of the critical nearshore habitat. The northern portion of Port Susan is owned by The Nature Conservancy and is one of the largest privately owned marine nature preserves in the world. Island County has designated the entire western portion of Port Susan as a marine stewardship area. Several other land trusts and conservancy organizations are working to protect habitat and farmland in the action area. This area also has 57 publicly owned beaches and 22 privately owned beaches that allow some public use. In recent years, Naval Air Station Whidbey Island has undertaken tidal lagoon restoration activities in Crescent Harbor.

Further discussion on the overall critical nature of this area's ecosystem can be found in local governing documents and plans such as the salmon recovery plan and shoreline master plan.

Local Implementation Structure and Planning Process

The Island local integrating organization (LIO) represents Island County Watershed. It was officially recognized by the Puget Sound Partnership's Leadership Council in 2011. The Island LIO builds on existing committees and watershed groups and has two committees: executive and technical.

The executive committee makes all LIO decisions, sets strategic policy direction, and establishes priorities and funding concepts. The executive committee includes representatives from the following entities.

- Island County Council of Governments
 - Island County Commissioner District 1
 - Island County Commissioner District 2
 - Island County Commissioner District 3
 - City of Langley – Mayor
 - Town of Coupeville – Mayor
 - City of Oak Harbor – Mayor
 - Port District of Coupeville – Port Commissioner (as appointed by commissioners)
 - Port District of South Whidbey – Port Commissioner (as appointed by commissioners)
- Participating Local Tribal Governments
 - Tulalip Tribes – to be determined
 - Swinomish Tribe – to be determined

The technical committee provides recommendations on strategic direction, priority setting, funding concepts, and other issues of interest to the executive committee. This process furthers the performance management systems of Island County and other LIO members. The technical committee members include representatives from the following entities.

- Island County Public Health
- Island County Public Works
- Island County Planning and Community Development
- City of Oak Harbor
- City of Langley

- Town of Coupeville
- Tulalip Tribes
- Swinomish Tribe (via Skagit River System Cooperative)
- Island County Marine Resource Committee
- Island County Water Resource Advisory Committee
- WRIA 6 Salmon Recovery Lead Entity
- Business/ports
- Whidbey ECO-Net (education/outreach)
- Conservation districts

The Island LIO is informed by the work of local and regional groups and County and technical advisors and is charged with maintaining the sustainable use of water resources while protecting habitat, environment, and human health. The Island LIO may also consult with other groups, such as water and sewer districts, shellfish protection districts, and diking districts, and coordinate with other LIOs.

The technical committee hosted a series of local workshops and surveys to evaluate pressures on the area ecosystem, using the Open Standards process, supported by the Puget Sound Partnership (Section 1, *Regulatory Context*).

The technical committee used guidance from Puget Sound Partnership staff to evaluate and prioritize pressures relevant to Island County Watershed (see *Pressures* section below) then held workshops to develop actions to address these high-priority pressures. These workshops provided a framework for meaningful conversations that challenged assumptions and forced members to think critically about each proposed action. The committee developed five selection criteria by which to evaluate potential actions: political feasibility, ability to implement, ecosystem outcomes, boldness/innovativeness, and the number of pressures the action addresses and how well it addresses them. The committee submitted 13 draft near-term actions to an external review panel, which consisted of a local reviewer (Island County Public Health Director), a Puget Sound Partnership reviewer, and a federal reviewer (U.S. Environmental Protection Agency), to review the near-term actions and performance measures against the selection criteria. Two actions were removed and one was divided into two separate actions. The resulting list was then submitted to the executive committee for review and approval. The Partnership’s Leadership Council approved the list of local near-term actions on October 9, 2013.

The final list (see *Local Near-Term Actions and Opportunities*, below) reflects Island LIO’s work to vet and prioritize 78 general strategy actions for ecosystem recovery, to develop a clearer connection to the 2020 recovery targets, and to develop a strategic plan for addressing high priority pressures over the next 2 years.

Pressures

The Island LIO identified the following pressures as having very high significance for the local ecosystem. These pressures are considered the primary drivers of current and potential future ecosystem degradation.

- Runoff from the built environment

- Marine shoreline infrastructure

The Island LIO identified the following pressures as high significance for the local ecosystem. These pressures represent a mix of primary drivers and intermediate effects/secondary drivers on ecosystem degradation.

- Culverts, freshwater levees, and tidegates
- Marine water levees and tidegates
- Livestock grazing
- Agriculture
- Invasive species and genes
- Oil and hazardous spills

Local Near-Term Actions and Opportunities

The table below presents the local near-term actions for Island County Watershed. Each local near-term action is listed with an identification code—which includes the area abbreviation and a number—followed by a description of the action. The performance measures represent important, measurable, dated components of implementing each action. The owner is the entity responsible for implementation of the near-term action and for tracking and reporting the progress toward completing the action. The final columns provide regional context for the local actions, identifying the pressure that each action is intended to reduce and the primary sub-strategy to which it is most closely linked as well as other sub-strategies that the LIO associates with the action. Local near-term actions are also listed in Section 3, *Strategies and Actions*, in the context of their primary sub-strategies.

This list of near-term actions reflects the best thinking to date, but Island LIO expects to continue discussions and reevaluate priorities based on new regional and local data and on the near-term action and priority project implementation.

Many projects and programs that were identified as important to area ecosystem recovery during prioritization workshops, did not meet the selection criteria. These include effective ongoing projects/programs, projects/programs not ready for funding in the next 2 years, and/or projects that did not have clearly defined ecosystem outcomes. The Island LIO will continue to develop priority projects/programs that did not make the near-term action list and apply applicable funding to move them forward in the upcoming years. These projects included the following.

- Projects in the salmon recovery 3-year work plan.
- Nutrient treatment and management projects.
- Stormwater treatment and management projects.
- Oil-spill response readiness.

Local Near-Term Actions for Island County Watershed

Near-Term Action		Performance Measures	Owner	Pressure(s)	Regional Sub-Strategy ²
ISL1	<p>Develop an implementation strategy for Shoreline Master Program compliance. Island County will develop an implementation strategy for Shoreline Master Program compliance that includes the following elements: a) develop an accurate evaluation of shoreline health that meets the state requirement for “no net loss” and Shoreline Master Program effectiveness based on guidance from Ecology; b) retain a consultant to set a baseline percentage of shoreline armoring and percent vegetative cover that will be used to quantitatively and qualitatively evaluate shoreline health status, trends, and compliance monitoring; c) conduct annual county-wide shoreline evaluations for trend analysis.</p>	<ul style="list-style-type: none"> • By January 2014, obtain funding for Shoreline Master Program implementation program. • By April 2014, develop baseline shoreline health report with trend analysis (no net loss measure) (e.g., percent change shoreline armoring, change in vegetation in Island County). • By July 2014, develop a Shoreline Master Program implementation strategy. • By March 2015, develop and implement a Shoreline Master Program training program (target: 100 residents to attend per quarter). 	Island County Planning and Community Development	<ul style="list-style-type: none"> • Marine Shoreline Infrastructure 	B1.2
ISL2	<p>Develop technical guidance document and trainings for residents on new Shoreline Master Program guidelines.</p>	<ul style="list-style-type: none"> • By December 2014, develop a residential Shoreline Master Program technical guidance manual. • By March 2015, develop and implement a Shoreline Master Program training program (target: 100 residents to attend per quarter). 	Island County Planning and Community Development	<ul style="list-style-type: none"> • Marine Shoreline Infrastructure 	B1.3 (D5.3)
ISL3	<p>Improve Island County GIS capability to support land use analysis, planning, permitting decisions, and enforcement with respect to adaptive management and Shoreline Master Program requirements. Island County will develop standard operating procedures for updating data and consistency in its data storage network to ensure usage</p>	<ul style="list-style-type: none"> • By September 2014, develop GIS standard operating procedures for Island County departments that support GIS data management procedures, which would enable geographically tracking professional reports and permitting activity in shoreline areas. • By September 2014, increase number of GIS licenses available to Island County staff. 	Island County Department of Natural Resources	<ul style="list-style-type: none"> • Runoff from Built Environment 	B1.1

	Near-Term Action	Performance Measures	Owner	Pressure(s)	Regional Sub-Strategy ²
	consistency and relevant data.	<ul style="list-style-type: none"> • By December 2014, increase number of Island County staff trained in GIS technology, and increase use in daily activities that result in geospatial data collection. • By June 2015, develop a comprehensive GIS map of Island County detailing permits, buffers, and forest cover based on updated layers. • By December 2015, develop a formal report recommending monitoring, restoration, and habitat protection priorities. 			
ISL4	<p>Decrease the use of shoreline armor, or in those instances where armor is absolutely necessary, increase the utilization of soft shore protection to address shoreline protection concerns. This effort will address two target audiences, Island County permitting staff and shoreline property owners. Education, outreach, and behavior change strategies will be used. Island County will engage its permitting staff and shoreline property owners in an extensive education and outreach campaign to meet its target of decreasing the use of shore armor and soft shore protection. The campaign will utilize appropriate behavior change strategies and technical/scientific data to support changes within the community. Island County will seek funding to provide technical assistance to landowners and to monitor program effectiveness.</p>	<ul style="list-style-type: none"> • By December 2013, secure funding for armor avoidance and alternatives to hard shore armoring program. • By February 2014, establish an updated baseline map of shore armor in Island County using historical data. • By February 2014, train Island County Planning and Community Development staff on hard shore armoring alternatives. Including a checklist (evaluation of soft shore protection potential) for permit review and planning documents. • By March 2014, develop shore protection landowner training program. • By March 2014, develop soft shore protection guidance document for residents (all who come to the Planning and Community Development counter regarding shoreline armoring permit). This would include an interactive website for residents to learn the reasons for choosing alternatives to hard shore armoring. 	Island County Planning and Community Development	<ul style="list-style-type: none"> • Marine Shoreline Infrastructure 	B2.3

Near-Term Action		Performance Measures	Owner	Pressure(s)	Regional Sub-Strategy ²
ISL5	Remove hard shore armor and, where feasible, replace with soft shore protection where erosion control is needed to protect houses. Develop a program for education and behavior change on shoreline armoring in Island County. Social marketing will be applied to program development. Financial incentives (e.g., free site visits from experts, and grants for cost share, design, permitting) will be offered to implement armor removal and possibly install soft shore protection. This program will include monitoring beach ecosystem health on removal and conversion projects (from hard shore to soft shore) to provide justification.	<ul style="list-style-type: none"> • By December 2013, secure funding for soft shore protection technical assistance and removal program (vouchers for removing bulkheads) (target: five properties to receive technical assistance per quarter). • By December 2013, secure funding for forage fish spawning surveys to establish baseline data and effectiveness monitoring to validate decision for removing armoring. Monitoring to begin spring 2014. • By January 2016, total amount of armor removed is greater than new armor installed (not including armor replacement). 	Island County Department of Natural Resources	<ul style="list-style-type: none"> • Marine Shoreline Infrastructure 	B2.3
ISL6	Restore tidal inundation. Island County will restore tidal inundation to one or more isolated pocket estuaries or tidal wetlands. The project selected will address either poor design or malfunctioning tidegates to improve habitat for juvenile salmon.	<ul style="list-style-type: none"> • By December 2014, reconnect one tidal wetland or pocket estuary to tidal influence. • By December 2014, secure funding to monitor habitat changes and/or juvenile salmon for restoration project to monitor improvements. • By July 2014, develop a prioritization of blockages, failing culverts, flood risks, etc. Prioritization report to include ecosystem benefits for each project. 	WRIA 6 Lead Entity	<ul style="list-style-type: none"> • Marine Shoreline Infrastructure 	A6.1

Near-Term Action		Performance Measures	Owner	Pressure(s)	Regional Sub-Strategy ²
ISL7	The City of Oak Harbor will implement Freund Marsh restoration and stormwater improvement project. The project will restore natural treatment functions to reduce nutrient loading and improve flow rates by increasing infiltration in Oak Harbor, the only urban watershed in the County. The project will complete the Freund Marsh improvements including a trails network and interpretive center to educate public about stormwater, water quality, and wetland issues.	<ul style="list-style-type: none"> By December 2015, restore 18.1 acres of wetland. By December 2015, reduce stormwater flow rates and nutrient and bacterial loading into Puget Sound. By December 2015, complete trails network around Freund Marsh and install interpretive center. 	City of Oak Harbor	<ul style="list-style-type: none"> Runoff from Built Environment 	C2.1 (C2.3)
ISL8	Implement a small farm water quality improvement project in Ebey's Prairie. The project will include water quality treatment technology (e.g., grassy swales, filter strips, phytoremediation) and landowner farm practices (e.g., manure management, filter strips) to reduce non-point stormwater pollution.	<ul style="list-style-type: none"> By December 2015, reduce nutrient and bacteria levels in stormwater runoff. By December 2015, implement five water quality BMPs in watershed. 	Whidbey Island Conservation District	<ul style="list-style-type: none"> Runoff from Built Environment Agriculture 	C3.1
ISL9	Stormwater technical assistance and incentive programs implementation. Island County will implement a stormwater retrofit program to target private properties. The program will include designing and conducting workshops for landowners and providing incentives for compliance (incentives may include cost sharing for rain gardens, no-cost engineering).	<ul style="list-style-type: none"> By June 2014, implement stormwater management and low-impact development program to assist urban and rural landowners (target: Whidbey Island Conservation District will complete 25 low-impact plans as well as technical assistance site visits as needed for stormwater management). 	Whidbey Island Conservation District	<ul style="list-style-type: none"> Runoff from Built Environment 	C1.4
ISL10	Develop and implement a stormwater monitoring program. Island County will enhance its stormwater monitoring program to address stormwater discharges from the built environment. The monitoring is intended to focus community attention on source	<ul style="list-style-type: none"> Nutrient loading during storm events at outfalls and in streams (identified in watershed prioritization). Decrease in percentage of 303d-listed impaired waters in Island County. 	Island County Department of Natural Resources	<ul style="list-style-type: none"> Runoff from Built Environment Agriculture 	D4.2

Near-Term Action		Performance Measures	Owner	Pressure(s)	Regional Sub-Strategy ²
	identification and key areas of concern. Based on the monitoring data, technical assistance will be provided to landowners.	<ul style="list-style-type: none"> • Net increase in recreational shellfish harvest area. 			
ISL11	Implement a noxious and invasive weed eradication program.	<ul style="list-style-type: none"> • By December 2014, secure funding to assess invasive species in Island County. • By June 2015, create plan for eradication program. • By December 2015, increase property owners' awareness about invasive species of concern, control methods for specific plants, and their legal obligations to control regulated species. • By December 2015, increase acreage of native vegetation restoration. 	Noxious Weed Control Board	<ul style="list-style-type: none"> • Invasive Species & Genes 	B5.3
ISL12	Identify, map, and prioritize blocked and failing culverts and replace one to two priority culverts using fish-friendly passage designs. Fish-blocking culverts negatively affect flood risk, scouring, erosion, landslides, and water quality. Island County will map all existing culverts noting which are blocked and failing, and will create a prioritization schedule for replacing these culverts.	<ul style="list-style-type: none"> • By January 2014, hire a full-time equivalent employee to be project manager for culvert replacement with fish-friendly passage. • By July 2014, develop a prioritization of blockages, failing culverts, flood risks, etc. Report to include ecosystem benefits for each project. • By December 2015, reduce flood risk and remove fish blockage for top two to three prioritized culverts. 	Island County Department of Natural Resources	<ul style="list-style-type: none"> • Culverts 	C2.3

¹. Where secondary regional sub-strategies were identified, they are shown in parentheses after the primary sub-strategy. BMP = best management practice; GIS = Geographic Information System; WRIA = Water Resources Inventory Area.

San Juan County Watershed

Description of the Area

San Juan County Watershed⁴ is in the San Juan/Whatcom Action Area and encompasses the entirety of San Juan County. Located at the nexus of the Strait of Juan de Fuca, the Georgia Strait, and Puget Sound, the 428 separate islands (at high tide) that make up this area are considered by many to be the crown jewels of Puget Sound. San Juan County has the smallest land mass of any county in Washington State, but with 408 miles of marine shoreline, has more than any other county in the contiguous United States.

Geologically, the San Juan Islands are distinctly different from mainland Washington and Vancouver Island, and are dominated by bedrock and thinner glacial deposits relative to other parts of Puget Sound. Their unique location in the crossroads of the Salish Sea gives the San Juan Islands a wide diversity of flora and fauna. High-energy tidal flows and turbulent mixing throughout the islands' channels are dominated by the surface outflows from the Strait of Georgia and the deep-water inflow from offshore Pacific waters. The islands' straits and channels link the Strait of Georgia to the Strait of Juan de Fuca, and to a lesser extent to Puget Sound. These water sources mix and contribute to the distribution of nutrients, plankton, sediment, and pollutants throughout the islands, creating a marine environment unique to the San Juan Islands. This environment includes not only turbulent straits and channels but also some quiet and protected bays.

San Juan County Watershed is affected by the "rainshadow" of the Olympic Mountains, and receives 20 to 30 inches of annual rainfall, with significant variation of rainfall patterns among the islands' microclimates. There are no major rivers on the islands, but several small creeks flow on a year-round basis. Additionally, the Fraser River in British Columbia influences the temperature and sedimentation in area waters. Only 1% of the land is paved, and 61% is forested. Lakes and freshwater wetlands cover over 7% of the landscape.

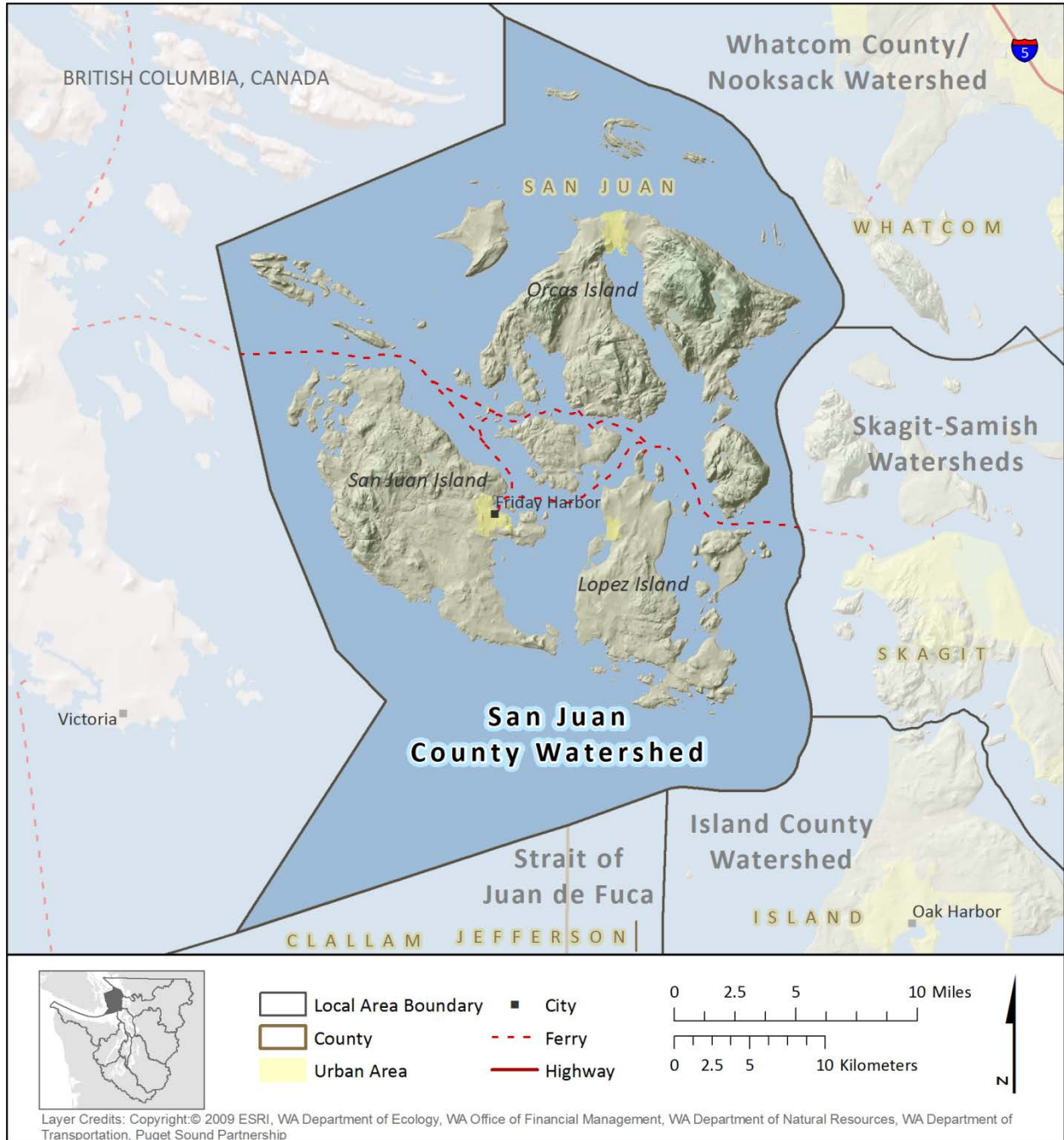
The San Juan Islands have served as rich fishing grounds for the Coast Salish People for thousands of years. The Salish Peoples' fishing activities were sustainable for generations, and traditional knowledge includes areas where salmon skirted the Orcas Island shoreline as vast runs returned to the Fraser and Skagit Rivers. The Coast Salish also knew where to find the best clam, mussel, and oyster beds near shore for ready harvest in season.

NOTABLE ACCOMPLISHMENTS

- Seven acres of coastal salt marsh and 2 acres of a tidal lagoon have been restored in San Juan County.
 - Eleven miles of surf smelt and sandlance habitat in the San Juan Islands has been documented.
 - All feeder bluffs, eelgrass, kelp, forage fish, and shoreline modifications in San Juan County have been documented.
 - Tidal inundation to Cascade Creek was restored with a new Buck Bay Bridge.
 - The Spring Street Rain Garden demonstration project was installed.
-

⁴ Water Resource Inventory Area (WRIA) 2

SAN JUAN COUNTY WATERSHED



Historically, the economy of the San Juan Islands has shifted along with the culture, technology, and natural resources in the region. Agriculture, logging, fishing, and lime kiln operations later became the main economic drivers for the islands. In the late nineteenth century, the economy boomed with fruit, canned salmon and peas, and lime exports to the mainland. These industries began to collapse as mainland infrastructure improved and it became cheaper to deliver goods overland from the eastern part of the state than across waters. It also became much easier to can or freeze and ship salmon from

the mainland, contributing to the decline of the fishing industry and associated canning operations by the mid-1900s. The cannery in Friday Harbor was canning peas when it closed in 1966.

Today, the San Juan Islands are an extremely popular summer destination, and the number of residents swells from 15,769 who live there year-round to approximately double that in the summer. In addition, over 750,000 visitors camp, moor, or stay in area lodging. Most of the area is rural, with 75% of the population living outside the “urban” areas of Friday Harbor, Eastsound, and Lopez Village. From 2000-2010, human population in the islands grew by 12%. There are 5,700 shoreline parcels in the area, of which approximately 50% have already been developed. Some islands have no public access and few accommodate automobiles. Public access to the shoreline and waters is extremely limited on many islands.

The current economy is driven by residential and commercial construction, tourism, and government (including schools). Tourism is highly dependent on the clean marine and fresh waters, spectacular views, and opportunities for boating, bird watching, whale watching, and cycling. These characteristics are also highly valued by the residents and second home—owners that make the San Juan Islands their home. There is significant marine-oriented commerce including marinas, fishing, and boat building and repair. Representative marine education and research organizations include the University of Washington Friday Harbor Labs, SeaDoc Society, and Seattle Pacific University marine labs. High quality shellfish farming occurs in the area as well as a growing sustainable agricultural movement. The islands are important to the cultural heritage of the coastal Salish tribes that retain treaty-reserved rights to hunt, fish, and gather, and are attached to many cultural heritage sites.

Unique Ecosystem Characteristics and Assets

Residents of San Juan County Watershed value the opportunities for involvement in stewardship of the islands’ ecosystem made available through numerous, long-standing efforts and organizations. Many government and non-governmental efforts are devoted to protecting this important natural resource. The San Juan Preservation Trust is the oldest private land trust in Washington State. The San Juan County Land Bank protects natural areas and is the only county-based land bank in the state. In 2007, the San Juan County Council adopted the San Juan County Marine Stewardship Area Plan, the culmination of 3 years of effort by the San Juan Marine Resources Committee, with contributions from numerous scientists, technical advisors, resource managers, community leaders, business owners, and citizens. The plan is intended to sustain the many services that the ecosystem provides for county citizens, fish and wildlife, and the economies of the county.

Example assets include sustainable tourism; commercial and recreational fisheries for clams, crab, and spot prawns; and clean beaches and waters. Currently, no beaches in the San Juan Islands are closed to swimming; however, public beaches are periodically closed to shellfish harvest due to a naturally occurring marine biotoxin that can cause paralytic shellfish poisoning. Protected upland areas are located at Moran State Park, San Juan Historical National Park, Turtleback Mountain, Lopez Hill, University of Washington Preserves at Friday Harbor Labs and on Shaw Island, and the National Wildlife Refuge with sites throughout the islands. Yellow Island, protected by the Nature Conservancy, contains an intact prairie, a unique ecological feature on a small island. Marine resource protection areas include

the Marine Preserve, National Wildlife Refuge, Bottomfish Recovery Zone, Whalewatch Exclusion Zone, and Sensitive Eelgrass Area.

The location of the San Juan Islands makes them a way-station for all 22 migrating populations of Puget Sound Chinook salmon as both juveniles and adults. Additionally, sockeye, pink, chum and coho salmon, Kokanee, steelhead, and rainbow and coastal cutthroat trout have been documented in the area. The San Juan Islands support outmigrating juvenile salmon including Chinook, coho, chum and pink, and stocks from the Fraser River, Puget Sound, east and west coast Vancouver Island, and the Strait of Georgia. Although most of the streams in the area are small and do not support salmon, a small number of coho have recently been reported spawning in Cascade Creek and possibly other streams on Orcas Island, and a few creeks support cutthroat trout and introduced runs of chum salmon.

San Juan County Watershed provides excellent habitat for juvenile and adult salmon with over 5,000 acres of tidal wetlands, inter- and subtidal flats, eelgrass meadows along the shorelines and in the bays, and kelp beds. Tidal wetlands are highly valued due to their relative scarcity. At least 80 miles of potential forage fish spawning beaches are present. Eelgrass is found on 20% of all shorelines, and the islands contain one-third of all of the kelp in Puget Sound. Pacific surf smelt and sandlance have been documented on 11 miles of the islands' shorelines. The geology has created habitat conditions for rockfish that are not replicated anywhere else in Puget Sound. Approximately 74% of the shallow dominant rocky reef habitat in Puget Sound—consisting of boulder fields, rocky ledges, and outcroppings—is found in the San Juan Archipelago.

Local Implementation Structure and Planning Process

The San Juan Action Agenda Oversight Group is the local integrating organization (LIO) for the San Juan County Watershed. It was officially recognized by the Puget Sound Partnership's Leadership Council in June 2010. The San Juan LIO operates with two committees: accountability oversight and implementation.

The accountability oversight committee serves as the executive body for the LIO. The committee includes representatives from the following entities.

- Lummi Nation
- Swinomish Tribe
- Tulalip Tribes
- Puget Sound Partnership Leadership Council (ex-officio)

The implementation committee provides recommendations to the accountability oversight committee. The implementation committee consists of staff and volunteers from the following entities.

- San Juan Marine Resources Committee
- WRIA 6 Salmon Recovery Lead Entity
- San Juan County Director of Community Development and Planning
- San Juan County Director of Public Works
- San Juan County Environmental Health Manager

- San Juan County Water Resources Committee (community representative)
- San Juan Conservation District
- University of Washington Friday Harbor Labs
- San Juan Stewardship Network/ECO Net
- Town of Friday Harbor

In 2011, the San Juan LIO developed a prioritization framework to guide the update to the local actions in the Action Agenda. The framework formed the basis of work on the 2012/2013 and 2014/2015 updates. The group identified key gaps in its original profile, and held workshops to identify and link pressures on the ecosystem to local ecosystem benefits. Local ecosystem benefits included most, but not all, of the recovery targets. Linkages were used to rate pressures—based on guidance from Puget Sound Partnership staff—and identify a list of pressures with a “high” significance on the local ecosystem.

For the 2014/2015 Action Agenda update, the implementation committee worked to identify near-term actions that are feasible, provide local ecosystem benefits, and are expected show significant results within the next 2-year horizon.

On September 24, 2013, the County Council endorsed and forwarded the list of near-term actions recommended by the implementation committee to the accountability oversight committee for review and approval. On September 25, 2013, the accountability oversight committee approved the document in principle, but asked that near-term actions be combined or tiered by priority so that a maximum of four near-term actions are applied to each key pressure. On October 2, 2013, the implementation committee presented a revised list of near-term actions, based on these recommendations. Final comments from members of both committees were integrated and the final list was submitted for Partnership review in October 2013.

Pressures

The San Juan LIO identified the following three pressures as having a high level of significance on the local ecosystem.

- Major oil spills
- Runoff from built environment (including septic systems)
- Shoreline development (including armoring)

Local Near-Term Actions

The table below presents the local near-term actions for San Juan County Watershed. Each local near-term action is listed with an identification code—which includes the area abbreviation and a number—followed by a description of the action. The performance measures represent important, measureable, dated components of implementing each action. The owner(s) column presents the entity or entities responsible for implementation of the near-term action (or as specified below), with the primary owner being responsible for tracking and reporting progress toward completing the action. The final columns

provide regional context for the local actions, identifying the pressure that each action is intended to reduce and the primary sub-strategy to which it is most closely linked as well as other sub-strategies that the LIO associates with the action. Local near-term actions are also listed in Section 3, *Strategies and Actions*, in the context of their primary sub-strategies.

Three of the near-term actions related to oil spill prevention are outcomes of a marine manager's workshop held at the University of Washington Friday Harbor Labs in November 2012 that convened local, state, federal, and Canadian agencies and non-government organizations responsible for oil spill prevention and readiness. Three other near-term actions reflect the legislative priorities of the San Juan County Council, adopted November 27, 2012.

Local Near-Term Actions for San Juan County Watershed

Near-Term Action		Performance Measures	Owner(s) ¹	Pressure(s)	Regional Sub-Strategy
SJI1	Coordinate actions and prepare to respond to major oil spills (Near-Term Major Oil Spills Action I).	<ul style="list-style-type: none"> By December 2015, update the Trans-boundary Inter-local Agreement between San Juan County and Islands Trust to include a jointly developed Washington and British Columbia report on Recommendations for Wildlife and Natural Resource Damage Assessment and Restoration. By December 2015, implement a Marine Specimen Bank to establish baseline data that would be useful for future marine resource damage assessments. Coordinate with WDFW and Ecology. Include participation in the Mussel Watch Program. Through 2016, maintain Islands Oil Spill Association local oil spill readiness and response programs with the ability to initiate first response to a major oil spill. This program will be tracked with training, workshops, equipment, and annual # of responses to any oil spills. Includes the Vessel of Opportunity Program with 13 vessels currently trained (2013). For each year, Islands Oil Spill Association plans to train 70 people, by holding at least 12 trainings or drills/year. Also, by December 2014, plan to train three additional volunteer vessels in Vessel Assist (Vessel of Opportunity) Program, and by December 2015, plan to train three more. 	<p>San Juan LIO (reporter)</p> <p><i>San Juan County Council, Islands Oil Spill Association, San Juan County Marine Resources Committee</i></p>	<ul style="list-style-type: none"> Major oil spills 	C8.2 (C8.3, C8.1)
SJI2	Integrate and define parameters for responses to increased vessel traffic and potential vessel spills (Near-Term Major Oil Spills Action II).	<ul style="list-style-type: none"> Monitor the results of Coast Guard Authorization Act of 2010 and the Coast Guard and Maritime Transportation Act of 2012. By December 2015, work with Ecology, tribes, state representatives, and the Governor to identify San Juan County as a staging area to ensure that equipment for the 4- and 6-hour planning standards are resident in San Juan County. By December 2014, complete feasibility assessment for Particularly Sensitive Sea Area study. Implement the study to communicate what important ecological and cultural values are present in the Salish Sea and how they would be negatively affected by vessel traffic if not well managed. 	<p>San Juan LIO (reporter)</p> <p><i>San Juan County Council (Trans-boundary agreement), Friends of the San Juans</i></p>	<ul style="list-style-type: none"> Major oil spills 	C8.2

Near-Term Action		Performance Measures	Owner(s) ¹	Pressure(s)	Regional Sub-Strategy
		<ul style="list-style-type: none"> Identify risks to environmental and cultural resources and the probability of risks from large-scale shipping traffic with potentially hazardous cargo and/or propulsion fuel. Provide citizens, local groups, eco-tourism operators, and decision makers with information about experiences of similar communities. Demonstrate a successful alternative to reduce both probability and consequences of an oil spill in the Salish Sea. 			
SJI3	Implement the Marine Stewardship Area Monitoring Plan to track key species (Near-Term Major Oil Spills Action III).	<ul style="list-style-type: none"> By December 2015, identify and prioritize indicator species to track in relation to oil spills. 	<p>San Juan County Marine Resources Committee</p> <p><i>UW Friday Harbor Labs, Salmon Recovery San Juan Lead Entity, intertidal monitoring by citizens and students</i></p>	<ul style="list-style-type: none"> Major oil spills 	D4.2
SJI4	Expand and maintain Derelict Vessel Compliance Program (Near-Term Major Oil Spills Action IV).	<ul style="list-style-type: none"> By 2015, obtain funding to expand program to six jurisdictions. Additional jurisdictions suggested by DNR include Jefferson, Island, Kitsap, Snohomish, Whatcom, and Mason. 	<p>San Juan County</p> <p><i>PSP</i></p>	<ul style="list-style-type: none"> Major oil spills 	C8.1
SJI5	Control and mitigate stormwater runoff (Near Term Run Off Action I).	<ul style="list-style-type: none"> Improve county stormwater permit review process and existing codes. <ul style="list-style-type: none"> Between 2014 and 2016, actions in process and codes should include pre-disturbance site review and follow-up site visits for at least 50% of properties permitted. The Town of Friday Harbor will continue existing permitting and pre-review for 100% of site disturbance development to ensure compliance with sediment control and water runoff issues. Friday Harbor will also conduct follow-up site visits of largest disturbed 	<p>San Juan LIO (reporter)</p> <p><i>San Juan County CDPD, Town of Friday Harbor</i></p>	<ul style="list-style-type: none"> Runoff from the built environment (including sewage) 	C2.2 (C2.3)

Near-Term Action		Performance Measures	Owner(s) ¹	Pressure(s)	Regional Sub-Strategy
		<p>sites to review applicants' compliance with the town's Storm Water Technical Manual for at least 10% of all sites.</p> <ul style="list-style-type: none"> ○ By December 2014, the Town of Friday Harbor is investigating feasibility and engineering for waterfront stormwater vault containing Ecology-approved cartridge filters. ● By December 2015, the Town of Friday Harbor will construct a waterfront stormwater vault containing Ecology-approved cartridge filters. 			
SJI6	Fully implement the Onsite Sewage System Operation and Maintenance Program Plan (Near-Term Run Off Action II).	<ul style="list-style-type: none"> ● 100% of systems in sensitive areas to remain in compliance with current inspections. ● Between 2012 and 2016, 75% of alternative systems countywide to have inspections. ● Between 2012 and 2016, 60% of gravity systems countywide to have inspections. 	San Juan County Health Department	<ul style="list-style-type: none"> ● Runoff from the built environment (including sewage) 	C5.1
SJI7	Provide technical and financial assistance, outreach, incentives, education and natural resource planning on a voluntary basis to interested residents to improve stormwater management and reduce polluted runoff and nutrient loading into the marine environment (Near-Term Run Off Action III).	<ul style="list-style-type: none"> ● Complete 30 voluntary farm management plans, provide cost-share funding to implement 50 BMPs. ● Provide education and outreach to at least 200 residents. ● Publicize BMPs at the San Juan County Department of Health and Community Services, San Juan County CDPD, and Town of Friday Harbor permit center. 	<p>San Juan LIO (reporter)</p> <p><i>San Juan Islands Conservation District, Green Shores for Homes, Friends of the San Juans, San Juan County CDPD, San Juan County Public Works Stormwater Utility, Town of Friday Harbor, Department of Health and Community Services, WSU Extension</i></p>	<ul style="list-style-type: none"> ● Runoff from the built environment (including sewage) 	C2.5 (C2.2, C2.3, C2.4, C3.1, C7.1, D5.1, D5.3)

Near-Term Action		Performance Measures	Owner(s) ¹	Pressure(s)	Regional Sub-Strategy
SJI8	Devise monitoring and management plans for priority and/or focus basins (Near-Term Run Off Action IV).	<ul style="list-style-type: none"> By January 2014, implement an annual strategic monitoring plan to measure levels of fecal coliform, heavy metals, persistent organic pollutants, and polycyclic aromatic hydrocarbons in priority basins. In the first year post-implementation, monitor 100% of priority basins, with monitoring actions ongoing after 2014. In 2012 and 2013, evaluate data collected and revise sampling plans based on results. Revisions may include changes in priority basins, sampling procedures, constituents, and frequency. By June 2014, prepare management plans for focus basins to manage existing runoff from public streets and lots. Develop mitigation strategies for ferry parking lots. 	<p>San Juan County Public Works Stormwater Utility</p> <p><i>San Juan County Stormwater Committee, San Juan County Water Resources Committee, San Juan Marine Resources Committee, Town of Friday Harbor, San Juan Islands Conservation District</i></p>	<ul style="list-style-type: none"> Runoff from the built environment (including sewage) 	D4.2 (B2.1, C2.3, C2.4)
SJI9	Increase use of BMPs, reduce shoreline armoring, and increase vegetative cover by making information and assistance available to landowners, contractors and consultants (Near Term Shoreline Action I).	<ul style="list-style-type: none"> By 2016, make ongoing technical assistance (BMPs or no net loss) available through pre-application site visits to 100% of shoreline permit applicants, with a goal of applicants avoiding hard armoring or implementing soft armoring techniques. This will leverage efforts underway via EPA grant funding for Green Shores and Washington Sea Grant (June 2014) and shoreline workshops coordinated by Friends of the San Juans and San Juan Islands Conservation District. By 2016, research and identify candidate sites for restoration of native vegetation, trees, and ground cover to target salmon recovery regions. By 2016, engage with 50 voluntary shoreline property owners in priority areas. Complete feasibility analysis with seven property owners with two to three projects moving forward for full project development. 	<p>San Juan LIO (reporter)</p> <p><i>Green Shores for Homes, Friends of the San Juans, San Juan County CDPD, Town of Friday Harbor</i></p>	<ul style="list-style-type: none"> Shoreline development (including shoreline armoring) 	B1.3 (B1.1)

Near-Term Action		Performance Measures	Owner(s) ¹	Pressure(s)	Regional Sub-Strategy
SJI10	Salmon recovery, habitat protection and restoration (Near Term Shoreline Action II).	<ul style="list-style-type: none"> • Between 2014 and 2016, target funding to highest priority salmon recovery projects, as listed in the San Juan Salmon Recovery 3-year work plan for WRIA 2. Projects include acquisition and conservation easements, and protection and restoration actions. • Identify landowners who are willing and restore shorelines and habitats affected by armoring. • Between 2014 and 2016, engage six shoreline landowners. • By 2016, commence shoreline restoration on four properties. 	<p>San Juan County Lead Entity for Salmon Recovery</p> <p><i>Green Shores for Homes, Friends of the San Juans</i></p>	<ul style="list-style-type: none"> • Shoreline development (including shoreline armoring) 	A6.1
SJI11	Continue to develop a voluntary program providing alternatives and incentives for best management practices to avoid hard armoring and to maintain native vegetation (Near Term Shoreline Action III).	<ul style="list-style-type: none"> • Ecosystem outcome goal: No new hard armoring in 2015 and 2016. • In 2015, engage 24 shoreline landowners, 16 contractors, and 30 realtors. • Conduct separate annual workshops for contractors and realtors/shoreline landowners. • Between 2014 and 2016, conduct 12 advisory visits to shoreline landowners. • Develop maps, checklists, or other usable information materials specifically tailored to conditions in the San Juan Islands. • Continue updating website; reach 50 views per month. • Develop website-based catalogue of examples. • Annual tour of “best alternatives” sites. 	<p>Green Shores for Homes</p> <p>San Juan County CDPD, <i>Friends of the San Juans</i></p>	<ul style="list-style-type: none"> • Shoreline development (including shoreline armoring) 	B2.3 (B2.1)
SJI12	Continue development of Salmon Recovery Adaptive Management and Monitoring Plan (Near Term Shoreline Action IV).	<ul style="list-style-type: none"> • By June 2014, draft Adaptive Management and Monitoring Framework for Chinook including narrative (document) and Miradi files. Finalize results chains, develop monitoring priorities, draft monitoring framework. Results will also inform the Marine Stewardship Area Monitoring Plan. • In 2015, start monitoring implementation. 	<p>San Juan LIO</p> <p><i>San Juan County Lead Entity, San Juan County Marine Resources Committee</i></p>	<ul style="list-style-type: none"> • Shoreline development (including shoreline armoring) 	D4.2 (A6.3)

¹ Where secondary owners were identified, they are shown in italics after the primary owner.

² Where secondary regional sub-strategies were identified, they are shown in parentheses after the primary sub-strategy.

BMP = best management practice; CDPD = Community Development and Planning Department; DNR = Washington State Department of Natural Resources; EPA = U.S. Environmental Protection Agency; LIO = Local integrating organization; PSP = Puget Sound Partnership; WDFW = Washington Department of Fish and Wildlife; WRIA = Water Resources Inventory Area; WSU = Washington State University; UW = University of Washington.

Skagit-Samish Watersheds

Description of the Area

The Skagit-Samish watersheds⁵ are in the Whidbey Action Area. The largest watershed in Puget Sound, the Skagit River system begins in Canada and flows through the rugged Cascades down into low-lying valleys, draining into Skagit Bay. The rich soils of the river's broad delta support the region's most productive farmlands appreciated not only for their crops of berries, potatoes, and organic vegetables, but especially renowned for their bright fields of daffodils and tulips. The Upper Skagit River Valley is a favored wintering area for bald eagles. This impressive gathering of bald eagles, one of the four largest in the contiguous 48 states, coincides with the spawning runs of chum salmon on the Skagit River.

The Skagit-Samish watersheds are a fertile center of productivity for high-profile members of the ecosystem's food web including salmon, whales, herring, eagles, and people. Foremost among Puget Sound rivers in volume and length, the Skagit River system has 2,989 identified streams totaling approximately 4,540 linear miles. Fed by glaciers on Mount Baker and Glacier Peak, the Skagit has a different seasonal flow pattern from the other major river systems in the area. The Samish River, a smaller drainage consisting of mostly lower elevation terrain, enters Samish Bay and is part of the greater Skagit River watershed (Water Resource Inventory Areas [WRIAs] 3 and 4).

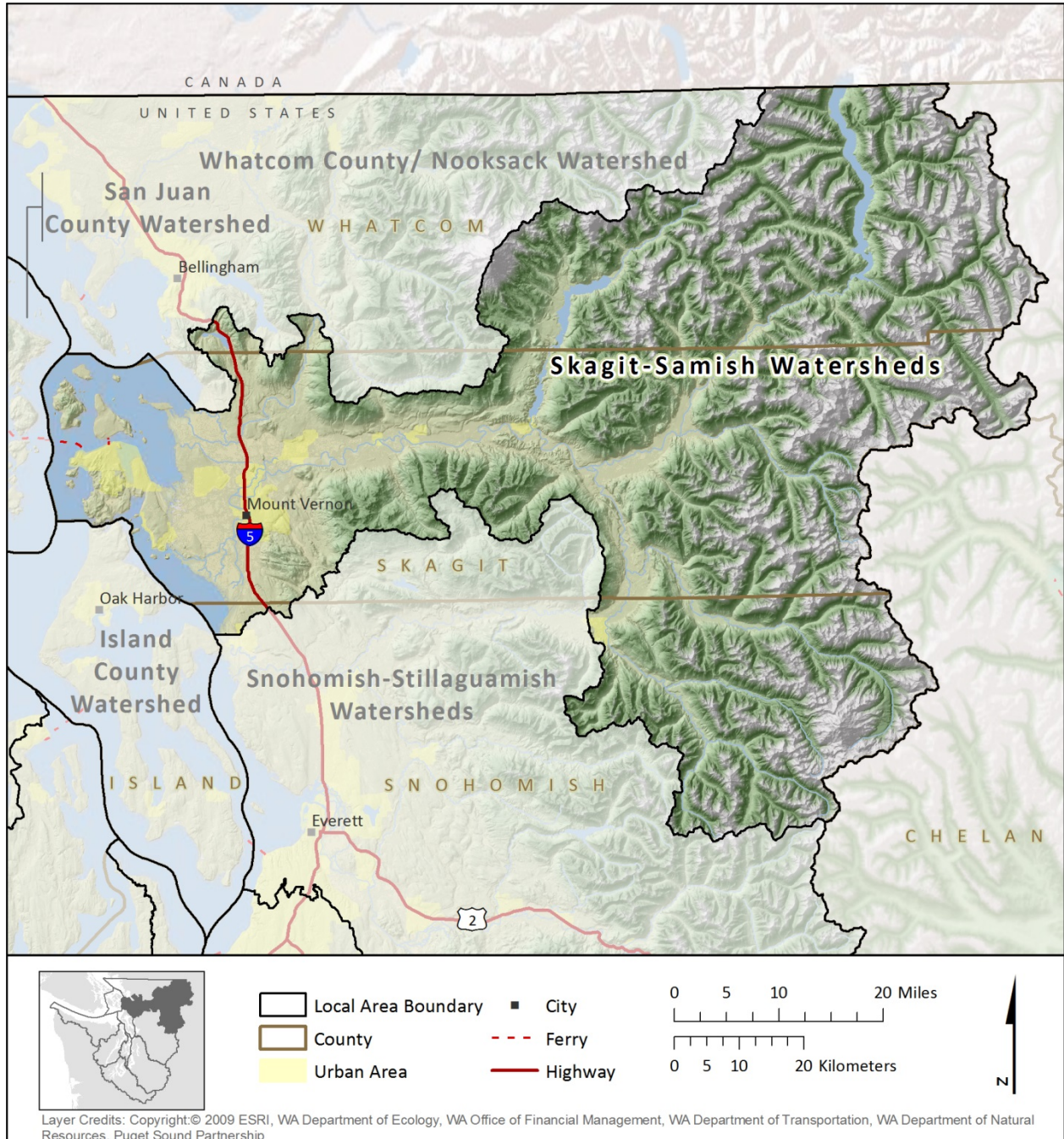
The upper river is home to the region's only major complex of dams. Seattle City Light's dams are located above natural salmon barriers. Puget Sound Energy's two Baker dams obstructed anadromous fish from historical habitat and inundated Baker Lake, a natural lake critical to Baker River sockeye. Today, fish passage facilities built and operated by Puget Sound Energy allow migration of sockeye and coho salmon and bull trout into the Shannon and Baker Reservoirs.

Also in the Skagit system, the Cascade, Sauk, and Suiattle Rivers are designated as Wild and Scenic, placing them among the largest undammed river systems remaining in the Pacific Northwest. The designation includes 158.5 miles within the Skagit River watershed. The Skagit Wild and Scenic River designation begins just east of the town of Sedro-Woolley, extending to Bacon Creek near the boundary of the Ross Lake National Recreation Area in the North Cascades National Park Service Complex.

The Skagit River delta contains large concentrations of wintering waterfowl, shorebirds, and raptors. A significant portion of an entire trumpeter swan population winters at the site, as well as the entire population of gray-bellied Brant, a subpopulation of Brant geese. Birdwatchers flock to the area in early spring to catch the inspiring sight of hundreds of snow geese rising off the fields in graceful waves. The estuarine and intertidal ecosystems are critical habitat for salmon, other marine fish, and wintering raptors and waterfowl.

⁵ Water Resource Inventory Areas (WRIAs) 3 and 4

SKAGIT-SAMISH WATERSHEDS



Major cities and towns in the watershed include Mount Vernon, Anacortes, La Conner, Edison, Bow, Conway, Burlington, Sedro-Woolley, Lyman, Hamilton, Concrete, Rockport, Marblemount, and Newhalem. Once dependent on traditional northwest economic sectors such as agriculture, fishing, and wood products, the Skagit Valley has diversified—tourism, international trade, and specialized manufacturing now comprise the bulk of its economy. Skagit County also has ports and refineries, making it an important location for the petroleum industry.

Although the economy has continued to diversify, fishing for salmon, crab, and shellfish remain an important commercial and recreational activity. Fishing is also a very important cultural resource and provides a primary food source for the Swinomish, Sauk-Suiattle, Upper Skagit, and Samish Tribes. The Swinomish, Sauk-Suiattle, and Upper Skagit tribes all have reservation lands in the watershed.

Agriculture is still the major land use category in the river delta areas of the watershed. Today the Skagit River delta is often referred to as “The Agricultural Heartland of Western Washington” and encompasses approximately 70,000 acres. The agricultural industry generates approximately \$500 million annually in revenue and provides a unique landscape. The delta farming community also has developed a high level of cooperation to allow rotation for major cultivated crops.

Recreation and tourism are also important economic sectors, with opportunities for float trips, eagle watching, kayaking, camping, hunting, and backpacking. Several designated wilderness areas are located in the watershed. The North Cascades National Park and the Ross Lake National Recreation Area protect the headwaters of the Whidbey Basin, while extensive areas of public and private forest, as well as several popular state parks, provide habitat protection and allow for low-impact outdoor recreation. Forest land dominates the upper mountainous portions of the watershed, with more than half in the Mount Baker–Snoqualmie National Forest or in state-owned forests managed by the Washington State Department of Natural Resources.

Local Implementation Structure and Planning Process

Although a great deal of work has occurred through existing processes such as the Skagit Chinook Recovery Plan, municipal planning documents, and the work of local watershed groups to identify priorities, at this time, the Skagit-Samish watersheds does not have a convening forum such as a local integrating organization (LIO) in which to develop its locally relevant priorities and actions for the Action Agenda.

Pressures

At this time, the pressures identified by the Partnership in regional pressure assessments are considered relevant to the Skagit-Samish watersheds, since discussion is required to determine the relative level of significance of each of these pressures.

- Agriculture and aquaculture
- Energy production and mining
- Natural system modifications
- Biological resource use
- Human intrusions and disturbance
- Transportation and service corridors
- Residential and commercial development
- Pollution
- Invasive and other problematic species
- Climate change

Local Near-Term Actions

Further work is needed to identify near-term actions for the Skagit-Samish watersheds.

Snohomish-Stillaguamish Watersheds

Description of the Area

The Snohomish-Stillaguamish watersheds⁶ are located within the Whidbey Action Area. Each of these watersheds is described below.

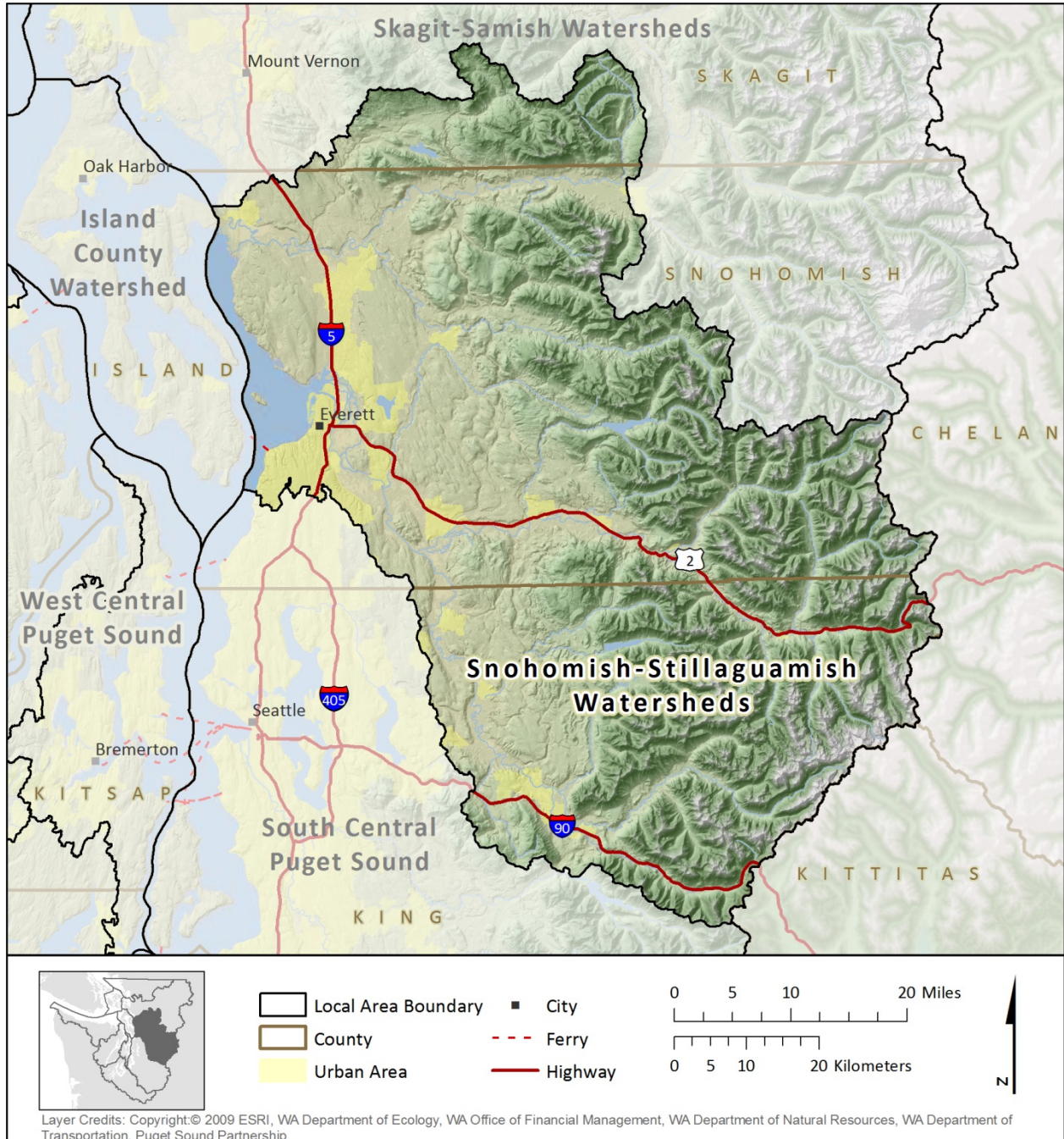
Snohomish River Watershed

The Snohomish River watershed is the largest watershed in Snohomish County and the second largest in the Puget Sound region. The watershed's varied topography ranges from low, rolling terrain next to the shoreline to steep foothills and mountains along the eastern border. The watershed lies in two counties—Snohomish and King—and covers an area of 1,856 square miles with 2,718 river miles. The two major tributaries, the Skykomish and Snoqualmie Rivers, originate in steep valleys of the Cascade Mountains and descend into broad floodplains where they converge near the City of Monroe. Over 90% of the original floodplain wetlands in the lower Snohomish have been drained, filled, or channeled to accommodate development and farming.

The Snohomish River empties into Puget Sound north of Everett, the region's fourth largest city and a major industrial and commercial center that includes Naval Station Everett and the Port of Everett. Some of the richest agricultural soils remaining in western Washington are found near the Snohomish, Skykomish, and Snoqualmie Rivers. Forestlands and wilderness cover approximately 70% of the watershed, and agricultural uses covers about 5% of the watershed. Urbanization is concentrated primarily in communities along the rivers and in the western portion of the watershed. Incorporated areas within the watershed include the cities of Everett, Mukilteo, Marysville, portions of Arlington and Granite Falls, Snohomish, Lake Stevens, Monroe, Sultan, Gold Bar, Index, Duvall, Skykomish, Carnation, Sammamish, Snoqualmie, and North Bend. The Snohomish River watershed is one of the fastest growing areas in Puget Sound with projected population growth of 59% from 2000 to 2030. By 2040, population and employment in the watershed are forecasted to grow by approximately 350,000 residents and 150,000 jobs, respectively. Most of this growth will be located in the western portion of the watershed. In the central and eastern portions of the watershed, there are an estimated 361,187 acres of privately owned forestland. The majority of the forest area is in a protected status; however, as many as 151,709 acres are at risk for development.

⁶ Water Resource Inventory Areas (WRIAs) 5 and 7

SNOHOMISH-STILLAGUAMISH WATERSHEDS



The estuary, where the nutrient rich fresh water of the Snohomish River mixes with the saltwater of Possession Sound, is home to many kinds of birds including blue heron, terns, eagles, and osprey and numerous varieties of fish and animals including Dungeness crab, salmon, seals, sea lions, and otter. The estuary functions as a natural filter that cleans water before it passes into the Puget Sound, provides rearing habitat for juvenile salmon, and slows down floodwaters entering Puget Sound. In addition, a myriad of streams and creeks in the upper reaches of the watershed flow through abundant forestlands and wilderness including the Alpine Lakes and Wild Sky Wilderness Areas.

The watershed has a long history of broad collaboration on issues ranging from flood protection to integrating mitigation and restoration needs in the Snohomish River estuary. In recent years, this collaboration has focused on a floodplain management approach to reconcile salmon habitat recovery, agricultural land use, and tribal treaty rights and culture.

Stillaguamish River Watershed

The Stillaguamish River is approximately 3,100 miles in stream length with a watershed of nearly 720 square miles in Snohomish and Skagit Counties. The mainstem of the Stillaguamish River is formed by the North and South Forks, which descend from the foothills of the Cascades to a confluence at the city of Arlington and flow westerly into Puget Sound via two channels: Hat Slough and the North Channel. The four main tributaries to the lower Stillaguamish River are Church Creek, Portage Creek, Pilchuck Creek, and Armstrong/Harvey Creek. The Stillaguamish River is the fifth largest freshwater system in Puget Sound, dropping from an elevation of 6,854 feet on Three Fingers Mountain to sea level at Port Susan and Skagit Bay. Forestry and farming are major land uses in the watershed with rural residential and urban development in the city of Stanwood and portions of the cities of Arlington and Granite Falls. Two municipal wastewater treatment plants discharge into the Stillaguamish River.

Watershed health is addressed through several collaborative efforts including the Stillaguamish River Clean Water District and the Stillaguamish Watershed Council. Many local stakeholders, including Snohomish County, the Stillaguamish Tribe, farmers, forestland owners, citizens, and local agency representatives plan and take actions to improve local water quality. Major public landholdings are managed by the U.S. Forest Service, Washington State Department of Natural Resources, and Snohomish County. The Stillaguamish River provides spawning and rearing habitat for eight salmonid species. Two of the 22 populations of Chinook salmon in the Puget Sound listed as threatened under the Endangered Species Act reside in the Stillaguamish River during portions of their life cycle. Land use in the portion of the watershed inhabited by salmon is 61% forestry, 22% rural residential, 15% agricultural, and 2% urban. In the mid-1990s, with leadership from the Stillaguamish Tribe and Snohomish County, the Stillaguamish Watershed Council began addressing salmon habitat restoration issues in the watershed.

The major commercial and recreational shellfish resource in Port Susan is the eastern softshell clam. The Port Susan area is a complex system of marshes, mudflats, and channels that support a wide variety of wildlife. It is among the most important of a series of estuaries in Puget Sound that collectively supports large numbers of shorebirds during winter periods and spring and fall migration.

Unique Ecosystem Characteristics and Assets

The Snohomish-Stillaguamish watersheds are dominated by forestlands, particularly in the upper mountainous portions of the area. More than 50% of the watersheds are in the Mount Baker–Snoqualmie National Forest or in state-owned forests managed by the Washington State Department of Natural Resources. Recreation and tourism are important economic sectors in both watersheds, with opportunities for float trips, fishing, kayaking, camping, hunting, hiking, and backpacking. Although much of the forestland is in public ownership and protected from development, there is still a significant risk of conversion to residential development on the privately held lands.

In the rural Snoqualmie River portion of the Snohomish River watershed, over 500 forested parcels, totaling more than 20,000 acres, are at risk of being converted from forestry use to residential development.

The Snohomish and Stillaguamish Rivers, combined with the Skagit River, have the largest freshwater influence from within the Puget Sound (excluding the Fraser River). The Snohomish River watershed has the most returning coho spawners between the Columbia River and the Canadian border, and produces 25 to 50% of all coho salmon in Puget Sound. In addition, the Skykomish River Chinook population has the highest abundance target in the Puget Sound evolutionarily significant unit. Juvenile salmon from many rivers in Puget Sound use the pocket estuaries and nearshore areas to forage and rear as they adapt to saltwater conditions.

The Stillaguamish and Skagit River deltas were designated as areas of regional importance in the Western Hemisphere Shorebird Reserve Network in May 2012. Aerial surveys of wintering shorebirds conducted in the mid-1990s showed that this area is one of only four sites in Washington with seasonal concentrations of shorebirds exceeding 20,000 birds on a regular basis. Port Susan is the southernmost critical biodiversity area in Puget Sound, and The Nature Conservancy identified the shoreline and nearshore as a priority conservation area of high biodiversity importance. The area is also a major producer of forage fish such as herring, sand lance, and surf smelt. Eelgrass beds in the Snohomish River delta are among the largest in Puget Sound, providing important spawning and foraging habitat for forage fish, salmon, and other species. Upper reaches of the Stillaguamish and Snohomish River watersheds support numerous resident and overwintering populations of eagles and other raptors.

Local Implementation Structure and Planning Process

The Snohomish-Stillaguamish Local Integrating Organization (LIO) was recognized in March 2012 by the Puget Sound Partnership's Leadership Council as the ninth LIO established in the Puget Sound region. In July 2012, the Snohomish County Public Work's Surface Water Management Division was designated as the LIO's fiscal agent and administrator and responsible for providing ongoing support for LIO work efforts. The Snohomish-Stillaguamish LIO collaboration extends across two large Water Resource Inventory Area (WRIA)—WRIA 5 (Stillaguamish River watershed) and WRIA 7 (Snohomish River watershed, including the Snoqualmie River watershed and the Skykomish River watershed).

The LIO is made up of a nine-member executive committee and a 21-member implementation committee, which operate under a set of approved bylaws established in July 2013.

The executive committee is the primary decision-making body that provides accountability, oversight, and a forum for interjurisdictional collaboration on local efforts to advance the Action Agenda. The executive committee includes representatives from the following entities.

- City Everett
- City of North Bend
- City of Snohomish
- City of Arlington
- City of Stanwood

- King County
- Port of Everett
- Snohomish County
- Stillaguamish Tribe
- Tulalip Tribes

The executive committee is supported by the implementation committee, which provides a local working knowledge of Action Agenda implementation in WRIs 5 and 7. The implementation committee includes representatives from the following entities.

- City of Lake Stevens Planning Department
- City of Snohomish
- ECO Net Snohomish Camano
- Futurewise
- King County
- King Conservation District
- Port of Everett
- Snohomish Conservation District
- Snohomish County
- Snohomish County Agricultural Advisory Board
- Snohomish Marine Resources Advisory Committee
- Snohomish Basin Salmon Recovery Forum
- Snohomish County Health Department
- Snoqualmie Watershed Forum
- Snoqualmie Tribe
- Sound Salmon Solutions
- Stillaguamish Clean Water District
- Stillaguamish Tribe Natural Resources Department
- Stillaguamish Watershed Council
- Tulalip Tribes Natural Resources Department
- Tulalip Tribes Planning Department

For the 2014/2015 Action Agenda update, The Snohomish-Stillaguamish LIO focused its work on identifying and reaching consensus on recommended near-term actions. This effort began in June 2013 with a day-long workshop of the implementation committee to review and revise a list of over 100 potential near-term actions that were submitted by the members. By the end of the workshop, the list had increased to 114 potential actions. The implementation committee then agreed to 11 criteria for prioritizing near-term actions, which it forwarded on to the executive committee.

The implementation committee grouped the potential near-term actions under the Strategic Initiatives (Section 2, *The Strategic Initiatives*) to ensure that all three initiatives would be addressed. The committee then identified several overarching actions that resulted in the creation of a fourth strategic initiative called Strategic Planning and Coordination. The implementation committee divided into four subcommittees, each based on a strategic initiative. Each subcommittee was tasked with identifying the 10 highest priority actions for addressing the strategic initiative. To facilitate this effort, several separate, but related actions were combined under a single near-term action.

The resulting list of approximately 40 recommended near-term actions was reviewed by the executive committee, which further prioritized and grouped the actions. The resulting list of about 25 near-term actions was voted on to identify the 12 highest priority actions. On October 18, 2013, the executive committee discussed the results of this vote and reached consensus on a list of 16 recommended near-term actions.

Pressures

The Snohomish-Stillaguamish LIO discussed the following pressures on the local ecosystem.

Habitat Alteration

- **Marine/estuary:** Loss of estuary tidal marsh and habitat connectivity, with more than 80% of the Snohomish, and 85% of the Stillaguamish estuaries diked, cutting off tidal marshes and blind tidal channels; only 18% of historical wetlands remain; potential future impacts from tidal power generation.
- **Shorelines:** Development along lake shorelines, resulting in reduced habitat availability, increased heterogeneity, nitrification, and increases in invasive species and toxic algal blooms.
- **Marine nearshore:** 38% of marine shoreline armored; over 5,000 overwater structures; 5.6 miles of railroad grade; disconnected feeder bluffs and pocket estuaries, development in sensitive areas.
- **Freshwater:** Loss of large river habitat complexity and floodplain connectivity from diking, riparian clearing, and floodplain development, reducing wood debris jams, side channels, forested islands, and pools.
- **Uplands:** Loss of working farms and forests through conversion resulting in altered watershed hydrology and degraded habitat; 16% increase in impervious surface in the Snohomish River watershed from 1991 to 2001; potential future development pressure in nearshore, river valley, and upland areas.

Pollution

- **Toxics:** Groundwater contamination leaching from past industrial development.
- **Bacterial pollution:** 48% of impaired waters listings due to bacterial pollution.
- **Nutrient loading:** Contributes to eutrophication and low dissolved oxygen concentrations in Possession Sound; dissolved oxygen and temperate concerns found in streams.
- **Surface-water runoff impacts:** Pollutant loading from urban stormwater and agricultural runoff; emerging pre-spawn fish mortality concern.

Freshwater Resources

- **Limited water availability for people, farms, and fish:** Low summer flows in WRIs 5 and 7.
- **Altered magnitude, frequency, and duration of peak flow events.**
- **Alteration of surface hydrology:** Major alteration for flow in Sultan River below dam.
- **Increased freshwater demand** from more people, resulting in decreased aquifer levels, saltwater intrusion, and decreased groundwater discharge.

Invasive Species

- Potential negative ecological impacts on native populations: Japanese knotweed, Spartina, purple loosestrife.

Artificial Propagation

- **Unknown impacts of hatchery production** on existing steelhead and other salmonid species threaten viability.
- **Unknown Impacts from straying hatchery** stocks in the Snoqualmie River watershed.

Harvest

- **Fishing and bycatch:** Fishing and poaching.

Localized Climate Change Impacts

- **Sea level rise:** Significant change and loss of estuarine habitat in Snohomish and Stillaguamish estuaries; risk of saltwater intrusion; potential loss of floodplain capacity from diking.
- **Changes in hydrology** due to reduced snow pack and forest cover.

Local Near-Term Actions

The table below presents the local near-term actions for Snohomish-Stillaguamish watersheds. Each local near-term action is listed with an identification code—which includes the area abbreviation and a number—followed by a description of the action. The performance measures represent important, measurable, dated components of implementing each action. The owner is the entity or entities responsible for implementation of the near-term action, with the primary owner being responsible for tracking and reporting progress toward completing the action. The final columns provide regional context for the local actions, identifying the pressure(s) that each action is intended to reduce and the primary sub-strategy to which it is most closely linked. Local near-term actions are also listed in Section 3, *Strategies and Actions*, in the context of their primary sub-strategies.

Local Near-Term Actions in the Snohomish-Stillaguamish Watersheds

				Regional Sub- Strategy	
Near-Term Action	Performance Measures	Owner(s) ¹	Pressure(s)		
SNST1	Improve regulatory effectiveness. Compile and evaluate results from existing studies and those currently being completed on the effectiveness of existing federal, state, and local regulations to protect habitat. Facilitate discussions and building trust among elected officials. Develop strategies to address common issues that are identified.	<ul style="list-style-type: none"> • By September 2014, compile studies including Tribal Treaty Rights at Risk White Paper, Tulalip Regulatory Analysis, Stillaguamish Regulatory Analysis, King County Critical Areas Ordinance Effectiveness Study, Snohomish County Critical Areas Regulations Review. • By October 2014, synthesize results based on common issues identified and highlighted as most important. • By November 2014, establish LIO subcommittee consisting of stakeholders to develop a series of recommendations. • By November 2015, implement recommended actions, including enforcement. 	<p>Snohomish-Stillaguamish LIO (reporter)</p> <p><i>Tulalip Tribes, Snoqualmie Tribe, King County, Snohomish County</i></p>	<ul style="list-style-type: none"> • Land development 	A1.3
SNST2	Identify existing data and prioritize needs. <ul style="list-style-type: none"> • Water quality: Compile water quality data from the previous 10 years for streams in the Snohomish and Stillaguamish River watersheds, and evaluate available data to establish priority areas for water quality improvements. • Culverts: Collect and assess existing data on public and private stream culverts in the Snohomish and Stillaguamish basins to identify high priority culverts for replacement based on multiple factors, such as fish passage. • Map systems: Inventory and map stormwater facilities and conveyance systems in the Snohomish and 	<ul style="list-style-type: none"> • By December 2014, compile available stream water quality data and identify gaps in data. • By December 2015, analyze water quality data to identify priority areas for water quality improvements. • In 2014 and 2015, explore and facilitate partnerships. • By December 2014, compile available culvert data, including past analyses of fish passage and flooding conditions, as well as upstream habitat. • By February 2015, identify data gaps. • By December 2015, identify specific public and private priority culverts for replacement. • By December 2014, compile available inventory data for public and private stormwater facilities and conveyance systems and identify data gaps. 	<p>Snohomish-Stillaguamish LIO (reporter)</p> <p><i>King County and cities, Snohomish County and cities, Snohomish CD</i></p>	<ul style="list-style-type: none"> • Pollution from runoff from built environment 	C2.1

	Near-Term Action	Performance Measures	Owner(s) ¹	Pressure(s)	Regional Sub-Strategy
	Stillaguamish basins, and begin to prioritize the need for public and private stormwater retrofits.	<ul style="list-style-type: none"> By December 2015, evaluate existing public and private stormwater facilities in selected areas for their potential to be retrofitted to improve water quality or downstream flows. 			
SNST3	<p>Agricultural runoff. Engage with the WSCC Agriculture Stormwater Committee to develop implementation and monitoring priorities related to agricultural runoff in the Snohomish and Stillaguamish basins. Both the King CD and the Snohomish CD will work with agricultural producers and livestock owners to implement BMPs that will address water quality and habitat resource concerns.</p>	<ul style="list-style-type: none"> During 2014–2015, attend and participate in drafting of priorities. During 2014–2016, share information with Snohomish-Stillaguamish LIO to include in Action Agenda. During 2014–2016, assist landowners to voluntarily implement BMPs, including but not limited to, livestock fencing, off-stream and solar pumps for stock watering, nutrient management, manure bins, installation of hedgerows and riparian forest buffers, pasture management, and filter strips on their land to improve habitat and protect water quality. During 2014–2016, assist landowners with compliance of existing water pollution and Critical Areas Regulations requirements. 	<p>Snohomish CD</p> <p><i>King CD</i></p>	<ul style="list-style-type: none"> Pollution from agricultural runoff 	C3.2
SNST4	<p>Local habitat protection and restoration. Implement effective habitat protection strategies that have been identified in local plans, recommended by stakeholders, and approved by plan sponsors. Examples include the following.</p> <ul style="list-style-type: none"> Acquisition by the City of Snohomish of 20 acres at the confluence of the Snohomish and Pilchuck River. Protection strategies identified in the Snohomish Basin Protection Plan and the Port Susan Marine Stewardship Area Conservation Action Plan. 	<ul style="list-style-type: none"> During 2014–2015, identify priority protection actions that can be implemented. By December 2015, establish conservation easements of unarmored shoreline parcels in Port Susan. By December 2015, City of Snohomish will acquire 20 acres at confluence of Snohomish and Pilchuck Rivers. During 2014–2016, acquire parcels in the Stillaguamish Basin to advance habitat protection 10- and 50-year salmon recovery targets. By December 2015, increase participation in Conservation Reserve Enhancement Program and explore other financial incentive programs. 	<p>Snohomish-Stillaguamish LIO</p> <p><i>City of Snohomish, Snohomish County, Snohomish CD, Forterra, The Nature Conservancy, King County</i></p>	<ul style="list-style-type: none"> Land development 	A2.1

				Regional Sub-Strategy
Near-Term Action	Performance Measures	Owner(s) ¹	Pressure(s)	
<ul style="list-style-type: none"> Promote the Conservation Reserve Enhancement Program and the Snohomish CD's "Free Trees Program". 	<ul style="list-style-type: none"> By December 2015, implement a pilot free trees program to increase tree cover within both the Snohomish and Stillaguamish watersheds. 			
SNST5 Onsite septic systems maintenance and retrofit. Seek stable funding and expand Snohomish Health District program to provide technical assistance to property owners with septic systems. Investigate role of failing onsite septic systems in elevating stream bacteria and nutrient loads in Kimball and Coal Creek subbasins. Explore upgrading or decommissioning septic systems and connecting to municipal sewer systems.	<ul style="list-style-type: none"> By September 2015, identify sustainable funding source(s) including no-cost loans for repairs. During 2014–2016, educate homeowners about septic system maintenance. During 2014–2016, investigate extent of failing septic systems. During 2014–2016, repair/replace defective septic systems. During 2014–2016, track homeowner compliance in King County with DOH septic system maintenance requirements. During 2014–2016, perform surface/groundwater monitoring and modeling as needed in Kimball and Coal Creeks following review of existing data. By November 2015, estimate corrective action costs and provide cost-share options (e.g., low-interest loans to pay for retrofits, sewer line extensions, hookup fees). By December 2015, share findings/approaches with Snoqualmie Valley cities and King County. 	LIO (reporter) <i>Snohomish Health District, Snohomish County, King County, Seattle/King County Public Health, Snoqualmie Tribe</i>	<ul style="list-style-type: none"> Wastewater-failing septic systems Land development: new and redevelopment 	C5.3
SNST6 Water quality monitoring for ocean acidification. Collect water quality data for temperature, salinity, dissolved oxygen, pH, CO ₂ (pCO ₂) to identify local trends.	<ul style="list-style-type: none"> During 2014–2016, install, maintain, and present data collected from Sunburst Sensor SAMI2-CO₂ sensor system. During 2014–2016, install and maintain YSI 6600 data logger. 	Tulalip Tribes <i>Stillaguamish Tribe, King County</i>	<ul style="list-style-type: none"> Data gap² 	C7.5

	Near-Term Action	Performance Measures	Owner(s) ¹	Pressure(s)	Regional Sub-Strategy
SNST7	<p>Floodplain management for farm-fish-flood. Snohomish County, together with project partners, will complete the development of reach-scale plans for the Sustainable Lands Strategy project and begin the implementation of those plans.</p> <ul style="list-style-type: none"> • Continue development of Farm-Fish-Flood Coordination efforts led by King County. • Utilize synergies between local and state agencies to coordinate and leverage efforts that deal with farm-fish-flood issues, such as Floodplains by Design. 	<ul style="list-style-type: none"> • By July 2014, complete Sustainable Lands Strategy reach-scale plans for four individual reaches (lower Snohomish River, Snohomish River estuary, Stillaguamish River estuary and mainstem, and Lower Skykomish River). • By December 2014, complete a countywide plan and strategy for implementing reach-scale plans. • By December 2015, complete the design and construction of two high priority projects listed in the plans. • By December 2015, secure funding to help support a cost-share program for farm pads or elevated farm structures. 	<p>Snohomish County</p> <p><i>Snohomish CD, King County, King CD, The Nature Conservancy</i></p>	<ul style="list-style-type: none"> • Floodplain function, levees, agriculture, runoff 	A5.2
SNST8	<p>Pollution identification and correction project. Snohomish County, together with project partners, will conduct a pollution identification and correction project to identify specific sources of fecal coliform bacteria contamination in the Lower Stillaguamish sub-basin and expand to the Snohomish Basin.</p>	<ul style="list-style-type: none"> • By December 2015, complete investigation and identification of specific sources of fecal coliform bacteria contamination in the Lower Stillaguamish sub-basin. • By December 2015, begin process of correcting some of the high priority sites that are sources of fecal coliform bacteria contamination. • By January 2016, expand project to the Snohomish Basin. 	<p>Snohomish County</p> <p><i>Snohomish Health District, Snohomish CD</i></p>	<ul style="list-style-type: none"> • Wastewater-failing septic systems • Pollution from runoff 	C5.3
SNST9	<p>Fisheries/watershed ecology education for officials and decision-makers. Sound Salmon Solutions and partners will develop a branded education curriculum and program on ecology issues necessary for salmon recovery, targeted at elected officials. This is not a lobbying campaign but a science-based, politically neutral curriculum, allowing officials to make informed decisions about land use and development, with Puget</p>	<ul style="list-style-type: none"> • By June 2014, determine what information stakeholders, such as the Stillaguamish Watershed Council members, feel is important for elected officials. • By June 2014, determine what information elected officials require to make decisions that will improve the health of Puget Sound and allow salmon recovery. • By September 2014, develop curriculum, making use of prior efforts where applicable. 	<p>Sound Salmon Solutions</p>	<ul style="list-style-type: none"> • Development, runoff and wastewater 	D6.5

	Near-Term Action	Performance Measures	Owner(s) ¹	Pressure(s)	Regional Sub-Strategy
	<p>Sound and salmon recovery in mind. The training will also initiate a relationship between decision-makers and organizations with the expertise to provide information and decision support. By completing the training, officials earn a Salmon Savvy Certification, a brand they can use to demonstrate their efforts to constituents. The program would result in ongoing classes in Snohomish County and could serve as a model for other areas.</p>	<ul style="list-style-type: none"> • By December 2014, review and refine curriculum with the members of the Stillaguamish Watershed Council Stewardship Committee. • By June 2015, publicize and promote the Salmon Savvy–branded curriculum with elected officials. • In 2015, hold classes with 10 to 15 officials to test curriculum and get feedback. • By December 2015, finalize curriculum. • In 2016 and beyond, land use decisions are made by a measurable number of officials (target of 15) commanding a basic level of understanding and a decision support network. 			
SNST10	<p>Inspections and maintenance. Provide regular inspections of public and private stormwater facilities in the Snohomish and Stillaguamish basins and identify prescriptive maintenance needs and retrofit opportunities.</p>	<ul style="list-style-type: none"> • By December 2014, secure funding for local cities that are challenged to provide regular inspections of existing stormwater facilities. • By December 2015, conduct stormwater facility inspections to identify prescriptive maintenance needs and retrofit opportunities. 	<p>Snohomish-Stillaguamish LIO (reporter)</p> <p><i>King County and cities, Snohomish County and cities, Snohomish CD</i></p>	<ul style="list-style-type: none"> • Pollution from runoff from built environment 	C2.3
SNST11	<p>Coordinated education and outreach leading to behavior change. Snohomish County, together with local and regional partners, will develop a prioritized list of BMPs to promote through education and outreach programs. Implement strategies that target specific audiences and use targeted messages to achieve awareness and meet behavior change goals. The following programs will be considered.</p>	<ul style="list-style-type: none"> • During 2015–2016, secure funding to offer WSU Extension classes and services in WRIA 7. • During 2014–2016, Sound Salmon Solutions and Snohomish CD will host and attend events, and provide technical consultation and site visits for streamside landowners to help improve salmon habitat. • During 2014–2016, Snohomish CD will host 25 educational workshops for agricultural landowners. 	<p>LIO</p> <p><i>Snohomish County, King County, Sound Salmon Solutions, Snohomish CD, King CD, WSU Extensions in King and Snohomish Counties, STORM, ECO Net,</i></p>	<ul style="list-style-type: none"> • Public not using best management practices 	D5.2

	Near-Term Action	Performance Measures	Owner(s) ¹	Pressure(s)	Regional Sub-Strategy
	<ul style="list-style-type: none"> • Forest stewardship and sustainable agriculture. • Riparian solutions program. • Community and youth education/outreach program. • Stormwater management training. • Nearshore and bluff behavior change outreach (WSU Extension) Connection of upland farmers with shellfish farmers to discuss clean water for safe shellfish harvest and consumption. • Development and implementation of multiparty integrated water quality themed education and behavior change programs to address shellfish protection. 	<ul style="list-style-type: none"> • In 2015, conduct nearshore and bluff landowner workshops and distribute an updated Guide for Shoreline Living. • In 2015, Snohomish Marine Resources Committee will host a meeting/field trip for upland farmers and shellfish farmers. • During 2014–2015, conduct outreach on aquaculture at gatherings of farmers at events such as the Snohomish County Focus on Farming, Country Living Expo, and Washington State Tilth Producers Convention. • During 2014–2016, Sound Salmon Solutions, WSU Extension, Snohomish County, and others will design and focus education and outreach efforts to target suspected sources that contribute and threaten commercial shellfish farm water certification as well as commercial fishery operations. • In 2015, identify the needs of participating homeowners through the pollution identification and correction program as a follow-up to corrective actions. 	<i>Tulalip Tribes, Everett Community College, and Marine Resources Committee</i>		
SNST12	<p>Riparian corridor knotweed control. Program leads will be divided among basins: Stillaguamish—Stillaguamish Tribe and Snohomish County; Skykomish/Snohomish—Tulalip Tribes and Snohomish County; Snoqualmie—Snoqualmie Tribe and King County. Leads will work to vet methods and strategies, and develop control and elimination plans, and monitoring programs.</p>	<ul style="list-style-type: none"> • By December 2014, develop methods and strategies that work best in their areas of concern including evaluation of effectiveness of biological control. • By March 2015, finalize control and elimination plans. • By June 2015, hire additional staff, if necessary, to implement the control and elimination plans. • From June 2015–June 2018, implement control and elimination plans, using principles of adaptive management. 	Snoqualmie Tribe <i>King County, Snohomish County, Tulalip Tribes</i>	<ul style="list-style-type: none"> • Invasive species 	B5.3

	Near-Term Action	Performance Measures	Owner(s) ¹	Pressure(s)	Regional Sub-Strategy
		<ul style="list-style-type: none"> From June 2015–June 2019, implement monitoring programs concurrently with control and elimination actions. 			
SNST13	<p>Salmon/multi-species recovery plans. Support priority projects as specified in the salmon recovery plan, salmon recovery 3-year work plans, and basin’s 10- and 50-year salmon recovery goals.</p> <ul style="list-style-type: none"> Identify and implement one to three top priority habitat restoration projects in each basin. Establish the baseline condition of key habitats such as forest cover, wetlands, riparian areas, floodplains, nearshore, and assess trends and rate of change. Use analysis to predict future anticipated gains/losses based on population and build out trajectories as well as evaluating current restoration and protection benchmarks. 	<ul style="list-style-type: none"> By December 2014, identify top habitat restoration projects that are ready to go in the next 2 years. In 2015, obtain funding for projects. During 2014–2016, obtain permitting for projects. During 2014–2016, projects are installed/implemented successfully. During 2014–2016, evaluate progress toward meeting Basin’s 10 and 50-year salmon plan recovery goals. In 2014, use existing land cover change analyses such as WDFW’s High Resolution Change Detection Project for baseline assessment. (King County) In 2015, project rate of conversion and habitat loss. 	<p>Stillaguamish Lead Entity and Snohomish Lead Entity</p> <p><i>Snohomish County, Stillaguamish Watershed Council, Snohomish Basin Salmon Recovery Forum, King County, Snoqualmie Valley cities</i></p>	<ul style="list-style-type: none"> Loss of habitat 	A6.1
SNST14	<p>Port Susan Marine Stewardship Area conservation. Establish Port Susan as a Marine Stewardship Area and implement the conservation action plan.</p>	<ul style="list-style-type: none"> In 2014, achieve formal adoption by the Snohomish County Council. By 2016, work to prevent 100% of future shoreline armoring in Port Susan. During 2014–2016, work to implement the high priority action steps in the Port Susan Conservation Action Plan. 	Snohomish County Marine Resources Committee	<ul style="list-style-type: none"> Loss of shoreline ecological functions 	B1.2

Near-Term Action		Performance Measures	Owner(s) ¹	Pressure(s)	Regional Sub-Strategy
SNST15	Low Impact Development. Provide funding for the construction of up to five Low Impact Development projects in the Snohomish and Stillaguamish basins, including the City of Everett's Green Stormwater Infrastructure Implementation Program.	<ul style="list-style-type: none"> By December 2015, construct five low impact development projects. 	Snohomish-Stillaguamish LIO (reporter) <i>King County and cities, Snohomish County and cities, Snohomish CD</i>	<ul style="list-style-type: none"> Pollution from runoff from built environment 	C2.2
SNST16	Groundwater study. Identify the costs and potential funding sources for conducting an impairment analysis for groundwater resources in the Stillaguamish and/or Snohomish River basins.	<ul style="list-style-type: none"> By December 2015, identify the costs and potential funding sources for conducting an impairment analysis including saltwater intrusion and impacts of sea level rise for groundwater resources in the Stillaguamish and/or Snohomish basins. 	Snohomish County	<ul style="list-style-type: none"> Water withdrawal, saltwater intrusion 	A7.3
¹ Where secondary owners were identified, they are shown in italics after the primary owner. ² Local concern. BMP = best management practice; CD = Conservation District; ECO Net = Education, Communication and Outreach Network; LIO = local integrating organization; STORM = Stormwater Outreach for Regional Municipalities; WRIA = Water Resources Inventory Area; WSCC = Washington State Conservation Commission; WSU = Washington State University.					

South Central Puget Sound Action Area

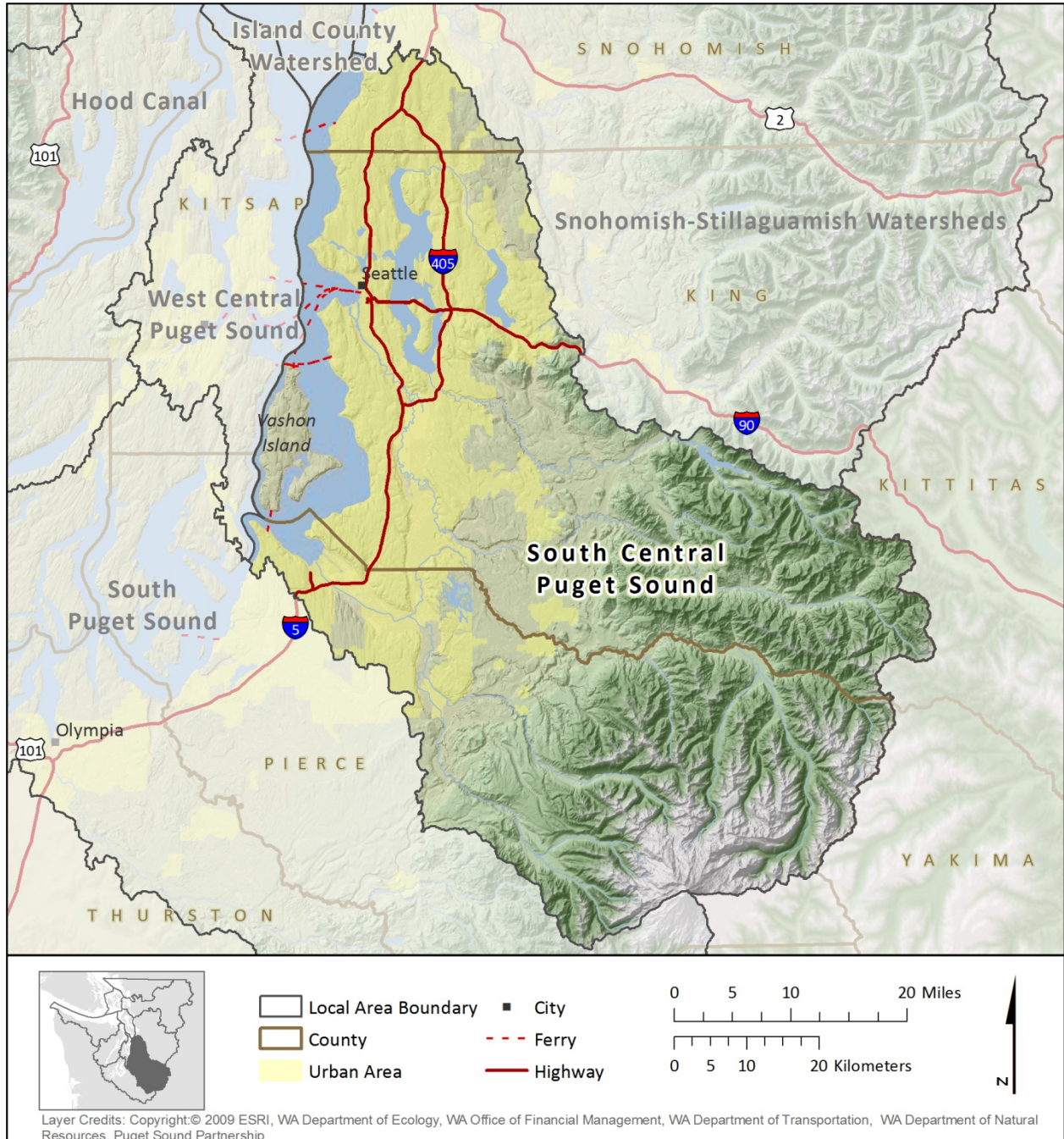
Description of the Action Area

The South Central Puget Sound Action Area⁷ is home to 2.5 million residents living in three of Washington’s largest cities—Seattle, Bellevue, and Tacoma—and in suburban and rural communities across unincorporated King and Pierce Counties. The action area is the most urbanized portion of Puget Sound and includes a variety of industrial, commercial, and residential infrastructure; large areas of pavement; a heavily modified shoreline; and a large network of streets, roads, and highways. Although portions of this area have been intensively developed, approximately 77% of the area is not considered urban, with vast tracts of agricultural lands in rural King and Pierce Counties and forestland in Mount Rainier National Park and the Mount Baker–Snoqualmie National Forest, and the surrounding private and tribal forestlands. Three major river systems originate in the Cascades near Snoqualmie Pass, Cascade Pass, and Mount Rainier, travel through forests and farms, and empty into Lake Washington and Puget Sound. Glacial melt from Mount Rainier feeds the Puyallup/White River system, while the Green/Duwamish and Cedar/Sammamish river systems are supplied by snow melt and rainfall. These river and watershed systems are home to five populations of Chinook salmon, listed as threatened under the Endangered Species Act, with federally approved watershed-scale recovery plans guiding recovery actions. Lowland areas average 40 inches of rainfall per year. In highly urbanized portions of the region, many streams or stream segments have been placed in drainage pipes and storm sewers that carry runoff from storms and flood events, creating significant stormwater management challenges. In some parts of these watersheds the risk of flooding is high, potentially causing the loss of life and severe impacts on infrastructure. Local jurisdictions are actively managing floodplains to provide multiple benefits and functions, including reducing flood risk, and restoring habitat.

The two largest bays in this action area are Seattle’s Elliott Bay and Tacoma’s Commencement Bay. Vashon-Maury is the largest island south of the Admiralty Inlet. The major currents within the saltwater basin of central Puget Sound generally flow northward along the west side of Vashon Island, and southward through the East Passage. The marine waters of Puget Sound form warm layers at the surface during the summer months due to river input and solar heating. These layers are mixed during winter months by seasonal winds and cool weather. An underwater sill by the Tacoma Narrows also alters the pattern of marine water circulation.

⁷ Water Resource Inventory Areas (WRIAs) 8, 9 and 10

SOUTH CENTRAL PUGET SOUND ACTION AREA



South Central Puget Sound is the economic driver of the region, and largely of the State of Washington. The region generates over \$200 billion in annual economic activity, comprising approximately 62% of the gross state product. Major commercial and industrial enterprises are concentrated here, including technology, aerospace, finance, insurance, health care, business and professional services, commercial fishing, recreation, and tourism. These industries are served by international port facilities in Seattle and Tacoma, along with SeaTac International Airport, Boeing Field, and passenger and freight railroad services. The region has 14,900 acres of designated manufacturing industrial centers in six locations:

Ballard Interbay, Duwamish, North Tukwila, Auburn/Kent, Overlake, and the Port of Tacoma. Water supply for most of the population of the area is provided by the Cities of Seattle and Tacoma through their operations on the Cedar and Green Rivers, respectively.

Following the adoption of the Growth Management Act in the 1990s, land use strategies have been somewhat effective in containing sprawl, since 2000, 97% of the population growth in King County has been concentrated inside the designated urban growth boundary. Pierce County's share of growth since 2000 in the urban growth boundary has been at 85%. The projected population change from 2000 to 2030 for King County is 25.58% and for Pierce County is 40.15%. Just over half (53%) of Pierce County's population lives in incorporated areas, while the balance of the population lives in unincorporated areas. Significant tracts of commercial forest and agriculture remain in the eastern and southeastern portions of the area. There are many challenges in trying to retain habitat features and natural amenities while trying to accommodate several hundred thousand new residents to this area in the next 20 to 25 years.

In general, the residents of the action area are remarkably informed and engaged citizens. There is a high level of volunteerism and civic engagement with many agencies and local nongovernmental organizations benefiting from the resources and knowledge base of the public for assistance with on-the-ground projects and public process for furthering recovery.

The varied ports and waterways of this action area have made it an international shipping center for regional and national industries, natural resource extraction (logging, fisheries, mining), and agricultural products. The combined ports of Seattle and Tacoma are the second largest on the west coast. Urban estuaries support many small marine, ship building/repair, and industrial enterprises. Public transportation to Kitsap County and Vashon Island is provided by the Washington State Ferries system, and other vessel traffic consists of passenger ferries, fishing boats, research vessels, small recreational craft, and cruise ships. Recreation spots include Lakes Washington, Sammamish, and Tapps; Puget Sound beaches such as Alki Beach in West Seattle, Seahurst in Burien, and Pt. Defiance in Tacoma; and along the Mountain to Sound Greenway along Interstate 90, the middle Green River, and the White River above Enumclaw. The headwaters of the major rivers in this area are protected through their status as parklands managed by the National Park Service, wilderness areas managed by the U.S. Forest Service, and the headwater source areas of the water supplies of Seattle and Tacoma.

Unique Ecosystem Characteristics and Assets

The federal listing of Puget Sound Chinook represents the first time a salmon species had been listed in such an urban environment. Despite the extensive urbanization of the action area, Chinook salmon and other salmon species spawn in the major rivers and lakes. Unique salmon populations include the spring run of White River Chinook, Issaquah Creek and Cedar River summer and fall Chinook, Lake Sammamish Kokanee, and Lake Washington Sockeye. The Green River is one of the top 10 steelhead rivers in Washington and supports substantial natural and hatchery populations of salmon. Bull, rainbow, and coastal cutthroat trout, and coho, chum, and pink salmon are also present in some of the river systems. Strong community efforts and watershed partnerships, some through formal inter-local agreements, are focused on strategic, science-based salmon recovery efforts throughout the area, and habitat restoration programs depend on a combination of local, regional, state, and federal funding. While other

fish, wildlife, and bird communities are abundant in undeveloped portions of the action area, those species that coexist well with humans are generally present in the urban sectors.

The action area has a long track record of collaboration at the watershed level to recover salmon, and a shared commitment to protect and recover Puget Sound. Many parties are making investments across Puget Sound, with much of the on-the-ground work being undertaken at the local level. Local governments, community organizations, businesses, and citizens are working to align limited resources with the Strategic Initiatives and 2020 recovery targets. The cost of actions in the Action Agenda far exceeds the available funding. Assessing the full cost of implementing top priorities, and identifying and developing appropriate funding mechanisms, is paramount to achieving restoration of the health of the Puget Sound. As a local integrating organization, the South Central Caucus Group has made this effort a priority.

Local Implementation Structure and Planning Process

The South Central Action Area Caucus Group (South Central Caucus Group) is the local integrating organization (LIO) for the South Central Puget Sound Action Area. It was officially recognized by the Puget Sound Partnership's Leadership Council in June 2010.

The South Central Caucus Group includes representatives from the following entities.

- King and Pierce Counties
- Cities of Seattle, Tacoma, and Bellevue
- Sound Cities Association
- Pierce County Cities and Towns Association
- Muckleshoot Indian Tribe
- Puyallup Tribe of Indians
- Puget Sound Regional Council of Government
- Puget Sound Partnership
- Seattle–King County Public Health
- Tacoma–Pierce County Public Health Department
- Ports of Seattle and Tacoma
- Lake Washington/Cedar/Sammamish Watershed (WRIA 8)
- Green/Duwamish and Central Puget Sound Watershed (WRIA 9)
- Puyallup/White and Chambers/Clover Watershed (WRIA 10/12) Pierce County Salmon Recovery Lead Entity (WRIA 10)
- King Conservation District
- Pierce Conservation District
- Washington State University, King County Extension
- ECO Net

- Forterra
- Citizens for a Healthy Bay
- Tacoma Chamber of Commerce
- Boeing

The South Central Caucus Group has one committee, the working group committee, which was tasked with identifying the highest priority actions and setting clear priorities to recommend to the Caucus Group. The committee consists of participants and local government staff from across the action area including the following entities.

- City of Seattle
- King County
- Pierce County
- King Conservation District
- Pierce Conservation District
- Lake Washington/Cedar/Sammamish Watershed (WRIA 8)
- Green/Duwamish Watershed (WRIA 9)
- Pierce County Salmon Recovery Lead Entity (WRIA 10)
- ECO Net

For the 2014/2015 Action Agenda update, the South Central Caucus Group focused on refining actions and priorities it had identified in 2010 through an extensive prioritization process that involved an assessment of vulnerability (pressures) in the action area. In preparation for the update, the existing actions were mapped to regional sub-strategies and grouped by the Strategic Initiatives. The Working Group held a series of work sessions to refine the criteria that would be used to identify and evaluate actions.

Throughout the near-term action development process, the working group committee remained committed to the South Central Caucus Group's mission to collaborate, to identify multi-beneficial efforts, and to look across the action area for actions. The considerations helped to inform development of the actions and performance measures.

The working group committee identified 13 near-term actions that were presented to the full membership of the South Central Caucus Group for discussion and approval. The South Central Caucus Group affirmed support for the process and the list of near-term actions. The actions were submitted to the Puget Sound Partnership for review and comment and inclusion into the Action Agenda.

While these local actions are high priorities for the South Central Caucus Group to pursue, the Caucus Group also seeks implementation of Soundwide strategies that are essential for the success of local actions. For example, the success of local efforts to protect and restore salmon habitat is highly dependent on state guidance and review of local Shoreline Master Programs and Flood Hazard Management Plans and alignment with the broader Action Agenda. Similarly, development of a comprehensive, integrated funding strategy will require Leadership from the Partnership.

Pressures

The South Central Caucus Group identified the following four pressures to have the highest significance on the local ecosystem.

- Land development
- Shoreline alteration
- Stormwater
- Dams, levees and loss of floodplain function

The South Central Caucus Group also identified the following additional pressures of specific importance to the South Central Puget Sound Action Area.

- Habitat conversion
- Climate change
- Dams, levees, and tidegates
- Legacy toxic contaminants
- Current use and release of excess toxics and nutrients

Local Near-Term Actions

The table below presents the local near-term actions for the South Central Puget Sound Action Area. Each local near-term action is listed with an identification code—which includes the area abbreviation and a number—followed by a description of the action. The performance measures represent important, measureable, dated components of implementing each action. The owner is the entity responsible for implementation of the near-term action and/or for tracking and reporting progress toward completing the action (or as specified in the table below). The final columns provide regional context for the local actions, identifying the pressure(s) that each action is intended to reduce and the primary sub-strategy to which it is most closely linked as well as other sub-strategies that the LIO associates with the action. Local near-term actions are also listed in Section 3, *Strategies and Actions*, in the context of their primary sub-strategies.

Local Near-Term Actions in the South Central Puget Sound Action Area

Near-Term Action		Performance Measures	Owner(s) ¹	Pressure(s)	Regional Sub-Strategy ²
SC1	<p>Support state and local partnerships to advance the Action Agenda. Use South Central Caucus Group (LIO) as a forum to advance local actions by sharing information and supporting local governments in the following.</p> <ul style="list-style-type: none"> • Sharing approaches to developing and implementing policies, regulations, and incentives. • Developing model ordinances. • Identifying and developing incentive programs. • Promoting funding and technical assistance for updating, adopting and implementing policies and regulations. • Promoting education and outreach through ECO Net. 	<ul style="list-style-type: none"> • By May 2015, hold two meetings to review and share incentives and model regulations. After full South Central Caucus Group (LIO) review, bring findings to the ECB. • In 2015, recommend ways to incorporate findings into state and local policies and regulations. 	South Central Caucus Group	<ul style="list-style-type: none"> • Residential and commercial development • Runoff from built environment 	D2.1
SC2	<p>Identify and protect high-value salmon recovery habitat and lands at immediate risk of conversion. Secure funding to acquire high-priority, high-threat land as identified in salmon recovery plans and seek funding to secure property.</p>	<ul style="list-style-type: none"> • By December 2015, secure funding for acquiring land and protecting the following high-priority, high-threat areas in each WRIA. <ul style="list-style-type: none"> WRIA 8: \$7,950,000: <ul style="list-style-type: none"> ○ Middle Cedar River: 70 acres of floodplain. ○ Issaquah Creek: 125 acres of floodplain and riparian area. ○ Bear Creek: 150 acres of riparian areas, wetlands, and forested uplands. WRIA 9: \$18,600,000: <ul style="list-style-type: none"> ○ Lower Green River: 273 acres of floodplain and riparian area. ○ Middle Green River tributary streams: 230+ acres of floodplain and riparian area. ○ Marine Nearshore (Vashon-Maury Island): 10 acres of nearshore habitat and riparian area. ○ Duwamish River: 10 acres of floodplain, wetland and riparian area. 	South Central Caucus Group (reporter)	<ul style="list-style-type: none"> • Residential and commercial development 	A2.1 (A2.2)

	Near-Term Action	Performance Measures	Owner(s) ¹	Pressure(s)	Regional Sub-Strategy ²
		<ul style="list-style-type: none"> ○ Hamm Creek City Light North DUW-11 WRIA 10: \$6,600,000: ○ Puyallup River main stem: 130 acres of upland, floodplain, and riparian area. ○ Carbon River canyon area: 500 acres of forested upland and riparian area. ○ Carbon River main stem: 25+ acres of floodplain and riparian area. ○ South Prairie Creek: 60 acres of riparian area and floodplain. ● Beginning in March 2014, and semi-annually thereafter, WRIAs will report to LIO on the list of high-priority, high-threat land acquisitions as identified in salmon recovery plans. 			
SC3	<p>Implement high-priority projects listed in local salmon recovery plans. Secure funding for high-priority projects listed in the salmon recovery 3-year work plans for WRIAs 8, 9, and 10.</p>	<ul style="list-style-type: none"> ● By December 2015, secure funding for implementation of high-priority restoration actions in each watershed. WRIA 8: \$16,690,000 for habitat restoration and \$50,000,000 for infrastructure improvements, including fish passage facilities at Hiram H. Chittenden (a.k.a. Ballard) Locks. ○ Lower Cedar River: 77 acres of riparian and floodplain restoration. ○ South Lake Washington: 750 linear feet of lakeshore restoration and 1,500 linear feet of tributary stream restoration. ○ Hiram H. Chittenden Locks: Corp’s list of prioritized infrastructure improvements, including critical fish passage facilities as secured funding from headquarters. ○ Issaquah Creek: 1,800 linear feet of stream channel restoration and 155 acres riparian area restoration. 	South Central Caucus Group (reporter)	<ul style="list-style-type: none"> ● Residential and commercial development ● Freshwater levees and floodgates 	A6.1 (A2.2)

	Near-Term Action	Performance Measures	Owner(s) ¹	Pressure(s)	Regional Sub-Strategy ²
		<ul style="list-style-type: none"> ○ Bear Creek: 370 linear feet of stream channel restoration and 2.3 acres riparian restoration. ○ Sammamish River: 5,500 feet of stream channel restoration and 85 acres of floodplain and riparian restoration. ○ Marine Nearshore: 1,750 linear feet of coastal tributary stream channel restoration and 28 acres of salt marsh restoration. <p>WRIA 9: \$16,035,000.</p> <ul style="list-style-type: none"> ○ Lower Green River: 31+ acres floodplain restoration. ○ Duwamish River: 5-10 acres of shallow water habitat and 2 acres of riparian restoration. ○ Marine Nearshore: remove 4,400 linear feet of shoreline armoring, revegetate 3.2 acres of shoreline with native plants, and restore 550 feet of linear stream channel. ○ Middle Green River: 14+ acres floodplain and riparian area. ○ Downstream fish passage at Howard Hanson Dam; work with NOAA and USA Corp of Engineers to obtain approvals and funding ○ Nearshore outreach (grant) – for consultants, homeowners and other influencers <p>WRIA 10: \$80,000,000.</p> <ul style="list-style-type: none"> ○ Upper White River forest road decommissioning and flood plain restoration: about 100 miles of forest road. ○ South Prairie Creek floodplain reconnection and habitat restoration: 300 acres. ○ Replace dam and build new fish collection facilities at Buckley Fish Trap. 			

	Near-Term Action	Performance Measures	Owner(s) ¹	Pressure(s)	Regional Sub-Strategy ²
		<ul style="list-style-type: none"> ○ Alward Road Levee Setback: Acquisition Phase: 142 acres. ○ Puyallup Estuary Acquisition at Union Pacific: 30 acres. ● By June 2014, WRIAs will report to LIO on status of implementation of high-priority habitat protection and restoration in salmon recovery plans. 			
SC4	<p>Improve shorelines in the South Central Puget Sound Action Area by limiting new residential shoreline armoring and overwater coverage, and promoting “green” shoreline replacements.</p> <ul style="list-style-type: none"> ● Encourage programs and help implement projects that implement and promote incentives and best practices identified in local Shoreline Master Program studies updates. Support actions to retrofit/restore public and private shoreline properties. ● Assist local governments by providing information on best practices and models. (e.g., hold informational sessions at standing planner forums including Puget Sound Regional Council, King County, and Seattle). ● Work to promote existing and new incentive programs. ● Use South Central Caucus Group (LIO) as a forum for sharing best practices for shoreline restoration and model shoreline regulations. ● Compile incentive information and provide to local governments. ● Coordinate outreach and incentive programs with existing industry best practices such as Leadership in Energy and Environmental Development, Green Shores for Homes project, and Built Green Certification program. 	<ul style="list-style-type: none"> ● Report quarterly to South Central Caucus Group (LIO) on education and other actions funded by Puget Sound Acquisition and Restoration, Estuary Salmon Restoration Project, and other sources. ● By third quarter 2015, implementers will report to South Central Caucus Group on progress made on working with private property owners and reaching priority audiences to promote green shorelines practices. ● By second quarter 2015, King Conservation District assists 20 landowners in implementing shoreline protection, restoration, and enhancement practices. ● In 2015, explore options for using existing funding mechanisms to assist landowners who are willing to implement aquatic area enhancement protection and enhancement practices. 	South Central Caucus Group	<ul style="list-style-type: none"> ● Marine shoreline infrastructure and freshwater Shoreline infrastructure ● Residential and commercial development 	B1.2 (B1.3)

	Near-Term Action	Performance Measures	Owner(s) ¹	Pressure(s)	Regional Sub-Strategy ²
	<ul style="list-style-type: none"> • Seek funding to engage streamside/riparian, lakeshore, and nearshore area property owners and to increase assistance to shoreline landowners who are willing to implement aquatic area protection and enhancement practices. • Support WRIA 8 Green Shorelines Steering Committee’s outreach and education to key marine and freshwater shoreline audiences (e.g., property owners, real estate agents, construction and landscaping communities, and local government planning departments) to share green shorelines materials and messages and to encourage improved shoreline restoration stewardship. • Support ECO Net endorsed education and outreach efforts for this action. • Retrofit/restore public and private lands 				
SC5	<p>Improve floodplains management by creating partnerships of interested parties (especially local governments and business community).</p> <ul style="list-style-type: none"> • Work with federal and state agencies to address and resolve conflicts between regulations that are a barrier to completing multi-benefit projects. • Over the next 2 years, support King County’s effort to lead the advisory committees of the Green River System-Wide Improvement Framework (SWIF) in developing integrated priorities for levee improvements that meet flood protection, safety, economic development, and habitat, vegetation management, agriculture, and recreation objectives and that bridge conflicts in federal regulations. 	<ul style="list-style-type: none"> • By February 2015, the Green River System-Wide Improvement Framework will make substantial progress in developing priorities for levee improvements in support of multiple benefit rivers and floodplains. • By December 2015, brief the PSP Leadership Council and ECB and the state legislature on the status of multiple benefit floodplain management initiatives, including status of Level of Protection from Flooding goals established for the Green River System – a new human dimension ecosystem recovery goal. • By June 2015, compile the percentage of local jurisdictions with significant floodplain area that comply with the FEMA Biological Opinion. 	<p>South Central Caucus Group (reporter)</p> <p><i>PSP, Ecology, WDFW, Muckleshoot Indian Tribe, Corps, NOAA, and FEMA</i></p>	<ul style="list-style-type: none"> • Marine levees and tidegates • Freshwater levees and tidegates • Residential and commercial development • Freshwater levees and floodgates 	A5.2 (A5.3, A5.4)

	Near-Term Action	Performance Measures	Owner(s) ¹	Pressure(s)	Regional Sub-Strategy ²
	<ul style="list-style-type: none"> • Over the next 2 years, support the Russell Foundation’s work with WRIA 10 to complete a Watershed Open Space Strategy (WOSS). The process will focus on development of a regional strategy by aligning with current ecological management efforts in the watershed to promote inter-organizational collaboration and action. • Share information among local governments on successful approaches to meeting requirements of the FEMA Biological Opinion. • Participate in forums to address conflicts between agriculture, flood hazard reduction projects, and habitat restoration projects in the floodplain. • Advocate for state to improve alignment and coordination between minimum requirements for local Flood Hazard Reduction Plans, Comprehensive Plans under the Growth Management Act (GMA), and minimum requirements for regulation of Frequently Flooded Areas. • Implement major floodplain protection and restoration projects in King and Pierce Counties funded under state 2013 Capital Improvement Plan appropriation for Coordinated Investment in Puget Sound Floodplains Strategy, including Carlin Project and Lower Cedar River Integrated Floodplain Restoration Project in King County and the Green and White rivers in Pierce County. • Continue to identify, implement, and publicize floodplain restoration projects, including the Needham Road Setback Levee Project and Calistoga Reach Setback Levee and Side Channel Construction Project that provide multiple benefits, including public safety, salmon habitat enhancement, open space, and recreation. 	<ul style="list-style-type: none"> • By September 2014, King County will develop concept, strategy, and candidate projects for 2014 legislative session and report to LIO. • By December 2015, King and Pierce County will report on progress in implementing major floodplain protection and restoration projects in King and Pierce Counties. • By August 2014 WRIA 9 will report out to LIO on progress of the Howard Hanson Dam Biological Opinion. 			

	Near-Term Action	Performance Measures	Owner(s) ¹	Pressure(s)	Regional Sub-Strategy ²
	<ul style="list-style-type: none"> • Demonstrate quantifiable benefits of major floodplain restoration projects to salmon recovery, flood resilience, water quality, and agriculture and help make the case for ongoing investments of state funding in multi-objective flood hazard reduction projects. Work with King County, Corps, and other partners to identify alternatives to the existing policies on levee vegetation. 				
SC6	<p>Identify, guide, and fund stormwater retrofits.</p> <ul style="list-style-type: none"> • Complete WRIA 9 retrofit study and promote it as a model. • Advocate locally and sound-wide through the LIO for increased funding for priority stormwater retrofit projects. • Develop a list of high-priority stormwater retrofit projects to support local investments and state funding request in 2014 and 2015, using upcoming guidance from Ecology and findings from the WRIA 9 study on stormwater retrofit priorities. • Participate in the Commerce’s technical assistance and study of examples of urban-specific implementation or stormwater retrofit projects. • Support ECO Net endorsed education and outreach efforts for this near-term action. 	<ul style="list-style-type: none"> • By September 2014, comment on Ecology’s retrofit prioritization and allocation criteria. • By January 2015, identify and analyze funding mechanisms that incorporate existing and new funding. • By June 2015, complete WRIA 9 retrofit study. • By December 2015, identify next steps to support carrying out stormwater retrofit planning and projects throughout the South Central Puget Sound Action Area. • By June 2014, report on monitoring and modeling tools for future stormwater retrofit evaluations. • By December 2015, implement 15 stormwater retrofit projects. • By December 2015, complete Swan Creek Watershed Characterization and Action Plan, and implement at least one retrofit project. • By third quarter 2014 and 2015, provide information to the Washington State Legislature on the high priority stormwater retrofit projects for 2014/2015 legislative session. 	South Central Caucus Group	<ul style="list-style-type: none"> • Runoff from built environment • Residential and commercial development 	C2.3 (C2.1)

	Near-Term Action	Performance Measures	Owner(s) ¹	Pressure(s)	Regional Sub-Strategy ²
SC7	<p>Promote operation and maintenance and improvements to existing stormwater systems. Promote, support and guide technical assistance for local government adoption of improved operation and maintenance techniques for existing stormwater infrastructure, such as:</p> <ul style="list-style-type: none"> • System flushing • Vactoring • High-efficiency street cleaning 	<ul style="list-style-type: none"> • By December 2015, create a list of the number of local jurisdictions implementing, and types of local operation and maintenance techniques. 	South Central Caucus Group	<ul style="list-style-type: none"> • Runoff from built environment • Residential and commercial development 	C2.3
SC8	<p>Increase education of and stewardship by homeowners and businesses to reduce stormwater pollution.</p> <ul style="list-style-type: none"> • Increase education of and stewardship by homeowners, businesses, and institutions to reduce pollutant loadings to stormwater (e.g., fertilizers, pesticides, oils, cleaners). • Support ECO Net endorsed education and outreach efforts for this action. 	<ul style="list-style-type: none"> • By December 2015, identify number of persons and businesses reached. 	ECO Net <i>Ecology</i>	<ul style="list-style-type: none"> • Runoff from built environment 	C2.5
SC9	<p>Share information on low impact development/green stormwater infrastructure and facilitate the transition from conventional stormwater management.</p> <ul style="list-style-type: none"> • Use LIO as a forum for sharing approaches to implementing Low Impact Development policies. • Encourage local government participation in Washington State University Low Impact Development technical workshops. • Support ECO Net endorsed education and outreach efforts for this near-term action. • Support development of regulations that implement Action Agenda priorities. 	<ul style="list-style-type: none"> • By December 2015, hold two forums that highlight successful integration of low impact development/green stormwater infrastructure into local regulations. 	South Central Caucus Group	<ul style="list-style-type: none"> • Runoff from built environment 	C2.2

	Near-Term Action	Performance Measures	Owner(s) ¹	Pressure(s)	Regional Sub-Strategy ²
SC10	<p>Support restoration of the voter approved local Model Toxics Control Account.</p> <ul style="list-style-type: none"> • Advocate for fund protection. Support the use of the Model Toxics Control Account for grants and programs that expedite multiparty cleanup efforts. • Support and promote programs that leverage other grants to expedite cleanups. • Educate and promote the protection of the Local Toxics Control Account and identify. Opportunities for acquisition and redevelopment of vacant, orphaned, or abandoned property. 	<ul style="list-style-type: none"> • By December 2015, increase awareness of state and local government about the value of protecting the Local Toxics Control Account in 2016. • By December 2015, hold a forum on opportunities for acquisition and redevelopment of vacant, orphaned, or abandoned property. 	<p>South Central Caucus Group</p> <p><i>Ecology</i></p>	<ul style="list-style-type: none"> • Toxics and legacy contaminants 	E1.3
SC11	<p>Keep toxics and excess nutrients out of the waste stream.</p> <ul style="list-style-type: none"> • Identify and implement strategies to keep toxics and excess nutrients out of the waste stream through product stewardship and source control. • Support state and local programs for safe reduction, recycling, or disposal of hazardous wastes from households, small businesses, and agriculture. • Support programs and projects that implement, teach, or otherwise encourage BMPs that remove toxic pollutants from the environment (source control; alternative products; hazardous waste technical assistance). • Inventory toxics reduction efforts and programs and additional chemicals of concern that need to be reduced. • Through the NW Product Stewardship Council, coordinate efforts for product-focused strategies to reduce the use of toxic chemicals. • Coordinate with and support new product stewardship initiatives. 	<ul style="list-style-type: none"> • By September 2014, ECO Net will report on education and outreach efforts for this near-term action. • By September 2014, Ecology and/or NW Product Stewardship Council will report to South Central Caucus Group (LIO) on status of their efforts. • By December 2015, obtain new funding for key toxic reduction activities. • By March 2015, develop inventory of toxics reduction efforts and programs and additional chemicals of concern that need to be reduced. • By December 2015, increase funding for the Washington Toxics Reduction Strategy Workgroup Recommendations of January 16, 2013. 	<p>South Central Caucus Group</p> <p><i>Ecology, local governments in this Action Area</i></p>	<ul style="list-style-type: none"> • Toxics and legacy contaminants 	C1.2 (C1.1)

	Near-Term Action	Performance Measures	Owner(s) ¹	Pressure(s)	Regional Sub-Strategy ²
	<ul style="list-style-type: none"> Support and promote the implementation of the Washington Toxics Reduction Strategy Workgroup Recommendations of January 16, 2013. Support efforts to increase funding. <p>Implement and strengthen authorities and programs to prevent toxic chemicals from entering the Puget Sound environment.</p>				
SC12	<p>Secure additional funding necessary to implement priority fish and wildlife habitat and high-value aquatic habitat area enhancement projects.</p> <p>Provide input to the PSP’s work to develop a gap analysis and funding strategy for implementation of the Action Agenda, including the following.</p> <ul style="list-style-type: none"> Articulate need for better funding coordination of habitat, water quality, and flood investments at a watershed level. Describe specific financial needs and challenges of urbanized watersheds in protecting and restoring habitat and in prioritizing and carrying out stormwater retrofits. Involve research and analysis conducted by WRIAs 8 and 9 on watershed funding options and models. Provide examples of successful watershed-based decision-making models and successful multi-benefit projects that help “tell the story.” Provide the WRIA 9 issue paper on watershed investment concepts for consideration. Provide input on state legislative proposals for potential new watershed-based governance structures and funding authorities. Develop specific project proposals in support of federal and state appropriation requests to support salmon habitat restoration, habitat acquisition, major 	<ul style="list-style-type: none"> By December 2014, identify large-scale habitat restoration projects for the next round of Puget Sound Acquisition and Restoration. By third quarter 2014 and 2015, promote the current round of “coordinated investment” floodplain restoration projects and development of the next set of candidate projects for 2014/2015 legislative session. 	South Central Caucus Group	<ul style="list-style-type: none"> Runoff from built environment Residential and commercial development 	E1.4 (E1.3)

	Near-Term Action	Performance Measures	Owner(s) ¹	Pressure(s)	Regional Sub-Strategy ²
	<p>floodplain restoration, and stormwater retrofits.</p> <ul style="list-style-type: none"> Support WRIAs 8, 9, and 10 in maintaining and refining the 3-year list of habitat protection and restoration implementation priorities. Support the King Conservation District in securing additional funding to address regional and local aquatic area enhancement and water quality protection priorities, with special emphasis on private property, subject to the outcome of joint task force recommendations. Support the work of WRIA 9 in preparing issue papers on key watershed-based investment concepts, including governance, geography, multiple benefit projects, and funding, and in preparing legislation for the session. 				
SC13	<p>Complete Regional Alliances Project and share results to increase infill development in urban centers while meeting stormwater requirements and Growth Management Act mandates. Through the Regional Alliance Project,</p> <ul style="list-style-type: none"> Develop recommendations for incentives and cost-effective tools to meet stormwater management and Growth Management Act requirements for development in urban areas in order to encourage infill development in urban centers instead of greenfield locations and to improve water quality. Develop recommendations related to comprehensive plan policy and development regulations to inform 2015 updates. Other actions may be identified. <p>Key partner in these efforts: Commerce</p>	<ul style="list-style-type: none"> By February 2015, develop a formal report on agreed next steps to Puget Sound Regional Council Growth Management Policy Board. By March 2015, present a final report to the PSP ECB. 	<p>South Central Caucus Group (reporter)</p> <p><i>Commerce, Puget Sound Regional Council, Growth Management and local governments participating in this work</i></p>	<ul style="list-style-type: none"> Residential and commercial development Runoff from built environment Agriculture 	<p>A4.2 (A2.3, A4.1)</p>
SC14	<p>Retain forest canopy cover and soils to attenuate stormwater runoff.</p>	<ul style="list-style-type: none"> By December 2015, WSU will hold workshops on coached forest management planning. 	<p>South Central Caucus Group</p>	<ul style="list-style-type: none"> Residential and 	<p>A2.1, (C4.1,</p>

	Near-Term Action	Performance Measures	Owner(s) ¹	Pressure(s)	Regional Sub-Strategy ²
	<ul style="list-style-type: none"> Promote programs that support retention and increase in forest canopy cover on private and public lands, especially those in priority and sensitive areas. Identify and implement watershed revegetation in the Swan Creek Watershed through the Pierce County Raise the Grade initiative. 	<ul style="list-style-type: none"> By January 2015, King Conservation District will implement at least two Forest Health Management Plans with technical and cost-share assistance. By December 2015, King Conservation District will seek to secure funding for urban canopy assessment and management plan development for at least one local jurisdiction. By December 2015, WRIA 8 will: <ul style="list-style-type: none"> Implement Trees for Streams Program to protect and restore riparian area canopy cover and streamside vegetation in high-priority sub-basins (Cedar River, Bear Creek, and Issaquah Creek). Conduct three workshops for property owners to promote riparian area stewardship. Provide technical assistance to at least 30 property owners to develop planting plans and support plantings. By December 2015, Pierce County Conservation District will implement at least two community planting events in the Swan Creek Watershed. By third quarter 2014 and 2015, owners will conduct two workshops for property owners with livestock to protect and enhance riparian functions. 	(reporter)	commercial development <ul style="list-style-type: none"> Runoff from built environment Timber harvesting 	C1.1, C2.1, C2.2, E 1.6)
<p>¹ Where secondary owners were identified, they are shown in italics after the primary owner.</p> <p>² Where secondary regional sub-strategies were identified, they are shown in parentheses after the primary sub-strategy.</p> <p>Corps = U.S. Army Corps of Engineers; ECB = Ecosystem Coordination Board; ECO Net = Education, Communication and Outreach Network; Ecology = Washington State Department of Ecology; FEMA = Federal Emergency Management Agency; LIO = local integrating organization; NOAA = National Oceanic and Atmospheric Administration; PSP = Puget Sound Partnership; WDFW = Washington Department of Fish and Wildlife; WRIA = Water Resources Inventory Area.</p>					

South Puget Sound Action Area

Description of the Action Area

The South Puget Sound Action Area⁸ is one of the fastest growing areas in Washington State, exceeding the state's growth rate consistently since the 1960s. According to 2010 U.S. Census data, the action area population was just over 700,000 people. Population growth projections from the Washington State Office of Financial Management predict an average of 36% growth, which is across all four counties by 2040. The growth rate is high because of the stable economy, high quality of life, and lower cost of living compared to the Central Puget Sound region. Approximately 75% of the population growth is from people moving to the area—only 25% of the growth is from births.

Much of the population is centered near the towns and cities of Shelton, Olympia (the state capitol), Lacey, Tumwater, Steilacoom, University Place, Lakewood, Tacoma, and DuPont, the community of Allyn, and along shorelines. Land use varies from urban populations to rural and mixed use. Commercial forestry and tribal and non-tribal commercial shellfisheries dominate the natural resources industries.

Unique Ecosystem Characteristics and Assets

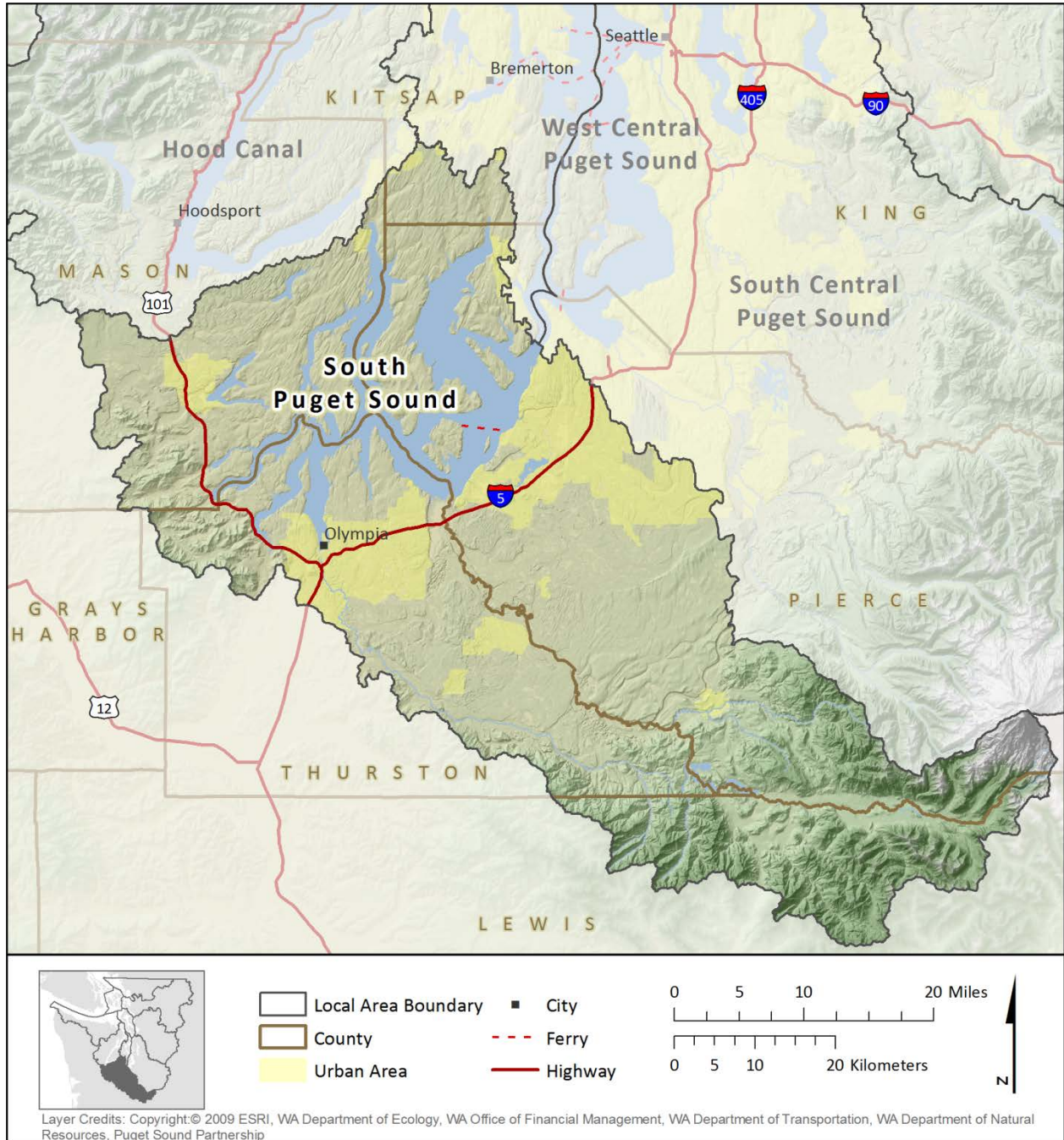
The South Puget Sound Action Area is unique. It has seven finger inlets—each with its own headwater estuary—four large islands and over 450 miles of shoreline. Its terrain is characterized by rolling hills and ridges. Steep bluffs bordering Puget Sound are intersected by small, steep ravines that drain the upland areas. The terrain and soils of the area have been heavily influenced by past glacial activity.

NOTABLE ACCOMPLISHMENTS

- The lead entities for salmon recovery in South Puget Sound and counties, non-governmental organization, and private partners worked together to secure the acquisition of the Devil's Head parcel on the Key Peninsula, resulting in permanent protection of 94 acres of shoreline, forested upland, and other important habitat.
- The Washington State Department of Natural Resources, Squaxin Island Tribe, Port of Olympia, South Puget Sound Salmon Enhancement Group, and private landowners partnered to remove toxic, derelict pilings and structures from the southern end of Budd Inlet in Olympia in 2013. A total of 394 pilings weighing 400 tons and 7,600 square feet of overwater structures were removed—an important first step in restoring ecological function in the tidelands. During the removal process, 12 tons of steel and 32 tons of concrete were recycled.
- The Pierce County Shellfish Partners worked to achieve recent upgrades of more than 210 acres of historic shellfish beds in Vaughn Bay, Purdy Spit, Mayo Cove, and Geldern Cove. Thurston County and partners upgraded 50 acres of historic shellfish beds and converted 131 septic systems to sewer in Henderson Inlet.
- Tidal hydrology has been restored to 902 acres of the Nisqually River delta, through a combination of 4 miles of dike removal and significant restoration efforts by the Nisqually National Wildlife Refuge and Nisqually Indian Tribe. The restored area, currently in a state of natural transition, may result in up to 50% of the salt marsh in South Puget Sound.

⁸ Water Resource Inventory Areas (WRIAs) 11, 12, 13, 14 and 15

SOUTH PUGET SOUND ACTION AREA



Hydrology in the action area is characterized by a number of short streams with headwaters in upland lake or wetland areas that drain into Puget Sound. The downstream reaches of these streams are usually confined within steeply sloping ravines with sidewall seeps. A number of estuarine bays and lagoons are located along the shorelines where these streams intersect with Puget Sound. Larger river systems include Nisqually and the Deschutes. Tidal ranges in the action area are extensive, with maximum ranges of upwards of 20 feet. Yet, much of the action area has slow circulation and sensitivity to nutrients, causing a trend to low dissolved oxygen.

The waters of the action area provide some of the finest shellfish habitat in the world and present an array of recreational, commercial, and tribal harvest opportunities. Washington leads the country in production of farmed clams, oysters, and mussels with an annual economic impact of over \$185 million. Washington shellfish growers directly and indirectly employ over 2,700 people. The state's shellfish aquaculture industry generates 26.72 jobs for every \$1 million in spending, which represents the highest employment multiplier of any natural resource industry in Washington.

It also has the highest rate of economic return to ports of landing within action area. The commercial shellfish industry is thriving, demand is expanding in markets worldwide, and clean water is the essential catalyst for continued success. Recreational use of the shorelines for clam digging, swimming, boating, fishing, and beach combing on state, county, city, and private beaches is popular. Efforts to restore populations of native shellfish—such as Olympia oysters—have increased in recent years, but non-native shellfish still dominate the assemblage of species that make up much of the economic backbone of action area.

Use of marine waters and nearshore areas by juvenile salmon and trout is high in the action area, not only for salmonids coming from freshwater systems in the area, but also during summer when salmon from elsewhere in Puget Sound, and even British Columbia, are known to feed in the rich South Sound.

Local Implementation Structure and Planning Process

The Alliance for a Healthy South Sound (Alliance) is the local integrating organization (LIO) for the South Puget Sound Action Area and has been meeting regularly since 2010. The Puget Sound Partnership's Leadership Council formally recognized the Alliance as the LIO in September 2011. The Alliance has an executive committee, a technical work group, and a council of stakeholders.

The executive committee, which provides policy direction for the Alliance, is composed of elected officials from the following entities.

- Thurston, Mason, Pierce, and Kitsap Counties
- Nisqually, Squaxin Island, and Puyallup Tribes

The council of stakeholders consists of approximately 35 members representing broad community interests and includes a number of sub-committees that provide technical guidance to the executive committee. Members and alternates are appointed to the council by the executive committee.

Working groups, including some existing South Sound groups, are assigned as needed to complete and/or report on specific tasks for work plan implementation. Membership on these working groups will not be limited to Alliance members.

To date, members of the council of stakeholders and working groups have included the following.

- Tribes: Nisqually, Squaxin Island, Puyallup
- Counties: Kitsap, Mason, Pierce, Thurston
- Cities: Olympia, Tumwater
- Ports: Port of Olympia

- Government entities/agencies: Mason Conservation District, Puget Sound Partnership, Thurston Conservation District, Washington State Department of Ecology, Washington Department of Fish and Wildlife, Washington State Department of Natural Resources, Clean Water/Shellfish Districts, JBLM
- Watershed management and salmon recovery organizations: Chambers/Clover Watershed Council, South Puget Sound Salmon Enhancement Group, lead entities for WRIA 10, 11, 12, 13, 14, and 15
- Non-governmental organizations: LOTT Clean Water Alliance, Deschutes Estuary Restoration Team, People for Puget Sound, Capitol Lake Improvement and Protection Association
- Educational institutions: Washington State University Cooperative Extension for Thurston County, Washington Sea Grant
- Industry: Taylor Shellfish Company, Wilcox Farms
- Citizen representation

Prior to the formal creation of the LIO, local entities developed and led a process to identify key science needs, threats to ecosystem health, and both existing and desired actions/programs needed to advance ecosystem recovery in the South Puget Sound Action Area. The result of this work was an extensive report and inlet-by-inlet list of actions, programs, and strategies that contribute to the recovery of Puget Sound. Along with the process detailed below, the Alliance has drawn heavily on this list when articulating opportunities and priorities for ecosystem recovery. An all-inclusive list of strategies and actions was created, matching actions to the 2008 Action Agenda strategies, sub-strategies, and near-term actions.

In addition to the report, other ecosystem recovery actions have been identified through other processes, such as salmon recovery and local water quality project planning. In 2011, an extensive list of over 200 strategies and actions was compiled, and those actions were linked to the 2008 Action Agenda strategies, sub-strategies, and near-term actions. That list was reviewed refined by a technical work group, which produced a spreadsheet with 153 specific recovery actions.

The technical work group created a scoring process to assist in project prioritization. Each project was scored based on the geographic scale at which the action would occur and the degree to which it would reduce targeted ecosystem threats or stressors. Scores from the two parameters were evaluated and each project was given an effectiveness score from 1 to 4, with 1 being the most effective and highest priority. Of the 153 actions, seven actions had an effectiveness of 1, and 33 had an effectiveness of 2.

A policy work group reviewed these 40 actions, several of which were similar in type, but in different inlets or areas in the action area, and consolidated them into 25 interim priorities. These 25 priorities contribute directly to the Strategic Initiatives, in addition to salmon recovery goals articulated in the South Sound chapter of the Puget Sound Chinook Recovery Plan.

The Alliance evaluated the 25 interim priorities based on the following criteria: having full geographic representation (tribes and counties), feasibility of occurring in the next 2 years, measureable, and trackable. The technical work group and council of stakeholders distributed a draft list of 18 near-term actions for South Sound stakeholder and caucus review. These near-term actions were further edited, refined, and matched to sub-strategies and pressures by the technical work group, council of

stakeholders, and executive committee over several months in 2013–2014. In January 2014, the executive committee adopted the 18 near-term actions.

Additionally, the Alliance is developing an ecosystem recovery strategy to objectively assess and articulate which pressures and recovery targets are most applicable to the South Puget Sound Action Area. Through this process, the Alliance will refine its list of pressures and articulate its contribution to achieving the recovery targets.

Pressures

The list below represents previous work by Alliance members and others to capture some of the threats of potential consequence in the action area, but may be significantly refined based on the Alliance’s ongoing assessment described above.

- Habitat conversion from historical conditions including loss of forest cover, reduced large woody debris and carbon inputs to stream systems, loss of storage in wetlands, reduction in habitat resilience, and degradation and loss of topsoil/duff layer.
- Land use practices and regulations in conflict with environmental goals, including lack of enforcement of regulations.
- Disruption of natural hydrologic regimes and loss of natural floodplain and wetland functions, due to land conversion to impervious surfaces; asphalted and realigned stream channels; and native vegetation removal.
- Technical and financial difficulty with retrofitting many South Puget Sound cities for stormwater water quality treatment.
- High sensitivity for pollution due to low flushing rates and long residency times in South Puget Sound marine waters.
- A combination of natural and anthropogenic characteristics affecting dissolved oxygen conditions that may lead to stress and mortality of fish and other aquatic organisms in South Puget Sound marine waters.
- Use of onsite septic systems at contemporary urban densities, which degrades fresh and marine water quality.
- Increase in biotoxins, pathogens, and viruses, which result in loss of private, recreational, commercial, and tribal shellfish harvest.
- Above average growth rates shown over the last several decades expected in South Sound counties, which will present fundamental challenges in controlling nutrient inputs to South Puget Sound.
- Aquatic and terrestrial habitat alterations significantly reducing salmon population abundance, productivity, and resilience.
- Difficulty maintaining and increasing public access to shorelines due to future population growth and development pressure.
- Amplification of many current stressors to ecosystems, infrastructure, and human communities in action area from the impacts of climate change.

Local Near-Term Actions

The table below presents the local near-term actions for the South Puget Sound Action Area. Each local near-term action is listed with an identification code—which includes the action area abbreviation and a number—followed by a description of the action. The performance measures represent important, measureable, dated components of implementing each action. The owner is the entity or entities responsible for implementation of the near-term action, with the primary owner being responsible for tracking and reporting progress toward completing the action. The final columns provide regional context for the local actions, identifying the pressure(s) that each action is intended to reduce and the primary sub-strategy to which it is most closely linked as well as other sub-strategies that the LIO associates with the action. Local near-term actions are also listed in Section 3, *Strategies and Actions*, in the context of their primary sub-strategies.

Local Near-Term Actions in the South Puget Sound Action Area

	Near-Term Action	Performance Measures	Owner(s) ¹	Pressure(s)	Regional Sub-Strategy ²
SS1	<p>Mason County enhanced septic repair grant and loan program. Achieve a self-sustaining septic repair loan program through a partnership with Craft3, expressly targeting shellfish reopening and/or preserved open status in Oakland Bay, North Bay, Hammersley, Totten, and Little Skookum Inlet watersheds.</p>	<ul style="list-style-type: none"> • Funded by 2016 • Number of inquiries • Number of completed loans • 100% of septic system receiving loans repaired • Net acres of shellfish beds re-opened 	<p>Alliance</p> <p><i>Mason County</i></p>	<ul style="list-style-type: none"> • Use of onsite septic systems at contemporary urban densities degrades fresh and marine water quality. • Increase in biotoxins, pathogens, and viruses result in loss of private, recreational, commercial and tribal shellfish harvest. 	C5.3
SS2	<p>Thurston County enhanced septic repair grant and loan program. Achieve a self-sustaining septic repair grant and loan program, expressly targeting shellfish reopening and/or preserved open status in Henderson and Eld Inlet watersheds.</p>	<ul style="list-style-type: none"> • Funded by 2016 • Number of inquiries • Number of completed loans • 100% of septic system receiving loans repaired • Net acres of shellfish beds re-opened 	<p>Alliance</p> <p><i>Thurston County</i></p>	<ul style="list-style-type: none"> • Use of onsite septic systems at contemporary urban densities degrades fresh and marine water quality. • Increase in biotoxins, pathogens, and viruses result in loss of private, recreational, commercial and tribal shellfish harvest. 	C5.3
SS3	<p>Pierce County enhanced septic repair grant and loan program. Achieve a self-sustaining septic repair grant and loan programs, expressly targeting shellfish reopening and/or preserved open status in Nisqually, Case, Pickering, Carr and Island Inlet watersheds.</p>	<ul style="list-style-type: none"> • Funded by 2016 	<p>Alliance</p> <p><i>Pierce County</i></p>	<ul style="list-style-type: none"> • Use of onsite septic systems at contemporary urban densities degrades fresh and marine water quality. • Increase in biotoxins, pathogens, and viruses result in loss of private, recreational, commercial and tribal shellfish harvest. 	C5.3

				Regional Sub-Strategy ²
Near-Term Action	Performance Measures	Owner(s) ¹	Pressure(s)	
SS4 NPDES municipal stormwater permit implementation funding strategy development. Municipal stormwater jurisdictions will develop a funding strategy to achieve a balance of local, state and federal funding for their stormwater programs, as needed.	<ul style="list-style-type: none"> By June 2015, municipal stormwater jurisdictions will convene a meeting of stormwater permittees/stakeholders to determine the framework, process, and key issues to be included in a funding strategy that includes an agreed upon balance of local, state, and federal funding. By June 2016, municipal stormwater jurisdictions will develop a funding strategy draft, vetted by a task force from the first set of meetings, for presentation to, and as a start to negotiations with, federal and state partners. 	Alliance ³	<ul style="list-style-type: none"> Technical and financial difficulty with retrofitting many South Puget Sound cities for stormwater water quality treatment. 	E1.4 (B.1.3, C.2.1)
SS5 Small community stormwater reduction program. Develop and enhance program with education, advocacy, and restoration elements addressing non-NPDES mandated stormwater programs in small communities.	<ul style="list-style-type: none"> Develop or enhance programs with education, advocacy, and restoration elements in each of the following communities: Oakland Bay, Hammersley Inlet, Case Inlet, Pickering Passage, and Nisqually Watershed. Program measures for the development and enhancement of these programs should include the following. <ul style="list-style-type: none"> By June 2015, outline pilot programs and enhancements, as well as identify success measures. Integrate with other ongoing programs where feasible. By December 2015, implement programs. By January 2016, evaluate and report. By June 2016, adapt all programs to use successful measures. 	WSU Extension <i>Mason Conservation District, Nisqually Tribe, Squaxin Island Tribe, Mason County, Thurston County, Thurston Conservation District, Pierce Conservation District, Town of Eatonville,</i>	<ul style="list-style-type: none"> Above average growth rates shown over the last several decades and expected to continue, in South Sound counties, which will present fundamental challenges in controlling nutrient inputs to South Puget Sound. 	C2.5 (C2.1)

	Near-Term Action	Performance Measures	Owner(s) ¹	Pressure(s)	Regional Sub-Strategy ²
			<i>City of Yelm, and other non-NPDES communities</i>		
SS6	South Puget Sound nutrient reduction strategy. Implement nutrient reduction strategies as recommended in the Ecology dissolved oxygen study or as indicated from modeling results based on that report.	<ul style="list-style-type: none"> • Continue to track dissolved oxygen study. • By June 2015, begin discussions with Ecology to identify recommendations for nutrient reduction. • By June 2016, Alliance for a Healthy South Sound (LIO) technical team will work with the Ecology to develop specific recommendations for sub-basin nutrient reduction plans (based on dissolved oxygen report) in South Sound. 	Alliance <i>ECO Net</i>	<ul style="list-style-type: none"> • High sensitivity for pollution due to low flushing rates and long residency times in South Puget Sound marine waters • A combination of natural and anthropogenic characteristics affecting dissolved oxygen conditions that may lead to stress and mortality of fish and other aquatic organisms in South Puget Sound marine waters. 	C2.1
SS7	Prevention of pollution and/or recovery of shellfish beds through education, outreach, and advocacy. Customize outreach efforts aimed at each watershed-inlet for citizen involvement and improved effectiveness to achieve behavioral change through ECO Net.	<ul style="list-style-type: none"> • By June 2015, develop and launch a pilot program in two inlets that a) is specific to that inlet but that has categories that can be adapted to the needs of other inlets; b) addresses pollution prevention and/or shellfish recovery and c) identifies clear measures of success. • By June 2016, adapt that program to the other inlets. 	WSU Extension <i>ECO Net, Thurston Conservation District, Mason Conservation District</i>	<ul style="list-style-type: none"> • High sensitivity for pollution due to low flushing rates and long residency times in South Puget Sound marine waters • A combination of natural and anthropogenic characteristics affecting dissolved oxygen conditions that may lead to stress and mortality of fish and other aquatic organisms in South Puget Sound marine waters. • Above average growth rates shown over the last several decades and expected to continue, in South Sound counties, which will present fundamental challenges in controlling nutrient inputs to South Puget Sound. 	C1.4

	Near-Term Action	Performance Measures	Owner(s) ¹	Pressure(s)	Regional Sub-Strategy ²
SS8	Johns Creek (Bayshore) Estuary restoration. Restore John's Creek (Bayshore) Estuary, a Puget Sound Nearshore Estuarine Restoration Program project.	<ul style="list-style-type: none"> • By June 2016, acquire, protect and fully restore 74 acres of biologically sensitive and culturally significant estuary, nearshore, riparian, and Puget Sound oak prairie habitat. 	Squaxin Island Tribe	<ul style="list-style-type: none"> • Habitat conversion from historic conditions, including loss of forest cover; reduced large woody debris and carbon inputs to stream systems; loss of storage in wetlands; reduction in habitat resilience; and degradation and loss of topsoil/duff layer. • Disruption of natural hydrologic regimes and loss of natural floodplain and wetland functions, due to land conversion to impervious surfaces' asphalted and realigned stream channels' and native vegetation removal. 	B2.2
SS9	Deschutes River estuary restoration. Remove the 5th Avenue dam and restore 346 acres of estuarine and intertidal habitat. The project was recommended by the Capitol Lake Adaptive Management Plan steering committee and is a WRIA 13 Lead Entity and Puget Sound Nearshore Estuarine Restoration Program priority project.	<ul style="list-style-type: none"> • By June 2015, develop funding strategy. • Support Puget Sound Nearshore Estuarine Restoration Program efforts to obtain federal support. • Build community support for estuary restoration by holding quarterly public meetings. • By June 2015, outline state legislative strategy. • By June 2016, complete strategy. 	Squaxin Island Tribe	<ul style="list-style-type: none"> • Habitat conversion from historic conditions, including loss of forest cover; reduced large woody debris and carbon inputs to stream systems; loss of storage in wetlands; reduction in habitat resilience; and degradation and loss of topsoil/duff layer. • Disruption of natural hydrologic regimes and loss of natural floodplain and wetland functions, due to land conversion to impervious surfaces' asphalted and realigned stream channels' and native vegetation removal. 	B2.2 (B2.1)

	Near-Term Action	Performance Measures	Owner(s) ¹	Pressure(s)	Regional Sub-Strategy ²
SS10	<p>Sequalitchew Creek restoration. Restore Sequalitchew Creek, a Puget Sound Nearshore Estuarine Restoration Program project.</p>	<ul style="list-style-type: none"> • By June 2015, develop funding strategy. • Meet quarterly with landowners to further develop the recommended restoration action plans. • Continue discussions to update appropriate City of DuPont critical areas ordinances to allow for restoration actions to occur within the city. • Plan and implement appropriate watershed monitoring activities and involve local citizens. 	South Puget Sound Salmon Enhancement Group	<ul style="list-style-type: none"> • Habitat conversion from historic conditions, including loss of forest cover; reduced large woody debris and carbon inputs to stream systems; loss of storage in wetlands; reduction in habitat resilience; and degradation and loss of topsoil/duff layer. • Disruption of natural hydrologic regimes and loss of natural floodplain and wetland functions, due to land conversion to impervious surfaces' asphalted and realigned stream channels' and native vegetation removal. 	B2.2 (B2.1)
SS11	<p>Chambers Bay estuarine and riparian enhancement project. Enhance estuarine habitat structure, increase salt marsh, and restore marine riparian habitat within and around Chambers Bay, a Puget Sound Nearshore Estuarine Restoration Program project. These actions will improve shallow-water refuge, increase foraging opportunity, and improve rearing capacity of the shoreline for salmon, particularly early life stages of Chinook, chum and pink salmon.</p>	<ul style="list-style-type: none"> • By June 2015, complete the feasibility study and resolve the dam ownership and maintenance responsibility. • By June 2016, meet with stakeholders to coordinate fish passage and management responsibilities. • By June 2016, develop list of funding opportunities to scope and design the next project phase. 	WRIA 10/12 Lead Entity	<ul style="list-style-type: none"> • Habitat conversion from historic conditions, including loss of forest cover; reduced large woody debris and carbon inputs to stream systems; loss of storage in wetlands; reduction in habitat resilience; and degradation and loss of topsoil/duff layer. • Disruption of natural hydrologic regimes and loss of natural floodplain and wetland functions, due to land conversion to impervious surfaces' asphalted and realigned stream channels' and native vegetation removal. 	B2.2 (B2.1)
SS12	<p>Salmon recovery 3-year work plan implementation—WRIA 10/12. Each lead entity will implement at least one top tier project each year from their</p>	<ul style="list-style-type: none"> • By June 2016, target funding to the highest priority salmon recovery projects between 2014 and 2016, as listed in 3-year work plan for WRIA 10/12 Lead 	WRIA 10/12 Lead Entity ⁴	<ul style="list-style-type: none"> • Habitat conversion from historic conditions, including loss of forest cover; reduced large woody debris and carbon inputs to stream 	A6.1 (B2.2)

				Regional Sub-Strategy ²
Near-Term Action	Performance Measures	Owner(s) ¹	Pressure(s)	
South Sound Salmon Recovery 3-Year Work Plan. They will determine year one project and set up performance measures at the start of each fiscal year.	Entity. Projects may include acquisition, protection, and/or restoration actions.		systems; loss of storage in wetlands; reduction in habitat resilience; and degradation and loss of topsoil/duff layer. <ul style="list-style-type: none"> Disruption of natural hydrologic regimes and loss of natural floodplain and wetland functions, due to land conversion to impervious surfaces' asphalted and realigned stream channels' and native vegetation removal. 	
SS13 Salmon recovery 3-year work plan implementation—WRIA 13. Each lead entity will implement at least one top tier project each year from their South Sound Salmon Recovery 3-Year Work Plan. They will determine year one project and set up performance measures at the start of each fiscal year.	<ul style="list-style-type: none"> Between 2014 and 2016, target funding to the highest priority salmon recovery projects, as listed in 3-year work plan for WRIA 13. Projects may include acquisition, protection, and/or restoration actions. 	WRIA 13 Lead Entity ⁴	<ul style="list-style-type: none"> Habitat conversion from historic conditions, including loss of forest cover; reduced large woody debris and carbon inputs to stream systems; loss of storage in wetlands; reduction in habitat resilience; and degradation and loss of topsoil/duff layer. Disruption of natural hydrologic regimes and loss of natural floodplain and wetland functions, due to land conversion to impervious surfaces' asphalted and realigned stream channels' and native vegetation removal. 	A6.1 (B2.2)
SS14 Salmon recovery 3-year work plan implementation—WRIA 14. Each lead entity will implement at least one top tier project each year from their South Sound Salmon Recovery 3-Year Work Plan. They will determine year one project and set up performance measures at the start of each fiscal year.	<ul style="list-style-type: none"> Between 2014 and 2016, target funding to the highest priority salmon recovery projects as listed in 3-year work plan for WRIA 14. Projects may include acquisition, protection, and/or restoration actions. 	WRIA 14 Lead Entity ⁴	<ul style="list-style-type: none"> Habitat conversion from historic conditions, including loss of forest cover; reduced large woody debris and carbon inputs to stream systems; loss of storage in wetlands; reduction in habitat resilience; and degradation and loss of topsoil/duff layer. 	A6.1 (B2.2)

	Near-Term Action	Performance Measures	Owner(s) ¹	Pressure(s)	Regional Sub-Strategy ²
				<ul style="list-style-type: none"> • Disruption of natural hydrologic regimes and loss of natural floodplain and wetland functions, due to land conversion to impervious surfaces' asphalted and realigned stream channels' and native vegetation removal. 	
SS15	<p>Salmon recovery 3-year work plan implementation—WRIA 11. Each lead entity will implement at least one top tier project each year from their South Sound Salmon Recovery 3-Year Work Plan. They will determine year one project and set up performance measures at the start of each fiscal year.</p>	<ul style="list-style-type: none"> • Complete acquisition of 250-acre McKenna Ranch property. • Begin floodplain restoration of McKenna Ranch property. • Complete analysis, including modeling, and restoration designs for lower Nisqually/upper Nisqually estuary restoration. • Begin acquisition and restoration planning for Wilcox Reach. 	WRIA 11 Lead Entity ⁵	<ul style="list-style-type: none"> • Habitat conversion from historic conditions, including loss of forest cover; reduced large woody debris and carbon inputs to stream systems; loss of storage in wetlands; reduction in habitat resilience; and degradation and loss of topsoil/duff layer. • Disruption of natural hydrologic regimes and loss of natural floodplain and wetland functions, due to land conversion to impervious surfaces' asphalted and realigned stream channels' and native vegetation removal. 	A6.1 (B2.2)
SS16	<p>Salmon recovery 3-year work plan implementation—WRIA 15. Each lead entity will implement at least one high priority project each year from their South Sound Salmon Recovery 3-Year Work Plan. They will determine year one project and set up performance measures at the start of each fiscal year.</p>	<ul style="list-style-type: none"> • Between 2014 and 2016, target funding to the highest priority salmon recovery projects as listed in 3-year work plan in the West Sound Watersheds Lead Entity. Projects may include acquisition, protection, and/or restoration actions. 	West Sound Watersheds Lead Entity	<ul style="list-style-type: none"> • Habitat conversion from historic conditions, including loss of forest cover; reduced large woody debris and carbon inputs to stream systems; loss of storage in wetlands; reduction in habitat resilience; and degradation and loss of topsoil/duff layer. • Disruption of natural hydrologic regimes and loss of natural floodplain and wetland functions, due to land conversion to 	A6.1 (B2.2)

	Near-Term Action	Performance Measures	Owner(s) ¹	Pressure(s)	Regional Sub-Strategy ²
				impervious surfaces' asphalted and realigned stream channels' and native vegetation removal.	
SS17	<p>Habitat and shellfish recovery through education and outreach. Implement the Shore Stewards Program throughout the South Puget Sound Action Area. The voluntary program engages shoreline homeowners to implement BMPs and behavior practices to reduce pollutant inputs and to improve habitat. Develop a local welcome packet to engage, connect, and educate new shoreline homeowners about local issues and resources available to them.</p>	<ul style="list-style-type: none"> • By June 2016, report number of new shore stewards signed up. • Every 2 years, conduct self-reporting survey to identify the number of shore stewards reporting behavior changes as a result of the program. • By June 2016, report number of new shoreline property owners reached. • By June 2016, report number of additional contacts for assistance resulting from the welcome packets. • Net acres of shellfish beds re-opened. 	<p>WSU Extension</p> <p><i>Thurston Conservation District, Thurston County Planning Department, Pierce Conservation District, Mason Conservation District</i></p>	<ul style="list-style-type: none"> • Above average growth rates shown over the last several decades and expected to continue, in South Sound counties, which will present fundamental challenges in controlling nutrient inputs to South Puget Sound. • Use of onsite septic systems at contemporary urban densities degrades fresh and marine water quality. • Increase in biotoxins, pathogens, and viruses result in loss of private, recreational, commercial and tribal shellfish harvest. • Habitat conversion from historic conditions, including loss of forest cover; reduced large woody debris and carbon inputs to stream systems; loss of storage in wetlands; reduction in habitat resilience; and degradation and loss of topsoil/duff layer. 	C1.4 (D5.3)
SS18	<p>McNeil Island long-term conservation and low-impact public access. Track state efforts to determine the long-term management strategy of McNeil Island. Support protection and restoration of habitat and natural resources of the island for low-impact public access.</p>	<ul style="list-style-type: none"> • By June 2015, determine current status of McNeil Island ownership and management. • Semi-annual updates to Alliance for a Healthy South Sound (LIO) Council and Executive Committee from staff and/or invited guests. 	<p>Pierce County</p> <p><i>Nisqually Tribe</i></p>	<ul style="list-style-type: none"> • Reduced development pressures to priority nearshore • Marine shoreline infrastructure 	B2.1 (B2.2, B3.1, B4.2, D2.1)

Near-Term Action	Performance Measures	Owner(s) ¹	Pressure(s)	Regional Sub-Strategy ²
<p>¹ Where secondary owners were identified, they are shown in italics after the primary owner.</p> <p>² Where secondary regional sub-strategies were identified, they are shown in parentheses after the primary sub-strategy</p> <p>³ Compiling reports from Stormwater Jurisdictions, including Phase 1 (Pierce, Tacoma), Phase 2 (Thurston, DuPont, Lacey, Lakewood, Olympia, Steilacoom, Tumwater, University Place), WSDOT, JBLM, and Secondary Permittees (Ports of Olympia and Tacoma, and others).</p> <p>⁴ Project will be determined through the regular lead entity process.</p> <p>⁵ Complete acquisition (where appropriate) and restoration of impaired mainstem Nisqually River floodplain habitat in the lower Nisqually, McKenna, and Wilcox Reaches.</p> <p>BMP = best management practice; ECO Net = Education, Communication and Outreach Network; Ecology = Washington State Department of Ecology; LIO = local integrating organization; NPDES = National Pollutant Discharge Elimination System; WRIA = Water Resources Inventory Area; WSU = Washington State University.</p>				

Strait of Juan de Fuca Action Area

Description of Action Area

The Strait of Juan de Fuca Action Area (Strait Action Area)⁹ includes the marine waters and associated watersheds from the northwestern tip of the Olympic Peninsula (Cape Flattery) to the eastern end of the Strait of Juan de Fuca (Point Wilson at Port Townsend). It is home to the Makah, Lower Elwha Klallam, and Jamestown S’Klallam Tribes; Clallam and Jefferson Counties; the Cities of Port Townsend, Port Angeles, and Sequim; the Dungeness National Wildlife Refuge; and much of Olympic National Park and Olympic National Forest.

The Strait of Juan de Fuca links the inner Puget Sound to the Pacific Ocean. It provides an essential pathway for exchange of incoming cold, dense saltwater and freshwater runoff from Puget Sound and Georgia Basin rivers. This exchange is assisted by strong ocean currents in the western end of the strait and intense tidal action in the eastern end.

The Strait Action Area has a rugged and diverse shoreline of 217 linear miles. The uplands are primarily forested, with most of the upper watersheds lying in federal, state, or private parks, forest or timberland. Many of the upper watersheds are in Olympic National Park. In other places, commercial timber harvest remains an important economic sector, supporting an active paper mill in Port Angeles.

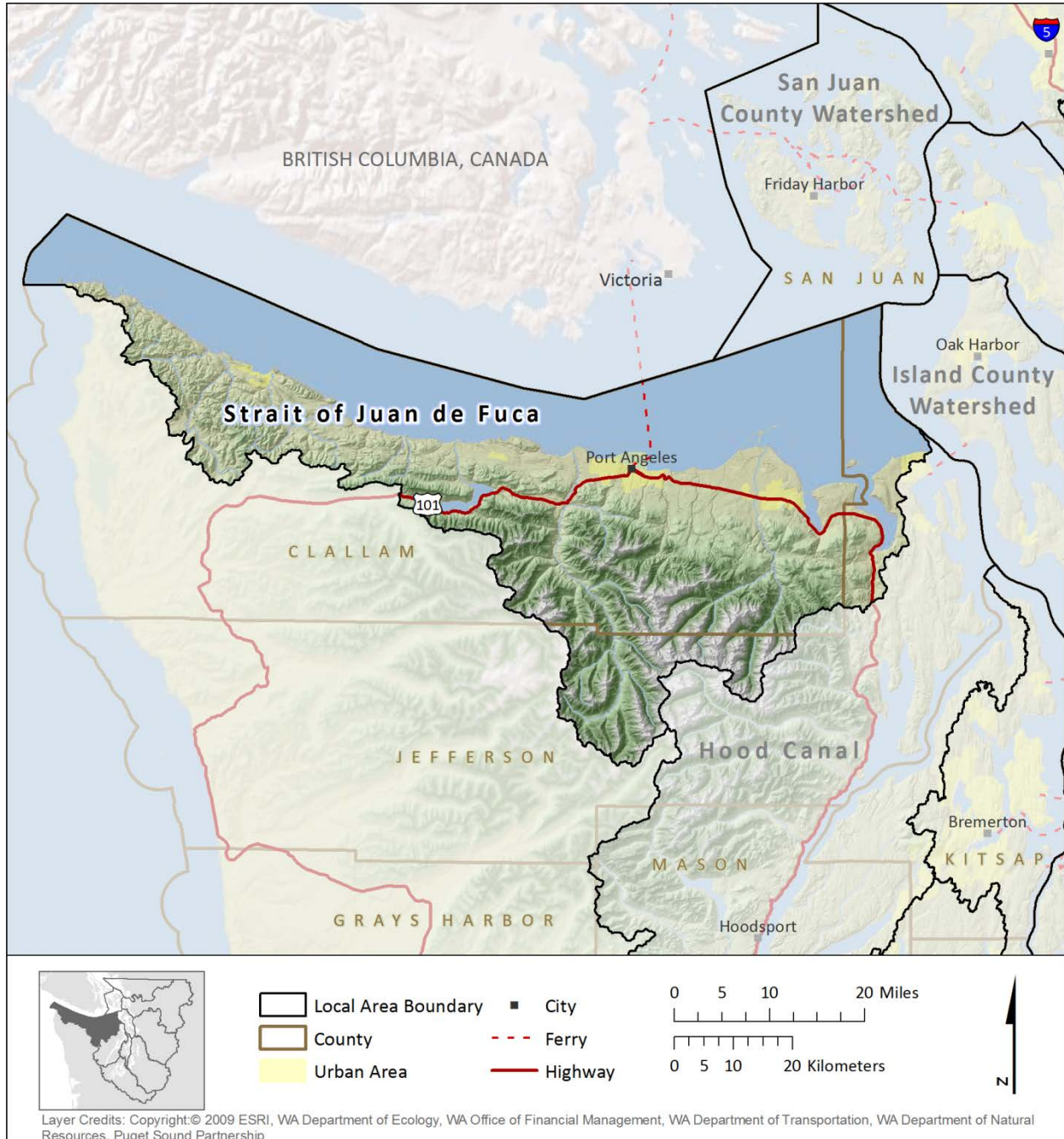
More than three-quarters of the private land west of the Elwha watershed is zoned for commercial forest, and some areas in the western portion of the action area are in their third rotation for timber harvest. Agriculture also is part of the rural landscape along the strait, with approximately 5,000 acres of irrigated farmland in the dry Sequim-Dungeness Valley. Smaller-scale agriculture occurs in other scattered areas, particularly the Salt Creek area west of Port Angeles and in the Discovery Bay watershed.

NOTABLE ACCOMPLISHMENTS

- Removed the entire lower Elwha Dam and most of the upper Glines Canyon Dam on the Elwha River.
 - Improved connection to the northern end of Washington Harbor estuary to restore ecosystem function and access by salmon.
 - Permanently protected 126.5 acres of salmon habitat within the Pysht River watershed.
 - Adopted the updated Jefferson County and City of Sequim Shoreline Master Programs.
 - Completed the Ecosystem Services Valuation and Watershed Stewardship Resource Center pilot projects.
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⁹ Water Resource Inventory Areas (WRIAs) 17, 18, and 19

STRAIT OF JUAN DE FUCA ACTION AREA



Many other economic activities in the area also depend directly on the Puget Sound ecosystem, and include ship building/repair, marinas, shellfish culture and harvest, commercial and recreational fishing, and tourism. A large retirement population, drawn by the relatively dry climate, scenic environment, and other community features, has shifted the economy in the eastern portion of the action area toward more service-based activities. Marine transportation is hugely reliant on the Strait of Juan de Fuca, as almost all the vessels entering or leaving the seaports of Puget Sound and the Georgia Basin pass through it.

Unique Ecosystem Characteristics and Assets

The Strait of Juan de Fuca is the migration and transportation corridor between Puget Sound and the Pacific Ocean for many species of fish, marine mammals, bird populations, and humans. The marine shoreline and nearshore contain the majority of Washington’s coastal kelp resources. The strait has 95 linear miles of floating kelp, 161 linear miles of non-floating kelp, and 75 linear miles of eelgrass. The kelp forests and eelgrass meadows provide food and cover for outbound and returning runs of salmon from all over Puget Sound, as well as birds, marine mammals, and the species they depend on. The connectivity of kelp and eelgrass habitat in the strait is essential to the function of the Puget Sound ecosystem. Sheltered bays, beaches, and over 22 small “pocket” estuaries at the mouths of the many creeks entering the strait also provide critically important habitat for salmon, bull trout, forage fish, and shellfish.

Unique populations of raptors, marine birds, Roosevelt elk, black-tailed deer, marmots, and other mammals, as well as anadromous and resident fish, are found throughout the strait. Notable bird species include the federally protected northern spotted owl and marbled murrelet. Olympic National Park recently reintroduced the fisher, a larger relative of the weasel, which has been locally extinct for decades. The population of sea otters that migrates between the outer coast and the strait has increased from the initial 59 animals reintroduced in 1969–1970 to 800 animals, but is still small enough to be highly vulnerable to a catastrophic event such as an oil spill. Protection Island, part of the Dungeness National Wildlife Refuge, is a critically important marine bird rookery for Puget Sound. This island and other portions of the strait are important haul-out areas for seals and sea lions.

In 2011, the 3-year process of removing the Elwha and Glines Canyon Dams was started in order to restore a free-flowing Elwha River. Removal of the lower Elwha Dam is now complete and over 50% of Glines Canyon Dam has been removed. Lake Mills and Lake Aldwell reservoirs have been drained, and the Elwha River now flows freely from its headwaters in the Olympic Mountains to the Strait of Juan de Fuca for the first time in 100 years. Removal of the Glines Canyon Dam is scheduled to be complete by September 2014. As the largest dam removal project in U.S. history, it will reopen more than 70 miles of mostly pristine spawning and rearing habitat in the Elwha River and its tributaries. Salmon populations are predicted to swell from 3,000 to nearly 400,000 as all five species of Pacific salmon return to one of the Pacific Northwest’s historically most productive salmon streams. The Elwha is the largest watershed in Olympic National Park, and the return of salmon to this ecosystem will provide marine-derived nutrients to the watershed, restoring a vital food source for the range of life that inhabits it.

Local Implementation Structure and Planning Process

The Strait Ecosystem Recovery Network (ERN) was originally formed in 2009 following adoption of the first Action Agenda by the Puget Sound Partnership’s Leadership Council in 2008. In June 2010, the Leadership Council recognized the Strait ERN as the local integrating organization (LIO) for the Strait Action Area.

The Strait ERN LIO is guided by a steering group, which is staffed by a coordinator, and consists of representatives from the following entities.

- 24th District, State Representative (co-chair)

- Jefferson County, Commissioner (co-chair)
- Clallam County
- Jamestown S’Klallam Tribe
- North Olympic Timber Action Committee
- Olympic Environmental Council
- Washington Department of Fish and Wildlife
- Puget Sound Partnership (ex-officio)

The co-chairs of the steering group (and the Strait ERN LIO) are also the Strait Action Area’s representative and the designee for the Partnership’s Ecosystem Coordination Board.

As needed, the Strait ERN LIO forms task force groups, made up of volunteers from the membership, to focus on implementing local strategies and near-term actions.

Starting in 2009, the Strait ERN LIO worked to identify priority pressures on the local ecosystem and define, prioritize, and link local strategies and near-term actions to the sub-strategies, Strategic Initiatives, and recovery targets. As a supplement to that work, the Strait ERN LIO held numerous speaker forums at quarterly meetings to gain background information on a variety of strategic topics that have included the following.

- Fin fish aquaculture
- Diarrhetic shellfish poisoning
- Port Angeles Harbor sediments investigation
- Wild Olympics campaign
- State roads: stormwater impacts and mitigation opportunities
- North Olympic Peninsula instream flow rules
- City of Port Angeles/Elwha Beach and Bluff Nearshore Management and Restoration
- Changing oil spill risk along the Strait of Juan de Fuca and adjacent waters
- ESA-listed Puget Sound steelhead recovery planning and critical habitat
- Ecosystem Services Valuation Pilot Project
- Watershed Stewardship Resource Center Pilot Project

The following entities participated in or contributed to this process.

- Tribes: Makah, Lower Elwha Klallam, Jamestown S’Klallam, and Port Gamble S’Klallam
- Counties: Clallam and Jefferson
- Cities: Port Angeles, Sequim, and Port Townsend
- Ports: Port Angeles and Neah Bay
- Government entities/agencies: Clallam and Jefferson Conservation Districts, Hood Canal Coordinating Council (HCCC), Point-No-Point Treaty Council, Puget Sound Partnership, Washington

Departments of Fish and Wildlife, Ecology, and Natural Resources, US Coast Guard Sector Seattle, and Olympic Coast National Marine Sanctuary

- Watershed management, salmon recovery, and marine organizations: North Olympic Peninsula and Hood Canal Coordinating Council Lead Entities, management teams or councils for WRAs 19, 18 (including Elwha-Morse Management Team and Dungeness River Management Team), and 17 (East Jefferson Watershed Council), and Clallam and Jefferson County Marine Resources Committees, a part of the Northwest Straits Commission, Sequim-Dungeness Clean Water District, and Sunland Water District
- Business-based non-governmental organizations: North Olympic Timber Action Committee, Pacific Shellfish Growers Association, North Peninsula Home Builders Association - BuiltGreen™ of Clallam County, Multi-Vision Integration LLC, and Northwest Maritime Center
- Natural resource-based and working land preservation non-governmental organizations (with wide Strait of Juan de Fuca geographic coverage): North Olympic Salmon Coalition, North Olympic Land Trust, Jefferson Land Trust, Olympic Environmental Council, Protect the Peninsula's Future, North Olympic Peninsula Group of the Sierra Club, and Coastal Watershed Institute
- Educational institutions: Washington State University Jefferson County Extension and Washington Sea Grant
- Place-based educational/public involvement organizations: Strait ECO Net, Feiro Marine Science Center, Dungeness River Audubon Center, and Port Townsend Marine Science Center
- Volunteer-based public involvement organizations: Washington State University Clallam and Jefferson County Beach Watchers/Water Watchers and Shore Stewards and Clallam County Streamkeepers

In 2011, the Strait ERN LIO undertook an extensive and aggressive effort to complete a strategic plan and work plan to implement the 2012/2013 Action Agenda. As part of that process and based on guidance from Puget Sound Partnership staff, the LIO developed a list of the most immediate and significant pressures on the local ecosystem. Using this list of pressures as a guide, the LIO identified 25 local strategies that would benefit most from its focused support and advocacy work. The LIO used the prioritization methods from Open Standards for Conservation process, supported by the Puget Sound Partnership (Section 1, *Regulatory Context*), to help rank the six highest priority local strategies.

For this 2014/2015 Action Agenda update, the LIO refined and reformatted these original six highest priority local strategies and associated specific actions and added two new local strategies¹⁰. These local strategies, the first six of which are in rank order, guided the development of the near-term actions listed in the following section.

1. Support efforts to monitor, adaptively manage, and restore the Elwha River ecosystem.
2. Implement salmon recovery 3-year work plans.
3. Support Improvements in oil spill prevention, preparedness, and response, within the strait action area and adjacent waters.

¹⁰ At the LIO's December 6, 2013, and February 28, 2014, quarterly meetings, the membership voted to include the two additional local strategies. These two strategies were not ranked by the LIO.

4. Develop and adopt shoreline master programs, and work to coordinate implementation of these programs among local governments.
5. Update and implement stormwater management programs and work to coordinate implementation of these programs using a watershed-based approach.
6. Develop, adopt, and implement water resources management program rules.
 - Support climate change mitigation, adaption, and implementation of programs and plans.
 - Implement water quality clean-up plans.

Local Near-Term Actions and Opportunities

The table below presents the local near-term actions for the Strait Action Area. Each local near-term action is listed with an identification code—which includes the area abbreviation and a number—followed by a description of the action. The performance measures represent important, measurable, dated components of implementing each action. The owner is the entity or entities responsible for implementation of the near-term action, with the primary owner being responsible for tracking and reporting progress toward completing the action. The final columns provide regional context for the local actions, identifying the pressure(s) that each action is intended to reduce and the primary sub-strategy to which it is most closely linked as well as other sub-strategies that the LIO associates with the action. Local near-term actions are also listed in Section 3, *Strategies and Actions*, in the context of their primary sub-strategies.

Comprehensive and detailed information on each of the following near-term actions can be found in the quarterly Performance Management Status Reports provided to the Puget Sound Partnership.

Local Near-Term Actions for the Strait Action Area

	Near-Term Action	Performance Measures	Owner(s) ¹	Pressure(s)	Regional Sub-Strategy ²
STRT1	<p>Assess vulnerabilities of local communities, tribes, and natural resources to the effects of climate change and concurrent human population increases.</p> <ul style="list-style-type: none"> Identify adaptive mechanisms for consideration and possible incorporation into the next updates of Growth Management Act comprehensive plans and other local regulatory and planning processes and documents by the five local jurisdictions and other organizations. Assess the vulnerabilities of the five local jurisdictions and four tribes' usual and accustomed areas to the effects of climate change and concurrent increases in human population on land use, infrastructure, and natural resources. Identify specific adaptive mechanisms (i.e., policies, regulations, programs, and plans) for consideration and possible incorporation into the next updates of Growth Management Act comprehensive plans and other local regulatory and planning processes and documents by five local jurisdictions and other organizations. 	<ul style="list-style-type: none"> By December 2016, the Climate Adaptation Plan will be presented to six local municipalities, planning commissions, public utility districts, watershed planning organizations and community development departments in Jefferson and Clallam Counties during the comprehensive plan update process. 	<p>North Olympic Peninsula Resource Conservation and Development Council</p> <p><i>Local 2020 Climate Action Group</i></p> <p><i>Olympic Climate Action Group</i></p>	<ul style="list-style-type: none"> Climate change (effects) Dams, levees, floodgates, and culverts Residential, commercial, and port development Roads, transportation and utility infrastructure Shoreline armoring Surface water loading and runoff from built environment Timber harvest Water withdrawals and diversions 	A1.2 (A5.2, B1.2)
STRT2	<p>Implementation of water quality cleanup plans for Sequim-Dungeness Bay and East Jefferson County Clean Water Districts.</p> <p>Implement Sequim-Dungeness Bay and East Jefferson County Clean Water District Cleanup Plans and projects according to</p>	<ul style="list-style-type: none"> Clallam County: By December 2014, develop and adopt a pollution identification and correction program in 2015–2016, begin implementation of the plan. Jefferson County: By July 2015, develop a Comprehensive Water Quality Improvement 	<p>Clallam and Jefferson Counties</p> <p><i>Sequim-Dungeness Clean</i></p>	<ul style="list-style-type: none"> Livestock grazing Onsite sewage systems 	C9.4 (C3.1, C5.1, C7.1)

	Near-Term Action	Performance Measures	Owner(s) ¹	Pressure(s)	Regional Sub-Strategy ²
	implementation strategies, onsite sewage system management plans, monitoring, and other activities required in Marine Recovery Areas under RCW 70.118A.	Plan; by December 2016, develop a Prioritized Work Plan.	<i>Water Work Group, Jamestown S’Klallam Tribe, Clallam Conservation District, Jefferson Conservation District</i>		
STRT3	Implement the Elwha River restoration project monitoring and management plans. Plans include two hatchery genetic management plans, one for each hatchery facility, and the Elwha Project’s Chinook and Steelhead Monitoring Plan. Implementation of these plans will also be informed by a comprehensive Elwha monitoring and adaptive management plan to be published by the USFWS (currently in peer review).	<ul style="list-style-type: none"> • Implement a monitoring strategy for adults, juveniles, and smolts that provide statistically valid information on abundance and distribution required to achieve restoration goals. • Specifically, achieve 15% coefficient of variation on data collected. • Annually achieve monitoring results for: Juvenile outmigration from mid-February to June. • Monitor adult chinook abundance from June through October. • Monitor adult steelhead abundance February through July. • Monitor adult coho and chum spawn abundance November through beginning of January. • Monitor adult pink spawn abundance. • Abundance (natural-origin adult spawning escapement): 1,028 for Chinook and 500 for Steelhead. • Productivity (# juveniles / female): 200 for Chinook and 75 for Steelhead 	Olympic National Park <i>LEKT, NOAA, USFWS, USGS, WDFW, BOR, North Olympic Lead Entity for Salmon</i>	<ul style="list-style-type: none"> • Aquaculture, climate change, dams, levees, floodgates, and culverts, harvesting, recreational activities, residential, commercial and port development, shoreline armoring, water withdrawals and diversions 	A6.3 (A6.1)

	Near-Term Action	Performance Measures	Owner(s) ¹	Pressure(s)	Regional Sub-Strategy ²
STRT4	<p>Implement the highest priority habitat restoration and protection projects in the Elwha River ecosystem as informed by adaptive management. Refer to the monitoring and adaptive management plans for the Elwha and the North Olympic Lead Entity for Salmon’s 3-year work plan, in part, for guidance. Adaptive management over the coming years may show that habitat restoration and protection projects become a higher priority. The 3-year work plan currently includes the following high priority restoration projects: Little River Large Woody Debris, Elwha Dike Removals, Elwha River Estuary Restoration Engineering Feasibility, and Elwha Conservation Planning. Elwha Revegetation and Elwha Engineered Log Jams projects are also a part of the 3-year work plan but are specifically cited as separate Strait Action Area local near-term actions. See the 3-year work plan for descriptions and costs for each project.</p>	<ul style="list-style-type: none"> • By 2016, three projects will be funded. 	<p>Lower Elwha Klallam Tribe</p> <p>North Olympic Park, <i>North Olympic Lead Entity for Salmon</i></p>	<ul style="list-style-type: none"> • Aquaculture, climate change, dams, levees, floodgates, and culverts, harvesting, recreational activities, residential, commercial and port development, shoreline armoring, toxics and legacy contaminants, water withdrawals and diversions 	A6.1 (A6.3, B2.2)
STRT5	<p>Implement the high priority actions listed within the most current North Olympic Lead Entity for Salmon’s 3-year work plan. This effort includes working with the HCCC-Lead Entity on summer chum recovery. Eventually, steelhead actions will also be incorporated into the 3-year work plan. Note: Number of projects funded each year is dependent on funding available and cost of each project.</p>	<ul style="list-style-type: none"> • In 2014, seven Salmon Recovery Funding Board and Puget Sound Acquisition and Restoration projects funded. • In 2015, 10 Salmon Recovery Funding Board and Puget Sound Acquisition and Restoration projects funded. 	<p>North Olympic Lead Entity for Salmon (reporter)</p>	<ul style="list-style-type: none"> • Agriculture • Climate change • Dams, levees, floodgates, and culverts • Roads, transportation and utility infrastructure • Residential, commercial and port development 	A6.1 (A5.4, A6.3, B2.2)

Near-Term Action		Performance Measures	Owner(s) ¹	Pressure(s)	Regional Sub-Strategy ²
				<ul style="list-style-type: none"> Roads, transportation and utility infrastructure Shoreline armoring Timber harvest Water withdrawals and diversions 	
STRT6	Implement the restoration and revegetation plan for Lake Mills and Lake Aldwell on the Elwha River.	<ul style="list-style-type: none"> By 2016, plant 360 total acres (i.e., 130 acres in both 2014, 130 acres in 2015, 100 acres in 2016). Each year, through 2016 (and beyond if needed), treat the 700 acres associated with the drained reservoirs to achieve a 75% reduction in invasive species. 	<p>Olympic National Park</p> <p><i>Lower Elwha Klallam Tribe</i></p>	<ul style="list-style-type: none"> Climate change Dams, levees, floodgates, and culverts Invasive species - terrestrial 	A6.1
STRT7	Implement Dungeness river floodplain restoration projects.	<ul style="list-style-type: none"> By end of 2016, complete design to reconnect 100 acres floodplain [Note: Floodplain acquisition and stewardship (planting and maintenance) is ongoing in anticipation of the reconnection]. 	<p>Clallam County Department of Community Development</p> <p><i>Corps, Jamestown S’Klallam Tribe, WDFW, WSDOT, North Olympic Lead Entity for Salmon</i></p>	<ul style="list-style-type: none"> Agriculture Climate change Dams, levees, floodgates, and culverts Livestock grazing Resident, commercial and port development Roads, transportation and utility infrastructure Shoreline armoring 	A6.1 (A5.4)
STRT8	Monitor interaction of existing engineered log jams with sediment load from removed Elwha River dams and consider additional engineered log jams, when and where necessary.	<ul style="list-style-type: none"> By 2016, document pool and spawning gravel formation. 	Lower Elwha Klallam Tribe	<ul style="list-style-type: none"> Dams, levees, floodgates, and culverts 	A6.1

Near-Term Action		Performance Measures	Owner(s) ¹	Pressure(s)	Regional Sub-Strategy ²
STRT9	Implement the Pysht River salt marsh estuary restoration project. Project includes removal of suction and clamshell dredge deposits placed on a 21.5 acre area of historic salt marsh within the Pysht River estuary. Also, construct a series of tidal channels (2 miles) to allow for natural recolonization of salt tolerant native plants.	<ul style="list-style-type: none"> By 2016, restore 21.5 acres of saltmarsh and 2 miles of tidal channels. 	Lower Elwha Klallam Tribe <i>Merrill and Ring, Forterra</i>	<ul style="list-style-type: none"> Climate change Dams, levees, floodgates, and culverts Roads, transportation and utility infrastructure Shoreline armoring 	A6.1 (B2.2)
STRT10	Implement the high priority actions for the Strait Action Area listed within the most current HCCC-Lead Entity salmon recovery 3-year work plan. This effort includes working with the North Olympic Lead Entity for Salmon on summer chum recovery. Eventually, steelhead actions will also be incorporated into the 3-year work plan. Note: Number of projects funded each year is dependent on the funding available, cost of each project, and the current reevaluation of priorities.	<ul style="list-style-type: none"> By 2016, 13 projects funded in eastern Strait of Juan de Fuca. 	HCCC- Lead Entity (reporter)	<ul style="list-style-type: none"> Agriculture Climate change Dams, levees, floodgates, and culverts Resident, commercial and port development Roads, transportation and utility infrastructure Shoreline armoring Timber harvest Water withdrawals and diversions 	A6.1 (A5.4, A6.3, B2.2)
STRT11	Implement the Snow Creek Estuary and Maynard Beach nearshore restoration project. Project includes railroad grade fill removal, bulkhead removal, estuary restoration, and beach restoration. (Note: Effort will also address the Olympic Discovery Trail)	<ul style="list-style-type: none"> Snow Creek Estuary: By year end 2015, removal of 11.1 acres of fill/ delta cone in salt marsh, and 2.5 acres of riparian plantings. Maynard Nearshore: By year end 2014, removal of 4 acres of nearshore fill, 1,250 linear feet of bulkhead, and 3 acres of riparian plantings. 	North Olympic Salmon Coalition	<ul style="list-style-type: none"> Climate change Roads, transportation and utility infrastructure Shoreline armoring 	A6.1 (B2.2)

	Near-Term Action	Performance Measures	Owner(s) ¹	Pressure(s)	Regional Sub-Strategy ²
STRT12	<p>Expand oil spill drills along the Strait of Juan de Fuca and coast. Regularly conduct worst-case oil spill exercises, including equipment deployment, in this region. The combined spill response assets housed in Neah Bay and Port Angeles afford substantial opportunities to drill. In addition, consider coordinating efforts with the Northwest Maritime Center in Port Townsend to host and expand drills and table-top exercises along the Strait of Juan de Fuca, outer Coast, and Puget Sound waterways utilizing their Pilothouse/Oil Spill Training Center. Drills and exercises should incorporate vessels of opportunity, publicly funded response equipment caches, and maritime industry participants as well. All of these assets are owned by various different organizations, that if drilled together, would afford opportunities to improve efficiencies through coordination.</p>	<ul style="list-style-type: none"> By 2016, participate in the worst-case or deployment drill planning process. (Note: Participants will likely include representatives from the Makah Tribe Office of Marine Affairs, Northwest Maritime Center, and possibly, the local offices of the Marine Spill Response Corporation and other appropriate Strait ERN LIO member organizations.) 	<p>Makah Tribe and Northwest Maritime Center</p> <p><i>Appropriate members of LIO</i> <i>U.S. Coast Guard</i> <i>Ecology</i> <i>Department of Fish and Oceans</i> <i>Transport</i> <i>Canada</i></p>	<ul style="list-style-type: none"> Moderate to large hazardous spills 	C8.2
STRT13	<p>Improve trans-boundary coordination on oil spill preparedness and response. Support enhancement of the U.S. and Canadian Coast Guards' annual joint spill response exercises, known as U.S. / Canadian Joint Response Team (CANUSPAC), on both sides of the border with additional equipment and personnel. Also, support implementation of the U.S. Coast Guard Reauthorization Act that called for both countries to reevaluate the comparability of spill response, tug escort, and rescue towing assets on either side of the border as cited within the Combined Vessel Traffic Service Treaty. Additionally, the</p>	<ul style="list-style-type: none"> By 2016, ensure one (or possibly more) CANUSPAC Exercise (or deployment) is conducted that incorporates trans-boundary movement of personnel and/or equipment. (Note: Participate in exercises when held in Strait Action Area; when possible, observe appropriate exercises held outside of Strait Action Area.) 	<p>Makah Tribe</p> <p><i>Appropriate members of LIO</i> <i>U.S. Coast Guard</i> <i>Ecology</i> <i>DFO</i> <i>Transport</i> <i>Canada</i></p>	<ul style="list-style-type: none"> Moderate to large hazardous spills 	C8.2

	Near-Term Action	Performance Measures	Owner(s) ¹	Pressure(s)	Regional Sub-Strategy ²
	current estimates of Canadian vessel traffic projections need to be incorporated into updates of vessel traffic risk assessments.				
STR14	Support the establishment of a Neah Bay Vessel of Opportunity Program. Once established in Neah Bay, support expansion of the program to other locations along the Strait of Juan de Fuca, including the Ports of Port Angeles and Port Townsend.	<ul style="list-style-type: none"> By December 2016, enhance existing Neah Bay Vessel of Opportunity Program standards, and assist other efforts, through participation in existing regional rulemaking and permitting processes. 	Makah Tribe <i>Ecology</i> <i>Industry Groups</i> <i>U.S. Coast Guard</i>	<ul style="list-style-type: none"> Moderate to large hazardous spills 	C8.2
STR15	Implement the City of Port Townsend’s Shoreline Master Program through public education and incentive programs. Education and incentive programs will be made available and promoted to City residents. Programs include promotion of improved stormwater management, removal of shoreline armoring, and restoring native marine riparian vegetation along the city’s shorelines. Shoreline education and technical assistance will be offered through implementation of Phase 2 of Jefferson County’s Watershed Stewardship Resource Center, as described in two other Strait Action Area near-term actions.	<ul style="list-style-type: none"> By 2016, hold four public educational events. By 2015, complete one “shovel-ready” plan for a high-priority stormwater management project. 	Jefferson County Marine Resources Committee <i>Jefferson County Washington State University Extension City of Port Townsend</i>	<ul style="list-style-type: none"> Climate change Residential, commercial, and port development Roads, transportation, and utility infrastructure Shoreline armoring Surface water loading and runoff from built environment 	B1.2 (B2.3, C2.3, D7.4)

	Near-Term Action	Performance Measures	Owner(s) ¹	Pressure(s)	Regional Sub-Strategy ²
STRT16	<p>Finalize and adopt the Shoreline Master Program, and update and implement the highest priority projects listed within the City of Port Angeles shoreline restoration plan, a part of the city’s updated Shoreline Master Program. In addition to finalizing and adopting the Shoreline Master Program update, the focus is on beach restoration projects within Port Angeles Harbor, including inner Ediz Hook, West End Park, and Hollywood Beach.</p>	<ul style="list-style-type: none"> • By 2014, adopt the Shoreline Master Program. • By 2014 and 2015, restore 8,606 feet (1.62 miles) of marine shoreline in Port Angeles Harbor by completing beach restoration projects, including <ul style="list-style-type: none"> ○ Ediz Hook by 2014. ○ West End Park by 2015. ○ Hollywood Beach (to be fully designed by 2015 with implementation to follow). 	<p>City of Port Angeles Department of Community and Economic Development</p>	<ul style="list-style-type: none"> • Climate change • Residential, commercial, and port development • Roads, transportation, and utility infrastructure • Shoreline armoring • Surface water loading and runoff from built environment • Toxics and legacy contaminants 	<p>B1.2 (A1.2, B1.2, B2.2, B2.3)</p>
STRT17	<p>Implement the highest priority projects listed within the City of Sequim Restoration Plan, a part of the city’s updated Shoreline Master Program. The current focus for this action is on Restoration Priority 7.1 from the city’s Restoration Plan, namely “Improve Water Quality and Reduce Pollutant Delivery.” This focus area is also a part of the local near-term action titled Develop a Storm and Surface Water Management Plan for the City of Sequim.</p>	<ul style="list-style-type: none"> • By 2016, adopt Storm and Surface Water Management Plan and drafts of ordinances 	<p>City of Sequim Department of Community Development</p>	<ul style="list-style-type: none"> • Residential, commercial, and port development • Roads, transportation, and utility infrastructure • Surface water loading and runoff from built environment 	<p>C2.2 (A7.2, C2.1, C2.2, C2.3)</p>
STRT18	<p>Provide shoreline education, training, and technical assistance in Jefferson County and City of Port Townsend through implementation of Phase 2 of SquareONE (formally called Watershed Stewardship Resource Center). Consider expansion of the SquareONE concept to the other three local jurisdictions within the Strait Action Area.</p>	<ul style="list-style-type: none"> • By 2016, hold four workshops with the number of attendees at workshops and before and after surveys showing improved knowledge. • By December 2016, complete a final report on decisions to expand the SquareONE concept to other Strait Action Area local jurisdictions. 	<p>Jefferson County Department of Community Development</p>	<ul style="list-style-type: none"> • Climate change • Residential, commercial, and port development • Roads, transportation, and utility infrastructure • Shoreline armoring (see STRT31 for 	<p>B1.3 (A1.2, B1.2, B2.3, D7.4)</p>

	Near-Term Action	Performance Measures	Owner(s) ¹	Pressure(s)	Regional Sub-Strategy ²
	<p>Following lessons learned from the SquareONE pilot project in Jefferson County; consider implementing Phase 2 to include the City of Port Townsend. Also, consider possible expansion of the concept to the other three local jurisdictions within the Strait Action Area. This action is one of a number of efforts to coordinate implementation of shoreline master programs among local governments within the Strait Action Area.</p> <p>(Note: This action has a double benefit in that it is also a part of C2.5 STRT31.)</p>			<p>surface-water loading and runoff from built environment)</p>	
<p>STRT19</p>	<p>Organize and implement annual Jefferson County restoration planning summits. Organize and implement the first annual Jefferson County Restoration Planning Summits, one for marine and one for freshwater areas. Consider implementing follow up activity, where needed.</p>	<ul style="list-style-type: none"> By December 2016, complete first annual Restoration Planning Summit. (Note: Marine related summit completed February 2014) 	<p>Jefferson County Marine Resources Committee</p> <p><i>Jefferson County Department of Community Development</i></p> <p><i>(marine summit), Jefferson County Department of Community Development (freshwater summit)</i></p>	<ul style="list-style-type: none"> Climate change Residential, commercial, and port development Roads, transportation, and utility infrastructure Shoreline armoring 	<p>B1.2 (A1.2, B2.2, B2.3)</p>

	Near-Term Action	Performance Measures	Owner(s) ¹	Pressure(s)	Regional Sub-Strategy ²
STRT20	<p>Implement the highest priority projects listed within the Jefferson County Shoreline Restoration Plan, a part of the County's updated Shoreline Master Program. Implement the highest priority shoreline restoration projects.</p>	<ul style="list-style-type: none"> • By December 2016, implement two bulkhead removal or bio-stabilization projects and two riparian enhancement projects along high priority shorelines. • Initiate conversations with at least one public agency regarding intertidal fill or culvert removal projects on a high priority shoreline (see page 7-1 of Shoreline Master Program Shoreline Restoration Plan). 	Jefferson County Department of Community Development	<ul style="list-style-type: none"> • Climate change • Residential, commercial, and port development • Roads, transportation, and utility infrastructure • Shoreline armoring 	B1.2 (A1.2, B2.2, B2.3)
STRT21	<p>Assess implementation of the Jefferson County Shoreline Restoration Plan, a part of the County's updated Shoreline Master Program. Regularly assess implementation of the Jefferson County Shoreline Restoration Plan.</p>	<ul style="list-style-type: none"> • By December 2014: <ul style="list-style-type: none"> ○ Identify at least two potential bulkhead removal/ bio-stabilization projects on high priority shorelines, apply for funding and initiate steps toward implementation. ○ Identify at least two potential riparian enhancement projects on high priority shorelines, apply for funding and initiate steps toward implementation. ○ Initiate conversations with at least one public agency regarding an intertidal fill removal or culvert removal project on a high priority shoreline. • By December 2018: <ul style="list-style-type: none"> ○ Complete at least two bulkhead removal/ bio-stabilization projects. ○ Complete at least two riparian enhancement projects. ○ Initiate technical work to support at least one large-scale intertidal fill removal or culvert removal project on a high priority shoreline. 	Jefferson County Department of Community Development	<ul style="list-style-type: none"> • Climate change • Residential, commercial, and port development • Roads, transportation, and utility infrastructure • Shoreline armoring 	B1.2 (A1.2, B2.2, B2.3)

	Near-Term Action	Performance Measures	Owner(s) ¹	Pressure(s)	Regional Sub-Strategy ²
STRT22	Develop and adopt the update of the Clallam County Shoreline Master Program.	<ul style="list-style-type: none"> In 2014, adopt Shoreline Master Program. 	Clallam County Department of Community Development	<ul style="list-style-type: none"> Climate change Recreational marinas Residential, commercial, and port development Roads, transportation, and utility infrastructure Shoreline armoring 	B1.2 (A1.2)
STRT23	Identify and implement a framework for measuring and tracking no net loss in Clallam and Jefferson Counties. Complete the Enhanced Shoreline Protection project (EPA Watershed Management Assistance Program Grant) for Clallam and Jefferson Counties and evaluate the results to determine next steps for implementation.	<ul style="list-style-type: none"> In 2014, adopt the Framework of Indicators and no net loss Project Specific Checklist for Clallam County. In 2014, adapt and begin field testing of no net loss Project Specific Checklist in Jefferson County. 	Clallam and Jefferson County Departments of Community Development	<ul style="list-style-type: none"> Climate change Recreational marinas Residential, commercial, and port development Roads, transportation, and utility infrastructure Shoreline armoring 	B1.2 (A1.2)
STRT24	Expand pilot Ecosystem Services Valuation analysis conducted along the Central Strait nearshore to other shorelines within the Strait Action Area and North Olympic Peninsula. Following lessons learned from the pilot Ecosystem Services Valuation analysis along the Central Strait nearshore within Clallam County and the City of Port Angeles, consider expanding the effort to other shorelines within the Strait Action Area and North Olympic Peninsula. This action is one of a number of efforts to coordinate implementation of shoreline master programs among local governments within the Strait Action Area.	<ul style="list-style-type: none"> By 2016, complete Ecosystem Services Valuation within Clallam and Jefferson Counties. 	Clallam and Jefferson County Departments of Community Development <i>Cities of Port Angeles, Sequim, and Port Townsend</i>	<ul style="list-style-type: none"> Climate change Dams, levees, floodgates, and culverts Recreational marinas Residential, commercial, and port development Roads, transportation, and utility infrastructure Shoreline armoring 	B1.2 (B2.2, B2.3, D7.4)

	Near-Term Action	Performance Measures	Owner(s) ¹	Pressure(s)	Regional Sub-Strategy ²
STRT25	Identify implementation priorities for the adopted update of the Clallam county Shoreline Master Program. Following adoption of Clallam County’s Shoreline Master Program update, identify implementation priorities, such as improved mapping capabilities to identify and monitor functions of vulnerable shorelines, an effective shoreline landowner outreach program, etc.	<ul style="list-style-type: none"> By 2015, list priority actions. 	Clallam County Department of Community Development	<ul style="list-style-type: none"> Climate change Recreational marinas Residential, commercial, and port development Roads, transportation, and utility infrastructure Shoreline armoring 	B1.2 (A1.2, D7.4)
STRT26	Develop a monitoring and adaptive management strategy for the adopted update of the Clallam County Shoreline Master Program, one that’s based on the no net loss indicators. Following adoption of Clallam County’s Shoreline Master Program update, develop a monitoring and adaptive management strategy that’s based on the no net loss indicators developed by the Enhanced Shoreline Protection project.	<ul style="list-style-type: none"> By 2015, complete monitoring and adaptive management strategy. 	Clallam County Department of Community Development	<ul style="list-style-type: none"> Climate change Recreational marinas Residential, commercial, and port development Roads, transportation, and utility infrastructure Shoreline armoring 	B1.2 (A1.2)
STRT27	Adopt the City of Port Townsend’s Stormwater Management Plan. Review and adopt local Low Impact Development codes and standards related to stormwater management and land development practices, to include an evaluation of stormwater conditions and needs within the 18 sub-basins of Port Townsend.	<ul style="list-style-type: none"> By 2016, adopt Stormwater Management Plan 	City of Port Townsend Public Works Department	<ul style="list-style-type: none"> Residential, commercial, and port development Roads, transportation, and utility infrastructure Surface water loading and runoff from built environment 	C2.2 (C2.1, C2.3)
STRT28	Develop and adopt a Storm and Surface Water Management Plan for the City of Sequim. Develop a Storm and Surface Water Management Plan, including adoption of Low	<ul style="list-style-type: none"> By 2016, adopt Storm and Surface Water Management Plan and drafts of ordinances 	City of Sequim Public Works Department	<ul style="list-style-type: none"> Industrial, domestic, and municipal wastewater 	C2.2 (C2.1, C2.3, A7.2)

Near-Term Action		Performance Measures	Owner(s) ¹	Pressure(s)	Regional Sub-Strategy ²
	Impact Development incentives and stormwater ordinances to support surface water pollution reduction. Initially, conduct a stormwater management needs assessment and develop a Storm and Surface Water Management Master Plan, including the possibility of a utility.			<ul style="list-style-type: none"> Residential, commercial, and port development Roads, transportation, and utility infrastructure Surface water loading and runoff from built environment 	
STRT29	<p>Implement City of Port Angeles combined sewer overflow reduction projects. Implement suite of combined sewer overflow Phase 1 and Phase 2 projects to reduce combined sewer overflow events into the Port Angeles Harbor to one per outfall per year on average.</p>	<ul style="list-style-type: none"> Not more than one combined sewer overflow per outfall per year, as per city's agreed order with Ecology. 	City of Port Angeles Public Works Department	<ul style="list-style-type: none"> Combined sewer overflows Industrial, domestic, and municipal wastewater Residential, commercial, and port development Roads, transportation, and utility infrastructure Surface water loading and runoff from built environment Toxic and legacy contaminants 	C6.2 (C2.1, C2.2, C2.3)
STRT30	<p>Implement the City of Port Angeles NPDES Phase II permit and Stormwater Management Program. Implement NPDES Phase II Stormwater Management Program, including Low Impact Development incentives and ordinances to support surface water pollutant reduction.</p>	<ul style="list-style-type: none"> By March 2015, meet 100% of permit compliance conditions as documented in the 2015 annual report. By March 2016, meet 100% of permit compliance conditions as documented in the 2016 annual report. 	City of Port Angeles Public Works Department	<ul style="list-style-type: none"> Combined sewer overflows Industrial, domestic, and municipal wastewater Residential, commercial, and port 	C2.2 (C2.1, C2.3, C2.5)

	Near-Term Action	Performance Measures	Owner(s) ¹	Pressure(s)	Regional Sub-Strategy ²
				development <ul style="list-style-type: none"> • Roads, transportation, and utility infrastructure • Surface water loading and runoff from built environment • Toxic and legacy contaminants 	
STRT31	<p>Provide stormwater education, training, and technical assistance in Jefferson County and Port Townsend using a watershed-based approach through implementation of Phase 2 of SquareONE. Consider expansion of the SquareONE concept to the other three local jurisdictions within the Strait Action Area. Following lessons learned from the SquareONE pilot project in Jefferson County, consider implementing Phase 2 to include the City of Port Townsend. Also, consider possible expansion of the concept to the other three local jurisdictions within the Strait Action Area. Phase 2 would (a) Implement the stormwater management public education plans in Jefferson County and Port Townsend by increasing citizen awareness and capacity to self-select preferred actions and methods; (b) Provide training on BMPs and Low Impact Development to the development community to increase capacity for successful site assessment and facility design, installation, and maintenance; and (c) Provide training to county and city staff to increase capacity for successful plan review and site inspections.</p>	<ul style="list-style-type: none"> • By 2016, hold four workshops. • Number of attendees at workshops and before and after surveys showing improved knowledge. • By December 2016, complete a final report on decisions to expand the SquareONE concept to other Strait Action Area local jurisdictions. 	Jefferson County Department of Community Development	<ul style="list-style-type: none"> • Residential, commercial, and port development • Roads, transportation, and utility infrastructure • Surface water loading and runoff from built environment (also see STRT18 regarding shoreline armoring) 	C2.5 (C2.1, C2.2, C2.3)

	Near-Term Action	Performance Measures	Owner(s) ¹	Pressure(s)	Regional Sub-Strategy ²
	(Note: This action has a double benefit in that it is also linked to B1.3 STRT18.)				
STRT32	<p>Update, adopt, and implement the Clallam County Stormwater Management Plan. Update and implement the Clallam County Stormwater Management Plan, including adoption of Low Impact Development incentives and ordinances to support stormwater management.</p>	<ul style="list-style-type: none"> • Adopt Stormwater Management Plan and ordinances (no target adoption date available at this time) 	Clallam County Department of Community Development	<ul style="list-style-type: none"> • Onsite sewage systems • Residential, commercial, and port development • Roads, transportation, and utility infrastructure • Surface water loading and runoff from built environment 	C2.2 (C2.1, C2.3, C2.4)
STRT33	<p>Provide stormwater management education, training, and technical assistance in Clallam County using a watershed-based approach. Consider partnerships with the cities of Port Angeles and Sequim to accomplish this action. Work to (a) increase citizen awareness and understanding of the importance, need, and techniques for stormwater management and familiarity with the new stormwater management plans requirements; (b) provide technical assistance to homeowners in Clallam County to assist in implementation of Low Impact Development BMPs contained with the Small Project Drainage Manual; and (c) provide training in Low Impact Development and BMPs to Clallam County staff to improve development plan review, site inspections, and assistance at the Permit Center. Consider partnerships with the cities of Port Angeles and Sequim. Also consider the Watershed Stewardship Resource Center</p>	<ul style="list-style-type: none"> • Number of attendees at workshops and before and after surveys showing improved knowledge. • Usage of the Permit Center (no target dates available at this time). 	Clallam County Department of Community Development	<ul style="list-style-type: none"> • Onsite sewage systems • Residential, commercial, and port development • Roads, transportation, and utility infrastructure • Surface water loading and runoff from built environment 	C2.5 (C2.1, C2.2, C2.3)

	Near-Term Action	Performance Measures	Owner(s) ¹	Pressure(s)	Regional Sub-Strategy ²
	concept used in Jefferson County and City of Port Townsend to accomplish this action.				
STRT34	Continue Clallam County Streamkeepers ambient monitoring program to understand stormwater baseline conditions and expand monitoring according to the Washington State Stormwater Work Group recommendations. Consider partnerships with the cities of Port Angeles and Sequim to accomplish this action.	<ul style="list-style-type: none"> By 2016, obtain funding to revise and expand ambient monitoring program, as per Washington State Stormwater Work Group Recommendations, in anticipation of future adoption of a Clallam County Stormwater Management Plan and Ordinance. 	Clallam County Streamkeepers	<ul style="list-style-type: none"> Onsite sewage systems Residential, commercial, and port development Roads, transportation, and utility infrastructure Surface water loading and runoff from built environment 	C2.4 (C2.1, C2.2, C2.3)
STRT35	Complete the collection of habitat information for use by WSDOT to inform the prioritization of stormwater road retrofit projects within the Strait Action Area.	<ul style="list-style-type: none"> By 2016, 100% complete and habitat information submitted to WSDOT, depending on staffing constraints. 	To be determined <i>WDFW</i>	<ul style="list-style-type: none"> Roads, transportation, and utility infrastructure Surface water loading and runoff from built environment 	C2.3 (C2.1, C2.2)
STRT36	Develop, adopt, and implement the water resources management program rules for Elwha-Dungeness WRIA 18. This action includes implementing the adopted rule that applies to eastern WRIA 18, the Dungeness watershed, from Bell Creek on Sequim Bay to the Bagley Creek sub-basin (WAC 173-518). Development of the Water Resources Program Rule for the Elwha portion of WRIA 18, that would involve the Elwha-Morse Management Team, is delayed awaiting completion of removal of the Elwha dams and river restoration.	<ul style="list-style-type: none"> Through February 2016, 100% of mitigation certificates issued relative to applications received by Clallam County (and beyond) within the Dungeness watershed. 	Ecology <i>Clallam County DCD</i> <i>Jamestown S’Klallam Tribe</i> <i>Lower Elwha Klallam Tribe</i> <i>Washington Water Trust</i> <i>Dungeness River Management Team</i>	<ul style="list-style-type: none"> Agriculture Climate change Onsite sewage systems Residential and commercial development Water withdrawals and diversions 	A7.1 (A7.2, A7.3)

	Near-Term Action	Performance Measures	Owner(s) ¹	Pressure(s)	Regional Sub-Strategy ²
			<i>Elwha-Morse Management Team</i>		
STRT37	<p>Implement stream flow improvement projects within the Dungeness portion of the Elwha-Dungeness Water Resources Area (WRIA 18). Stream flow improvement projects include Water Acquisitions, Irrigation Efficiency, Water Storage & Aquifer Recharge, and Source Substitution; Also, work to update Ecology’s 2003 Final Environmental Impact Statement on water conservation needs.</p>	<ul style="list-style-type: none"> • Irrigation Efficiency Project Implementation: By 2015, 2.0 cubic feet per second (600 acre-feet) restored to the river. • Water Storage and Aquifer Recharge Project Implementation: By 2015, 1.0 cubic feet per second (300 acre-feet) restored to the river. • Source Substitution Project Implementation: By 2016, 0.5 cubic feet per second restored to river. • Water Acquisition Project Implementation: By 2016, 0.5 cubic feet per second restored to river. 	<p>Clallam Conservation District and Washington Water Trust</p> <p><i>Ecology Water Users Associations</i></p>	<ul style="list-style-type: none"> • Agriculture • Climate change • Livestock grazing • Onsite sewage systems • Residential, commercial and port development • Industrial, domestic, and municipal wastewater • Surface water loading and runoff from built environment • Water withdrawals and diversions 	A6.1 (A7.2, A7.3, C7.1)
STRT38	<p>Develop, adopt, and implement a water resources management program rule for eastern Clallam County’s portion of WRIA 17. Eastern Clallam County’s Sequim Bay–Miller Peninsula portion of the Quilcene-Snow WRIA 17 is within the Dungeness River Management Team’s purview.</p>	<ul style="list-style-type: none"> • Development, adoption, and implementation of a rule (start date for process is uncertain). 	<p>Ecology</p> <p><i>Jamestown S’Klallam Tribe Clallam County DCD Dungeness River Management Team</i></p>	<ul style="list-style-type: none"> • Agriculture • Climate change • Residential and commercial development • Water withdrawals and diversions 	A7.1

	Near-Term Action	Performance Measures	Owner(s) ¹	Pressure(s)	Regional Sub-Strategy ²
STRT39	Develop, adopt, and implement a water resources management program rule for WRIA 19 the Lyre Hoko watershed.	<ul style="list-style-type: none"> • Development, adoption, and implementation of a rule (start date for process is uncertain). 	Ecology <i>Lower Elwha</i> <i>Klallam Tribe</i> <i>Makah Tribe</i> <i>Clallam County</i> <i>DCD</i>	<ul style="list-style-type: none"> • Climate change • Residential and commercial development • Water withdrawals and diversions 	A7.1
¹ Where secondary owners were identified, they are shown in italics after the primary owner.					
² Where secondary regional sub-strategies were identified, they are shown in parentheses after the primary sub-strategy.					

The following list represents the local strategies from the original list of 25 that remain to be implemented (in alphabetical order).

- Aquatic resources habitat conservation plans
- Carlsborg Wastewater Treatment and Water Reuse
- Critical areas ordinances
- Forest practices
- Green jobs
- Landfill assessments, closure, and remediation
- Local recovery capacity
- Marine resource plans (Clallam and Jefferson Marine Resource Committees)
- Migration corridor integrity
- Non-indigenous species programs
- Outreach, education, public involvement: a) Strait ECO Net; b) Technical Assistance; c) BuiltGreen™
- Port Angeles Harbor Ecosystem Recovery
- Sewage discharges (treated and untreated)
- Sustainable commercial, tribal, and recreational fishing and shellfishing
- Toxic source reduction programs
- Watershed planning detailed implementation plan development and implementation (WRIAs 19, 18 West, 18 East, and 17)
- Working lands and tidelands protection

West Central Puget Sound (North Central Puget Sound Action Area)

Description of the Action Area

West Central Puget Sound (North Central Puget Sound Action Area)¹¹ occupies the geographic center of the Puget Sound basin. With over 220 miles of shoreline, and extensive bluffs, pocket estuaries, protected bays, harbors, and lagoons, the action area's most prominent feature is its expanse of nearshore reaches. Bluffs along the coastline provide a supply of sediment that drifts along the shore, building beaches and forming spits, lagoons, deltas, and tideflats. Bainbridge Island, approximately 5 miles wide by 10 miles long, is one of the largest islands in Puget Sound and has 53 miles of shoreline. Agate Passage, Port Washington Narrows, and Rich Passage are characterized by high currents due to the circulation of Puget Sound tides through these narrow openings. Streams originate from lakes, groundwater discharge, or headwater wetlands that often contribute flow to multiple watersheds. These unique lowland freshwater ecosystems provide highly productive habitat for salmon and trout.

The history of the action area is completely connected to Puget Sound and is the heartland of Suquamish Ancestral Territory.

The Suquamish and their ancestors have occupied the region for the past 14,000 years. Important Suquamish leaders in the early historic period such as Kitsap, Chalicum, and Seattle controlled extended Suquamish families who occupied more than 15 winter villages. Old Man House on Agate Passage was the “mother village” of the Suquamish, and was occupied for over 5,000 years with a historic period cedar plank longhouse. The Port Madison Indian Reservation, straddling Miller Bay between the communities of Suquamish and Indianola, is the center of the Suquamish culture named after the beach at Old Man House on Agate Passage and meaning ‘place of clear saltwater’ in Lushootseed.

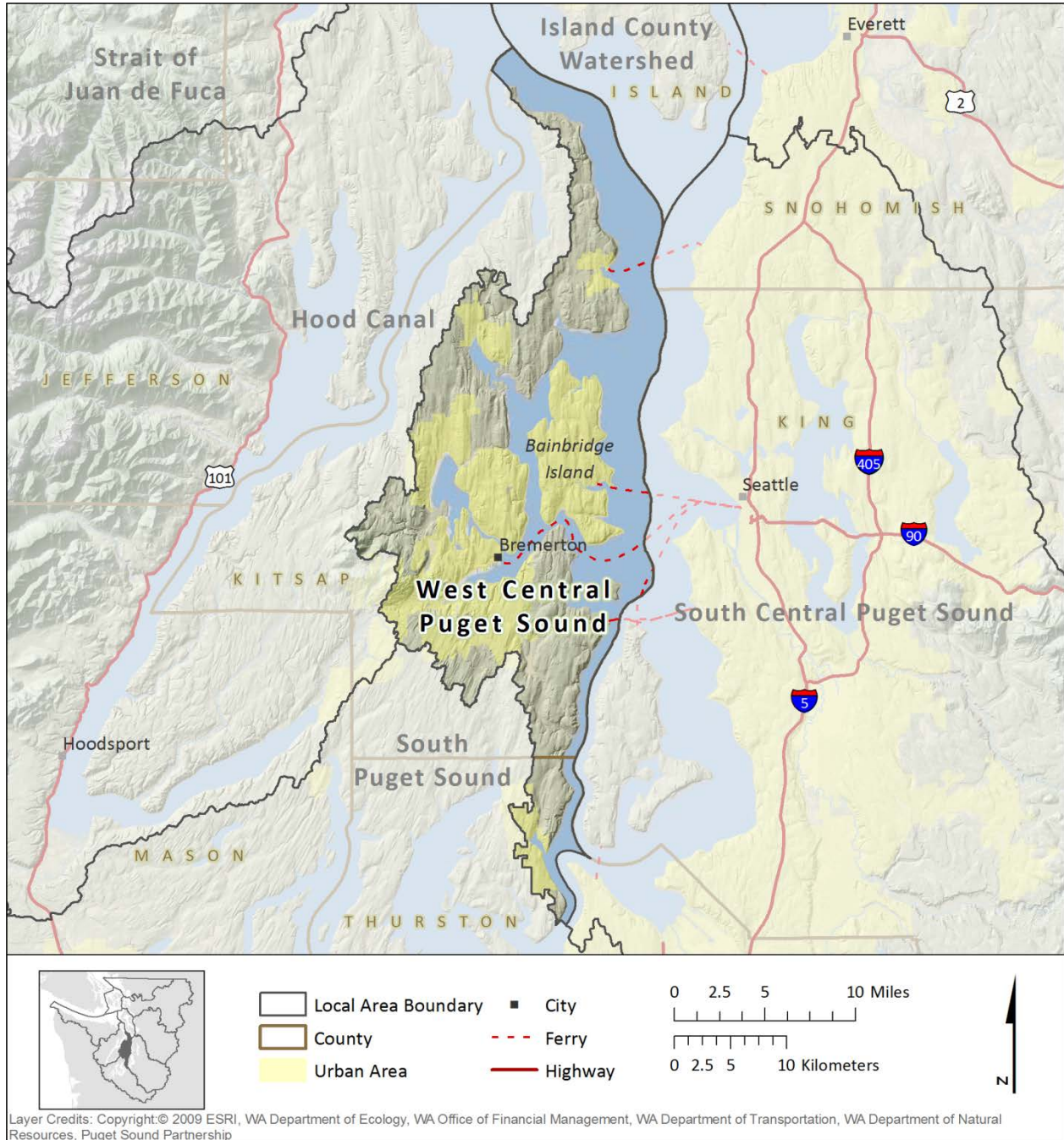
Incorporated cities in the action area include Bainbridge Island, Port Orchard, Poulsbo, Bremerton and Gig Harbor. Bremerton is the largest city in the action area, with a population of almost 38,000. Incorporated cities and urban growth areas make up 44% of the land base.

NOTABLE ACCOMPLISHMENTS

- Carpenter Creek estuary is currently being restored—a high priority in the 2008 Action Agenda.
 - Considerable progress has been made toward restoring Chico Creek, leveraging the partnerships and work of many to restore the watershed in phases.
 - The action area is a leader in water quality improvement projects, which have resulted in the upgrade of 2,500 acres of shellfish beds. Additionally, wet weather water quality in Dyes and Sinclair Inlets is improved due to the completion of combined sewer overflow construction projects by the City of Bremerton.
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¹¹ Water Resource Inventory Area (WRIA) 15

WEST CENTRAL PUGET SOUND (NORTH CENTRAL PUGET SOUND ACTION AREA)



These five cities began as dock locations for the historic Puget Sound “Mosquito Fleet,” which consisted of small steamers and sternwheelers that carried passengers and cargo up and down the Puget Sound prior to bridges and state-run ferries. Businesses, homes, and eventually roads were all located close to the shorelines of Puget Sound. Gig Harbor and Poulsbo were also home to cod and salmon fishing fleets.

The action area’s port districts are important as centers for commerce and military installations and as critical hubs for marine transportation. More than half of the 23 million annual passengers on the

Washington State Ferries system travel between the action area and the greater Seattle metropolitan area. Eagle Harbor on Bainbridge Island hosts the ferry system's maintenance and repair facility. Bridges at Agate Passage and the Tacoma Narrows link the action area by road to the rest of Puget Sound. Recreational vessels are moored throughout the action area, with over 2,000 permanent and transient slips. Other recreational amenities of the region include several state and local parks used for camping, boat launching, beach walking, hiking, bird watching, swimming, picnicking, shellfishing, and kayaking.

The U.S. military presence in the action area began in 1891, and since that time the area has played a pivotal role in military operations in several wars and conflicts. Naval Base Kitsap has facilities at Bremerton, Keyport, and Manchester, and is the action area's largest employer.

Unique Ecosystem Characteristics and Assets

The action area constitutes almost half of the nearshore habitat in the Central Basin of Puget Sound. This habitat includes dozens of embayments including open coastal inlets and functioning pocket estuaries, intact bluffed back beaches, and the only plunging rocky coastline in the basin. The subtidal and intertidal portions of the action area support some of the densest and highest quality wildstock geoduck clam fisheries in the world. The action area has 90 streams used by wild populations of chum, coho, steelhead, and cutthroat trout. The shoreline provides refuge, food, and rearing area for other juvenile salmon, including Chinook and Hood Canal summer chum, as they enter the Puget Sound from larger rivers on the eastern shore and Hood Canal. Much of the nearshore is used for spawning by native marine fishes including Pacific herring, surf smelt and Pacific sand lance. Commercial, recreational, and tribal shellfish activity is prominent along most of area's shorelines. Hatchery programs operated by the Suquamish Tribe at Gorst and Grovers Creek provide some salmon harvest opportunities for tribal fishers and recreational anglers.

The historical uses of military support activities and ship building left toxic legacies at Eagle Harbor, Keyport, Dyes Inlet, Sinclair Inlet, and Manchester. The sites were contaminated by disposal of military testing materials, creosote, and other chemicals, and are in varying degrees of remediation as part of the U.S. Environmental Protection Agency superfund site clean-up process.

Many people move to the action area because of its rural feel, and the majority of residents choose to live outside of the incorporated cities. This can result in conversion from existing rural forestland to an urban/suburban landscape, resulting in fragmented or degraded habitat. The population is expected to grow by 43% in the next 20 years, adding another 100,000 people. The increased population will require additional sewage or septic systems, and drinking water. Since the action area has no snow-fed water supplies, key aquifer recharge areas will need to be protected. An urbanizing landscape will also increase stormwater runoff, which threatens water quality, patterns of streamflow, and the availability of groundwater for human use. Stormwater has also been noted as a vector for pathogens, which have closed shellfish harvesting in some bays in the action area.

Local Implementation Structure and Planning Process

The West Central Local Integrating Organization (LIO) represents the North Central Puget Sound Action Area. The LIO formed in mid-2012, as a result of the work of a preliminary planning group over the

previous year, and was officially recognized by the Puget Sound Partnership’s Leadership Council in August 2012. The West Central LIO operates with an executive committee and a working group.

The executive committee, which officially convened in November 2012, includes elected representatives from the following entities:

- Kitsap and Pierce Counties
- Cities of Bainbridge Island, Bremerton, Gig Harbor, Poulsbo, and Port Orchard
- Port Gamble S’Klallam and Suquamish Tribes

The working group includes staff from the nine jurisdictions represented on the executive committee as well as from the following entities.

- Great Peninsula Conservancy
- Kitsap Conservation District
- Kitsap County Parks and Recreation
- Kitsap Public Health District
- Kitsap Public Utility District
- Kitsap Regional Coordinating Council
- Kitsap/Pierce Home Builders’ Association
- Naval Base Kitsap
- Ports of Poulsbo, Kingston, and Bremerton
- Puget Sound Restoration Fund
- Stillwaters Environmental Center / Kitsap Eco-Net
- Washington State Department of Health
- West Sound Watersheds Council
- Washington State University Extension Kitsap

The executive committee and working group meet at least semi-annually; smaller subgroups meet on an ad-hoc basis to address specific topics.

For this 2014/2015 Action Agenda update, the West Central LIO relied on staff from area jurisdictions to identify pressures, strategies, and a range of possible actions. Those actions were further developed, through technical sub-committees of the working group as described below, into near-term actions, and ultimately approved by the executive committee.

Three sub-groups were formed out of the working group to identify priority actions, based on the Strategic Initiatives. Each sub-group developed criteria for identifying, evaluating, and prioritizing actions. Each sub-group developed criteria for identifying, evaluating, and prioritizing actions.

The **salmon sub-group** used the West Sound Watersheds Council process to identify priority actions related to salmon recovery. The West Sound Watersheds Council’s technical advisory group developed a list of proposed actions from the salmon recovery 3-year work plan and assessments. The actions were evaluated based on the following four criteria.

- Protect and restore habitat and ecological functions in priority watersheds.
- Maintain the health of core salmonid populations.
- Protect intact nearshore habitat.
- Restore nearshore habitat functions.

If the technical advisory group agreed that a project would result in significant progress toward recovery targets and met at least one of the criteria, the action was included on the of sub-group's list of priority actions.

The **shellfish sub-group** evaluated projects identified by LIO members based on the following criteria.

- The action will lose funding after current U.S. Environmental Protection Agency grant funding ends in 2014.
- Kitsap County funding match is likely for the action.
- The action will support monitoring/maintenance of existing sewer areas OR the action relates to installing sewers in an area with historically high onsite sewage system failure rates and associated water quality problems.

The sub-group identified projects that would focus on extending the public sewer system as a necessary step for any potential upgrade to shellfish classification in commercial growing areas. If an action met at least one of the above criteria, it was included on the sub-group's list of priority actions.

The **stormwater sub-group** identified a list of potential actions and evaluated those actions based on the following 13 criteria.

- Benefits Puget Sound.
- Has cross-over with salmon and/or shellfish (co-location).
- Has motivation to accomplish milestones within 2 years (i.e., staff and political will).
- Provides community engagement/education.
- Restores natural flow regimes.
- Improves water quality/increases treatment.
- Takes advantage of infiltration opportunities (encourages cost-benefit).
- Improves access to habitat.
- Has aquatic habitat restoration component (habitat besides water quality/quantity).
- Can be maintained.
- Has construction feasibility.
- Has primary contact to water.
- Provides significant amount of water treated or habitat restored.

The proposed actions were ranked based on a scoring system (high, medium, low). The group made adjustments to the final list to balance habitat-specific projects with retrofit/conveyance projects, since both are needed to address priority pressures in the action area.

The full list of priority actions developed by the sub-groups was evaluated by a core team (consisting of representatives from each sub-group). The core team identified the following three criteria to further refine the priority actions into a list of near-term actions.

- Project opportunity relies on funding in the 2014–2015 timeframe.
- Geographic synergy with other actions.
- Achievement of multiple objectives.

The core team prioritized the actions as tier 1 and tier 2. The 15 tier 1 actions were proposed to the executive committee as new near-term actions, along with nine updated near-term actions from the 2012/2013 Action Agenda that are not yet complete. In September 2013, the executive committee approved all 24 near-term actions.

Pressures

The West Central LIO focused on pressures related to water quality and stormwater, shellfish health, and salmon habitat restoration as most significant in the action area.

Local Near-Term Actions

The table below presents the local near-term actions for West Central Puget Sound (North Central Puget Sound Action Area). Each local near-term action is listed with an identification code—which includes the area abbreviation and a number—followed by a description of the action. The performance measures represent important, measureable, dated components of implementing each action. The owner is the entity or entities responsible for implementation of the near-term action, with the primary owner being responsible for tracking and reporting progress toward completing the action. The final columns provide regional context for the local actions, identifying the pressure(s) that each action is intended to reduce and the primary sub-strategy to which it is most closely linked as well as other sub-strategies that the LIO associates with the action. Local near-term actions are also listed in Section 3, *Strategies and Actions*, in the context of their primary sub-strategies.

Local Near-Term Actions in the West Central Puget Sound

Near-Term Action		Performance Measures	Owner(s) ¹	Pressure(s)	Regional Sub-Strategy ²
WC1	West Sound inventory of transportation infrastructure projects. The West Sound Watersheds Council and West Central LIO will develop a process for the review of transportation infrastructure projects that addresses environmental impacts and key fish passage barriers.	<ul style="list-style-type: none"> By January 2015, identify process for the review of transportation infrastructure projects that addresses environmental impacts and key fish passage barriers by January 2013. 	West Central LIO (reporter)	<ul style="list-style-type: none"> Transportation and service corridors 	A1.1
WC2	West Sound Shoreline Master Program update alternatives to shoreline armoring. During the Shoreline Master Program update process for all West Central jurisdictions, the West Sound Watersheds Council will ensure that restoration plans for every Shoreline Master Program include alternatives to traditional shoreline armoring, and incentives for the removal of existing armoring.	<ul style="list-style-type: none"> Over the next 2 years, no net gain in shoreline armoring within any West Central jurisdiction. 	West Sound Watersheds Council	<ul style="list-style-type: none"> Marine shoreline infrastructure 	B1.2
WC3	West Sound eelgrass and forage fish surveys. The West Sound Watersheds Council, in coordination with the Suquamish Tribe, DNR, and others, will develop and implement periodic surveys of eelgrass and forage fish spawning habitat under a scientifically rigorous methodology, and update spawning habitat maps.	<ul style="list-style-type: none"> By June 2014, secure funds for eelgrass monitoring. By June 2015, update eelgrass maps. By June 2015, start forage fish spawning area surveys. By June 2016, update forage fish spawning maps. 	<p>Suquamish Tribe</p> <p><i>West Sound Watersheds Council</i></p>	<ul style="list-style-type: none"> Marine shoreline infrastructure 	B1.1

Near-Term Action		Performance Measures	Owner(s) ¹	Pressure(s)	Regional Sub-Strategy ²
WC4	West Sound Low Impact Development Training. Kitsap County Surface and Stormwater Management Program – with direct assistance from and close coordination with other stormwater utilities and agencies in the County – will provide training for 80% of Low Impact Development professionals in Kitsap County, including plan review staff, designers, installers, inspection, and maintenance staff.	<ul style="list-style-type: none"> • Training for 80% of LID professionals in Kitsap County by December 2014 	Kitsap SSWM	<ul style="list-style-type: none"> • Runoff from built environment 	C2.5
WC9	West Sound SR3 Chico Creek culvert replacement. The WSDOT will develop a funding strategy and schedule for replacing the SR3 culvert with a bridge on Chico Creek. Chico is the most productive salmon stream in West Sound and a high priority watershed for protection and restoration, and replacing the culvert with a bridge will improve fish passage and restore estuarine functions.	<ul style="list-style-type: none"> • By December 2015, funding strategy and schedule completed. 	West Central LIO (reporter) <i>WSDOT</i>	<ul style="list-style-type: none"> • Runoff from built environment 	A6.1
WC10	West Sound pump out stations. Kitsap Public Health District will identify pump out stations and develop needs assessment to address marine vessel sewage.	<ul style="list-style-type: none"> • By January 2015, deliver needs assessment report to Kitsap County Surface and Stormwater Management. • By June 2015, identify pump out station locations (likely candidates are Port Madison Bay, Port Gamble Bay, and Seabeck). • By June 2015, identify long term funding source for work on vessel waste issues. 	Kitsap Public Health District	<ul style="list-style-type: none"> • Culverts 	C1.5

Near-Term Action		Performance Measures	Owner(s) ¹	Pressure(s)	Regional Sub-Strategy ²
WC11	West Sound Steelhead Recovery Chapter. The West Sound Watersheds Council will develop a local chapter of a Steelhead Recovery Plan. The Council will propose a budget and implementation strategy for its local chapter of the recovery plan.	<ul style="list-style-type: none"> • By July 2015, local chapter developed. • By December 2015, budget and implementation strategy for local chapter. 	West Sound Watersheds Council	<ul style="list-style-type: none"> • Residential and commercial development • Culverts • Freshwater shoreline infrastructure 	A6.4
WC12	West Sound Priority Watersheds for Protection. The Suquamish Tribe will develop a detailed protection and restoration plan for the upper Chico Creek watershed. The Tribe will seek funding to undertake similar work for the high priority refugia, Curley and Blackjack Creek watersheds.	<ul style="list-style-type: none"> • By February 2015, protection and restoration plan for the Upper Chico Creek watershed. • By December 2015, funding in place for plans for Curley and Blackjack Creek watersheds. 	Suquamish Tribe	<ul style="list-style-type: none"> • Residential and commercial development • Culverts • Freshwater shoreline • Infrastructure 	A2.2
WC13	West Sound shellfish gardening. Kitsap Public Health will continue to work with the Puget Sound Restoration Fund on the expansion of community shellfish gardens in Kitsap County. This dovetails with the Health District's plans to implement a permanent marine shoreline survey program throughout Kitsap County in 2014.	<ul style="list-style-type: none"> • By April 2015, shellfish gardening pilot program expanded to one additional site. • By December 2015, expand to two additional sites. 	Kitsap Public Health District	<ul style="list-style-type: none"> • Runoff from built environment • Industrial, domestic and municipal • Onsite sewage systems 	C7.2
WC14	Kitsap Forest & Bay Divide Property acquisition. The West Central LIO, along with Great Peninsula Conservancy and other partners, will seek and secure funding to complete acquisition of the Kitsap Forest & Bay Divide Property, part of a larger effort to protect over 7,000 acres of forest and wetland habitat in north Kitsap County.	<ul style="list-style-type: none"> • By June 2016, secure funding for acquisition. 	Great Peninsula Conservancy <i>West Central LIO (reporter)</i>	<ul style="list-style-type: none"> • Residential and commercial development 	A2.1 (A3.2, A6.1, C4.1, C4.2, C7.1, D6.4)

Near-Term Action		Performance Measures	Owner(s) ¹	Pressure(s)	Regional Sub-Strategy ²
WC15	<p>Springbrook Creek fish passage enhancement and water quality retrofit. The City of Bainbridge Island will seek funding to complete study and design for a watershed scale project that would ultimately replace two stream crossing culverts to improve fish passage; eliminate stream bank erosion through habitat enhancement; and reduce pollutants from road runoff by adding water quality retrofits, including addressing fecal coliform sources upstream of an important shellfish growing area and eliminating impound ponds.</p>	<ul style="list-style-type: none"> • By June 30, 2014, complete project study and design. • By June 30, 2015, secure funds and begin project construction. 	City of Bainbridge Island	<ul style="list-style-type: none"> • Runoff from built environment • Culverts 	A2.2 (A6.4, C2.3, C2.4, C7.1)
WC16	<p>Duwe'iq stormwater treatment wetland and stream restoration. Kitsap County Surface and Stormwater Management will complete construction of the Duwe'iq Stormwater Treatment Wetland and Stream Restoration project, which will reduce fecal coliform and other stormwater pollutants from 30 acres of commercial runoff into Clear Creek, improve stream habitat, advance public education about stormwater via Clear Creek Trail access, and increase green space in the urban Silverdale corridor.</p>	<ul style="list-style-type: none"> • By January 2016, complete Phase 2: 60/90/Final Design Plan, Specifications and Estimates. • By June 2016, complete construction. • Public education signage installed. • Provide a higher level of water quality treatment of 30 acres of commercial runoff post-project. • A statistically significant improving trend of fecal coliform during the wet season at the northern Dyes Inlet marine stations. • Increased public green space along the Clear Creek Trail. 	Kitsap County Surface and Stormwater Management	<ul style="list-style-type: none"> • Runoff from built environment 	A2.2 (A2.3, A6.4, C2.1, C2.3, C7.1, D6.4)
WC17	<p>Clear Creek floodplain restoration. With an ultimate goal of freshwater habitat restoration and enhancement, Kitsap County Surface and Stormwater Management will complete a project to construct floodplain, restore stream habitat, remove road, enhance trails, reduce downstream flooding, and advance public</p>	<ul style="list-style-type: none"> • By December 31, 2016, completion of project design and permitting. • By December 31, 2017, completion of project construction. • By December 31, 2017, 8.2 acres of floodplain constructed. • By December 31, 2017, 2,120 feet of stream 	Kitsap County Surface and Stormwater Management	<ul style="list-style-type: none"> • Runoff from built environment • Residential and commercial development 	A2.2 (A5.4, A6.1, A6.4, C2.1, D6.4)

Near-Term Action		Performance Measures	Owner(s) ¹	Pressure(s)	Regional Sub-Strategy ²
	<p>education about floodplains/wetlands/stormwater in Clear Creek. This includes:</p> <ul style="list-style-type: none"> • Completion of restoration design. • Completion of project permitting. • Completion of project construction. 	<p>habitat improved.</p>			
WC18	<p>Chico/Keta Park culvert replacement and floodplain restoration. Kitsap County Roads and the Suquamish Tribe will replace a triple box culvert and reconnect/ restore upstream floodplain habitat at Keta Park, on the mainstem of Chico Creek. This includes completion of project design, for which funding has already been secured.</p>	<ul style="list-style-type: none"> • By December 2014, culvert design completed. • By June 2016, culvert replaced. 	<p>Kitsap County Roads</p> <p><i>Suquamish Tribe</i></p>	<ul style="list-style-type: none"> • Culverts • Runoff from built environment 	<p>A6.1 (A5.4, A6.4, B5.1, D2.2)</p>
WC19	<p>Point No Point Marsh restoration. Pending the results of a feasibility study in progress, Kitsap Surface and Stormwater Management, WDFW, and the West Central LIO will design and construct a replacement tidegate at Point No Point State Park by December 31, 2014. The goal is restoration of tidal hydrology and fish passage at a regionally important location for salmon recovery.</p>	<ul style="list-style-type: none"> • By December 31, 2014, complete design for a replacement tidegate at Point No Point State Park. • By June 30, 2015, begin construction. • By June 30, 2016, complete construction/restoration. 	<p>West Central LIO (reporter)</p> <p><i>WDFW</i></p>	<ul style="list-style-type: none"> • Marine water levees and tidegates • Residential and commercial development 	<p>B2.2 (A6.1)</p>
WC20	<p>Waterfront Park bulkhead removal and conveyance retrofit. With a goal of enhancing nearshore habitat through armoring removal and beach nourishment, the City of Bainbridge Island will complete a bulkhead removal, beach nourishment, and stormwater conveyance system retrofit. Funding has been secured for initial design work, community outreach, and armoring</p>	<ul style="list-style-type: none"> • By June 2014, secure funds for stormwater conveyance system retrofits. • By June 2016, complete bulkhead removal, beach nourishment, and stormwater conveyance system retrofit. 	<p>City of Bainbridge Island</p>	<ul style="list-style-type: none"> • Marine shoreline infrastructure • Runoff from built environment 	<p>B2.2 (B3.2, C2.3, C9.3, D6.4)</p>

Near-Term Action		Performance Measures	Owner(s) ¹	Pressure(s)	Regional Sub-Strategy ²
	removal and beach nourishment, and funds necessary to complete stormwater conveyance system retrofit work will be sought. All proposed project work must occur simultaneously in order to minimize project costs and maximize ecological outcomes.				
WC21	Ridgetop Boulevard Green Street. Kitsap Surface and Stormwater Management will install 10-14 median bioretention (rain gardens) facilities on Ridgetop Boulevard near Silverdale, treating 18 acres of road runoff and reducing fecal coliform and other contaminants flowing into Dyes Inlet.	<ul style="list-style-type: none"> • By December 2015, install 10–14 median bioretention (rain gardens) facilities on Ridgetop Boulevard. • Statistically significant declining fecal coliform trend at the northern Dyes Inlet marine stations during the wet season. Volume of runoff reduced based upon modeling and amount of annual rainfall can be reported. • Protection of shellfish acres. 	Kitsap SSWM	<ul style="list-style-type: none"> • Runoff from built environment 	C2.3 (C2.4, C7.1)
WC22	Poulsbo Low Impact Development retrofit study for Upper South Fork Dogfish Creek basin and downtown Poulsbo. City of Poulsbo will seek funding and complete stormwater retrofit plans for the Upper South Fork Dogfish Creek Basin and Downtown Poulsbo basins.	<ul style="list-style-type: none"> • By June 30, 2014, secure funding for plan development. • By June 30, 2016, complete stormwater retrofit plans. 	City of Poulsbo	<ul style="list-style-type: none"> • Runoff from built environment 	C2.3 (C7.1, C9.3)

Near-Term Action		Performance Measures	Owner(s) ¹	Pressure(s)	Regional Sub-Strategy ²
WC23	Gig Harbor stormwater retrofit study. City of Gig Harbor and Pierce County will complete a stormwater retrofit study for the City of Gig Harbor. The primary deliverable will be a comprehensive, prioritized list of beneficial stormwater projects within the City. Once completed, Gig Harbor and Pierce County can include identified projects on their Capital Facilities Plans and/or apply for relevant stormwater retrofit grants to fund construction.	<ul style="list-style-type: none"> By December 2014, prioritize list of beneficial stormwater projects. 	City of Gig Harbor <i>Pierce County</i>	<ul style="list-style-type: none"> Runoff from built environment 	C2.3 (C2.1, C9.3, C9.3)
WC24	Low Impact Development peer leaders network. With funding provided through Kitsap County Surface and Stormwater Management, WSU Cooperative Extension will develop and implement a Low Impact Development professionals network program.	<ul style="list-style-type: none"> By December 2014, grant funds secured. By June 30, 2016, Low Impact Development professionals network implemented. Increased Low Impact Development in Kitsap (if resources exist to measure). 	WSU Extension Kitsap <i>Kitsap SSWM</i>	<ul style="list-style-type: none"> Runoff from built environment 	C2.5 (C1.4, D7.2)
WC25	Continued funding for shoreline monitoring programs in Kitsap and Pierce Counties. Help fund routine marine shoreline E. coli bacteria monitoring program in Kitsap and Pierce Counties to protect and restore commercial shellfish areas. Provide 100% funding for 2-year shoreline monitoring program on Bainbridge Island. Provide 50% match for shoreline monitoring program along unincorporated Kitsap and Pierce Counties, within all classified areas (including Port Orchard Passage).	<ul style="list-style-type: none"> Maintain current level of monitors. Acres of shellfish monitored. Fecal coliform content of water reduced (or other contaminants). Acres of shellfish re-opened or upgraded. By December 31, 2014, deliver needs assessment report to Kitsap County Surface and Stormwater Management. Report on number of stations sampled. Report on number of stations identified as “hot spots.” Investigate and close 90% of identified “hot spots.” Report on number of failing onsite sewage systems identified/corrected. 	Kitsap Public Health District and Tacoma-Pierce County Health Department	<ul style="list-style-type: none"> Onsite sewage systems 	D4.2

	Near-Term Action	Performance Measures	Owner(s) ¹	Pressure(s)	Regional Sub-Strategy ²
		<ul style="list-style-type: none"> • Report on number of animal waste management violations identified/corrected. • Report on number of public/side sewer leaks identified/corrected. • Report on number of shoreline miles monitored. • Report on acres of classified commercial shellfish growing area protected or down grade prevented. • Report on acres of commercial shellfish growing area re-opened or receiving improved classification. • Report on number and percentage of shoreline discharges with reduced bacterial concentrations. 			
WC26	<p>South Dyes Inlet wastewater infrastructure. With an ultimate goal of making Oyster Bay viable for commercial shellfish harvest, the City of Bremerton will assess, improve, and expand sewer infrastructure in South Dyes Inlet.</p>	<ul style="list-style-type: none"> • By August 31, 2014, completion of an Infrastructure Integrity Assessment. • By July 31, 2014, completion of 100% sewer system designs for Phinney Bay, and by November 30, 2014, Ostrich Bay Creek. • By August 31, 2015, construction of sewer system extensions for Phinney Bay and by June 30, 2016, Ostrich Bay Creek. • Fecal coliform content of water reduced (or other contaminants). • Shellfish acres re-opened or upgraded. 	City of Bremerton	<ul style="list-style-type: none"> • Onsite sewage systems • Industrial, domestic, and municipal • Wastewater 	C7.1 (C2.3, C5.1, C9.2, C9.3)
WC27	<p>Marine Drive/Kitsap Way/Oyster Bay Avenue storm system filtration retrofit. With a goal of improving water quality impacting shellfish harvest in Oyster and Ostrich bays, the City of Bremerton will install a passive stormwater filtration system prior to the outfall into Oyster Bay and Low Impact Development components along</p>	<ul style="list-style-type: none"> • By March 2015, install passive stormwater filtration system and Low Impact Development components. • Contaminants in road runoff reduced. • Shellfish beds re-opened or upgraded. • Determine baseline flow and water quality characteristics and compare with post- 	City of Bremerton	<ul style="list-style-type: none"> • Runoff from built environment 	C2.3 (C2.1, C9.3)

Near-Term Action		Performance Measures	Owner(s) ¹	Pressure(s)	Regional Sub-Strategy ²
	approximately 1.5 miles and 65 acres on Marine Drive, approximately 31 acres along the north portion of Kitsap Way, and approximately 1.5 miles and 40 acres on Oyster Bay Avenue.	construction to determine effects of the project.			
WC28	Ostrich Bay Creek retrofit plan design. With a goal of improving water quality impacting shellfish harvest in Oyster and Ostrich bays, the City of Bremerton will complete a stormwater retrofit design study for Ostrich Bay Creek. The retrofit design plan will evaluate and determine the best locations and types of Low Impact Development components to use for this drainage basin. The basin is more than 230 acres of pervious and impervious surface used for light commercial facilities, residences and State Highway. The plan will address water quality and quantity issues that impact Ostrich Bay Creek by using various Low Impact Development components and treatment systems. The City will pursue funding through the LIO process, grants, and local partnerships to construct the designed components as funding is made available.	<ul style="list-style-type: none"> By December 2014, complete stormwater retrofit design study for Ostrich Bay Creek. 	City of Bremerton	<ul style="list-style-type: none"> Runoff from built environment 	C2.3 (C2.1, C9.3)
<p>¹ Where secondary owners were identified, they are shown in italics after the primary owner.</p> <p>² Where secondary regional sub-strategies were identified, they are shown in parentheses after the primary sub-strategy.</p> <p>DNR = Washington State Department of Natural Resources; LIO = local integrating organization; WDFW = Washington Department of Fish and Wildlife; WSDOT = Washington State Department of Transportation; WSU = Washington State University.</p>					

Whatcom County/Nooksack Watershed

Description of the Area

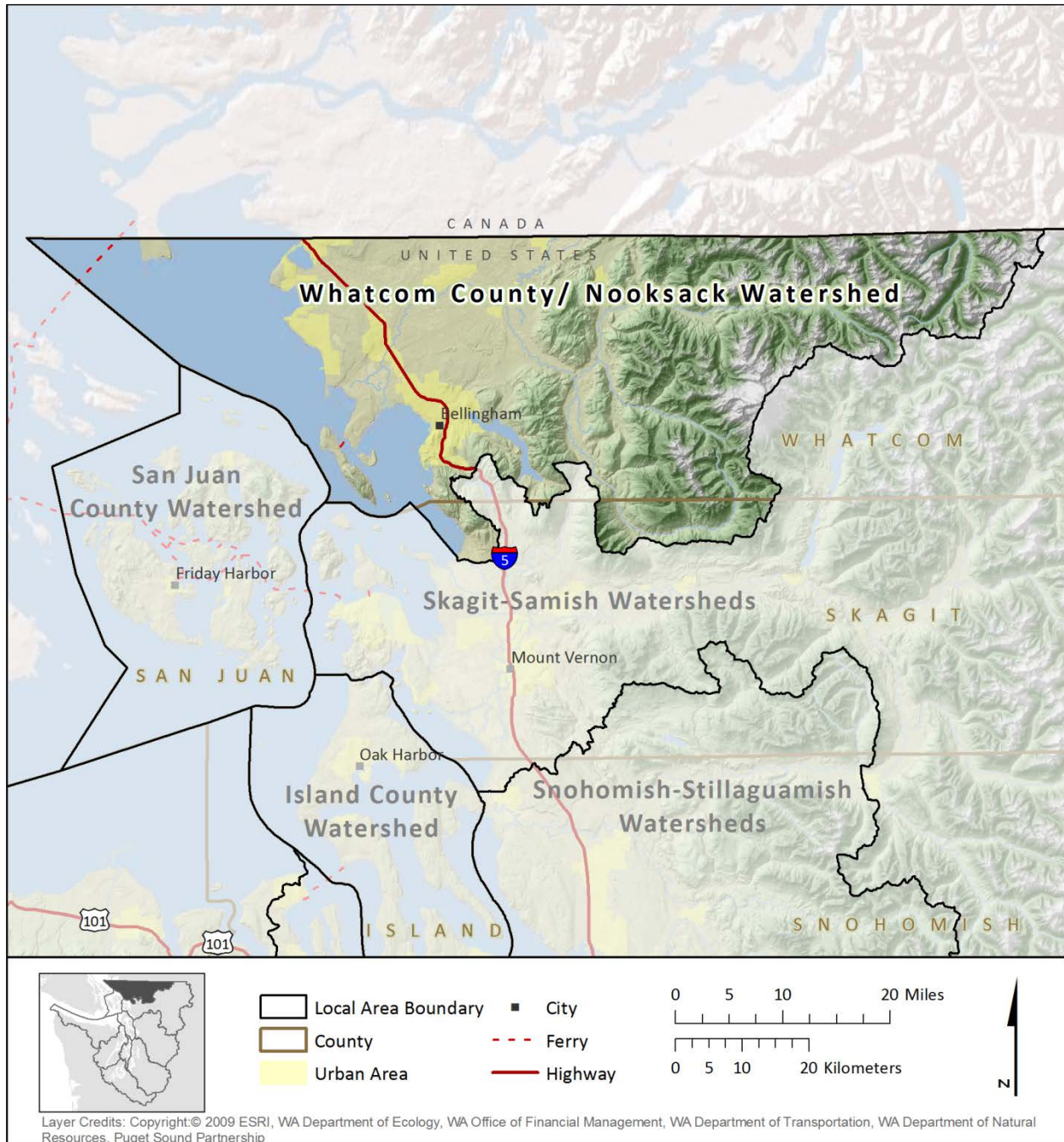
Whatcom County/Nooksack watershed¹² is within the San Juan/Whatcom Action Area. It is located in the northwest corner of Washington State and encompasses the northeast corner of Puget Sound. WRIA 1 covers 1,410 square miles, largely in Whatcom County, but extends 21 square miles into Skagit County and 147 square miles into British Columbia, Canada. The San Juan/Whatcom Action Area is one of two action areas with streams crossing the international boundary with Canada. The Nooksack River, the watershed's namesake, originates from glaciers on Mount Shuksan in North Cascade National Park and Mount Baker, the highest point in the watershed at 10,778 feet, which is located in the Mount Baker–Snoqualmie National Forest. From the headwaters, the Nooksack River flows westerly through forest and farm land and past small cities to reach sea level at Bellingham Bay. Mount Baker is an active volcano and one of the snowiest places on earth. In 1999, the Mount Baker Ski Area set a world record with 95 feet of total snowfall in a single season. Yet despite some banner years for skiers, the many glaciers on Mount Baker have generally been in rapid retreat since the 1980s. Spring and early summer snowmelt feed the three forks that combine to form the mainstem Nooksack River near Deming, while glacial meltwater continues to feed two of the three branches, the North and Middle Forks, from mid-summer to early fall once the snowmelt is complete. Rainfall and groundwater contribute flow to the Nooksack River and are the primary sources of flow for the lowland tributaries and independent coastal streams.

The Nooksack River has three main forks—north, middle, and south. Other major river systems in WRIA 1 include the Lummi River, Dakota Creek, and other independent coastal streams, and tributaries to the Fraser River in Canada including the Sumas River. Fishtrap and Bertrand Creeks are tributaries to the Nooksack River and both originate in British Columbia. There are more than 3,000 total miles of freshwater courses, including streams, rivers, lakes, ponds and wetlands, as well as 155 miles of marine shoreline in the Whatcom County portion of the area.

The Whatcom County portion of WRIA 1 is home to over 200,000 residents, with approximately 81,000 living in the city of Bellingham. The county is located between two major metropolitan areas: Vancouver, British Columbia, which supports over 2 million people 30 miles to the north, and King/Snohomish Counties, which include the cities of Everett and Seattle also support over 2 million people 60 to 100 miles to the south.

¹² Water Resource Inventory Area (WRIA) 1

WHATCOM COUNTY/NOOKSACK WATERSHED



Approximately 85,300 acres (11%) of Whatcom County land is designated for agricultural use although agricultural production occurs on more than 140,000 acres. This land base supports robust dairy, berry, and seed potato production. Whatcom County’s dairy industry ranks second out of 34 dairy-producing counties in the state and is in the top 5% of dairy production nationwide, with a farm gate value of \$190 million dollars per year. Half of the 103,000 milk cows in Puget Sound are in Whatcom County. The county also produces more than 65% of the nation’s raspberries, with an estimated value of \$65 million in 2011. Other major crops include strawberries, blueberries, greenhouse and nursery items, poultry,

eggs, and seed potatoes. Approximately 9% of Whatcom County's land use is agriculture, while 82% of the land is considered forest and rural. Cities and urban growth areas account for 7% of the land use. Other land uses consist of mining, industrial, and commercial development. Two refineries and an aluminum smelter operate in the Cherry Point area. Deep-water access at Cherry Point is a factor in future industrial activity in this location including the proposed coal transport facility, which would accommodate Panamax (65,000 to 85,000 tons) and Capesize (160,000 to 180,000 tons) deep-draft vessels. Western Washington University, the Port of Bellingham, and traditional commercial forestry and fishing also contribute to the region's economy. The former pulp mill site on Bellingham Bay is being redeveloped from a heavy industrial site to a mixed-use waterfront with parks, businesses, and public moorage that will be linked to downtown Bellingham, while portions of the Whatcom Waterway are reserved for deep-water commercial use.

The reservation lands of the Nooksack Tribe are located primarily along and in the vicinity of the Nooksack River and its tributaries. The Lummi Indian Nation lands include the Lummi and Sandy Point Peninsulas, Portage Island, and associated tidelands. The Nooksack River flows through the Lummi Reservation as it discharges into Bellingham Bay. Both tribes exercise treaty rights to fish, hunt, and gather throughout the Nooksack River watershed and adjoining marine areas. Shellfish harvest is an important activity for local tribes and a major commercial industry for the region. Commercial, ceremonial, and subsistence harvest of in both marine and freshwater habitats is of particular importance to Lummi Nation and Nooksack Indian Tribe members. Recreational shellfish harvest is an active pursuit of area residents and recreational visitors at Semiahmoo Spit, Birch Bay, and Chuckanut Bay.

The relatively shallow depths of Birch Bay result in warm water temperatures and increased recreational activities in the summer. Of all Washington State Parks, Birch Bay State Park was the most visited for recreational shellfish harvesting in 2009. Lake Whatcom, another popular recreational and residential area, is also the drinking water reservoir for Bellingham and parts of Whatcom County. Winter recreation enthusiasts rely on the proximity to the Mount Baker Ski Area for easy access to snow sports. The residents of, and visitors to, Whatcom County, university students, tribal citizens, and pioneer descendants place a high value on the diverse environment and economy of Whatcom County. There is active participation in marine resource committees, watershed councils, and education and restoration programs related to the continued health of the local ecosystem.

Unique Ecosystem Characteristics and Assets

Mount Baker has been a landmark since humans first began to navigate and explore this corner of Puget Sound, and the abundant snowfields provide water and electricity for communities in Puget Sound. In addition to the striking natural beauty of Whatcom County, the region supports habitat types from alpine headwaters to tidal bays, along with farming, fishing, and forestry operations. This area sustains every native Pacific salmonid species, and includes unusual types such as riverine sockeye salmon and even-year pink salmon. The Chinook salmon populations in the North, Middle and South Forks of the Nooksack River have distinct genetic and timing traits that are considered to be crucial in retaining the diversity and viability of threatened Puget Sound Chinook salmon overall. All of the salmon species depend on the nearshore habitats for food and shelter as they adjust between freshwater and saltwater habitats.

The marine shorelines of Whatcom County produce surf smelt, sand lance, and anchovy, along with other fish and shellfish species. Birch Bay, Chuckanut Bay, and Lummi Island have recreational shellfish harvesting. Drayton Harbor, Lummi Bay, and Portage Bay have tribal and commercial shellfish growing areas, while Alden Bank offers shallow offshore habitat for isolated populations of geoduck, sea urchins, and clams. Several of these areas are currently prohibited, conditionally approved, or threatened for shellfish harvest due to poor water quality. The Cherry Point area was historically the most highly productive area for herring in Puget Sound, producing an estimated 32% of all the known herring spawning in the sound, prior to a precipitous decline of 94% from 1973 to 2000.

Natural features and human activities have made Whatcom County an important area for migratory waterfowl, raptors, and other birds. The nearshore areas have abundant food sources for marine birds; and the floodplains, wetlands, and agricultural fields provide forage areas. Birch Bay is designated as a Shoreline of Statewide Significance, the only marine shoreline in Whatcom County with this designation. Greater Bellingham Bay, including Chuckanut and Portage Bays, Drayton Harbor, Semiahmoo Spit, and Birch Bay are portions of the Pacific Flyway and are stopovers for the migratory birds' flight path between the Fraser River estuary and Skagit Bay.

Local Implementation Structure and Planning Process

The WRIA 1 Policy Boards—WRIA 1 Watershed Joint Board and WRIA 1 Salmon Recovery Board—form the local integrating organization (LIO) for Whatcom County Nooksack watershed, or Whatcom LIO. The Whatcom LIO was officially recognized by the Puget Sound Partnership's Leadership Council in November 2010. The Whatcom LIO is a function of the existing integrated governance structure for WRIA 1 program management. The LIO operates with the WRIA 1 Policy Boards and Management Team and staff teams.

The WRIA 1 Policy Boards provide policy direction and guidance. Their membership is shown below.

- WRIA 1 Watershed Joint Board
 - Whatcom County
 - Cities of Bellingham
 - Lummi Nation
 - Nooksack Indian Tribe
 - Public Utility District No. 1
- WRIA 1 Salmon Recovery Board
 - City of Bellingham
 - City of Blaine
 - City of Everson
 - City of Ferndale
 - City of Lynden
 - City of Nooksack
 - City of Sumas

- Whatcom County
- Washington Department of Fish and Wildlife
- Lummi Nation
- Nooksack Indian Tribe

The WRIA 1 Management Team provides program oversight and administers the policies and directions of the WRIA 1 Policy Boards. It consists of representatives from the same entities as the policy boards. The staff teams¹³ support the Whatcom LIO through the development and implementation of local actions. The staff teams include staff members from the policy boards' membership and other governments and organizations.

For the 2014/2015 Action Agenda update, the staff teams focused on identifying near-term actions that could be implemented over the next 2 to 3 years and supported the Strategic Initiatives. The staff teams compiled a list of 33 actions representing the local priorities of participating jurisdictions and organizations. The management team used a rubric, typically consisting of the following questions, to narrow that list.

- Will the action have measurable watershed improvements (e.g., riparian function, stream habitat, water quality, water allocation, estuary function, nearshore habitat connectivity)?
- Is the action based on established and legitimate local planning process?
- Does the proponent have sufficient authority to implement and report on the action?
- Can the action be substantially completed by December 2016?
- Does the action address one of the Strategic Initiatives?

If the response to the first four questions was positive, the action was advanced by the management team to the policy boards as a recommended near-term action.

The updated near-term actions should not be construed to represent the priority of any individual contributor; rather, as a group they are consistent with the LIO's overall purpose to coordinate implementation of Action Agenda priorities consistent with or complementary to local priorities.

Pressures

In 2011, the Whatcom LIO used guidance from Partnership staff to evaluate pressures relevant to the local ecosystem. The LIO prioritized 15 pressures as significant to the local ecosystem. In the table below, the pressures are listed alphabetically and organized geographically by aggregated watershed areas. They are organized geographically because of the unique characteristics and land uses within this area. The aggregated watersheds are consistent with the aggregations in the WRIA 1 2010 State of the Watershed Report. The pressures were not revised for this update.

¹³ In 2012, an ad hoc work group (the Whatcom Integration Team) was established for the purpose of updating and refining the March 16, 2012, update to the Puget Sound Action Agenda, and identifying options to present to the WRIA 1 Management Team for further integrating and advancing local priorities in the WRIA 1 decision-making structure. The options identified by the Whatcom Integration Team and presented to the WRIA 1 Management Team for the purpose of a 2014/2015 update included a staff team option. In June 2013, the WRIA 1 Policy Boards acted on the WRIA 1 Management Team recommendation of staff teams to support the WRIA 1 Policy Boards' LIO function.

Pressures Identified by Aggregated Watersheds

Pressure(s)	Aggregated Watersheds						
	Nooksack Forks	Lower Nooksack	Coastal North ¹	Coastal West ¹	Coastal South ¹	Lake Whatcom	Sumas River
Agriculture, livestock grazing; agricultural runoff	X	X	X	X			X
Aquatic animal harvesting (includes threat of illegal fishing)	X	X	X	X	X	X	X
Culverts	X	X	X	X	X	X	X
Dams	X						
Freshwater levees/floodgates (includes outlet dam)	X	X				X	
Freshwater shoreline infrastructure (armoring, docks, bulkheads, other overwater structures)	X	X				X	
Industrial, domestic and municipal wastewater	X	X	X	X	X	X	X
Invasive species	X	X	X	X	X	X	X
Marine shoreline infrastructure (armoring, docks, bulkheads, other overwater structures)			X	X	X		
Oil and hazardous material spills (includes pipelines/tanker trucks/trains/ marinas/ports)	X	X	X	X	X	X	X
Recreational activities	X	X	X	X	X	X	X
Residential and commercial development; runoff from built environment (unmanaged runoff)	X	X	X	X	X	X	X
Timber production (includes Lummi Reservation)	X		X	X	X	X	X
Transportation and service corridors (in WRIA 1 includes rail, roadways, ports, marinas, ferry terminal, border crossings, pipelines)	X	X	X	X	X	X	X
Water withdrawals/ diversions	X	X	X	X	X	X	X

¹ Includes adjacent marine waters.

Local Near-Term Actions and Opportunities

The table below presents the local near-term actions for Whatcom County Nooksack watershed. Each local near-term action is listed with an identification code—which includes the area abbreviation and a number—followed by a description of the action. The performance measures represent important, measureable, dated components of implementing each action. The owner is the entity or entities responsible for implementation of the near-term action, with the primary owner being responsible for tracking and reporting progress toward completing the action. The final column provides regional context for each local action, identifying the primary sub-strategy to which it is most closely linked as well as other sub-strategies that the LIO associates with the action. Local near-term actions are also listed in Section 3, *Strategies and Actions*, in the context of their primary sub-strategies.

Local Near-Term Actions in Whatcom County Nooksack Watershed

Near-Term Action		Performance Measures	Owner(s) ¹	Regional Sub-Strategy ²
WH1	Implement Chinook restoration projects in the WRIA 1 Salmon Recovery 3-Year Work Plan. The preparation and updating of the 3-year work plan is an element of salmon recovery and is a regional requirement for lead entities, occurring annually. The local recovery plan and restoration strategies are the foundation for the updates, and reflect local restoration strategies and priorities.	<ul style="list-style-type: none"> • By January 2016, WRIA 1 Sponsors prepare designs for up to six priority chinook projects in the Nooksack River Forks. • By January 2016, WRIA 1 Sponsors complete up to five instream projects in the Nooksack River Forks that create up to 20 primary pools and 4 miles of channel and off-channel habitat. • By January 2016, WRIA 1 Sponsors acquire up to 100 acres of priority habitat for protection and/or restoration in the Nooksack River Forks. • By January 2016, WRIA 1 Sponsors submit up to six applications for project funding. 	<p>WRIA 1 Salmon Recovery Board (Lead Entity)</p> <p><i>Nooksack Tribe, Lummi Nation, Whatcom County, Whatcom Land Trust, NSEA, Whatcom CD, City of Bellingham, WDFW, USFS, and others are supporting partners</i></p>	A6.1 (A5.4)
WH2	WRIA 1 Forest Road Inventory and Assessment for implementation. Compile information on federal, state, and private forest roads identified as risks to aquatic resources. In addition, identify additional non-system roads and prioritize road segments based on potential for mass wasting and sediment delivery to streams. Develop treatments for road decommissioning, storage, and seek funding for implementation.	<ul style="list-style-type: none"> • By December 2014, USFS complete Inventory and Assessment for Priority Drainages on USFS land. • By December 2014, Nooksack and Lummi Natural Resource Staff provide information on private forest roads risk in priority drainages. • By June 2015, USFS and technical staff prioritize road segments for treatment. • By June 2016, USFS finalize contract for treatment on road segments in priority areas. 	<p>WRIA 1 Salmon Recovery Board</p> <p><i>USFS, NNR, LNR</i></p>	C4.2 (B2.2)
WH3	Lower Nooksack Floodplain Management. Complete habitat assessments and restoration plans for Reach 4, Reach 3, Reach 2, and Reach 1 of the Mainstem Nooksack. The restoration plans will advance the Flood/Fish Integration action in the WRIA 1 Salmonid Recovery Plan (through incorporation into Systemwide Improvement Framework Plan and/or Comprehensive Flood Hazard Management Plan), and will provide technical information to support the	<ul style="list-style-type: none"> • By December 2015, Salmon Recovery Staff Team completes restoration plan for mainstem Nooksack River (reaches 1 through 4). • By December 2014, Whatcom Conservation District prepares agricultural riparian corridor plan in collaboration with salmon recovery, water quality, and other interests to establish vegetative prescriptions for agricultural watercourses to achieve water quality and 	<p>WRIA 1 Salmon Recovery Board</p> <p><i>WCPW, LNR, Whatcom CD, NNR</i></p>	A5.1 (A5.4)

	Near-Term Action	Performance Measures	Owner(s) ¹	Regional Sub-Strategy ²
	<p>Whatcom Conservation District’s restoration and riparian efforts in agricultural areas. This action is critical to ultimately restoring Nooksack River floodplain.</p>	<p>fish habitat goals.</p> <ul style="list-style-type: none"> • By December 2014, agreement with Whatcom Conservation District to develop a community vision for a green infrastructure plan that identifies working lands and essential environmental features including fish and wildlife habitat that will inspire individual landowner participation in protection and restoration actions. • By February 2016, Salmon Recovery Staff Team develops preliminary design for integrated floodplain restoration project and associated grant proposal to procure construction funding. 		
WH4	<p>Padden Creek enhancements—24th to 30th Streets. This freshwater project greatly improves existing habitat conditions for the section of Padden Creek that is immediately upstream of the newly daylighted tunnel. This site is now accessible to salmonid species. The project will increase the diversity and amount of fish habitat available by reconnecting Padden Creek to its floodplain, adding log jams, boulders and pools in an urban environment. Steps include completing design, obtaining permits, constructing, planting the site, maintaining plantings, and monitoring site evolution.</p>	<ul style="list-style-type: none"> • By November 2015, complete design. • By January 2016, complete bid specifications and permit applications. • By December 2016, complete construction. • By January 2017, complete planting. 	City of Bellingham	A2.2 (B2.2)
WH5	<p>WRIA 1 culvert inventory maintenance. Whatcom County completed an inventory of culverts in WRIA 1 in 2005. The document may need to be updated to reflect culverts replaced or repaired and inventories recently completed by WDFW. Completing designs for priority fish passage barriers would enable those barriers to be “shovel-ready” when funding becomes available to implement projects.</p>	<ul style="list-style-type: none"> • By December 2014, WDFW in collaboration with partners prepare an addendum to 2005 WRIA 1 Culvert Inventory. • By December 2015, Sponsors prepare designs to fix up to three priority fish passage barriers. 	<p>To be determined</p> <p><i>USFS, Whatcom County Public Works, NSEA, WDFW</i></p>	A2.2

Near-Term Action		Performance Measures	Owner(s) ¹	Regional Sub-Strategy ²
WH6	Implement and expand the noxious weed eradication program. The Noxious Weed Board has implemented a program in Whatcom County to remove knotweed from the Nooksack Forks and spartina species from marine intertidal areas including the Nooksack and Lummi River deltas. Long term surveys and continued annual removal/treatment is necessary to prevent the establishment of spartina and to manage knotweed infestations.	<ul style="list-style-type: none"> ● In 2014, continue follow-up treatments in forks using existing funding. ● By the end of 2015, if full funding is made available, extend treatments to all tributaries to the forks with first treatment of all tributaries and touch up treatments in previously treated areas. ● Through 2014, continue spartina surveys for early detection with existing funding. <ul style="list-style-type: none"> ○ Remove new spartina clones detected. ○ Continue seasonal removal of spartina close currently known. ○ Recommend and implement herbicides if determined necessary. 	<p>Whatcom County</p> <p><i>Whatcom County Noxious Weed Board</i></p>	B5.3
WH7	Waterfront and estuary habitat connectivity projects. Implement restoration projects, and protect marine shorelines through stewardship projects.	<ul style="list-style-type: none"> ● Locust Beach– Marine Resources Committee in cooperation with City of Bellingham Parks Department to: <ul style="list-style-type: none"> ○ By December 2016, host four coordinated beach clean ups with local community groups at Locust Beach (e.g., kiteboarding club, dive club, Surfrider), and design and install interpretive and stewardship signs. ● Little Squalicum Estuary–City of Bellingham to: <ul style="list-style-type: none"> ○ By June 2014, complete design. ○ By June 2014, complete bid specifications and permit applications. ○ By December 2015, complete construction. ○ By January 2016, complete planting. ● Whatcom Waterway Between Roeder and Holly–City of Bellingham to: <ul style="list-style-type: none"> ○ Complete feasibility and site characterization. ○ By December 2014, complete design, bid specifications and permit applications. ● Cornwall Beach Park Habitat Enhancements–City of Bellingham to: 	City of Bellingham	B2.2 (D7.6)

	Near-Term Action	Performance Measures	Owner(s) ¹	Regional Sub-Strategy ²
		<ul style="list-style-type: none"> ○ By August 2014, complete Master Planning and 30% design. ● Willow Spring Culvert Removal—City of Bellingham to: <ul style="list-style-type: none"> ○ By April 2015, complete design. ○ By April 2015, complete bid specifications and permit applications. ○ By December 2016, complete construction. ○ By December 2016, complete planting. 		
WH8	Marietta Acquisition. Acquire properties in repetitive flood loss area to prevent future loss and to enhance upstream habitat restoration opportunities. Clean up three former gas stations sites as dictated by site conditions.	<ul style="list-style-type: none"> ● By December 2015, complete Estuary and Salmon Restoration Program acquisitions. ● By December 2015, complete additional acquisitions. ● By December 2015, assess and remediate former gas station sites. 	Whatcom County	A5.4 (B3.2)
WH9	Implement a pollution identification and control project in northern Chuckanut Bay (Mud Bay) to restore the recreational shellfish area. Through a partnership of community groups and local agencies, identify bacteria sources and implement water quality improvement projects to reduce bacteria levels in Mud Bay and restore the recreational shellfish area. This program includes: <ul style="list-style-type: none"> ● Monitoring. ● Community outreach. ● Technical and financial assistance for onsite sewage system operation and maintenance. ● Stormwater retrofits. 	<ul style="list-style-type: none"> ● By December 2014, develop a strategy with DOH with specific milestones to reopen the Mud Bay recreational shellfish area. ● In January 2015, January 2016, and December 2016, host three meetings (one per each date listed) to inform and engage community members in water quality improvement). ● Through December 2016, conduct monthly sampling at approximately 10 stations. Conduct bracketing monitoring to identify pollution sources. ● By December 2015, evaluate 75% of onsite sewage system in the drainage area and repair 100% of identified failing systems. ● By December 2015, develop and implement outreach strategies to address domestic pet and urban wildlife sources of bacteria. ● By December 2015, identify opportunities for stormwater retrofits. 	Whatcom County Marine Resources Committee <i>Whatcom County Department of Health</i>	C9.4

	Near-Term Action	Performance Measures	Owner(s) ¹	Regional Sub-Strategy ²
WH10	<p>Implement Whatcom County Pollution Identification and Control Program. Through a partnership of local, state, and tribal agencies identify priority areas and implement projects to decrease bacteria levels in local marine waters, rivers, and streams. This program includes:</p> <ul style="list-style-type: none"> • Monitoring and focus area identification. • Community outreach and engagement. • Technical and financial assistance for agricultural operations. • Technical and financial assistance for onsite sewage system operation and maintenance. • Stormwater retrofits. • Regulatory backstop. • Nutrient Management, TMDL Implementation. 	<ul style="list-style-type: none"> • Through December 2016, conduct monthly sampling at approximately 90 stations. Conduct short-term ambient and bracketing monitoring in each focus area to identify pollution sources. Complete annual reviews of water quality results. • Through December 2016, identify a minimum of two focus areas per year. • Provide technical/financial assistance to 50 agricultural operations in focus areas per year. • Evaluate 75% of onsite sewage system in focus areas per year. Repair 100% of identified failures. • By December 2016, complete designs for two priority stormwater retrofits. • Water quality. • Shellfish beds. 	<p>Whatcom County</p> <p><i>Whatcom Conservation District, DOH, Ecology, WSDA, Lummi Nation, Nooksack Tribe</i></p>	C9.4
WH11	<p>Implement the Birch Bay watershed and aquatic resources management (BBWARM) district stormwater program. The BBWARM program includes both capital and programmatic elements to improve water quality, reduce flooding, and protect aquatic habitat. BBWARM works with a variety of partners including the Birch Bay Shellfish Protection District, Birch Bay Water Sewer District, Whatcom Conservation District, NSEA, MRC, and other Whatcom County programs. BBWARM program areas include:</p> <ul style="list-style-type: none"> • Capital Improvement Projects • Maintenance and Operations • Water Quality Monitoring • Education and Outreach 	<ul style="list-style-type: none"> • Design and construct stormwater retrofit projects per the 6-Year Water Resources Improvement Program. • In 2014, complete the Central-North and Central-South Subwatershed Master Plans. • In 2015, complete the draft Terrell Creek Subwatershed Master Plan. • Host a minimum of three outreach events each year (e.g., rain barrel workshops, Discovery Days, Whatcom Water Weeks event). • Write and distribute an annual newsletter. • Maintain 11 pet waste stations near Birch Bay. • Participate in Whatcom County’s pollution identification and correction program. • Participate in Whatcom County’s NPDES Phase II program. 	<p>Whatcom County</p> <p><i>BBWARM</i></p>	C2.1 (C2.5)

	Near-Term Action	Performance Measures	Owner(s) ¹	Regional Sub-Strategy ²
WH12	<p>Lake Whatcom watershed stormwater projects. Implement stormwater retrofit projects identified in the Lake Whatcom Comprehensive Stormwater Plan.</p> <ul style="list-style-type: none"> • Coronado-Fremont Stormwater Improvements: Construction of Phase 1 in 2013 included a bio-infiltration swale and stormwater vaults. The project will treat runoff from approx. 10 acres. • Academy Road Stormwater Improvements: Partner with the City of Bellingham on a joint stormwater retrofit project to improve stormwater quality in the Lake Whatcom Watershed. This project will treat runoff from approximately 80 acres. • Cedar Hills/Euclid Stormwater Improvements: Install rain gardens, filter vaults, and treatment swales. This project will treat runoff from approximately 60 acres. 	<ul style="list-style-type: none"> • Coronado-Fremont Stormwater Improvements: <ul style="list-style-type: none"> ○ By October 2014, Whatcom County to complete restoration of about 600 feet of creek channel and install treatment vaults. • Academy Road Stormwater Improvements—Whatcom County with City of Bellingham to: <ul style="list-style-type: none"> ○ By September 2014, complete engineering design. ○ By October 2015, construct pretreatment unit, biofiltration swale, filter cartridge vault, high flow bypass, and a vegetated buffer along the lake front. • Cedar Hills/Euclid Stormwater Improvements: <ul style="list-style-type: none"> ○ By September 2015, Whatcom County to complete design. 	Whatcom County	C2.3
WH13	<p>Birch Bay area stormwater projects. Implement stormwater retrofit projects identified in the Birch Bay Comprehensive Stormwater Plan:</p> <ul style="list-style-type: none"> • Birch Bay Stormwater Priority Retrofit Projects Pre-Design: Ecology Watershed protection and Restoration grant-funded project to complete preliminary design and analysis for priority capital projects. • Beachway Drive & Fern/Park Stormwater Improvements: Stormwater retrofit project to improve stormwater quality entering Birch Bay and reduce flooding impacts. • Harborview Road Culvert Replacement: Replace undersized driveway culverts and catch basins to alleviate flooding along Harborview Road. • Cottonwood Drive Drainage Improvements: Stormwater retrofit project to improve conveyance 	<ul style="list-style-type: none"> • Birch Bay Stormwater Priority Retrofit Projects Pre-Design: <ul style="list-style-type: none"> ○ By December 2014, complete four preliminary solutions reports and four pre-design reports. • Beachway Drive & Fern/Park Stormwater Improvements: <ul style="list-style-type: none"> ○ By December 2014, replace one to two outfall structures, install an improved stormwater conveyance system, and install water quality treatment swales. • Harborview Road Culvert Replacement: <ul style="list-style-type: none"> ○ By December 2014, complete engineering design. ○ By December 2015, replace 10 undersized driveway culverts and two undersized catch basins. • Cottonwood Drive Drainage Improvements: <ul style="list-style-type: none"> ○ By September 2015, complete engineering design. 	Whatcom County	C2.3

	Near-Term Action	Performance Measures	Owner(s) ¹	Regional Sub-Strategy ²
	from uplands areas, reduce nearshore flooding, and provide additional drainage connections along Birch Bay Drive. Water quality treatment options will be incorporated.			
WH14	<p>Ferndale stormwater projects. Implement stormwater projects that address runoff to the Nooksack River, and that are identified in the City of Ferndale Stormwater Management Plan.</p> <ul style="list-style-type: none"> • Gateway Stormwater Facility projects: Upgrade the stormwater conveyance reaches identified in the 2013 Ferndale Gateway Stormwater Study and planned for implementation (project reaches W-R-2 and W-R-3). • Decant Design and Construction: Design and construct a covered facility for the City of Ferndale stormwater decant process, which currently is located in the floodplain. • City of Ferndale Stormwater Studies: Complete stormwater drainage studies for two areas within the City of Ferndale: Main Street and Labounty and Thornton Street Stormwater Pond. 	<ul style="list-style-type: none"> • Gateway Stormwater Facility projects: <ul style="list-style-type: none"> ○ By December 2016, construct two stormwater facilities. • Decant Design and Construction: <ul style="list-style-type: none"> ○ By December 2014, complete the decant design, pending a new site location. ○ By December 2016, construct. • City of Ferndale Stormwater Studies: <ul style="list-style-type: none"> ○ By December 2014, complete Main Street RAB Stormwater Study. ○ By December 2016, complete Thornton Street Stormwater Pond. 	City of Ferndale	C2.3
<p>¹ Where secondary owners were identified, they are shown in italics after the primary owner.</p> <p>² Where secondary regional sub-strategies were identified, they are shown in parentheses after the primary sub-strategy.</p> <p>CD = Conservation District</p>				

The near-term actions identified above represent a subset of the local priorities planned for implementation over the next 2 or 3 years. The remaining local priorities, listed below, provide important context for all of the work that is underway in the Whatcom County Nooksack watershed. The fact that not all of the local priorities met the criteria in the rubric that was used to identify the set of near-term actions for this update does not lessen their importance in addressing local needs and, where applicable, obtaining funding to implement them.

Additional Priority Local Actions in Whatcom County/Nooksack Watershed

Local Action (Investment)	Principal Proponent/ Reporting Organization	Performance Measures	Existing Program or Plan
<p>Lower Nooksack Overflow Corridors. Model and construct overflow corridors that reconnect the Nooksack River to its floodplain as a flood risk reduction and mainstem habitat protection mechanism.</p>	<p>Whatcom County Public Works with diking districts</p>	<ul style="list-style-type: none"> • By December 2014, complete Reach 1 modeling and alternatives analysis. • By December 2015, scope and model Reach 2 and 3 corridors and conduct alternatives analysis. 	<p>Whatcom County Public Works, River and Flood Division; salmon recovery</p>
<p>Implement aquatic invasive species management plans for Whatcom County Lakes. Continue boat inspections and educating the boating public about effective methods to prevent the introduction of aquatic invasive plant and animal species to all lakes in Whatcom County.</p>	<p>Whatcom County Public Works with Whatcom County Noxious Weed Board</p>	<ul style="list-style-type: none"> • Continue mandatory inspection of all watercraft in Lake Whatcom and Lake Samish. • By end of 2015, evaluate all Whatcom County water bodies for potential expansion. 	
<p>WRIA 1 Salmon Recovery Monitoring and Adaptive Management Plan. Develop a locally prepared plan that can be rolled up into the regional framework and that will inform local recovery plan addenda. Prepare narrative addenda to the WRIA 1 Salmonid Recovery Plan as appropriate to reflect changes and/or modifications to key actions based on adaptive management.</p>	<p>WRIA 1 Salmon Recovery Board with Nooksack Natural Resources and Lummi Natural Resources</p>	<ul style="list-style-type: none"> • By March 2014, Salmon Recovery Staff Team prepares report on Status of Key Actions in Appendix B of the WRIA 1 Salmonid Recovery Plan (milestone). • By June 2014, Nooksack Natural Resources and Lummi Natural Resources technical staff working with Salmon Staff Team complete Worksheets for Regional Monitoring Framework (milestone). • By December 2014 Nooksack Natural Resources and Lummi Natural Resources technical staff working with Salmon Staff Team prepare a final WRIA 1 Salmon Recovery Monitoring and Adaptive Management Plan for approval (output). 	<p>Salmon recovery</p>

Local Action (Investment)	Principal Proponent/ Reporting Organization	Performance Measures	Existing Program or Plan
<p>Improve and expand the purchase of development rights (PDR) program. Whatcom County has implemented a PDR program, though it has not been heavily used. The Whatcom County Agricultural Advisory Committee has begun exploring a reverse auction strategy as a way to improve the program.</p>	<p>Whatcom County Planning and Development Services</p>	<ul style="list-style-type: none"> • In November 2013, Whatcom County entered into a contract with consultant, who is assisting in development of a reverse auction strategy that will focus on lots in the core ag zone. The reverse auction will be held winter 2014/2015. • The PDR Oversight Committee is working with the Whatcom County Ag-Watershed grant project to develop agricultural metrics that might be used in a natural resource marketplace. 	<p>Whatcom County Ag Strategic Plan</p>
<p>Investigate the development of a transfer of development rights (TDR) program. The Whatcom County Agricultural Advisory Committee wants to explore setting up a TDR program for agricultural lands. The Agricultural Strategic Plan lists developing a TDR program to help achieve the goal of maintaining 100,000 acres of farmland in Whatcom County.</p>	<p>Whatcom County Planning and Development Services</p>	<ul style="list-style-type: none"> • Whatcom County plans on applying for a grant in 2014 to hire a consultant to do a feasibility study of a TDR program in Whatcom County. 	<p>Whatcom County Ag Strategic Plan</p>
<p>WRIA 1 Multipurpose Water Storage Assessment Report update and evaluation. Review the May 2003 WRIA 1 Multipurpose Water Storage Assessment and Annotated Bibliography and evaluate and identify storage options to implement in key areas. Coordinate the review and application to key areas with other water resource related programs such as floodplain management and salmon recovery. Identifying viable options for water storage as part of an overall management strategy for addressing seasonal low stream flows.</p>	<p>WRIA 1 Joint Board</p>	<ul style="list-style-type: none"> • By September 2014, review and update of storage option report (milestone). • By December 2014, GIS mapping of storage options in focus areas (output). • By March 2015, technical agreement on options to pursue for funding in key areas (milestone). • By December 2015, funding applications for two storage options in key areas (milestone). 	<p>WRIA 1 Watershed Management Plan</p>
<p>Implement a marine water aquatic invasive species management plan.</p>	<p>City of Bellingham</p>	<ul style="list-style-type: none"> • By December 2015, City of Bellingham identifies and implements aquatic invasive species management plan for marine waters. 	

Local Action (Investment)	Principal Proponent/ Reporting Organization	Performance Measures	Existing Program or Plan
<p>Implement riparian restoration and enhancement projects in priority areas of coastal drainages. Building upon the riparian condition and function assessment completed for coastal drainages, work with local partners to identify, design, and implement riparian planting and stream channel restoration in priority areas of the coastal drainages.</p>	<p>Whatcom County, Whatcom Conservation District</p>		<p>Shellfish protection districts, Birch Bay Comprehensive Stormwater Plan, WRIA 1 Salmonid Recovery Plan, complements critical areas ordinance, shoreline master program, and Nooksack and Drayton TMDLs</p>
<p>Implement the 2013–2018 National Pollutant Discharge Elimination System Phase II Permit. Enhance and implement the requirements of the permit. The permit sections include:</p> <ul style="list-style-type: none"> • Public Education and Outreach • Public Involvement and Participation • Illicit Discharge Detection and Elimination • Controlling Runoff from New Development, Redevelopment, and Construction Sites • Municipal Operations and Maintenance • Monitoring and Assessment • Compliance with TMDL requirements 	<p>Whatcom County, City of Bellingham, City of Lynden, City of Ferndale</p>	<ul style="list-style-type: none"> • December 31, 2016, develop and adopt Low Impact Development principles requirement in land use and stormwater codes. • Coordinate outreach events regarding Low Impact Development principles prior to adoption of updated land use and stormwater codes. • Develop and implement maintenance and inspection program for public stormwater facilities • Coordinate one outreach event per year on the following topics: illicit discharges, private stormwater facility maintenance, and sustainable landscaping practices. 	<p>2013–2018 Western Washington Phase II Municipal Stormwater Permit</p>
<p>Terrell Creek Landowner Incentive Program. Whatcom Conservation District program in partnership with BBWARM provides cost-share funding to facilitate projects that benefit water quality in Terrell Creek and promote watershed stewardship activities. Current EPA grant funding ends June 2015.</p>	<p>Whatcom Conservation District, Whatcom County/BBWARM</p>	<ul style="list-style-type: none"> • In 2015, seek additional funding to continue farm/home visits, stream and riparian restoration projects, small farm plans, and onsite sewer system inspection assistance. 	<p>Birch Bay Comprehensive Stormwater Plan</p>

Local Action (Investment)	Principal Proponent/ Reporting Organization	Performance Measures	Existing Program or Plan
<p>Implement public outreach. Implement work plan activities and events in existing work plans from Whatcom Watershed Information Network, Marine Resources Committee, and other organizations.</p>	<p>Whatcom Watershed Information Network with partnering organizations (e.g., Marine Resources Committee, Whatcom Conservation District, Nooksack Salmon Enhancement Association, Sustainable Connections, local governments, tribes)</p>		<p>Whatcom Watershed Information Network work plan; Marine Resources Committee Strategic Plan; other work plans</p>
<p>Implement the Lake Whatcom Management Program. Through a partnership between Whatcom County, the City of Bellingham, and the Lake Whatcom Water and Sewer District, improve water quality of Lake Whatcom and reduce phosphorus loading to achieve goals of the Lake Whatcom TMDL through priority tasks outlined in the Lake Whatcom Management Program’s 5-Year Work Plan.</p>	<p>Whatcom County, City of Bellingham, and Lake Whatcom Water and Sewer District</p>		<p>2010–2014 Lake Whatcom Management Program 5-Year Work Plan</p>
<p>Swift Creek landslide Derived Asbestos Project. Implement phase 1 projects and explore feasibility of other projects to reduce the impacts on human health of landslide-supplied sediment containing naturally occurring asbestos.</p>	<p>Whatcom County Public Works with Ecology and EPA</p>		<p>Whatcom County Public Works 6-year Water Resources Improvement Program</p>
<p>International task force to address high nitrates/nitrate contamination of groundwater. The Sumas/Abbotsford Aquifer Task Force will review and perform an assessment of existing Washington and British Columbia plans that pertain to high nitrates and nitrate contamination of groundwater and manure management. The assessment will include existing programs and laws, both regulatory and non-regulatory, provide</p>	<p>Ecology with partners</p>	<ul style="list-style-type: none"> • By December 2014, identify gaps in existing programs and laws (milestone). • By June 2015, prepare proposals for new action and programs, if needed, for groundwater management area (milestone). 	

Local Action (Investment)	Principal Proponent/ Reporting Organization	Performance Measures	Existing Program or Plan
proposals for identified fixes within existing laws and programs, and provide proposals for new action items/programs, if needed for groundwater management area.			
Climate change influences on WRIA 1 programs. Review conclusions of local analysis of if and how climate change and seasonal weather patterns may affect implementation of local plans and actions (e.g., instream flows, salmon restoration, flood hazard management planning). Based on review, consider applicable and appropriate policy guidance for local programs and projects to incorporate into programs as part of adaptive management.	WRIA 1 Joint Board and Salmon Recovery Board	<ul style="list-style-type: none"> • By March 2015, complete review of conclusions in local analysis related to changing climatic conditions and seasonal weather patterns. • By December 2015, adopt policy guidance, if applicable, for incorporating into WRIA 1 strategies and plans. 	
WRIA 1 Water and Natural Resource Management Funding Strategy. In 2005, a WRIA 1 Planning Unit subcommittee identified funding options for the WRIA 1 Watershed Management Plan. The funding option report should be updated to reflect current status and options for a reliable and local funding strategy to address water and natural resource management needs throughout WRIA 1.	WRIA 1 Joint Board and Salmon Recovery Board	<ul style="list-style-type: none"> • By December 2014, update to the WRIA 1 Water Management Funding Strategy presented to Joint Board (milestone). • Identify funding needs and prepare strategy for local funding to implement priority actions in approved plans (e.g., watershed management, shellfish protection, salmon recovery). 	WRIA 1 Watershed Management Plan; complements other plans
Locally Significant Capital Projects¹			
Pepin Creek Realignment. Realign the small Double Ditch tributary, which flows into Fishtrap Creek from headwaters in Canada. The system supports populations of coho salmon, fall Chinook salmon, cutthroat trout, and winter steelhead.	City of Lynden	<ul style="list-style-type: none"> • Complete property acquisition and easement for approximately 3,000 feet of new stream channel. • Complete full design for the entire 6,000-foot corridor. • Construct 3,000 feet of new stream channel, providing habitat for salmonids and steelhead. • Construct a new crossing, bridge or culvert, on Main Street over the new channel. 	

Local Action (Investment)	Principal Proponent/ Reporting Organization	Performance Measures	Existing Program or Plan
<p>Integrated surface/groundwater model and data collection. Groundwater modeling (focused geographically) is needed to estimate the potential impacts on surface water from groundwater uses with a level of reliability that can satisfy stakeholders' needs. To serve this purpose, groundwater use needs to be quantified along with timing, locations of points of withdrawal and place of use (Chapter 4, Ground Water Data Assessment, 2013). An integrated surface/ groundwater model that builds on existing models, data, and reports previously completed for WRIA 1 can support this need. Chapter 4 of the WRIA 1 Groundwater Data Assessment (June 2013 report) outlines different options for an integrated surface/groundwater model and data gaps relevant to groundwater modeling. Continued support of the U.S. Geological Survey agreement for maintaining stream gages in WRIA 1 is one element of the data collection.</p>	<p>WRIA 1 Joint Board</p>	<ul style="list-style-type: none"> • By May 2014, Joint Board agreement for proceeding with ground water/surface water model (milestone). • By December 2014, conceptual model (output). • By December 2015, quantification of water use and location of use (output). • By December 2015, numerical model developed (output). 	
<p>Middle Fork Passage Project. Address fish passage project on the Middle Fork Nooksack River.</p>	<p>City of Bellingham with Co-Managers</p>	<ul style="list-style-type: none"> • By March 2015, updated funding package for the 2012 Middle Fork Passage Project (milestone). • By January 2016, seek and obtain funding agreements for the Middle Fork Passage Project (milestone). 	
<p>¹ For this purpose, locally significant capital projects are actions or groups of actions that have multiple habitat benefits, have costs that exceed the range of typical grants (\$2 million), and are generally agreed to bring far-reaching influence.</p> <p>DOH = Department of Health; Ecology = Washington State Department of Ecology; EPA = U.S. Environmental Protection Agency; GIS = Geographic Information System; LIO = local integrating organization; NPDES = National Pollutant Discharge Elimination System; TMDL = total maximum daily load; USFS = U.S. Forest Service; WDFW = Washington Department of Fish and Wildlife; WRIA = Water Resources Inventory Area; WSDA = Washington State Department of Agriculture.</p>			



SECTION 5

REFERENCES

Literature Cited

- Battin, J., M. W. Wiley, M. H. Ruckelshaus, R. N. Paulmer, E. Corb, K. K. Bartz, and H. Imaki. 2007. *Projected Impacts of Climate Change on Salmon Habitat Restoration*. In: Proceedings of the National Academy of Sciences of United States of America. 104(16):6720–6725. Available: <http://www.pnas.org/content/104/16/6720>. Accessed: May 20, 2014.
- Beechie, T. J. and T. H. Sibley. 1997. *Relationship between Channel Characteristics, LWD, and Fish Habitat in NW Washington Streams*. Transactions of the American Fisheries Society 126:217–229.
- Bissonnette Environmental Solutions, LLC (Bissonnette) and Parametrix. 2010. *Task 1: Urban Stormwater Runoff Preliminary Needs Assessment Technical Memorandum*. Prepared for Puget Sound Partnership. September. Available: <http://www.psp.wa.gov/downloads/Stormwater/FinalUrbanStormwaterTechMemo20100930.pdf>. Accessed: May 20, 2014.
- Bissonnette Environmental Solutions, LLC (Bissonnette). 2011. *Stormwater Vision and Financing Strategy for Puget Sound*. Draft.
- Brennan, J., H. Culverwell, R. Gregg, and P. Granger. 2009. *Protection of Marine Riparian Functions in Puget Sound, Washington*. Prepared for Washington Department of Fish and Wildlife. Prepared by Washington Sea Grant. June. Available: <http://www.mercergov.org/files/3%20-%20Protection%20of%20Marine%20Riparian.pdf>. Accessed: May 20, 2014.
- The Cascade Land Conservancy (rebranded in 2011 as Forterra). 2005. *Cascade Agenda*. Available: http://www.forterra.org/who_we_are/cascade_agenda. Accessed: May 20, 2014.
- Cereghino, P., J. Toft, C. Simenstad, E. Iverson, S. Campbell, C. Behrens, and J. Burke. 2012. *Strategies for Nearshore Protection and Restoration in Puget Sound*. Technical Report 2012–01. March. Available: http://www.pugetsoundnearshore.org/technical_papers/PSNERP_Strategies_NoMaps.pdf. Accessed: May 20, 2014.
- City of Tacoma. 2011. *2010 Stormwater Source Control and Water Year 2010 Stormwater Monitoring Report; Thea Foss and Wheeler-Osgood Waterways*. March. Available: <http://archive-org.com/page/742969/2012-11-24/http://www.cityoftacoma.org/Page.aspx?hid=16619>. Accessed: May 20, 2014.
- The Conservation Measures Partnership. 2007. *Open Standards for the Practice of Conservation*. Version 2.0. October. Available: http://www.conservationmeasures.org/wp-content/uploads/2010/04/CMP_Open_Standards_Version_2.0.pdf. Accessed: May 20, 2014.
- The Conservation Measures Partnership. 2013. *Open Standards for the Practice of Conservation*. Version 3.0. April. Available: <http://www.conservationmeasures.org/wp-content/uploads/2013/05/CMP-OS-V3-0-Final.pdf>. Accessed: May 20, 2014.
- EnviroVision, Herrera Environmental, and Aquatic Habitat Guidelines Working Group. 2010. *Protecting Nearshore Habitat and Functions in Puget Sound*. Revised Edition. June. Available: <http://wdfw.wa.gov/publications/00047/>. Accessed: May 20, 2014.

Forterra (formerly The Cascade Land Conservancy). 2011 *Olympic Agenda: A First Look*. Final. Available: http://www.forterra.org/who_we_are/olympic_agenda. Accessed: May 20, 2014.

Francis and Mantua. 2003. Section 3A Pg 37: “While Pacific salmon have persisted in the face of exceptional climate variability for thousands of years—involving such large-scale factors as the advance and retreat of glaciers covering huge swaths of western North America—future climate change projections are troubling when considered in combination with the impacts that human development has had, and continues to have, on the landscapes of Puget Sound and elsewhere (Francis and Mantua 2003).”

Francis and Mantua. 2009. Pg. 38: “Francis and Mantua (2009) find that in general, salmon populations in regions with healthy habitat are likely to persist in the face of climate change as long as the time scale of environmental change does not exceed the rate at which they are able to adapt.”

Hayes, G. E., and J. C. Lewis. 2006. *Washington State Recovery Plan for the Fisher*. Washington Department of Fish and Wildlife, Olympia, WA. 62+ viii pp. Available: <http://wdfw.wa.gov/publications/00228/wdfw00228.pdf>. Accessed: May 5, 2014.

Hays, D. W., K. R. McAllister, S. A. Richardson, and D. W. Stinson. 1999. *Washington State Recovery Plan for the Western Pond Turtle*. Washington Department of Fish and Wildlife. Olympia, WA. 66 pp. Available: <http://wdfw.wa.gov/publications/00398/wdfw00398.pdf>. Accessed: May 5, 2014.

Hood Canal Coordinating Council. 2005. *Hood Canal/Eastern Strait of Juan de Fuca Summer Chum Salmon Recovery Plan*. November. Available: http://www.westcoast.fisheries.noaa.gov/protected_species/salmon_steelhead/recovery_planning_and_implementation/puget_sound/hood_canal_summer-run_chum_recovery_plan.html. Accessed: May 15, 2014.

Knight, 2009. *Land Use Planning for Salmon, Steelhead and Trout: A Land Use Planner’s Guide to Salmonid Habitat Protection and Recovery*. October. Available: <http://wdfw.wa.gov/publications/pub.php?id=00033>. Accessed: May 20, 2014.

Lance, M. M., S. A. Richardson, and H. L. Allen. 2004. *Washington State Recovery Plan for the Sea Otter*. Washington Department of Fish and Wildlife. Olympia, WA. 91 pp. Available: <http://wdfw.wa.gov/publications/00314/wdfw00314.pdf>. Accessed: May 15, 2014.

Linders, M. J., and D. W. Stinson 2007. *Washington State Recovery Plan for the Western Gray Squirrel*. Washington Department of Fish and Wildlife. Olympia, WA. 128+ viii pp. Available: <http://wdfw.wa.gov/publications/00119/wdfw00119.pdf>. Accessed: May 5, 2014.

Mantua, N., I. Tohver, and A. Hamlet. 2009. *Impacts of Climate Change on Key Aspects of Freshwater Salmon Habitat in Washington State*. In: The Washington Climate Change Impacts Assessment, Elsner, M. M., J. Littell, and L. W. Binder (eds.). Center for Science in the Earth System, Joint Institute for Study of the Atmosphere and Oceans, University of Washington, Seattle, WA, pp. 217-253.

Miles. 2009. Pg. 38: “In sum, though, the result of multiple stresses including altered thermal structure and increasingly acidic waters is likely to be negative for the marine environment in general (Miles 2009), and by extension, for Pacific salmon specifically.”

- Mote, P. W., A. Petersen, S. Reeder, H. Shipman, and L. C. Whitely Binder. 2008. *Sea Level Rise in the Coastal Waters of Washington State*. Prepared by the Climate Impacts Group, Center for Science in the Earth System, Joint Institute for the Study of the Atmosphere and Oceans, University of Washington, Seattle, WA and the Washington Department of Ecology, Lacey, WA.
- National Oceanic and Atmospheric Administration. 2007. *Puget Sound Salmon Recovery Plan*. January. Available:
http://www.westcoast.fisheries.noaa.gov/publications/recovery_planning/salmon_steelhead/domains/puget_sound/chinook/pugetsoundchinookrecoveryplan.pdf. Accessed: May 20, 2014.
- National Marine Fisheries Service. 2007. *Puget Sound Salmon Recovery Plan*. Submitted by Shared Strategy Development Committee, Seattle, WA. 472 pp. Available:
http://www.westcoast.fisheries.noaa.gov/publications/recovery_planning/salmon_steelhead/domains/puget_sound/chinook/pugetsoundchinookrecoveryplan.pdf. Accessed: May 5, 2014.
- National Marine Fisheries Service. 2008. *Recovery Plan for Southern Resident Killer Whales (Orcinus orca)*. Available:
http://www.westcoast.fisheries.noaa.gov/publications/protected_species/marine_mammals/killer_whales/esa_status/srkw-recov-plan.pdf. Accessed: May 5, 2014.
- Pearson, S. F., and B. Altman. 2005. *Range-Wide Streaked Horned Lark (Eremophila alpestris strigata) Assessment and Preliminary Conservation Strategy*. Washington Department of Fish and Wildlife, Olympia, WA. 25pp. Available: <http://wdfw.wa.gov/publications/00391/wdfw00391.pdf>. Accessed: May 5, 2014.
- Puget Sound Partnership. 2008. *Land Use/Habitat Protection and Restoration Topic Forum*. Initial Discussion Draft. April. Available:
http://www.psp.wa.gov/downloads/AA2008/Habitat_Land_Use.pdf. Accessed: May 20, 2014.
- Puget Sound Partnership. 2010a. *Strategic Science Plan*. Final. June. Available:
http://www.psp.wa.gov/downloads/SCIENCE/strategicscience_09_02_10.pdf. Accessed: May 20, 2014.
- Puget Sound Partnership. 2010b. *Implementation of Priority Actions—Action Item 4: FEMA BiOp/NFIP/Floodplain Management*. Available:
http://www.psp.wa.gov/downloads/LC2010/111910/05e_FEMA_BiOP_Memo.pdf. Accessed: May 5, 2014.
- Puget Sound Partnership. 2010c. *Floodplain Management: A Synthesis of Issues Affecting Recovery of Puget Sound*. Final. July. Available:
http://www.psp.wa.gov/downloads/LC2010/072010/03b_Floodplain_Management_Report%20Judge%20Final-July%202010.pdf. Accessed: May 5, 2014.
- Puget Sound Partnership. 2011a. *2011 Puget Sound Science Update*. Draft. April. Available:
<http://www.psp.wa.gov/scienceupdate.php>. Accessed: May 20, 2014.

- Puget Sound Partnership. 2011b. *Report of the Stormwater Subcommittee of the Ecosystem Coordination Board, Stormwater Policy Statements*. April. Available: http://www.mypugetsound.net/index.php?option=com_docman&task=doc_view&gid=1065&Itemid=238. Accessed: May 20, 2014.
- Puget Sound Partnership. 2012a. *Puget Sound Characterization—Volume 1: The Water Resource Assessments (Water Flow and Water Quality)*. Ecology Publication #11-06-016. Available: <https://fortress.wa.gov/ecy/publications/publications/1106016.pdf>. Accessed: May 14, 2014.
- Puget Sound Partnership. 2012b. *Integrating LID into Local Codes: A Guidebook for Local Governments*. July. Available: http://www.psp.wa.gov/LID_GLG.php. Accessed: May 20, 2014.
- Roni, P., T. J. Beechie, R. E. Bilby, F. E. Leonetti, M. M. Pollock, and G. R. Pess. 2002. *A Review of Stream Restoration Techniques and a Hierarchical Strategy for Prioritizing Restoration in Pacific Northwest Watersheds*. In: North American Journal of Fisheries Management. 22:1–20. Available: http://www.crab.wa.gov/LibraryData/RESEARCH_and_REFERENCE_MATERIAL/Environmental/020923StreamRestoreTechPNW.pdf. Accessed: May 21, 2014.
- Smith, C. J. 2005. *Salmon Habitat Limiting Factors in Washington State*. Prepared for the Washington State Conservation Commission, Olympia, WA. In: Puget Sound Partnership. 2010b. *Floodplain Management: A Synthesis of Issues Affecting Recovery of Puget Sound*. Final. July. Available: http://www.psp.wa.gov/downloads/LC2010/072010/03b_Floodplain_Management_Report%20Judge%20Final-July%202010.pdf. Accessed: May 5, 2014.
- U.S. Fish and Wildlife Service. 1997. *Recovery Plan for the Threatened Marbled Murrelet (Brachyramphus marmoratus) in Washington, Oregon, and California*. Portland, OR. 203 pp. Available: http://ecos.fws.gov/docs/recovery_plan/970924.pdf. Accessed: May 5, 2014.
- U.S. Fish and Wildlife Service. 2010. *Draft Revised Recovery Plan for the Northern Spotted Owl, Strix occidentalis caurina*. U.S. Fish and Wildlife Service, Portland, OR. 163 pp. Available: http://ecos.fws.gov/docs/recovery_plan/100915.pdf. Accessed: May 5, 2014.
- U. S. Forest Service. 2010. *FY 2010 Legacy Roads and Trails Accomplishment Report: Restoring Priority Watersheds*. Available: http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5318813.pdf. Accessed: May 20, 2014.
- University of Washington College of Forest Resources. 2009. *Retention of High-Valued Forest Lands at Risk of Conversion to Non-Forest Uses in Washington State*. March. Prepared for the Washington State Legislature and Washington Department of Natural Resources. 55 pp.
- Van Cleve, F. B., G. Bargmann, and M. Culver. 2009. *Marine Protected Areas in Washington: Recommendations of the Marine Protected Areas Work Group to the Washington State Legislature*. December. Available: <http://wdfw.wa.gov/publications/00038/wdfw00038.pdf>. Accessed: May 20, 2014.

- Washington Biodiversity Council. 2007. *Washington Biodiversity Conservation Strategy, Sustaining our Natural Heritage for Future Generations*. December. 148 pp. Available:
<http://www.rco.wa.gov/documents/biodiversity/WABiodiversityConservationStrategy.pdf>.
Accessed: May 20, 2014.
- Washington Department of Fish and Wildlife. 2011. *Puget Sound Rockfish Conservation Plan: Policies, Strategies and Actions*. Final. March. 28 pp. Available:
http://wdfw.wa.gov/publications/00035/apr2011_rockfish_conservation_plan.pdf. Accessed: May 5, 2014.
- Washington Sea Grant. 2013. *Geoduck Aquaculture Research Program*. 2013. Final. Available:
<http://wsg.washington.edu/research/geoduck/>. Accessed: May 20, 2014.
- Washington State Blue Ribbon Panel on Ocean Acidification. 2012. *Ocean Acidification: From Knowledge to Action*. November. Available: <https://fortress.wa.gov/ecy/publications/publications/1201015.pdf>.
Accessed: May 20, 2014.
- Washington State Conservation Commission. 2009. *Washington Conservation Markets Study*. January. Available:
http://www.farmland.org/programs/states/wa/documents/WAConservationMarketsStudyReport_27Jan2009.pdf. Accessed: May 20, 2014.
- Washington State Department of Ecology. 2011a. *Marine Spatial Planning in Washington: Final Report and Recommendations of the State Ocean Caucus to the Washington State Legislature*. January. Available: <https://fortress.wa.gov/ecy/publications/summarypages/1006027.html>. Accessed: May 20, 2014.
- Washington State Department of Ecology. 2011b. *Marine Sediment Monitoring Program Data: as Reported in the Puget Sound Partnership's Target Setting Brief Sheet*. March.
- Washington State Department of Ecology. 2012a. *Preparing for a Changing Climate: Washington State's Integrated Climate Response Strategy*. Publication No. 12-01-004. April. Available:
<https://fortress.wa.gov/ecy/publications/publications/1201004.pdf>. Accessed: May 20, 2014.
- Washington State Department of Ecology. 2012b. *PAH Chemical Action Plan*. Publication No. 12-07-048. December. Available: <https://fortress.wa.gov/ecy/publications/publications/1207048.pdf>. Accessed: May 20, 2014.
- Washington State Department of Ecology. 2012c. *2013–2015 Strategic Plan*. Available:
<https://fortress.wa.gov/ecy/publications/publications/1201014.pdf>. Accessed: May 20, 2014.
- Washington State Department of Ecology. 2013. *National Estuary Program: Toxics and Nutrients, Federal Fiscal Year 2013 Work Plan and Multi-Year Implementation Strategy*. Final. June. Available:
http://www.ecy.wa.gov/puget_sound/docs/grants/2012fedgrants_NEP_multiyearstrategy.pdf.
Accessed: May 20, 2014.
- Washington State Department of Ecology. 2014a. *Threats to Puget Sound*. Available:
http://www.ecy.wa.gov/puget_sound/threats.html. Accessed: May 20, 2014.

Washington State Department of Ecology. 2014b. *South Puget Sound Dissolved Oxygen Study: Water Quality Model Calibration and Scenarios*. March. Available: <https://fortress.wa.gov/ecy/publications/publications/1403004.pdf>. Accessed: May 20, 2014.

Washington State Department of Natural Resources. 2013. *Forest Practices Habitat Conservation Plan Annual Report*. 2013. Available: http://www.dnr.wa.gov/BusinessPermits/Topics/ForestPracticesHCP/Pages/fp_hcp_annualrep13.aspx. Accessed: May 20, 2014.

Washington State Department of Natural Resources. 2014. *Aquaculture Leasing on State-Owned Aquatic Lands*. Available: http://www.dnr.wa.gov/BusinessPermits/Topics/ShellfishAquaticLeasing/Pages/aqr_aqua_geoduck_aquaculture.aspx. Accessed: May 20, 2014.

Washington State University Extension and Puget Sound Partnership. 2012. *Low Impact Development Technical Guidance Manual for Puget Sound*. December. Available: http://www.psp.wa.gov/downloads/LID/20121221_LIDmanual_FINAL_secure.pdf. Accessed: May 20, 2014.

Personal Communications

Canty, Dennis. Pacific Northwest Director. American Farmland Trust. August 2011—Comment letter to Puget Sound Partnership.

Peters, Doug. Washington State Department of Commerce. August 2011—Comment letter to Puget Sound Partnership.

APPENDIX A

PUGET SOUND NATIONAL ESTUARY PROGRAM MANAGEMENT CONFERENCE OVERVIEW

This appendix provides a description of the Management Conference of the Puget Sound National Estuary Program, including the following.

- I. Management Conference Roles and Structure
- II. Puget Sound Partnership Agency Role and Structure
- III. Management Conference Decision Making Process
- IV. Puget Sound National Estuary Program History

I. Management Conference Roles and Structure

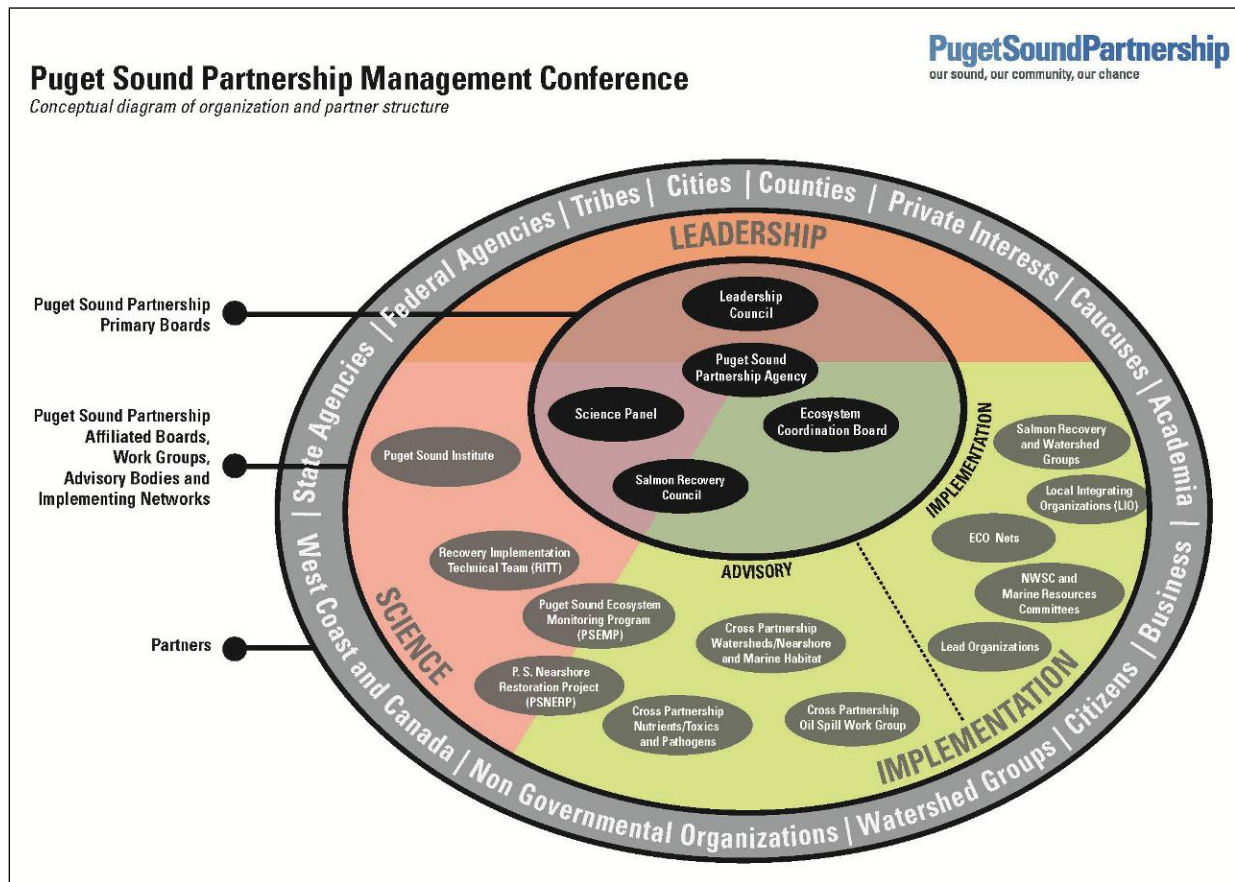
The Puget Sound Partnership (PSP) is also a state agency. State statute defines composition and roles for key structural elements of the Puget Sound Partnership (RCW 90.71), including the Leadership Council, Ecosystem Coordination Board, Science Panel, and Executive Director. The Partnership also serves as the state’s designated lead agency for Puget Sound salmon recovery under RCW 70.85.090.

As created, the Partnership is intended to be a multi-disciplinary, networked regional coalition. To fulfill this role, structures have evolved to provide specific coordination, advice, implementation and collaboration. Some elements, like the Education, Communication and Outreach Network (ECO Net) and Local Integrating Organizations were created by the Partnership. Others coalitions and groups existed prior to the Partnership or have been developed by partners engaged in Puget Sound recovery. These include but are not limited to the Puget Sound Institute, Puget Sound caucuses (federal, state, environmental, tribes), the Northwest Straits Commission, Lead Organizations which support implementation efforts across key topics, formal and informal interest groups, watershed groups, local government coalitions, and trans-boundary (US/Canada) work groups. The salmon recovery program includes the Salmon Recovery Council and its affiliated Recovery Implementation Technical Team (RITT), and watershed Lead Entities.

Under the National Estuary Program (NEP), a “Management Conference” is used to guide and direct the overall program of respective NEP organizations. By federal statute, the Management Conference includes the program administrator, representatives of state and nations, regional agencies, appropriate federal agencies, local governments, affected industries, academic institutions, and the public (CWA 320(c)).

For the purposes of the National Estuary Program, the Puget Sound Management Conference includes: the statutorily-described Partnership including the Puget Sound Partnership state agency, Leadership Council, Ecosystem Coordination Board, and Science Panel; and the broader partnership coalition that includes the Puget Sound caucuses affiliated with the Ecosystem Coordination Board, the Salmon Recovery Council, Northwest Straits Commission, implementing networks, formal and informal interest groups, watershed groups, individual local governments, and representatives from Canadian agencies.

The Management Conference relationship is shown in the following figure.



Puget Sound Partnership Management Conference

Partnership Structure as Defined by Statute

Partnership State Agency

An Executive Director with staff administers the Partnership. The Director acts as a critical link between the Leadership Council, Ecosystem Coordination Board, and Science Panel. The Director also communicates directly with other interests such as governments, the private sector, tribes, academic institutions, non-governmental organizations, and citizens not specifically represented on the advisory boards. The Executive Director has supervisory responsibility for Partnership staff, is appointed by the Governor in consultation with the Leadership Council and serves in the Governor’s cabinet. The Leadership Council may delegate functions to the Executive Director with the exception of developing or amending the Action Agenda. For additional detail on Partnership staff functions, see “Partnership Agency Structure” section below.

Leadership Council

This seven-member council sets policy and strategic direction for the Partnership. This includes adopting, revising, and guiding implementation of the Action Agenda, allocating funds for recovery efforts, providing progress and other reports, setting and implementing the accountability system, and

promoting extensive public awareness, education, and participation in protection and recovery efforts. The Leadership Council serves as the regional salmon recovery organization for Puget Sound salmon species (except for Hood Canal summer chum). Members have staggered terms and are appointed by the Governor with the advice and consent of the state Senate. Decisions are made by consensus. The Council has bylaws that guide its operations.

The Partnership statute identifies specific reporting and accountability responsibilities for the Leadership Council (RCW 90.71.350 and 370). These include:

- Achieving the Action Agenda. This includes developing standards and processes to determine whether implementing agencies are taking actions consistent with the Action Agenda and achieving the outcomes identified.
- Determining substantial non-compliance with the Action Agenda.
- Providing a forum for addressing and resolving problems, conflicts, or a substantial lack of progress in a specific area of implementation, or addressing issues that citizens or implementing entities bring to the Council.
- Making recommendations to the Legislature, Governor, implementing agency, local government or other appropriate entity for addressing and resolving conflicts, impediments, or deficiencies related to statutes, rules, ordinances, or policies.
- Making recommendations to the Governor and Legislature for local or state administrative or legislative actions to address Action Agenda implementation barriers.
- By September 1 of each even-numbered year beginning in 2008, providing recommendations for funding necessary to implement the Action Agenda in the succeeding biennium to the Governor and Legislature. The 2008 report includes recommendations for project funding needed through 2020 to implement the Action Agenda.
- By November 1 of each odd-numbered year beginning in 2009, producing a State of the Sound report. *[Note that the Partnership has shifted the report to even numbered years so that the State of the Sound conclusions inform the Action Agenda and Biennial Science Work Plan updates.]*
- Reviewing state programs that fund facilities and activities that may contribute to Action Agenda implementation.

Ecosystem Coordination Board

This 27-member board advises and assists the Leadership Council. Their statutory duties (RCW.90.71.250) include assisting and advising the Leadership Council in preparing and implementing the Action Agenda, working with implementers to identify actions needed, seeking funding and the commitment of other resources for plan implementation, conducting public outreach and local implementation strategies, and actively encouraging collaboration and communication among public, private, non-governmental interests, and citizens.

The Board is focused on problem solving and the practical aspects of implementation, as well as assisting the Leadership Council in identifying areas of work that need emphasis. Serving as a broadly representative group of implementers, the Board provides critical advice to the Leadership Council and

Executive Director on major strategic and implementation decisions. This includes considering and commenting on budgets, work plans, and future changes to the Partnership's strategic direction that arise from adaptive management. The Board can also discuss issues of concern to its members and their constituents, and make subsequent recommendations to the Partnership staff and Leadership Council for action. The Board has bylaws that provide operating guidance.

The Board is comprised of representatives of key implementing agencies or organizations, and by statute includes one representative from each of the seven geographic Action Areas (solicited from the Action Areas), two business representatives (appointed by the Leadership Council), two environmental representatives (appointed by the Leadership Council), three representatives of tribal governments in Puget Sound (invited by the Governor), one representative each for counties, cities, and port districts (appointed by the Leadership Council), three representatives of state agencies with environmental management responsibilities (one of whom is the Commissioner of Public Lands), three representatives of federal agencies with environmental responsibilities (invited by the Governor), and four legislative liaisons (two appointed by the President of the State Senate, two appointed by the Speaker of the State House of Representatives). Board members represent key interests and are expected to get input from and relay information to their broader constituencies. The strength of the Ecosystem Coordination Board lies in its diversity. Differing opinions are respected and the Board can advise without having consensus. In providing input to the Leadership Council, the Board often represents the range of opinions represented by members.

Science Panel

A nine-member Science Panel was established in statute (RCW 90.71.280) provides independent, scientific advice to the Leadership Council. By statute, the panel is to be comprised of diverse disciplines ranging from biological and physical disciplines to social science and engineering. The Leadership Council has expanded the Science Panel to include two additional positions to increase diversity. The Panel assists the Leadership Council, Ecosystem Coordination Board, and Executive Director in carrying out the obligations of the Partnership. The Science Panel has assisted the Partnership in developing an ecosystem-level strategic science program, establishing indicators of ecosystem health, setting policy-based recovery targets. Additionally, the Science panel helps guide the Partnership's work in monitoring, modeling, data management, and research; recommending research priorities to fill knowledge gaps; developing and overseeing a competitive, peer-reviewed process for soliciting, strategically prioritizing, and funding research and modeling projects; providing input to the Executive Director in developing biennial implementation strategies; offering an ecosystem perspective on scientific work conducted in Puget Sound; and engaging regional scientific talent in Puget Sound recovery. The Panel has bylaws that guide its operations.

The Panel is specifically responsible for developing a regional monitoring program; developing a list of critical research needs; and preparing a Strategic Science Plan, Biennial Science Work Plan, and Puget Sound Science Update. The Panel also assists in preparing and updating the Action Agenda, as well as the *State of the Sound* report.

The Panel provides scientific advice to the Puget Sound Institute, a cooperative program between the Center for Urban Waters and the University of Washington Tacoma. The Puget Sound Institute's role in the management conference is to provide the capacity for rigorous, transparent analysis, synthesis,

discussion and dissemination of science in support of the restoration and protection of the Puget Sound ecosystem. The Puget Sound Institute also holds a non-voting position as a member of the Science Panel.

The Leadership Council makes staggered term appointments to the Science Panel. Appointments are based on nominations, and are vetted by the Washington Academy of Sciences.

While not formally identified in statute, the Puget Sound Salmon Recovery Council was developed as part of the regional process to implement the Puget Sound Salmon Recovery Plan. The Recovery Council formation was led by the former Shared Strategy for Puget Sound, to coordinate development of the regional recovery Plan. When the Shared Strategy for Puget Sound sunset at the end of 2007, the Puget Sound Partnership assumed the responsibility of supporting the regional salmon recovery structure. The Puget Sound Salmon Recovery Council assists the Leadership Council in carrying out its salmon recovery responsibilities (RCW 70.85.090) by advising the Leadership Council on decisions relating to salmon recovery and the implementation of the Puget Sound Salmon Recovery Plan. Specific responsibilities include: advising the Leadership Council on setting policy direction for implementation, including allocation of resources for habitat restoration and protection; developing and directing strategic approaches to near-term issues and actions, including adaptive management and monitoring; and holding others, and being held, accountable for implementation of the recovery plan. This role encompasses the habitat, harvest, and hatchery aspects of salmon recovery.

The 32 members of the Salmon Recovery Council include representatives of each of the 14 chapter areas (chosen by the groups themselves), state and federal agencies engaged in salmon recovery in the Puget Sound, tribes, and business and environmental interests. Whenever possible, the Salmon Recovery Council makes decisions through a consensus process, but will vote if necessary on time-sensitive issues or if consensus cannot be reached.

The RITT is the regional technical team that supports implementation of the salmon recovery plan. The RITT advises the Puget Sound Salmon Recovery Council on technical issues. Work includes original design and analyses, independent review, literature review, and scientific interpretation of other studies. The Puget Sound Watershed Leads is a staff level regional group that helps develop and review actions for the Recovery Council. The Watershed Leads group consists of members of each of the fourteen watershed chapter areas, the fifteen lead entities in the Puget Sound, as well as supporting state agency staff.

Partnership Standing Sub-Committees

As of April 2012, the Partnership has the following standing sub-committees and advisory groups. Members are drawn from the Partnership agency and leadership bodies above, as well as key partners with subject expertise and interest.

- **Monitoring Steering Committee:** Coordinates and develops an ecosystem monitoring program to evaluate progress towards ecosystem recovery and to improve the scientific basis for management actions.
- **Cross Partnership Oil Spill Work Group:** Provides independent advice and assessment of Washington State's oil spill programs and recommends necessary improvements.

- **Cross Partnership Strategic Advisory Groups:** Provide strategic advice on the Action Agenda update process, target setting and biennial science work plan; and on the EPA Lead Organization six-year strategies for a) protecting and restoring watersheds; b) nearshore and marine habitat; and c) prevent, reduce and control nutrients, toxic and pathogen loadings to Puget Sound.
- **Social Science / Social Strategies Advisory Committee:** Advises the Science Panel and staff on the application of the social sciences to advance Puget Sound recovery.

Local Implementation in Action Areas

The Partnership’s authorizing statute (RCW 90.71.260) created seven action areas to help organize the work of protecting and restoring Puget Sound at the local level. While the action area concept is useful for sharing information and working to implement the Action Agenda and priority local actions, the Partnership has taken the concept a step further. The Partnership is working to help form Local Integrating Organizations (LIOs) at a scale that makes the most sense for Action Agenda implementation. In some areas, the LIO is at the action area level (e.g., Hood Canal, Strait of Juan de Fuca, South Central, and South Sound) to become a LIO. In other areas (e.g., Whatcom and San Juan) a different geography was determined to be more useful. The Partnership is continuing to work with those areas where local communities are still deciding the right LIO geography and structure.

The purpose of the LIO is to identify locally relevant strategies and actions to implement the Action Agenda and accomplish the sound-wide objectives. LIOs are a coordinating body and each has different membership. Example members include salmon recovery watershed groups, marine resource committees, tribes, local governments, local utilities, farming interests, environmental interests and others. Composition of each group is included in their profile in the Action Agenda.

As of April 2012, those areas that have formed LIOs are:

- Strait of Juan de Fuca: Strait Ecosystem Recovery Network
- Hood Canal: Hood Canal Coordinating Council
- South Sound: Alliance for a Healthy South Sound
- South Central: South Central Puget Sound Caucus Group
- Island: Island County/Watershed LIO
- Whatcom: Consolidated Water Resource Inventory Area (WRIA) 1 Joint Policy Boards
- San Juan Islands: San Juan Action Agenda Oversight Group
- Stillaguamish and Snohomish Watersheds: Snohomish/Stillaguamish LIO

Those areas that are still in formation are:

- North Central/Kitsap County
- Skagit Watershed/Skagit County

Ecosystem and Salmon Recovery

The Partnership's Ecosystem and Salmon Recovery team works to implement the Puget Sound Salmon Recovery Plan and the Action Agenda in local communities. The team works with salmon recovery watershed groups, tribes, state agencies, federal agencies, local governments and non-profits around Puget Sound. See Action Agenda Section A.6 for more specific information on the responsibilities of this program. The team has also led the development of the Local Implementing Organizations.

Working Groups and Coalitions that Support the Statutory Structure

The diversity of groups interested in Puget Sound ecosystem protection and recovery include governments, tribes, universities, businesses, ports, natural resource industries such as farming, forestry and fisheries, environmental, utilities, human health, education, tourism and recreation, and many others. The Puget Sound Partnership was created to engage public and private interests, both Soundwide and in local communities, in the long-term protection and recovery of the ecosystem. This includes coordinating activities, sharing expertise, facilitating recovery work, leveraging partnerships and resources, and enhancing the ongoing efforts in Puget Sound. Members of the Management Conference meet with partners collectively and individually. In addition to specific groups and collaborative partnerships mentioned in Sections A–D of the Action Agenda, the following are important elements of the overall Management Conference.

Lead Organizations for Supporting Implementation

Beginning in 2011, EPA provided Puget Sound Geographic Program funding to Washington state agencies and the Northwest Indian Fisheries Commission to serve as Lead Organizations to develop and implement multi-year strategies for supporting implementation of the Action Agenda through both directed and competitive sub-awards. The Lead Organizations include:

- Marine and nearshore protection and restoration (Departments of Fish and Wildlife and Natural Resources)
- Watershed protection and restoration (Departments of Ecology and Commerce)
- Toxics and nutrients prevention, reduction and control (Department of Ecology)
- Pathogen prevention, reduction and control (Department of Health)
- Managing Implementation of the Action Agenda (Puget Sound Partnership)
- Outreach and Stewardship (Puget Sound Partnership)
- Tribal Capacity and Implementation (Northwest Indian Fisheries Commission)

Puget Sound Tribes

The health of the Puget Sound is intrinsically linked to the physical and cultural health of Western Washington Tribes, as well as to tribal sovereignty. Indian tribes rely on the Puget Sound's natural resources for economic and subsistence purposes. Most of the Puget Sound tribes hold treaty-reserved rights to fish, hunt, and gather roots and berries throughout the Puget Sound Basin.

The Puget Sound Partnership is committed to acting consistently with tribal treaty rights, the federal trust responsibility to Indian tribes and tribal interests in planning and implementing the Action Agenda. The Partnership recognizes the Centennial Accord and is committed to the principles contained in it. The Partnership also recognizes the sovereign status of Federally Recognized Tribes and their unique government-to-government relationship with all federal agencies. While the Governor has appointed a Tribal leader to the Leadership Council and the Partnership includes tribal input on the Ecosystem Coordination Board and seeks additional input from the Tribal caucus, the Partnership understands that direct government-to-government communication with individual tribes is also necessary. The Partnership will recognize and foster the co-management relationship that is established between the tribes and state agencies. The Partnership expects its federal and state partners will also carry out their tribal trust responsibilities by working cooperatively with tribal governments to preserve and enhance our environment and to ensure that tribal treaty rights are upheld.

Since 2008, The Partnership and Tribes developed a set of protocols that created the Partnership Tribal Co-Management Council (PTCC). The purpose of PTCC is to provide an official forum for the early and frequent involvement of tribes in Partnership activities including policy and project development and prioritization. PTCC does not replace the need for federal and state agencies, including the Partnership, from establishing direct government-to-government relationships with each Puget Sound tribe.

Examples of ongoing collaboration with Puget Sound Tribes

- The Partnership convenes PTCC meetings consistent with the agreed upon protocols in order to develop common funding, policy and projects to collaborate on over the course of the biennium.
- The Partnership has a need and an obligation to consult with each tribe on an individual basis. This must be done at the executive director level even though daily relationships are nurtured and sustained with tribal staff through our ecosystem recovery program. The Partnership shall invite each Puget Sound tribe to consult on issues related to Puget Sound recovery and of mutual concern at least once per biennium. The Partnership works with the Northwest Indian Fisheries Commission on this collaborative need.
- The U.S. Environmental Protection Agency (EPA) and the Northwest Indian Fisheries Commission support the Coast Salish Gathering in order to encourage collaborative relationships between all levels of government on both sides of the US/Canadian border. The Coast Salish gathering has emerged as an important forum for building collaborative relationships across the entire Salish Sea and should be stated as a strategy to nurture the success of that effort.
- EPA fund Tribes with Puget Sound Geographic Program funds to participate in the implementation of priority actions in the Action Agenda and to participate in Action Agenda review and update processes. (EPA)

Federal Agencies

The federal caucus promotes information sharing, development of joint work priorities, and collaboration among federal agency leadership and staff. Thirteen federal agencies have signed a Memorandum of Understanding to commit to these working principles, and all federal agencies with Puget Sound interests are welcome to participate. Agencies include those with environmental and

natural resource responsibilities such as National Oceanic and Atmospheric Administration (NOAA), the Environmental Protection Agency, U.S. Fish and Wildlife Service, U.S. Geological Survey, U.S. Army Corps of Engineers, as well as those with local defense and security responsibilities such as the Coast Guard, Army, and Navy. The federal caucus has a work plan to guide their engagement with Puget Sound recovery efforts.

Examples of ongoing collaboration:

- Regular meetings of the federal caucus
- Maintaining a joint federal work plan that support implementation of priority recovery strategies and actions, including science and reporting. Use the Action Agenda to help set work plan priorities.
- Increasing internal federal coordination and communication to efficiently implement Action Agenda priorities. Examples include: coordinating restoration and protection grants and other funding; improving government-to-government consultation with Puget Sound tribes on federal agency actions; and coordinating restoration-related permits.
- Aligning federal agency budgets with priorities of the Action Agenda as described in Priorities A, B, C, and D.
- Modeling stewardship behavior consistent with the priorities in sections A, B, and C of the Action Agenda

State Agencies

State agencies with natural resource and human health responsibilities meet to promote increased efficiency through consistent coordination, communication and program alignment via the State Caucus and Natural Resource cabinet. Participating agencies in the state caucus include, but are not limited to, the departments of Ecology, Natural Resources, Fish and Wildlife, Commerce, Transportation, Health, State Conservation Commission, Recreation and Conservation Office, the Governor's Office, and the Office of Financial Management.

Local Governments

Much of the effort to protect and restore Puget Sound is and will continue to occur locally. Cities and counties are in many cases the frontline for addressing impacts—they develop and implement growth management plans and development regulations, manage surface water runoff, treat wastewater, and provide numerous benefits to citizens. Working cooperatively with cities and counties is essential for federal and state agencies, tribes, and non-governmental interests. In addition to participating as individual jurisdictions and in LIOs, counties work together through the Washington State Association of Counties and County Coastal Caucus and cities work together through the Association of Washington Cities.

Interest-Based Organizations and Collaborations

There are numerous interest-based organizations at the Soundwide and local level. Many interest groups participate via existing associations and organizations, such as the Washington Forest Protection

Association, diverse agricultural associations, boating interests, property rights interests, business and commercial interests, and many others.

Interest-based caucuses include:

- *Environmental caucus.* This caucus primarily includes groups with Soundwide environmental interests such as People for Puget Sound, Washington Environmental Council, The Nature Conservancy, Trust for Public Land, American Rivers, and many others.
- *Business caucus.* Recovery and long-term protection of the Puget Sound ecosystem will only happen with expertise, contributions and business acumen of the private sector. Job creation, economic growth and stability and ecosystem markets are mutual interests of the partnership and the business community. The business caucus works primarily through the Association of Washington Business and is organized by the representatives on the Ecosystem Coordination Board.

Canada

Puget Sound is part of the Salish Sea that encompasses the Puget Sound of the United States and the Georgia Basin of Canada. Many pressures facing the Puget Sound ecosystem must be addressed on both sides of the border. Those pressures include the threat of oil spills, invasive species, wastewater, polluted runoff, air pollution, and climate change. Puget Sound recovery efforts are bolstered by close collaboration with our Canadian partners on scientific investigations, planning, and action implementation.

Environment Canada Pacific and Yukon Region (EC) and USEPA Region 10 have maintained a Statement of Cooperation (SOC) on the Salish Sea (Georgia Basin and Puget Sound) Ecosystem since 2000. The SOC, which outlines common goals and objectives, is an articulation of the importance of ecosystem-based partnerships in the region. It promotes closer Canada-US collaboration in addressing the transboundary environmental challenges confronting the future of this ecosystem. The SOC commits EC and the EPA to develop action plans every two years to guide coordination efforts and to report on progress. These action plans are developed through an interagency Working Group co-chaired by EC Pacific and Yukon Region and EPA Region 10 with representation from the Coast Salish Gathering Coordinators, the British Columbia Ministry of Environment, Washington State Department of Ecology, the Puget Sound Partnership and the Northwest Straits Commission. The SOC and current action plan is available at <http://www.epa.gov/pugetsound/partnerships/index.html>.

Relations between the Province of British Columbia and Washington State are guided by an agreement signed by the Premier and Governor that created an Environmental Coordination Council. The Coastal and Oceans Task Force was created to enhance collaboration between the state and province on ocean health. The Partnership and the provincial Ministry of the Environment have been working with the SOC workgroup to coordinate the state/provincial work plan elements on transboundary marine restoration efforts with the federal level plan to the extent possible. Elements of that work plan may be incorporated into topic-specific strategies in the Action Agenda.

Examples of ongoing collaboration with Canada

- Collaboration with Canada to host the Salish Sea Ecosystem Conference in Washington in 2013. The Salish Sea Ecosystem Conference is widely recognized as critical to collaboration on science and

policy issues related to Salish Sea recovery. It is the primary conduit for coordination and collaboration between Washington State and British Columbia. It is also important to scientists and policy makers working on Puget Sound issues without a trans-boundary component. Each conference has a strong first nations/tribal component and is therefore vital for the incorporation of indigenous knowledge and values into ecosystem recovery efforts. The administrative lead for the conference needs to be determined.

- Adoption of federal-state-provincial trans-boundary work plan and regular meetings to coordinate implementation of actions. (PSP, EPA)
- The Partnership is investigating whether a Canadian federal or provincial government agency should participate formally or in an ad hoc way on the Science Panel and Ecosystem Coordination Board. A formal agreement could be developed with Canada in the future.
- The Transboundary Ecosystem Indicators project was created to establish a common understanding of transboundary ecosystem priorities for action. Since its inception, two transboundary indicator reports were published in 2002 and 2005 to share knowledge on the health of the Puget Sound Georgia Basin. The EPA Region 10 and Environment Canada's Pacific and Yukon Region are in the process of updating these reports, expanding the suite of indicators and increasing its relevance to ecosystem health including human wellbeing.
- During the 2012 update of the Action Agenda, the need for additional coordination and collaboration with Canada on toxics reduction was identified, as well as the potential exploration of cooperative baseline mapping such as using the BC Shorezone Mapping.
- Other examples of collaborative efforts include the Coast Salish Gatherings, the Georgia Basin/Puget Sound International Airshed Strategy, the Pacific and Northwest Economic Region forum, and the Pacific Northwest Environmental Directors forum.

West Coast Collaboration

Puget Sound is also intricately related physically and politically to the Pacific Ocean. There are numerous on-going efforts to coordinate marine restoration efforts on the west coast of the United States. These include, but are not limited to:

- *State Ocean Caucus*: The Department of Ecology convenes representatives from state agencies that play a role in the management of coastal areas.
- *West Coast Governor's Agreement*: The West Coast Governor's Agreement (WCGA) establishes a framework for collaboration between Washington, Oregon, California, Alaska and British Columbia on a variety of issues including ocean health. The Department of Ecology also leads these coordination efforts.
- *The Pacific Coast Collaborative*: similar to the West Coast Governor's Agreement and includes the Province of British Columbia.

Working with Citizens

The Partnership recognizes that the actions of individual citizens are important in the overall effort to protect and restore Puget Sound. The Partnership works closely with citizens to promote extensive

public awareness, education, and participation in Puget Sound recovery as outlined in the Partnership's enabling statute (RCW 90.71.230 (g)). See Action Agenda Section D.5-7 for more detail.

The Puget Sound Partnership supports grassroots activities to help inform, engage, and promote stewardship. The Partnership's Stewardship Program works both regionally and locally with ECO Net member organizations to build awareness and advance best management practices among Puget Sound residents. The Partnership developed and maintains ECO Net, an active network of over 400 local education and outreach organizations who help to implement elements of the Action Agenda. The Partnership has also co-branded Puget Sound Starts Here, a regional media/social media campaign to increase the visibility of and engagement in Puget Sound recovery.

Working with Academia

As part of science-based recovery, the Partnership, particularly the Science Panel, coordinates with academia. This coordination is called out in Section D4.1.2 of the Action Agenda in relation to the strategic science program.

II. Partnership Agency Roles and Structure

Roles of the Partnership Agency within the Management Conference

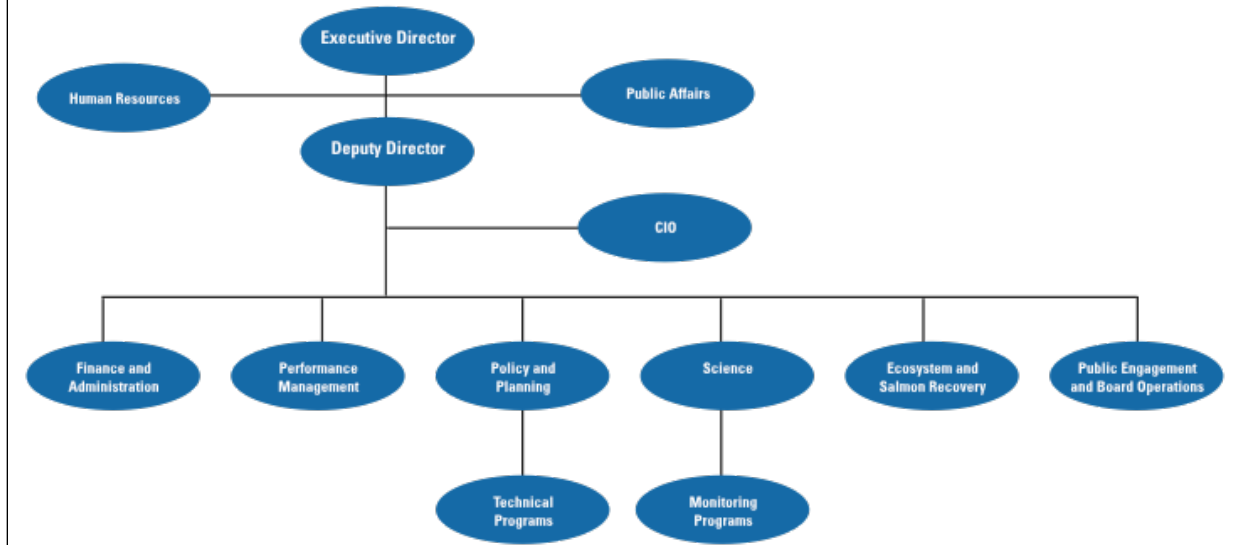
The Partnership has specific roles within the Management Conference. These roles are the backbone structure that makes the Management Conference function. Unique Partnership responsibilities are explained in Section D of the Action Agenda and include setting priorities through target-setting, adaptation of the Action Agenda, tracking and reporting on progress, implementing the strategic science program including the coordinated ecosystem monitoring program, and leading regional behavior change and stewardship efforts. In addition, the Partnership leads work to implement key elements of the salmon recovery program (see Action Agenda Section A.6) and leads select strategic policy initiatives (identified in Sections A–C of the Action Agenda).

Structure of the Partnership Agency

The Partnership agency is organized to successfully support long-term implementation of the Action Agenda and maintain the management conference. The Executive Director leads a team of six Departments: Finance and Administration, Performance Management, Policy and Planning, Science, Ecosystem and Salmon Recovery, and Public Engagement and Board Operations. Figure A.2 depicts the agency organization. Brief department descriptions follow.

Puget Sound Partnership Agency Organization Chart

PugetSoundPartnership
our sound, our community, our chance



Puget Sound Partnership Agency Organization Chart

Executive Leadership

Provides strategic leadership and management oversight of the Puget Sound Partnership. This includes advancing the agency vision, building and maintaining strategic coalitions, and building momentum for decision-making and implementation across the Partnership boards and with external partners.

Finance and Administration

The Finance and Administration team manages the agency finances. The team has oversight of agency budgets, contracts, sub-awards, grants, and purchasing.

Performance Management

The Performance Management Team is responsible for overseeing the design and implementation of a performance management system for Puget Sound. This team leads data collection and reporting on implementation of actions and overall ecosystem recovery. For more information on specific functions, see Section D.3 of the Action Agenda.

Policy and Planning

The policy and planning team leads the adaptation work of the Action Agenda and leads key policy initiatives. The Partnership leads and engages on select strategic policy issues where regional leadership can provide consistency, bring an ecosystem perspective, advance the work beyond authorities of individual agencies, resolve conflicts, or are essential for the recovery of Puget Sound's ecosystem. These issues can be ongoing, emerging or time sensitive. Current policy assignments are identified in

Sections A-C of the Action Agenda. Coordination with the EPA National Estuary Program and related agreements is housed in this department.

Science and Monitoring

The Science and Monitoring Program Team supports the Science Panel in the development and execution of a strategic science program, including the Ecosystem Monitoring Program and advancement of the Open Standards for the Practice of Conservation in Puget Sound. See Section D.4 for specific details.

Ecosystem and Salmon Recovery

The Ecosystem & Salmon Recovery team works with salmon recovery watershed groups, tribes, state agencies, federal agencies, local governments and non-profits around Puget Sound to implement the Puget Sound Salmon Recovery Plan. See Action Agenda Section A.6 for more specific information on the responsibilities of this program. The team has led the development of the Local Implementing Organizations to help integrate the local salmon recovery and other Puget Sound protection and restoration efforts.

Public Engagement and Board Operations

The Public Engagement and Board Operations team is responsible for leading the stewardship strategies of the Action Agenda (see Action Agenda Section D5-7), supporting the work of the Partnership's boards, and managing the agency's graphics, web and social media. The team also coordinates graphic design, branding, web, and social media applications to stay connected with the public and our many partners. In addition, the team supports and facilitates the work of the Leadership Council, the Science Panel and the Ecosystem Coordination Board.

III. Management Conference Decision Making

The Leadership Council sets the strategic direction to guide the work of the Partnership and meet its statutory obligations. Prior to setting direction or making decisions, the Leadership Council is typically presented with a broad proposal or concept by the Executive Director and staff. As appropriate, the Leadership Council may request specific input, ask questions, or seek advice from the Ecosystem Coordination Board, Science Panel, or lead implementing agencies as well as organizations involved in Puget Sound recovery and interested members of the public. Depending on the issues and timing, special meetings or work sessions may be held to seek input from relevant experts and partners. Recommendations or suggestions from these discussions will be incorporated into a revised presentation to the Leadership Council. As much as possible, the meetings of the Ecosystem Coordination Board and Science Panel are staggered and structured to provide timely input to the Leadership Council.

Major decisions that use this approach may include annual and biennial work plans for Partnership activities, review of state agency budget requests and legislation, and Action Agenda adaptive management decisions that result in new and/or changed actions, particularly when resulting in a strategic directional shift or revision to the Action Agenda.

Using the Partnership’s adopted Open Standards for the Practice of Conservation, Figure 3 illustrates a preliminary conceptual framework that guides decision-making within the Management Conference. The model depicts inputs from science, performance management and policy. Each of the partners in our region may play one or more of these roles depending on the decision that is under consideration. The conceptual framework will be expanded to include how additional tools and processes will specifically inform decision-making (e.g., monitoring data, public outreach, integration of existing regional and national data).

IV. Puget Sound National Estuary Program History

In 1985, the Washington State Legislature created the Puget Sound Water Quality Authority (Authority) to develop and oversee implementation of a management plan for Puget Sound (RCW 90.70). The Authority developed the first Puget Sound Water Quality Management Plan in 1987. Congress established the National Estuary Program (EPA) in 1987 under Section 320 of the Clean Water Act. The U.S. Environmental Protection Agency approved the Puget Sound Management Plan as the federal Comprehensive Conservation and Management Plan (CCMP) for the basin in 1991. In July 1996, the authorizing legislation for the Puget Sound Water Quality Authority expired and the Washington State Legislature enacted the Puget Sound Water Quality Protection Act (RCW 90.71). Under this new law, the Puget Sound Water Quality Action Team and Puget Sound Council assumed the Authority’s responsibilities, including review and adoption of the Puget Sound Management Plan.

In 2005, Governor Gregoire created a task force to develop recommendations for how best to protect and restore the health of Puget Sound’s ecosystem while maintaining and promoting a vibrant economy. Also known as the Puget Sound Partnership, the task force recommended a new governance structure for Puget Sound to improve accountability for results and actions, among other program changes. In 2007, the Washington State Legislature amended RCW 90.71 to establish the Puget Sound Partnership as the entity to coordinate and lead the effort to protect and restore Puget Sound. In 2009, EPA approved the Action Agenda as the federally recognized CCMP for Puget Sound.

APPENDIX B

SCIENCE BASIS FOR THE
2012/2013 ACTION
AGENDA

Introduction

The Action Agenda is the single road map that identifies the work needed to protect and restore the Puget Sound ecosystem. The Puget Sound Partnership (Partnership) guides the iterative adaptation of the Action Agenda, building on updated scientific information about ecosystem conditions and on scientific information and policy perspectives about expected and observed ecosystem responses to implementation strategies.

In 2008, the Partnership, including the Science Panel, was forming while creating the Action Agenda and Biennial Science Work Plan. The first version of the Action Agenda was built on scientific frameworks and information available at that time, knowing that a more systematic and rigorous approach would be needed. The scientific foundation of the 2008 Action Agenda includes:

- The guiding principles for ecosystem management in Puget Sound. These were developed from the work of the topic forums (discussed below), community workshops, refined by the Science Panel and vetted by the Ecosystem Coordination Board and Leadership Council. The principles, presented on page 29 of the 2008 Action Agenda, were used to refine strategies and actions, and prioritize actions.
- Five topic forum papers were prepared to promote and inspire community conversation and critical thinking about the specific problems facing Puget Sound and the strategies and actions needed to address them. The papers are organized to logically step through three initial questions (two scientific and one policy) that build to a rational conclusion about the strategies and actions needed for recovery. After a public review of the draft papers, the Science Panel coordinated a peer review of the conclusions of the science questions. Their conclusion was that the topic forum papers were a good start at synthesizing information and a process that could be modified and continued in the future. Given time and resource constraints in 2008, the topic forum papers were not revised following Science Panel review: therefore, the scientific basis for Action Agenda strategies and actions is found in the topic forum papers and the peer review summaries.
- Staff at the National Oceanic and Atmospheric Administration (NOAA)'s Northwest Fisheries Science Center led scientific steps related to Puget Sound ecosystem indicator identification in 2008. To describe a healthy Puget Sound, the Action Agenda presented a list of 103 indicators as identified by the NOAA project, which was still in progress at the time that the Action Agenda was published.
- The Action Agenda's description of the current status of Puget Sound was largely drawn from a threats and drivers analysis led by staff at NOAA Northwest Fisheries Science Center. The anticipation was that a more thorough description would be developed as part of the 2009 State of the Sound report.

2012 Update: Building from 2008

After completion of the first Action Agenda, the Partnership, including the Science Panel, embarked on identifying and building more rigorous and systematic approach to future iterations of the Action Agenda. In 2009, the Partnership identified that the Open Standards for the Practice of Conservation

could be the right adaptive and performance-oriented framework for Puget Sound recovery. Staff, working with partners, prepared a series of technical memoranda that detail important advancements toward having the performance management system. Based on this early work, the Partnership adopted the Open Standards for the Practice of Conservation (The Conservation Measures Partnership 2007) as the adaptive framework to use moving forward (Puget Sound Partnership 2010a).

The Open Standards process provides a common means of understanding and supporting the critical role of science, and a means to identify where in the project management cycle science is relevant and needed. This framework also helps define recommendations for structured science/policy collaboration that clarify roles in implementing the Open Standards cycle.

Each of the five Open Standards steps shown in Figure B-1 has scientific, performance, and policy inputs. The choice of what actions to take and their priority and sequencing are ultimately policy choices. These choices are grounded in scientific information so that decision-makers can make the most informed decisions possible, and understand the certainty and uncertainties in their choices.

The 2012 update to the Action Agenda occurs in Open Standards steps 1 and 2: Conceptualize/Frame Project (scoping the extent of the update, content revisions and processes) and Plan Actions and Monitoring (process to develop the strategies and actions). There are multiple scientific inputs to the Action Agenda content and process as summarized in Tables B-1 and B-2. The update builds from the work in 2008 with some critical refinements: selection of ecosystem indicators, setting recovery targets, logic models to transparently link strategies and actions to outcomes, and closely linked the Action Agenda and the Biennial Science Work Plan.

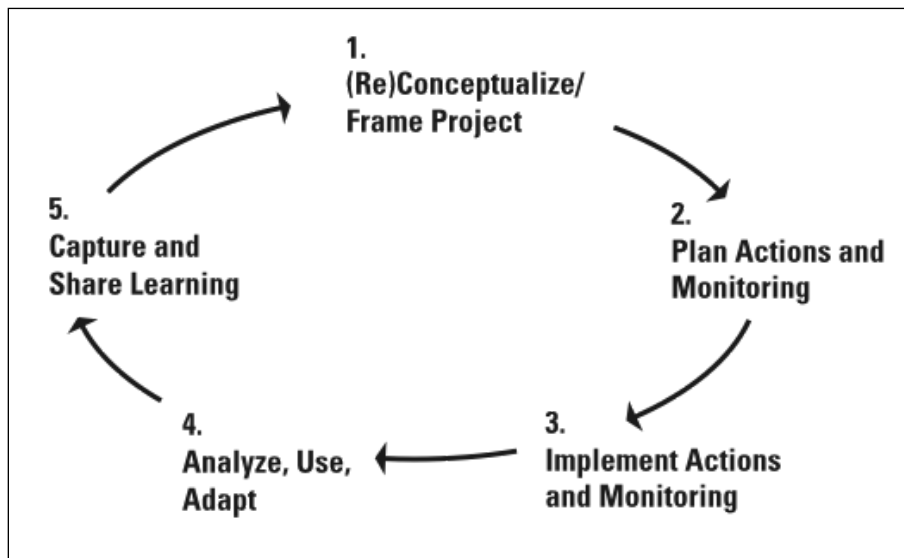


Figure B-1. The Five Steps of the Open Standards for the Practice of Conservation

**Table B-1. Scientific Input into the 2011 Action Agenda Revision –
Conceptualizing and Framing Project**

Open Standards Step 1: Conceptualize/Frame Project
<p>Framing the Partnership’s 2011 work based on the 2010 Puget Sound Science Update – materials at psp.wa.gov</p> <p>The Science Panel convened a science-policy workshop on December 14, 2010 to help frame the Partnership’s work for 2011 based on the conclusions and implications of the 2010 Puget Sound Science Update. This workshop was supported by two key documents:</p> <ul style="list-style-type: none"> ● State-of-the-science synthesis to support efforts to restore and protect the Puget Sound ecosystem (draft December 2010). ● Science Panel Conclusions Regarding Action Agenda Implications of the Science Update (December 2010): <ul style="list-style-type: none"> ○ Target setting should begin immediately for the Dashboard of Ecosystem Indicators (completed February, June, October 2011) ○ Urgent need to conduct a comprehensive analysis of threats (called out in the Biennial Science Work Plan update) ○ Social science work needs to be advanced ○ Need clear process for prioritizing scientific work to identify where disagreement on scientific underpinnings of management issues arises (added to IDT tasks, also part of Biennial Science Work Plan process to prioritize science) ○ Need to continue to support targeted scientific studies (added to IDT tasks).
<p>Scientific contributions to target setting – materials at MyPugetSound.net</p> <ul style="list-style-type: none"> ● Target setting brief sheets for Dashboard indicators and technical memos for key pressures (completed January, March – May, and September 2011) ● Science Panel member reviews of briefsheets and technical memos
<p>Social science contributions to ecosystem recovery</p> <ul style="list-style-type: none"> ● In June 2011, the Puget Sound Institute and Washington Sea Grant convened a workshop on social science research to inform Puget Sound recovery and management. This workshop represents a first step in advancing social science work in support of ecosystem recovery. Next steps identified in this workshop included: <ul style="list-style-type: none"> ○ Develop a preliminary draft social sciences strategic plan ○ Convene a second workshop to provide peer review of the draft plan ○ Create a seminar series at University of Washington (UW) on social sciences in ecosystem recovery ○ Support research activities highlighted by the workshop: a baseline literature review, an institutional analysis, an evaluation of public engagement and behaviors, and development of a conceptual model incorporating human dimension components

Table B-2. Scientific Input into 2011 Action Agenda Revision – Planning of Actions and Monitoring

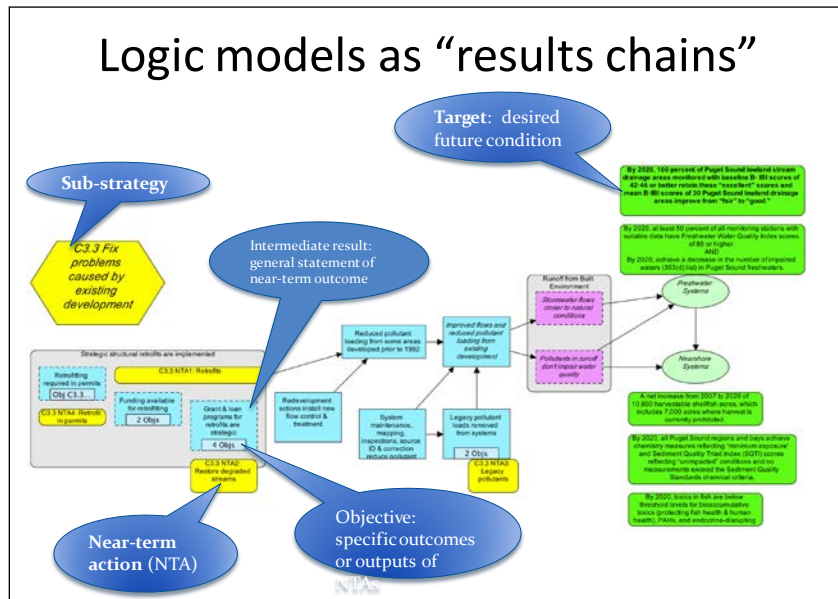
Open Standards Step 2: Plan Actions and Monitoring
<p>Develop updated strategies and actions related to five key pressures using Open Standards steps:</p> <p><i>Strategies</i></p> <ul style="list-style-type: none"> • Develop conceptual model with consideration given to information in Partnership’s 2009 results chains and Puget Sound Science Update (Chapter 4). • Consider where to intervene, where not • Brainstorm new strategies and sub-strategies/refinements to existing 2008 strategies • Identify sub-strategies by assessing the likely effectiveness of candidate strategies <p><i>Actions</i></p> <ul style="list-style-type: none"> • Identify near-term actions (NTAs) • Build results chains to illustrate the logic of sub-strategies and actions • Prioritize NTAs using similar process above based on potential impacts and feasibility • Identify science gaps <p>Scientific and technical staff from agencies and interest groups participate in strategy and action development (i.e., participate on interdisciplinary teams; attend September partner workshops)</p> <p>Science Panel engagement:</p> <ul style="list-style-type: none"> • Review and advise on Open Standards steps used to develop strategies and actions (May 2011). Science Panel with expertise in decision-making tools reviewed the steps with Partnership staff; concluded that the steps were reasonable. • Brief review of conceptual models for three of the Interdisciplinary Team strategies (June 2011). The Science Panel was asked to provide feedback on identifying gaps and concerns about incomplete or inconsistent relationships between strategies, contributing factors, pressures, and ecosystem components. <ul style="list-style-type: none"> ○ Land use: the model and material were distributed in early June but no feedback was provided ○ Wastewater: model was well thought out and covered the issues ○ Stormwater: no glaring omissions or errors in fact, move onto implementation strategies <p>The nearshore and floodplain models were not reviewed in June as these groups got a late start</p>
<p>Process for identifying priority Sub-Strategies and near-term actions</p> <ul style="list-style-type: none"> • The process for prioritizing sub-strategies and near-term actions is in progress. The Science Director, working with the Ecosystem Coordination Board (ECB) and the Science Panel, is working to create a robust process for ranking sub-strategies. Based on input from the ECB the ranking will be based on the expected ecological impact of the sub-strategy with information on human well-being and economic costs/benefits also gathered and presented with the expected ecological impact score. A ranked list of sub-strategies based on expected ecological impact will be available in August 2012.
<p>Develop and verify the strategy and action links to targets</p> <ul style="list-style-type: none"> • Fall 2011 meetings of the ECB and Leadership Council have included discussions of a staff proposal of a target-perspective view of strategies and actions. Target-strategies linkages for 13 targets are presented in the December 2011 draft. • Presentations on target-strategy linkages were revised based on scientists’ and subject matter experts’ (including IDT members) advice based on their understanding of target-strategy relationships and their strengths.

APPENDIX C
RESULTS CHAINS

Results Chains by Recovery Target

The results changes in this first section depict how a set of strategies (and related sub-strategies) reduces pressures and contributes to achieving a single recovery target.

- The yellow polygons represent strategies and sub-strategies.
- The Blue boxes describe the intermediate results that the strategies and sub-strategies are expected to achieve.
- The purple boxes show the reduced pressure on the ecosystem that is expected to occur.
- The green ovals show the areas of the ecosystem where the change will be observed.
- The dark green squares show all recovery targets addressed.



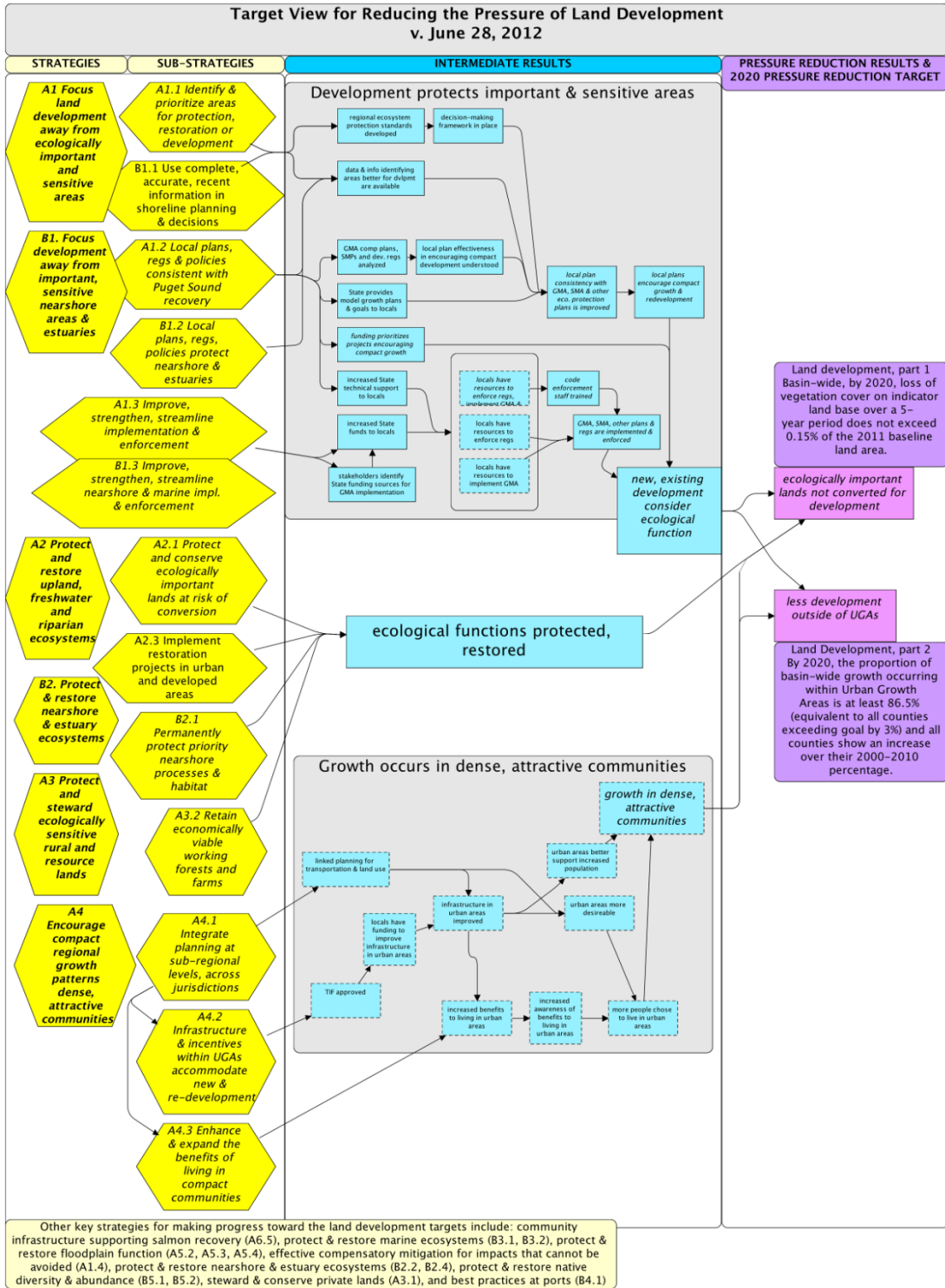


Figure C-1. Results Chain—Land Development Recovery Target

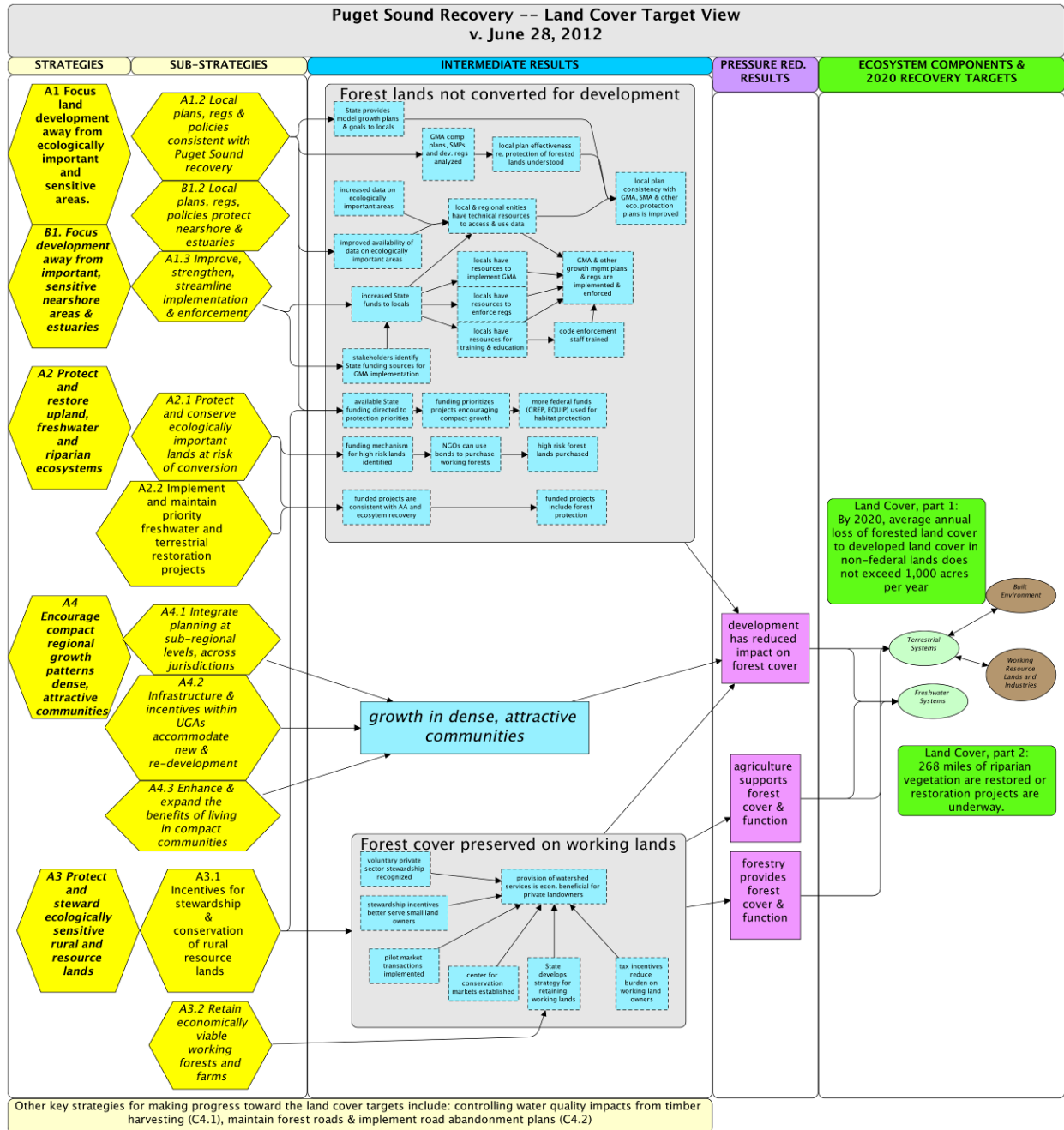


Figure C-2. Results Chain—Land Cover Recovery Target

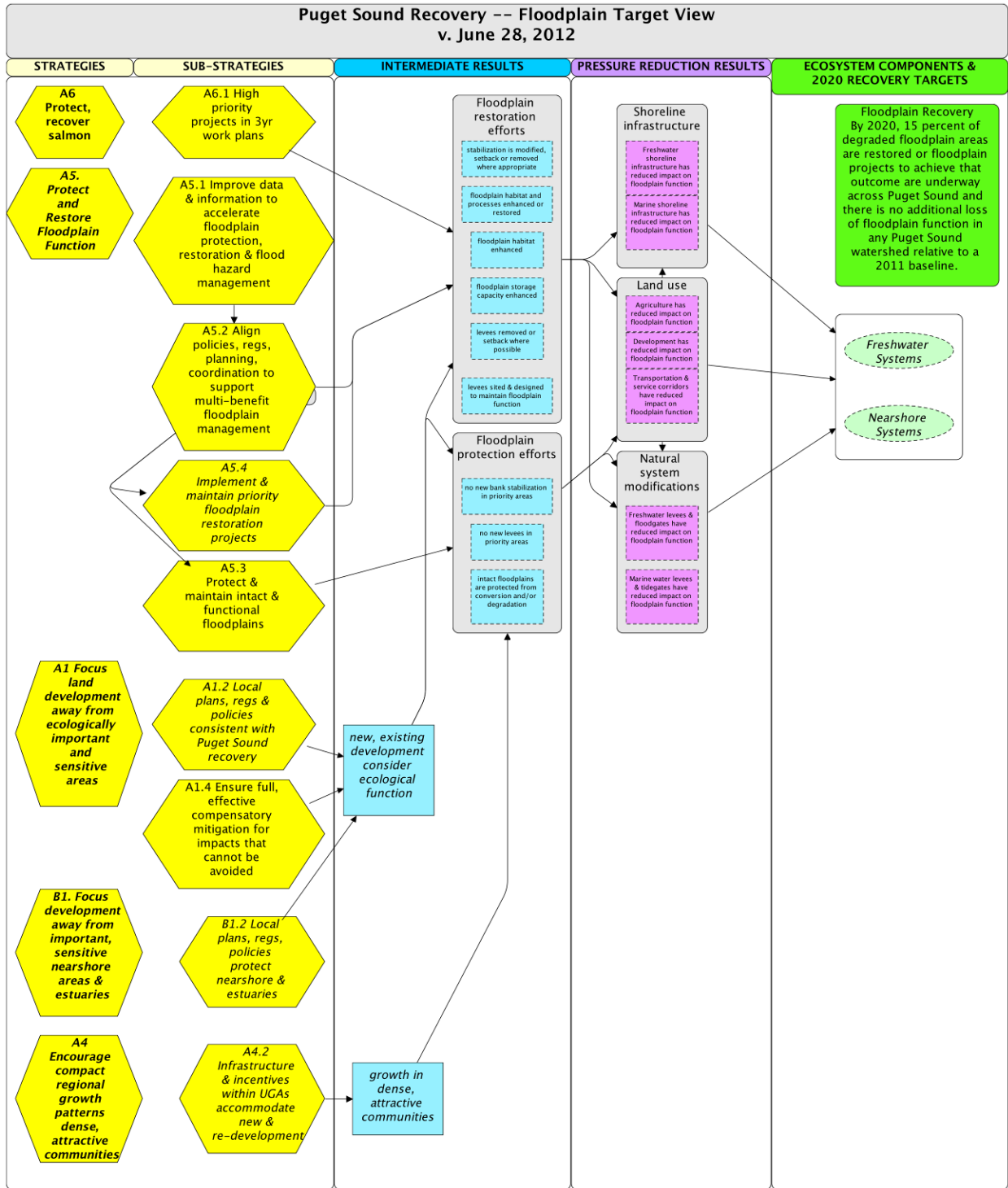


Figure C-3. Results Chain—Floodplains Recovery Target

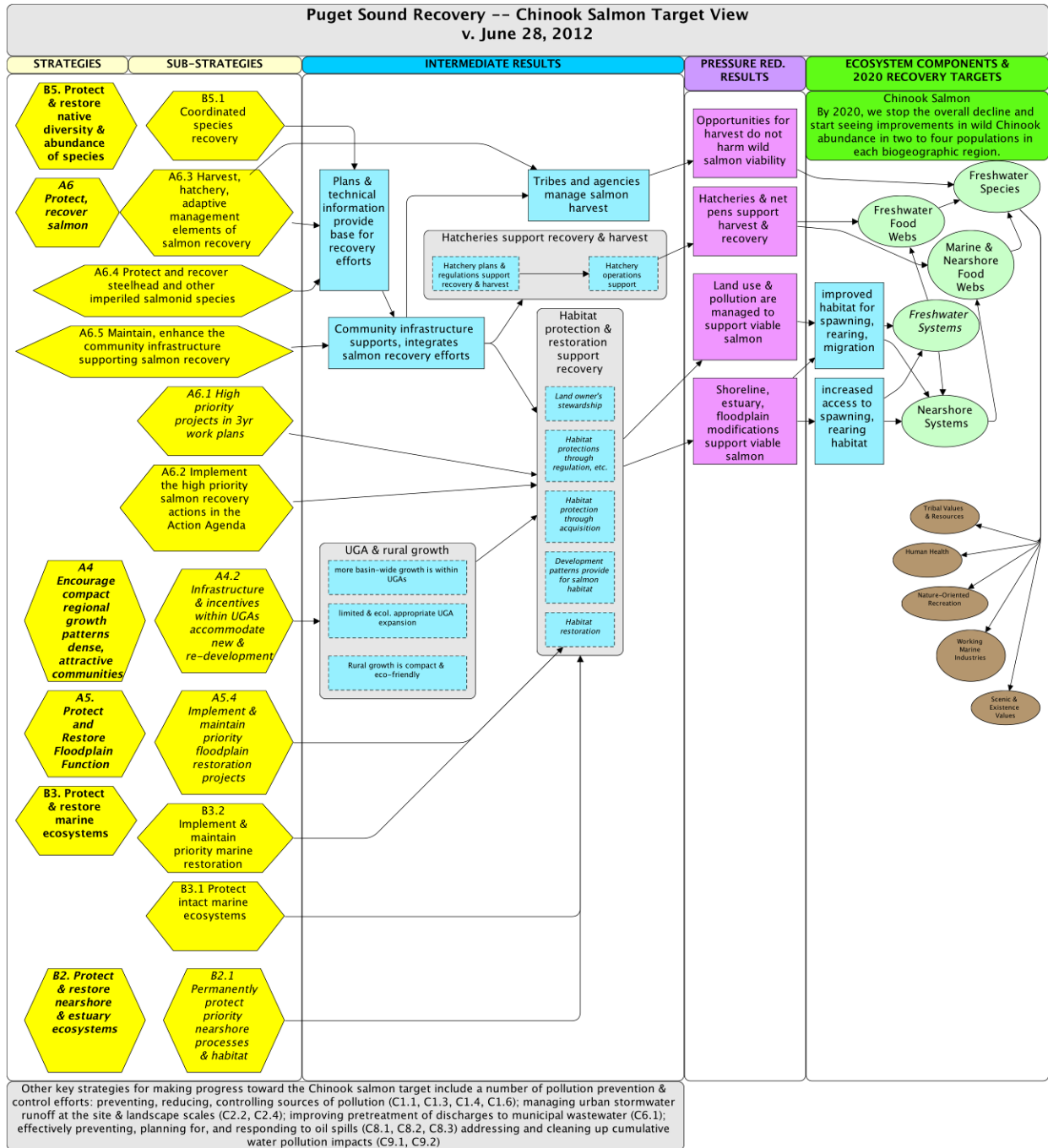


Figure C-4. Results Chain—Chinook Salmon Recovery Target

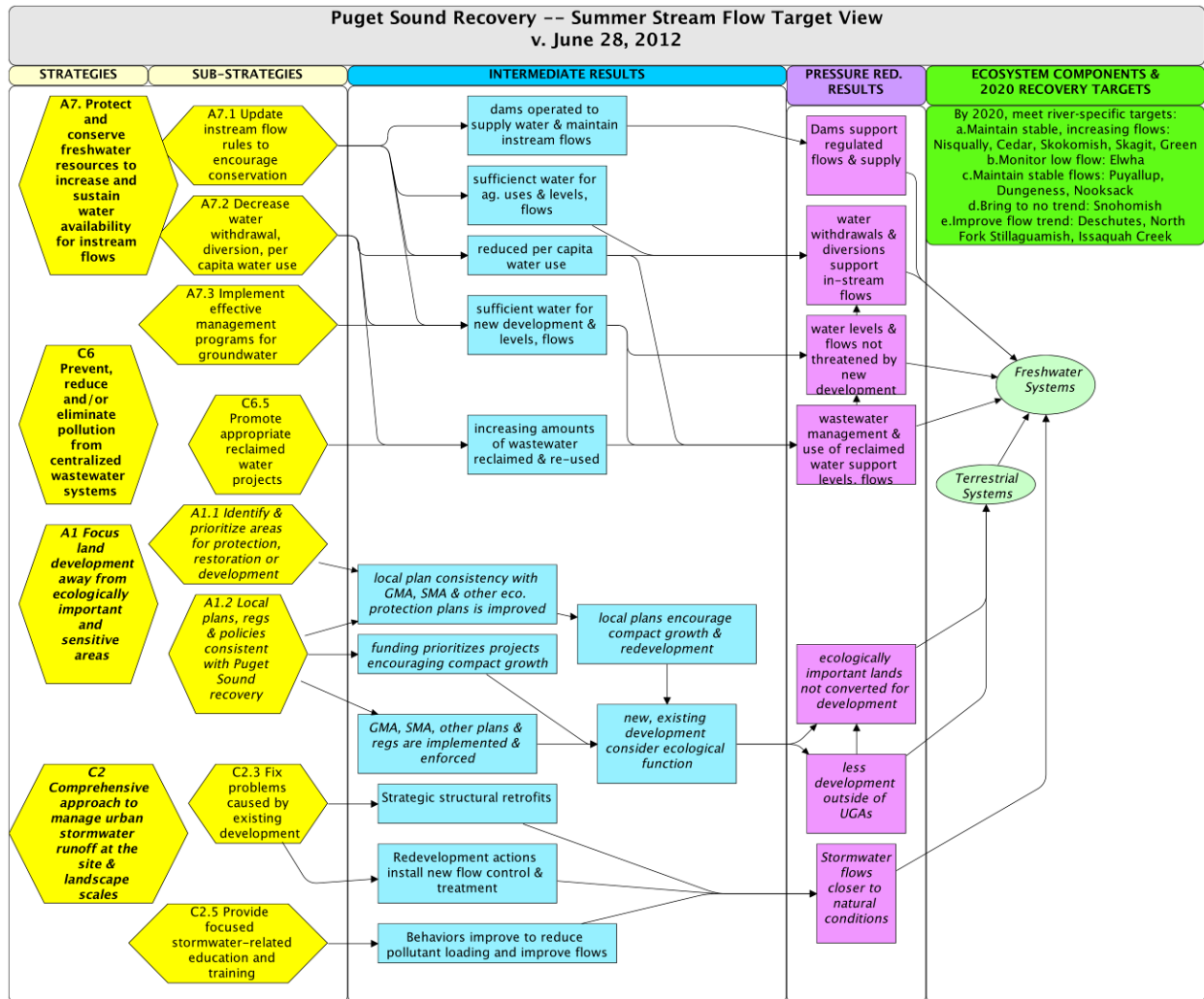


Figure C-5. Results Chain—Summer Stream Flow Recovery Target

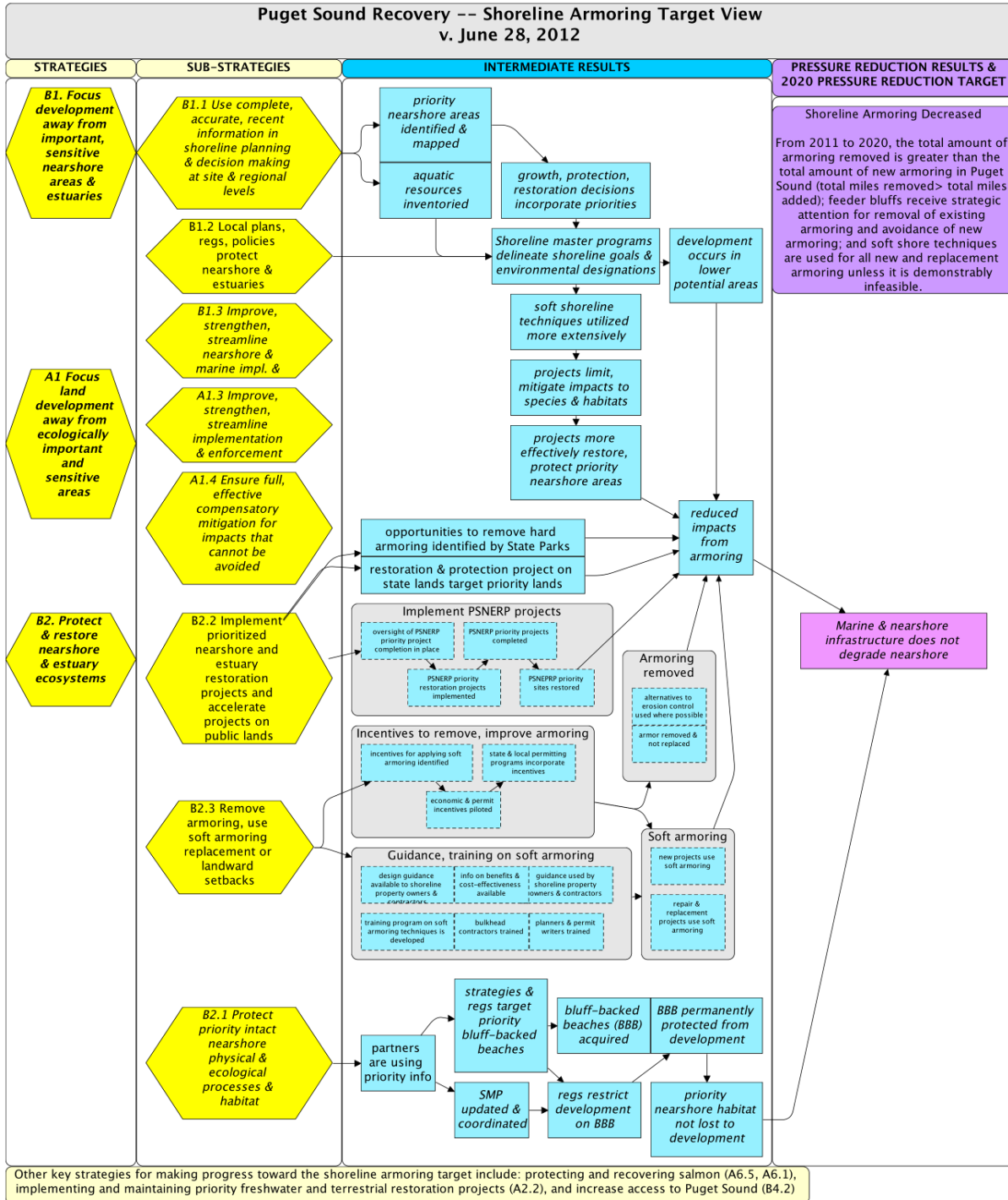


Figure C-6. Results Chain—Shoreline Armoring Recovery Target

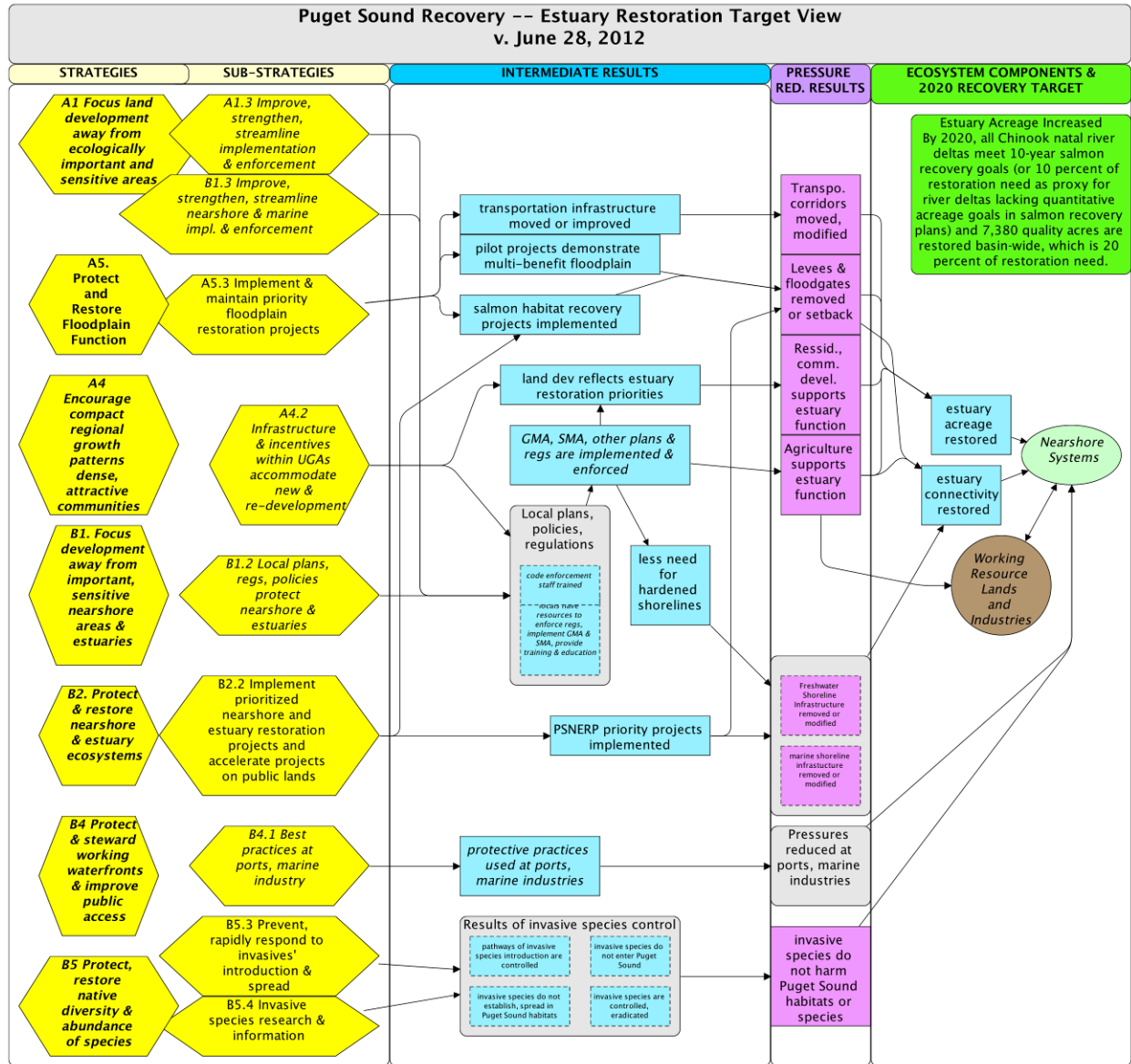


Figure C-7. Results Chain—Estuaries Recovery Target

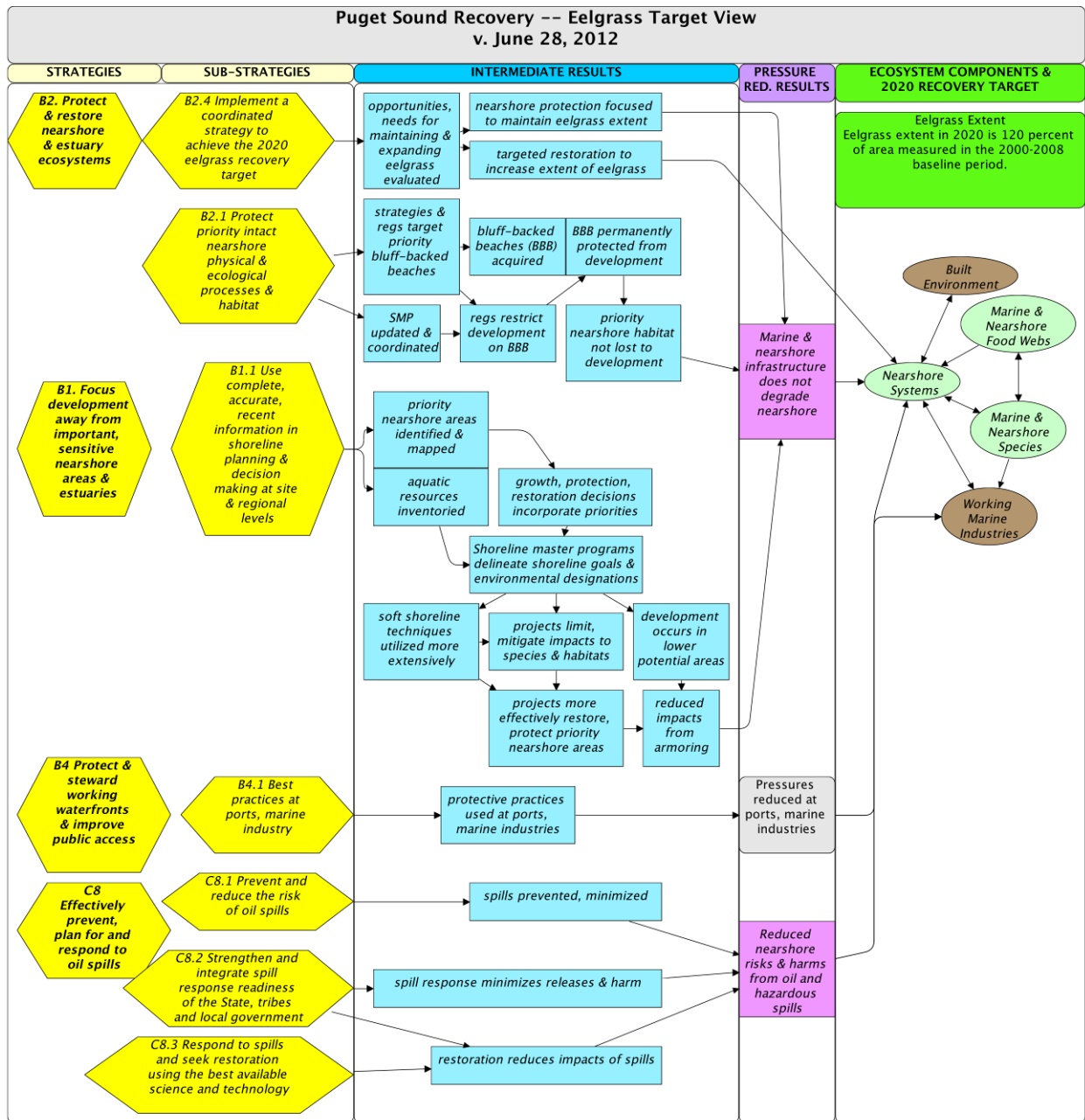


Figure C-8. Results Chain—Eelgrass Recovery Target

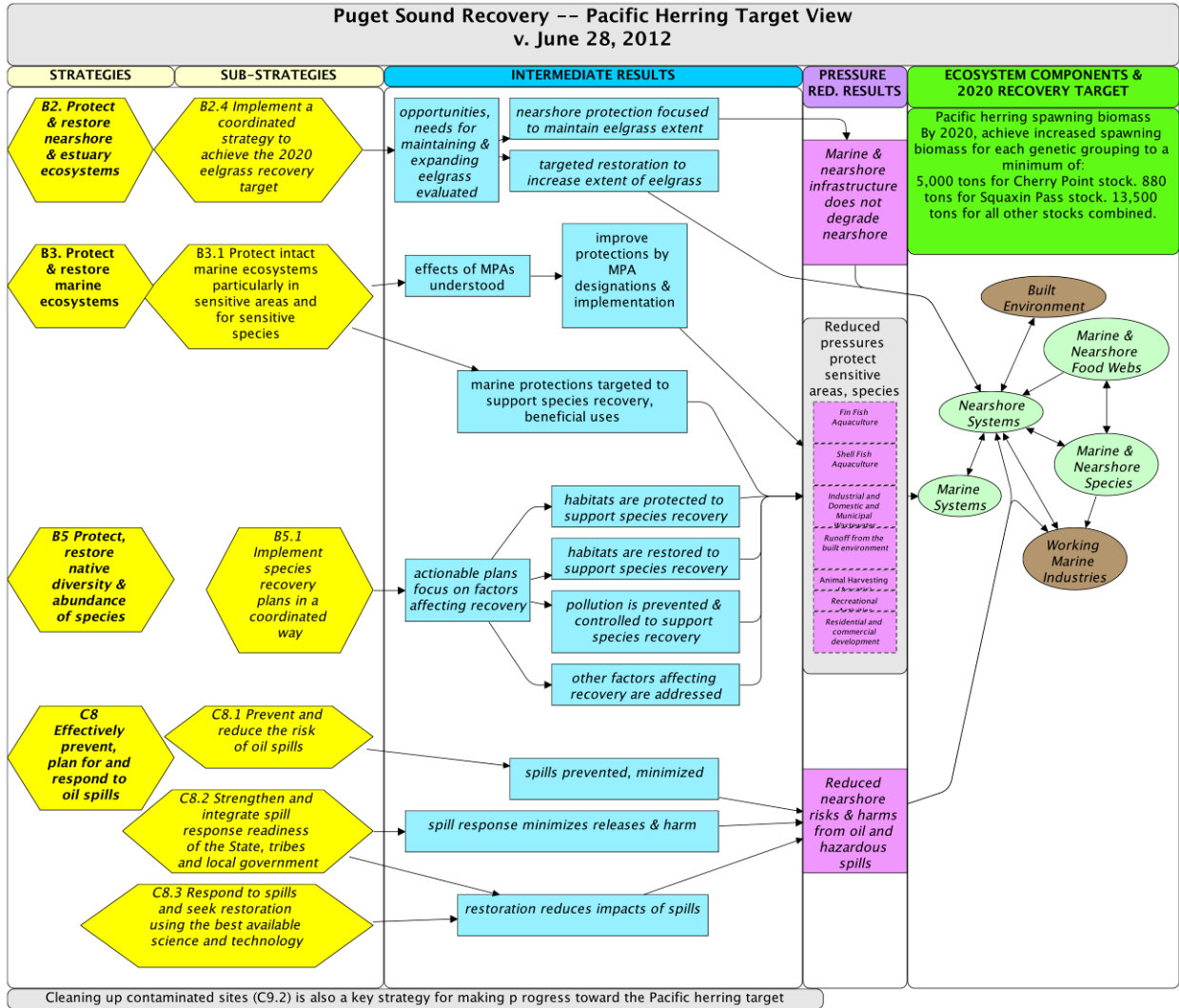


Figure C-9. Results Chain—Pacific Herring Recovery Target

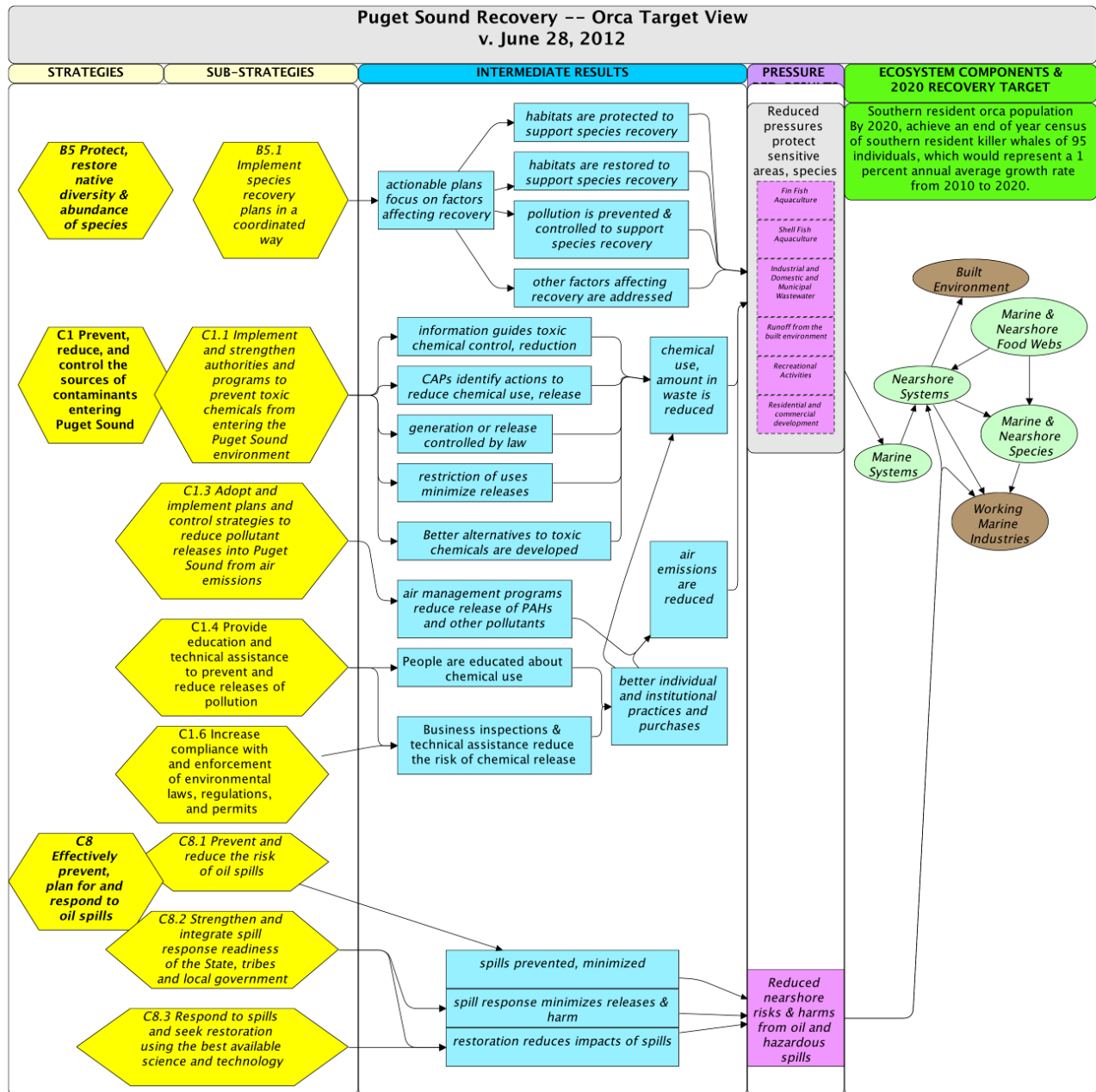


Figure C-10. Results Chain—Orcas Recovery Target

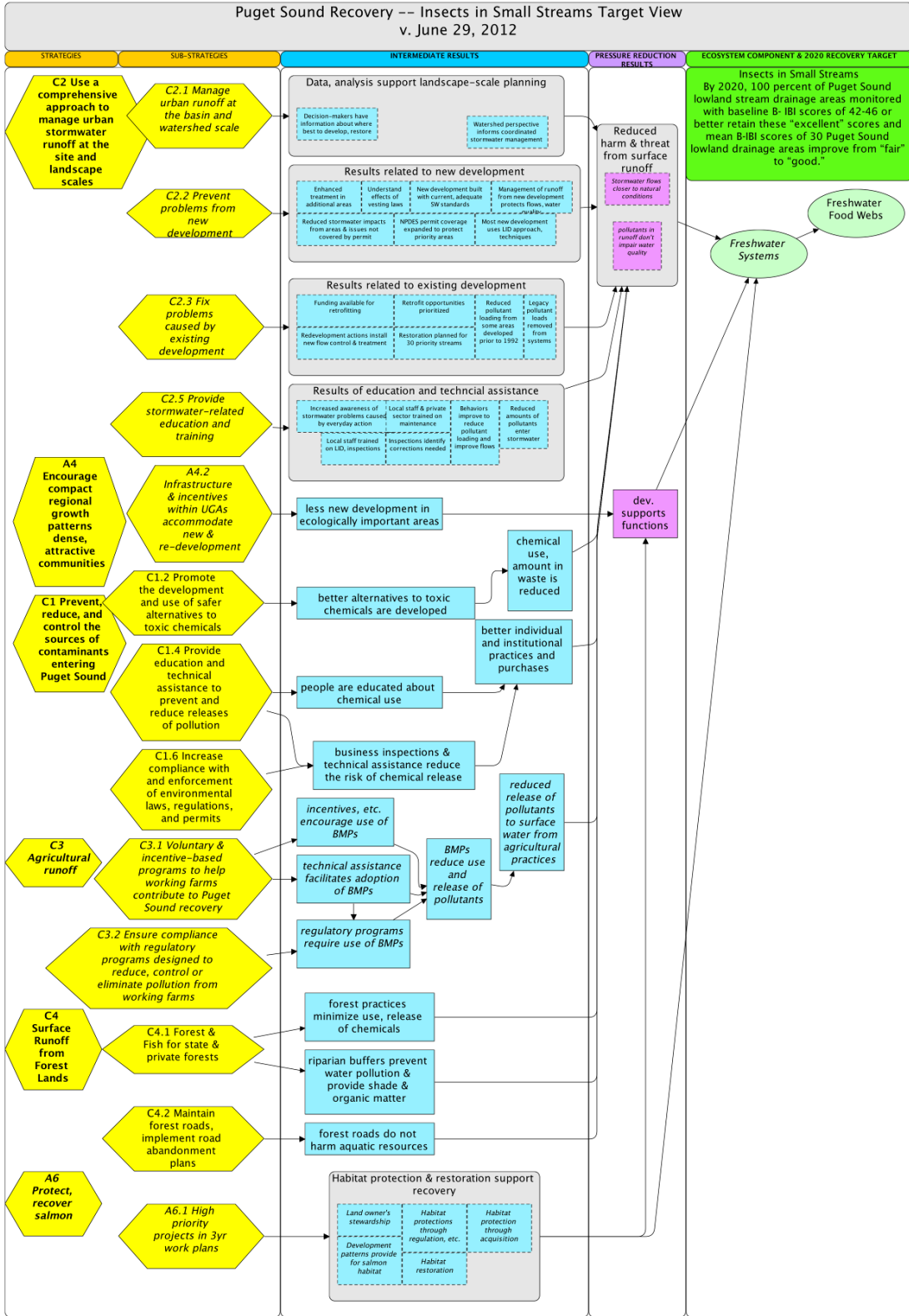


Figure C-11. Results Chain— Benthic Index of Biotic Integrity (Freshwater Quality) Recovery Target

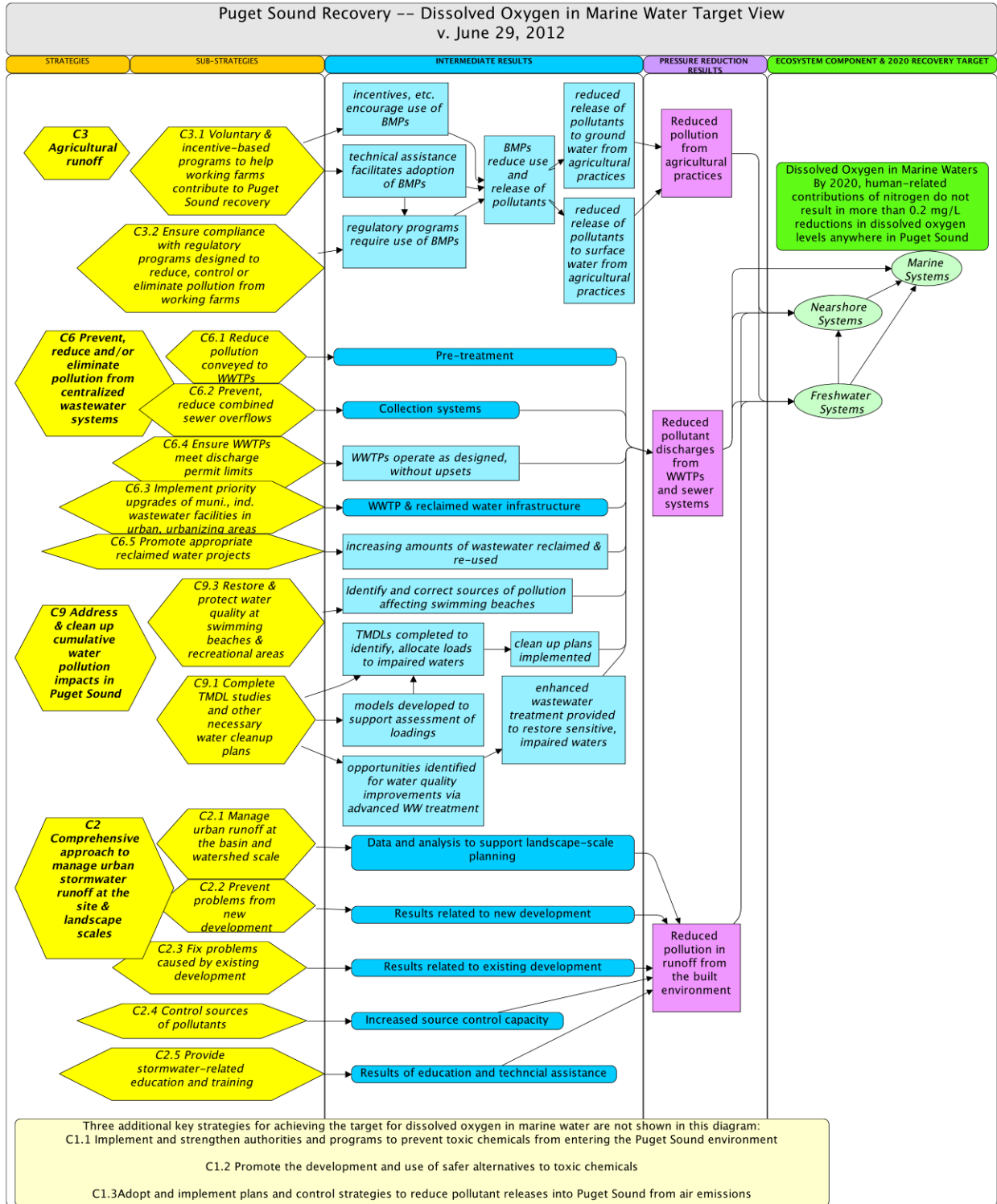


Figure C-12. Results Chain— Dissolved Oxygen (Marine Water Quality) Recovery Target

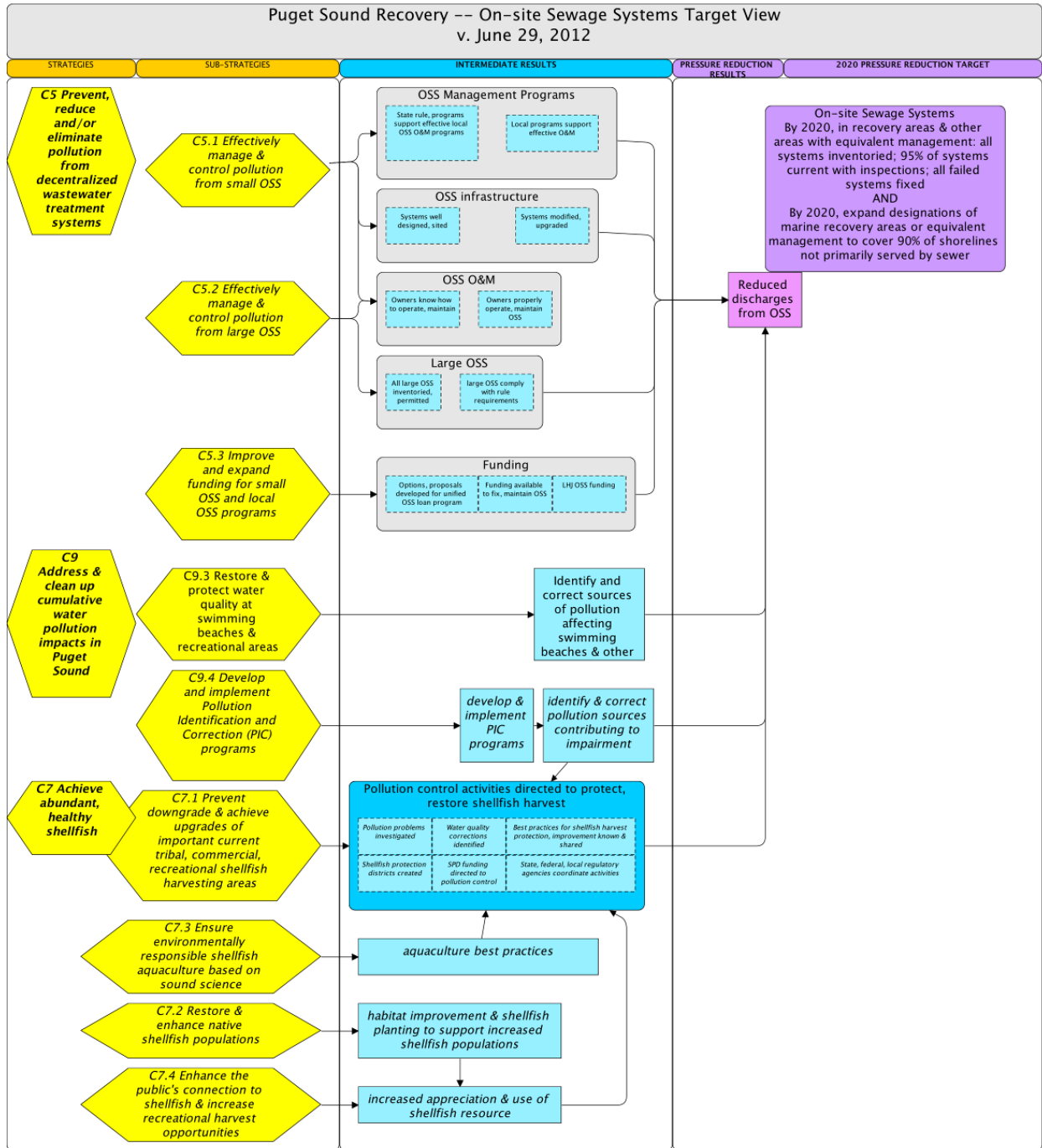


Figure C-13. Results Chain— Onsite Sewage Systems Recovery Target

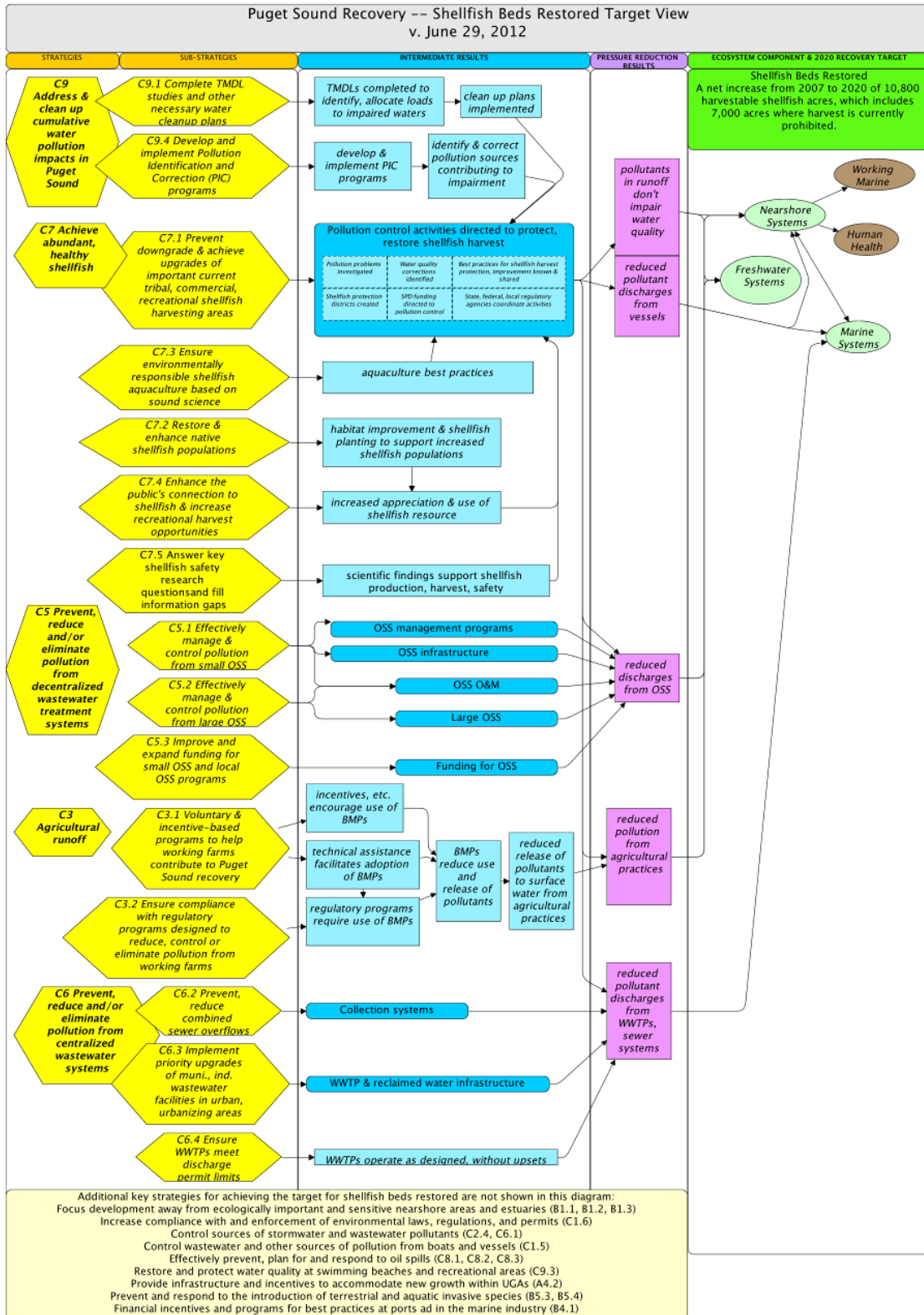


Figure C-14. Results Chain—Shellfish Beds Recovery Target

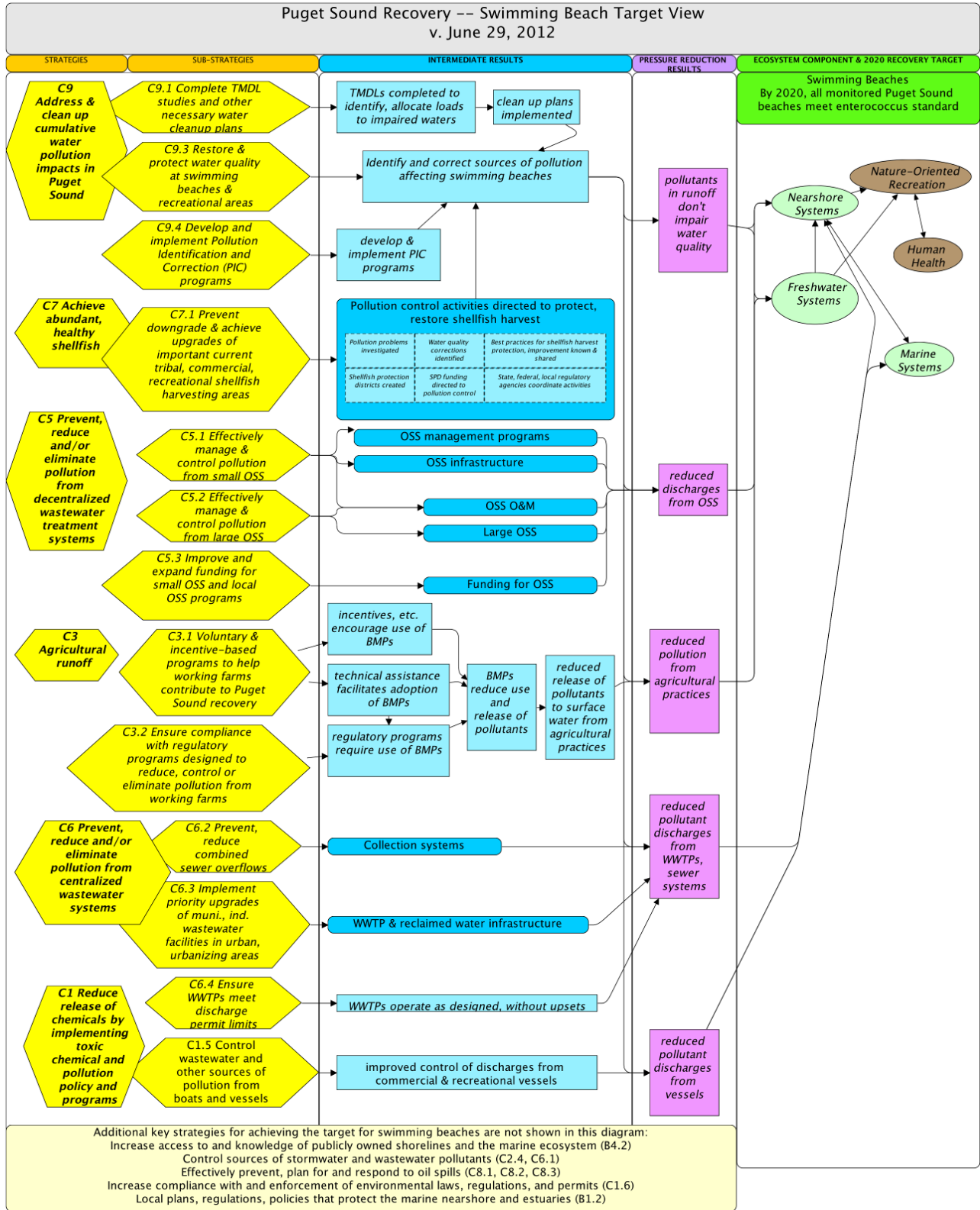


Figure C-15. Results Chain—Shellfish Beds Recovery Target

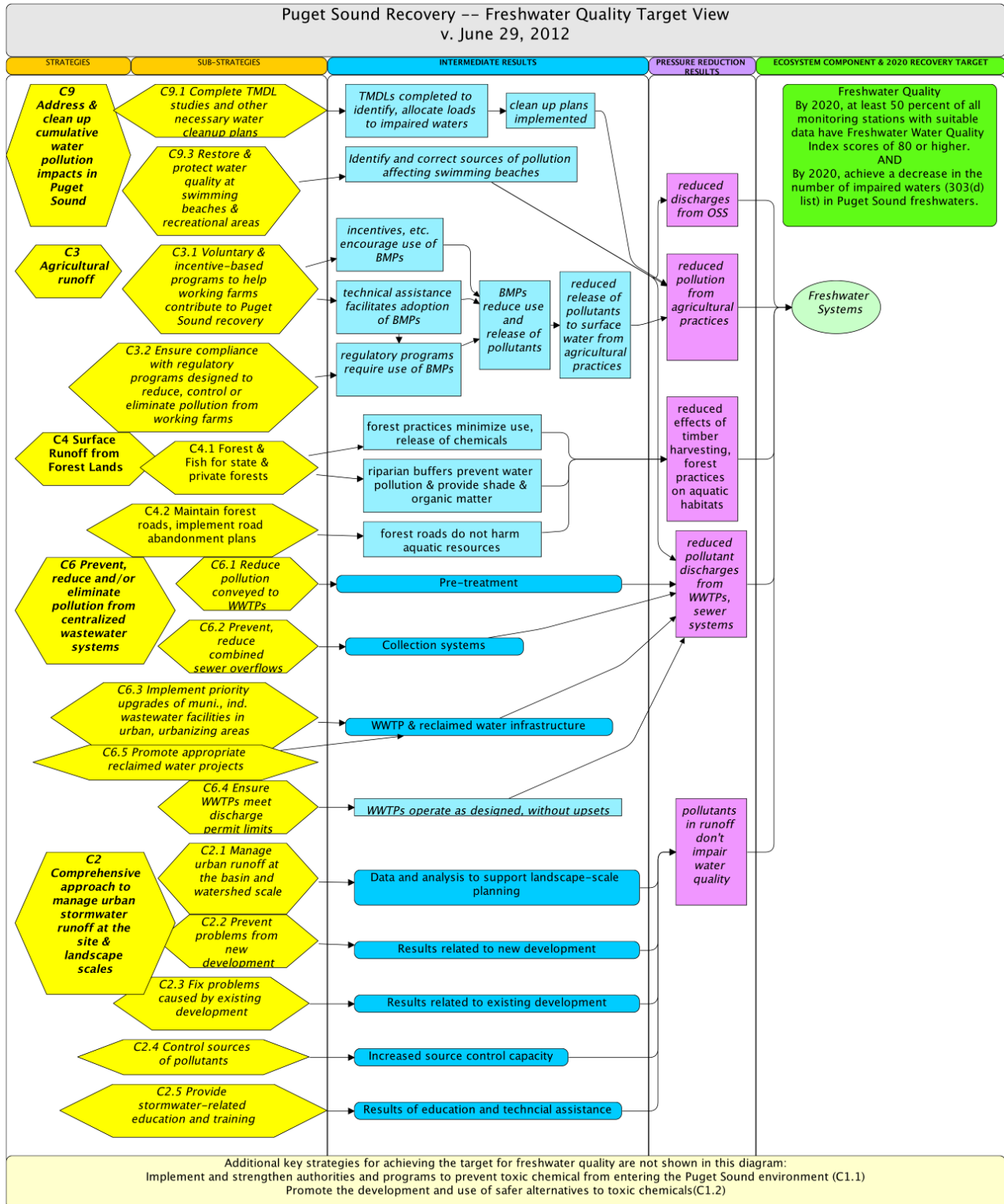


Figure C-16. Results Chain—Freshwater Quality Recovery Target

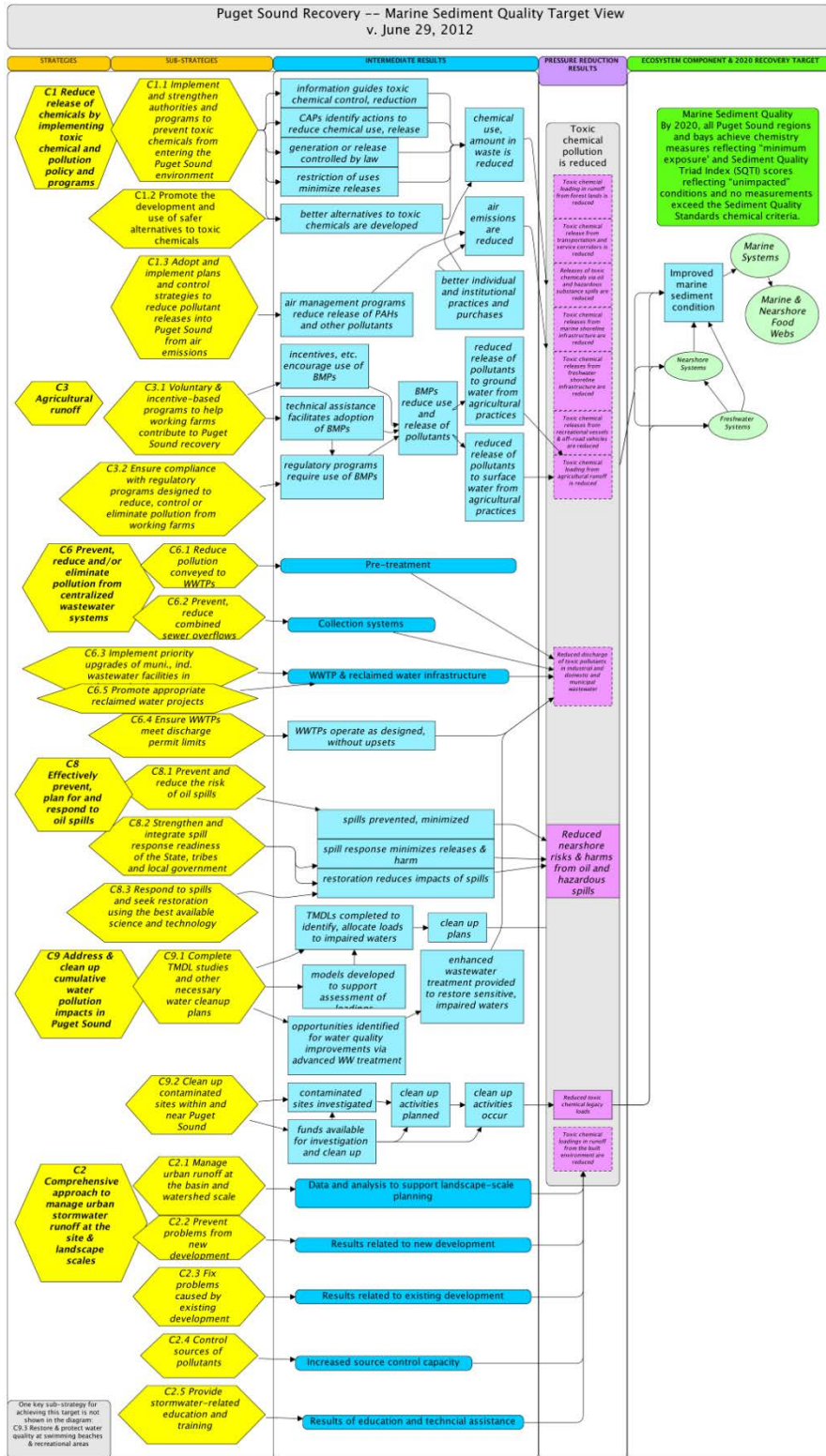


Figure C-17. Results Chain—Marine Sediment Quality Recovery Target

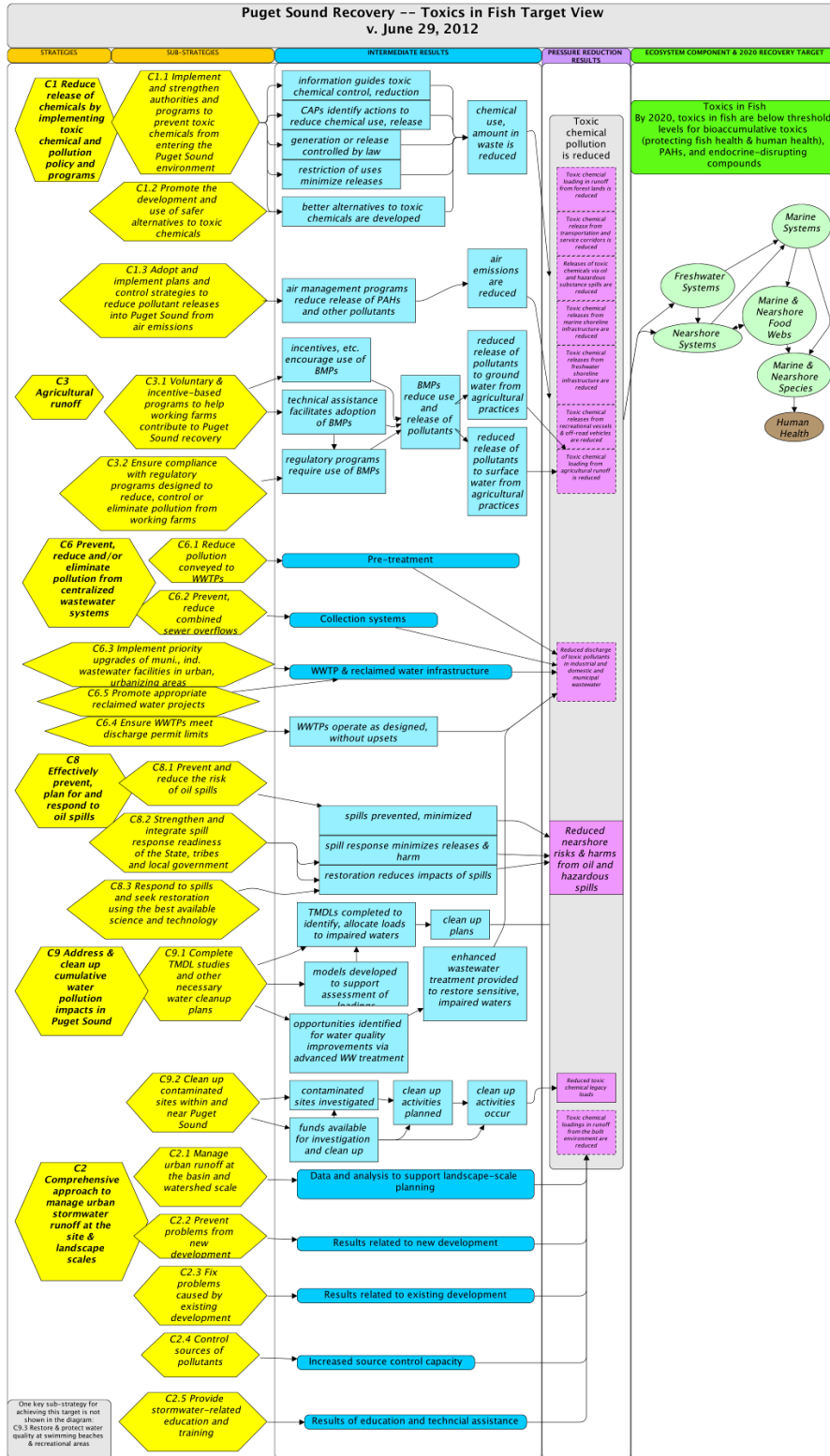


Figure C-18. Results Chain—Toxics in Fish Recovery Target

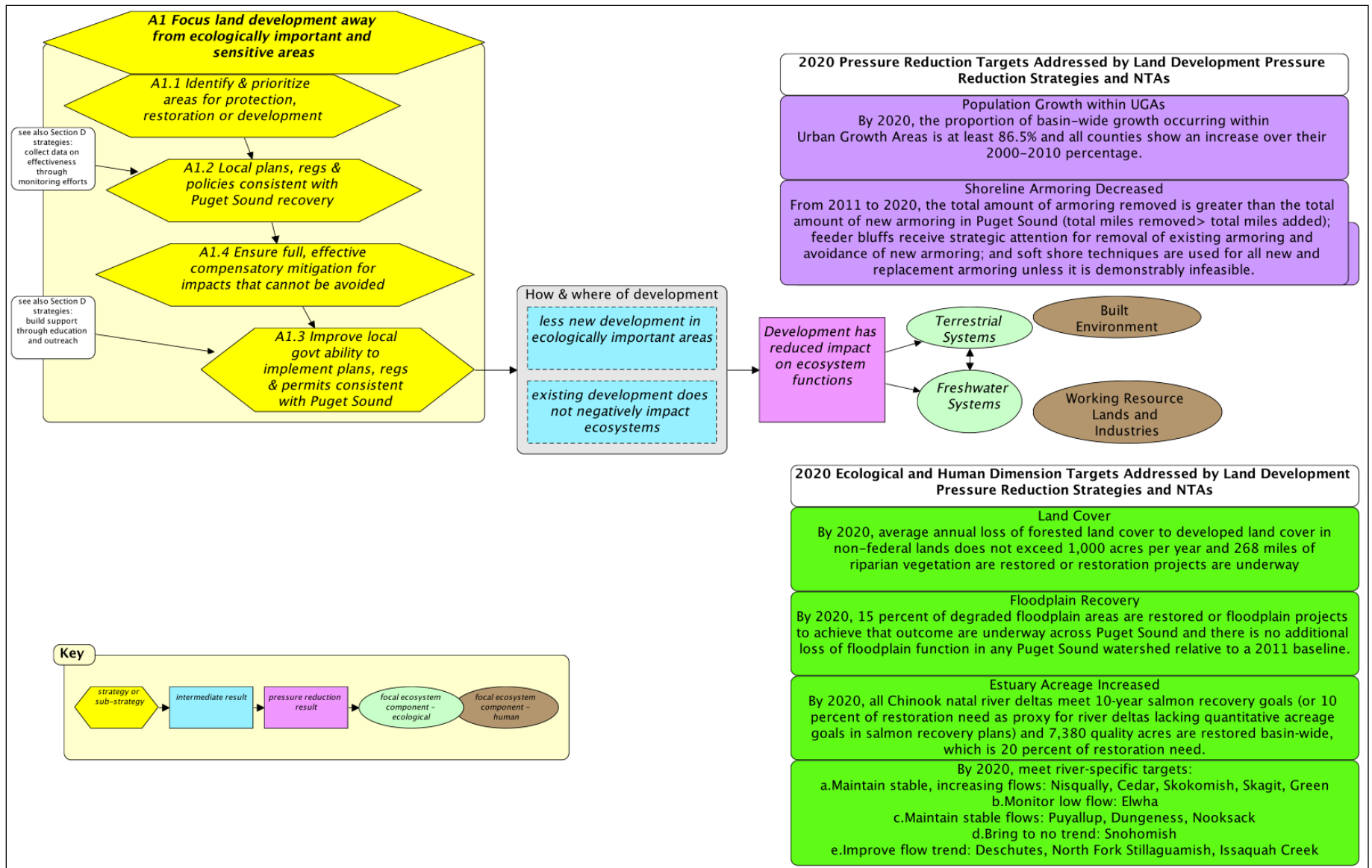


Figure C-19. Results Chain—Strategy A1

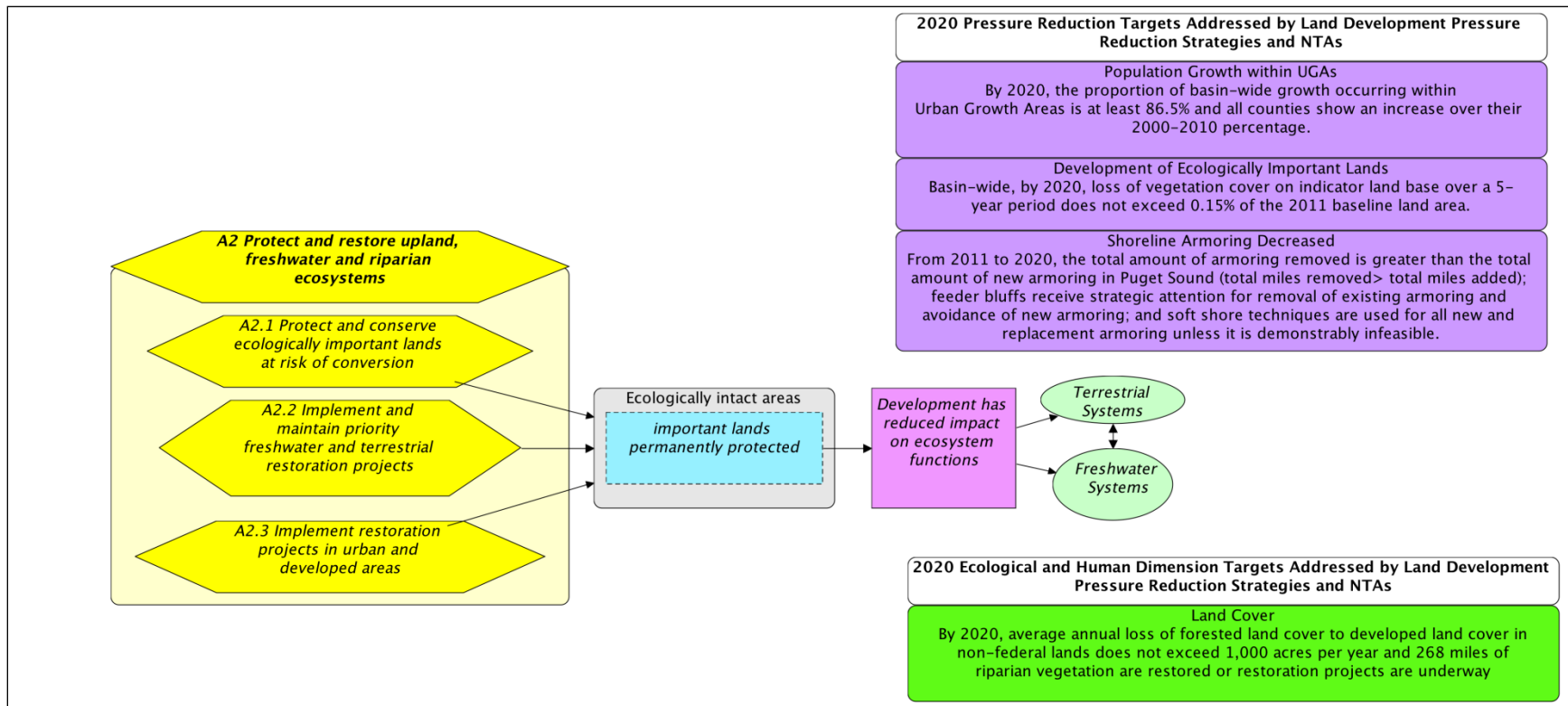


Figure C-20. Results Chain—Strategy A2

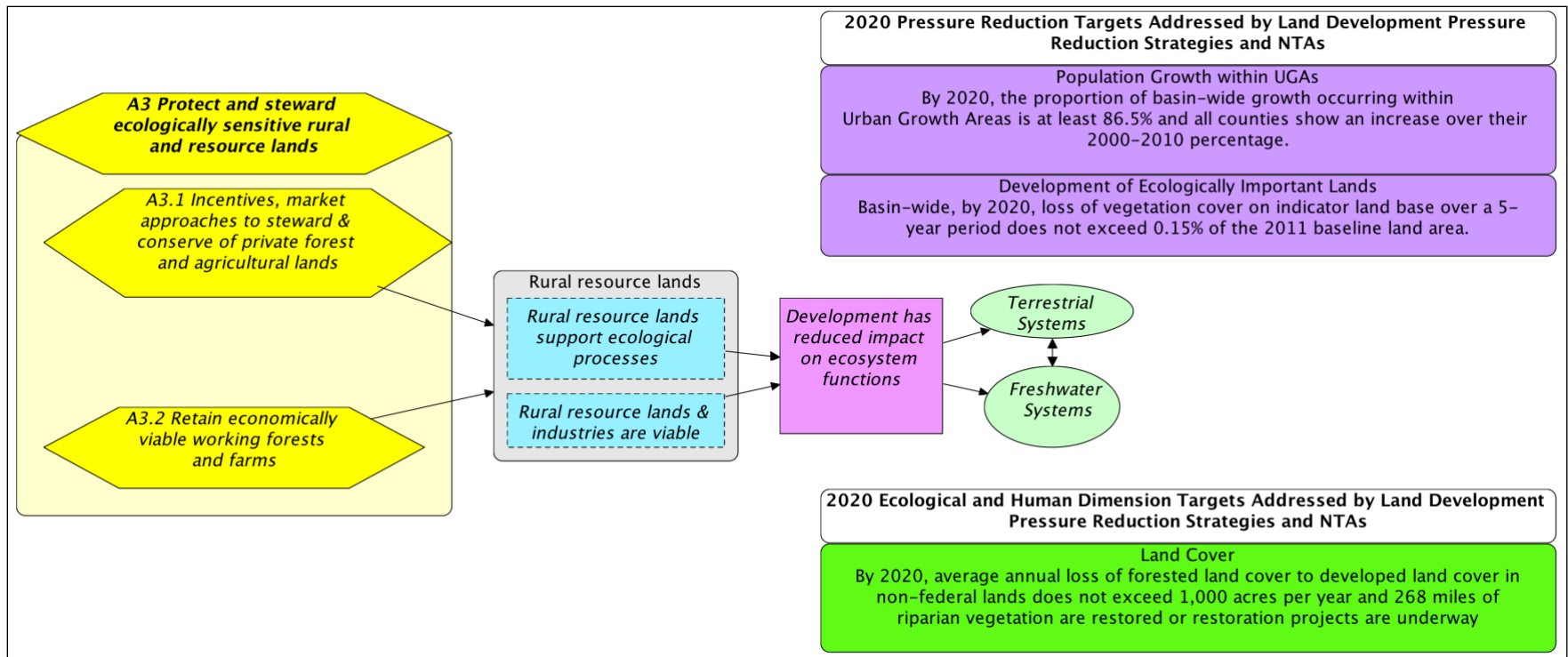


Figure C-21. Results Chain—Strategy A3

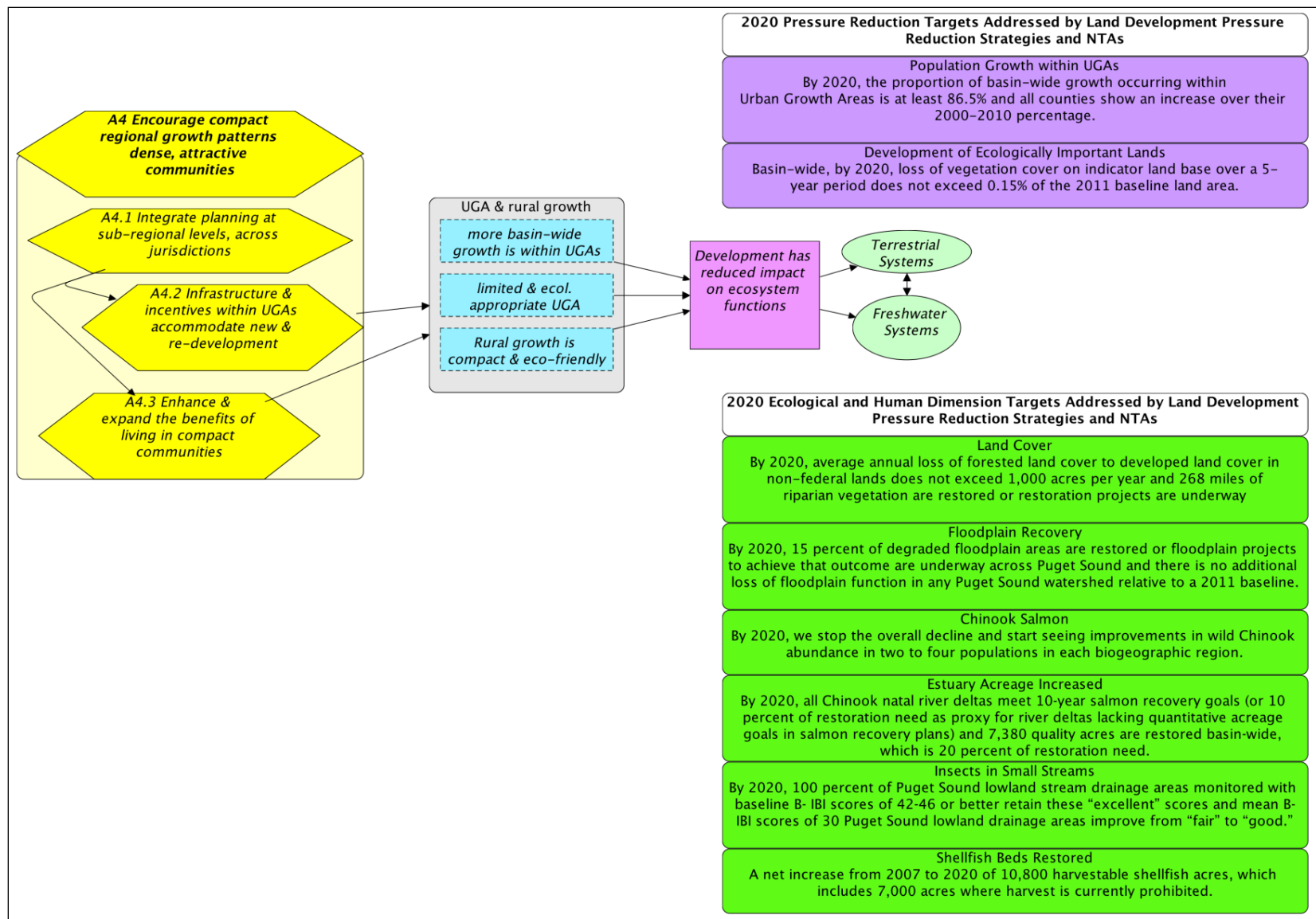


Figure C-22. Results Chain—Strategy A4

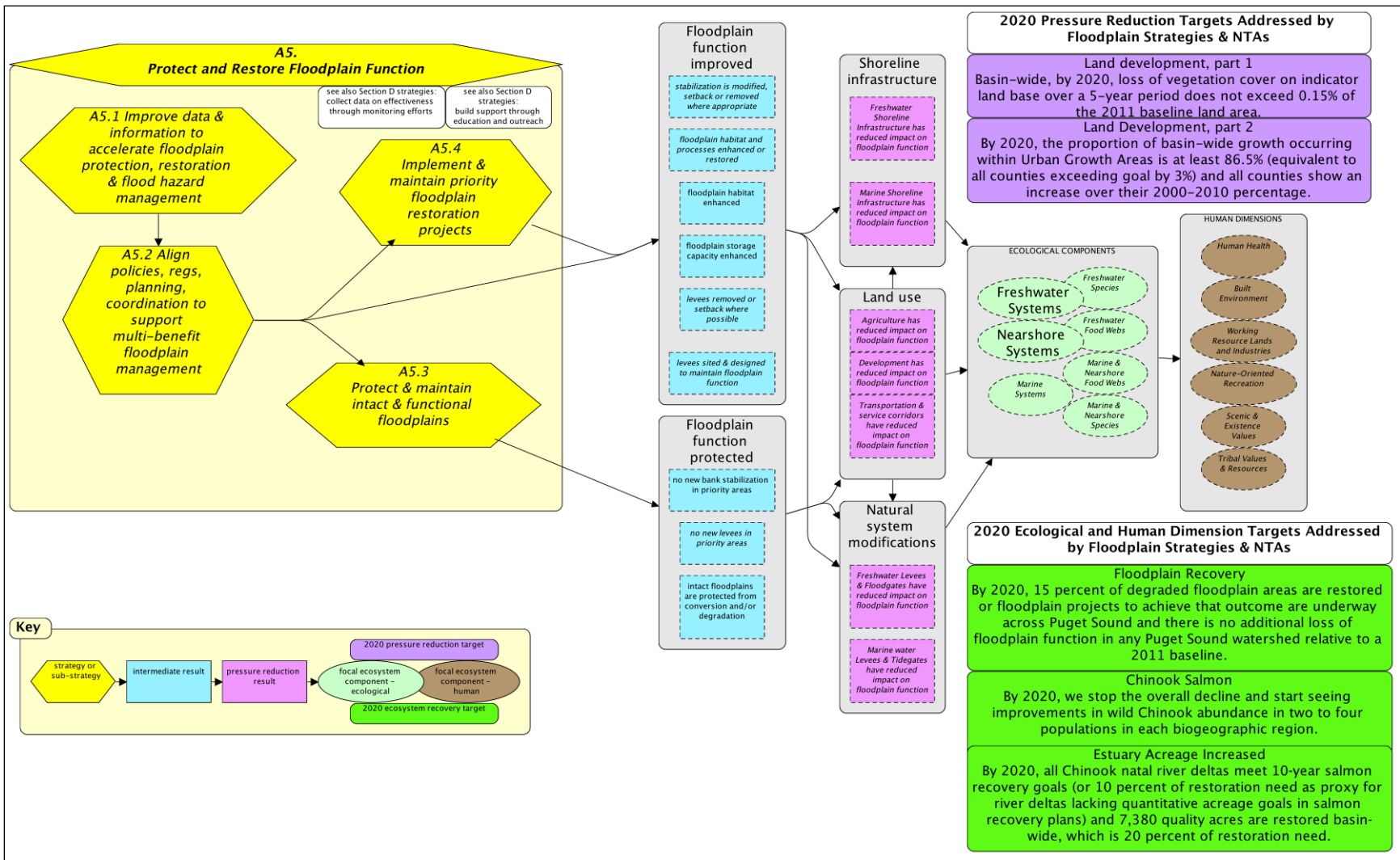


Figure C-23. Results Chain—Strategy A5

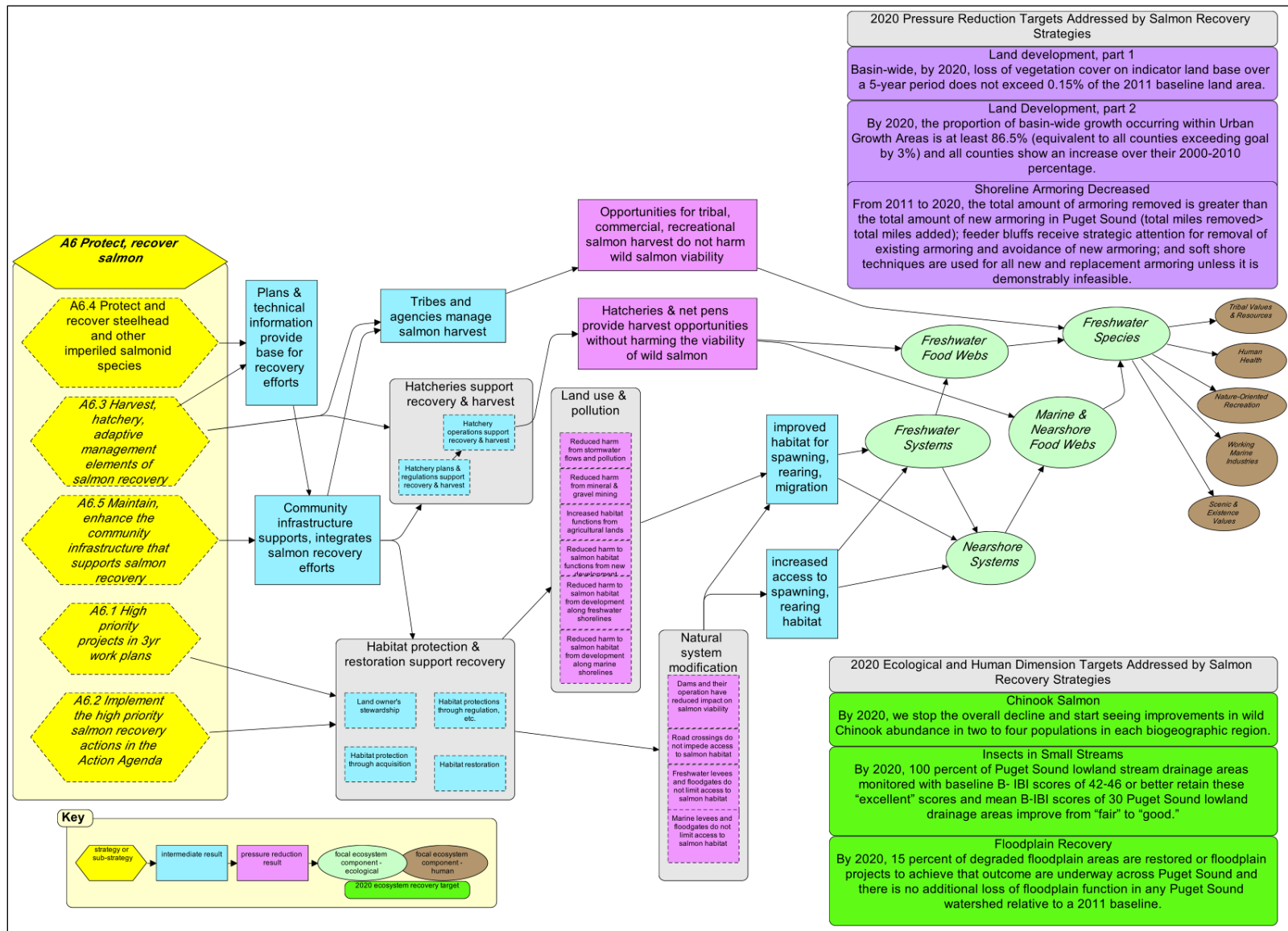


Figure C-24. Results Chain—Strategy A6

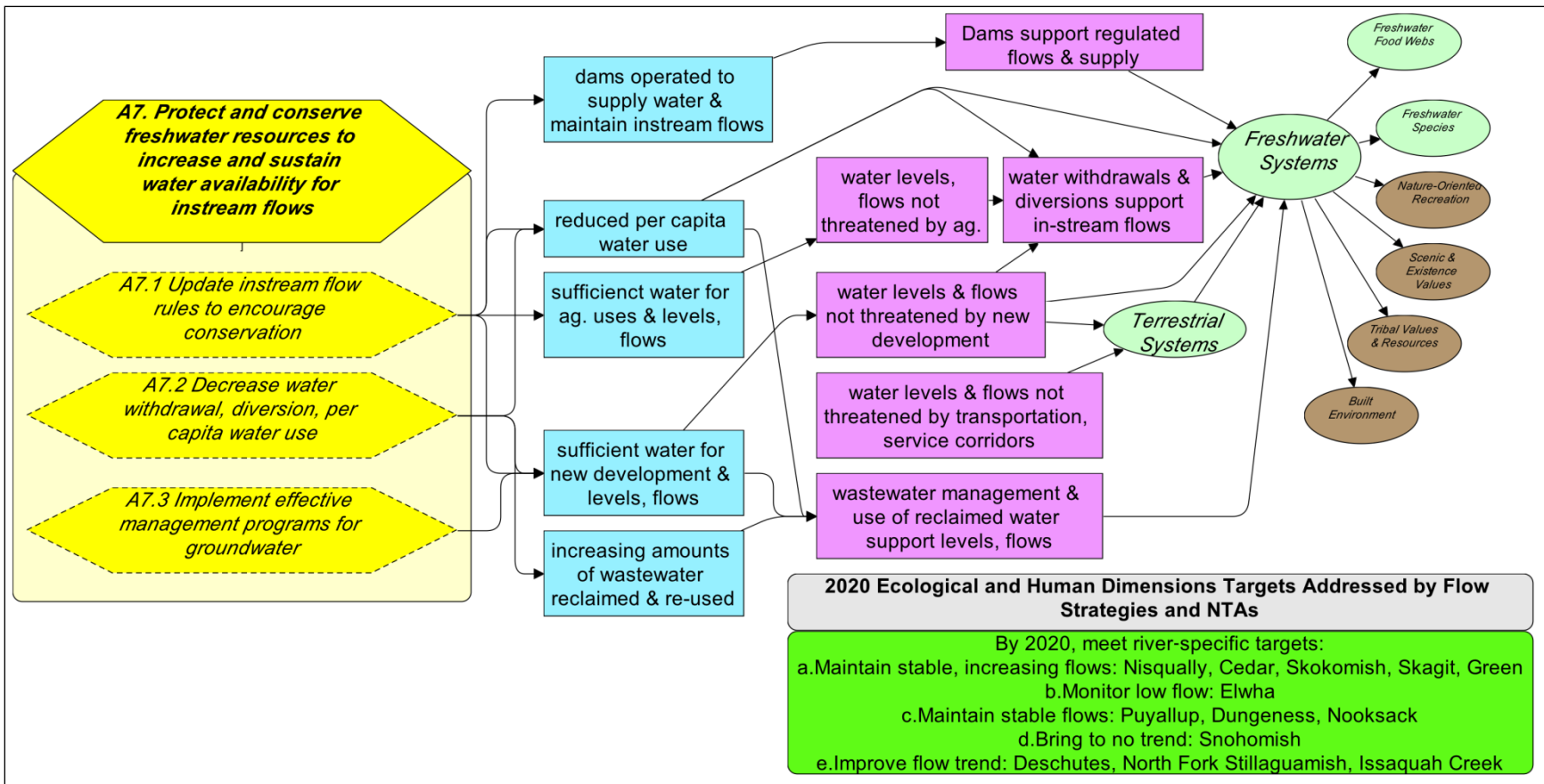


Figure C-25. Results Chain—Strategy A7

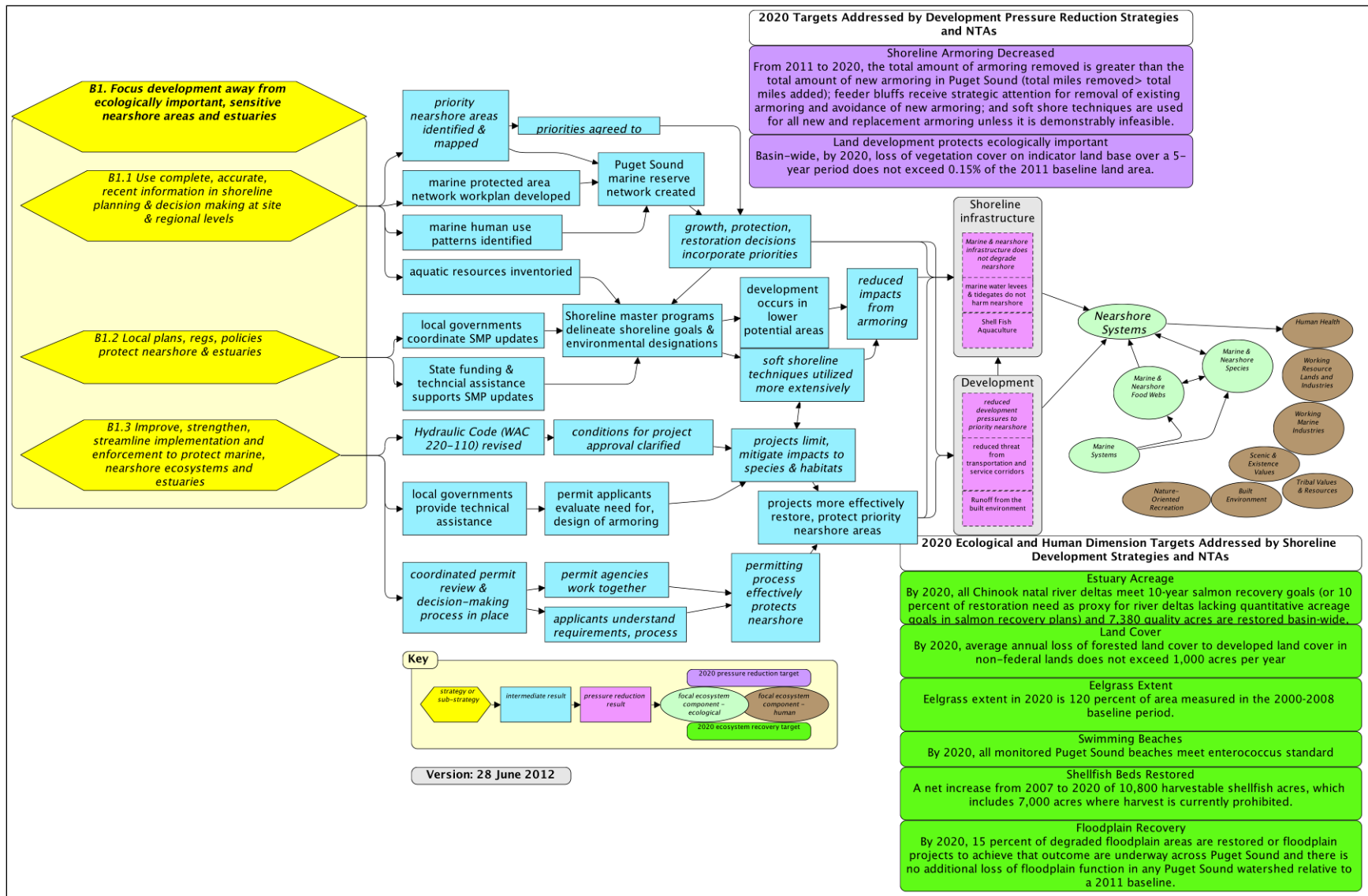


Figure C-26. Results Chain—Strategy B1

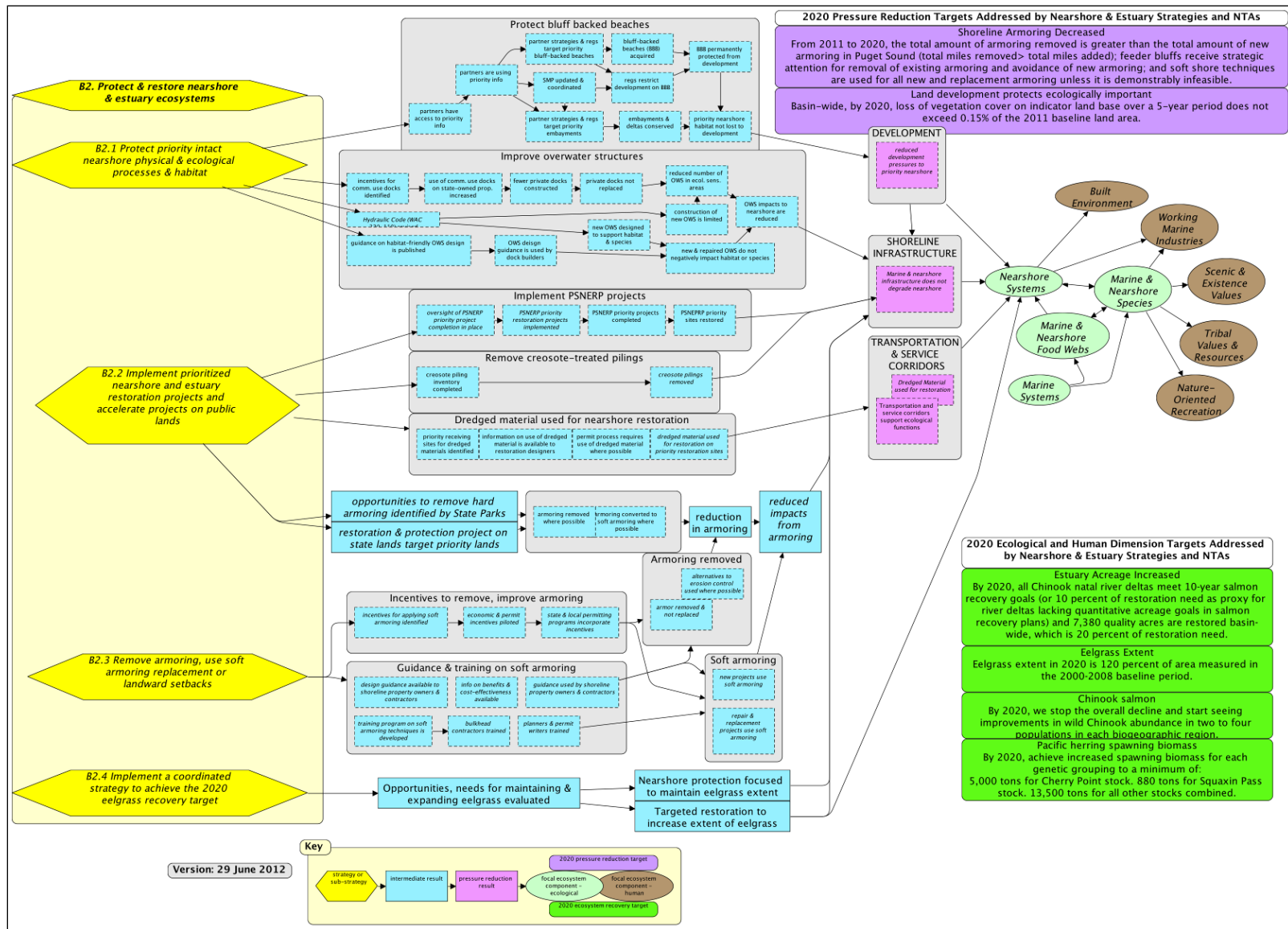


Figure C-27. Results Chain—Strategy B2

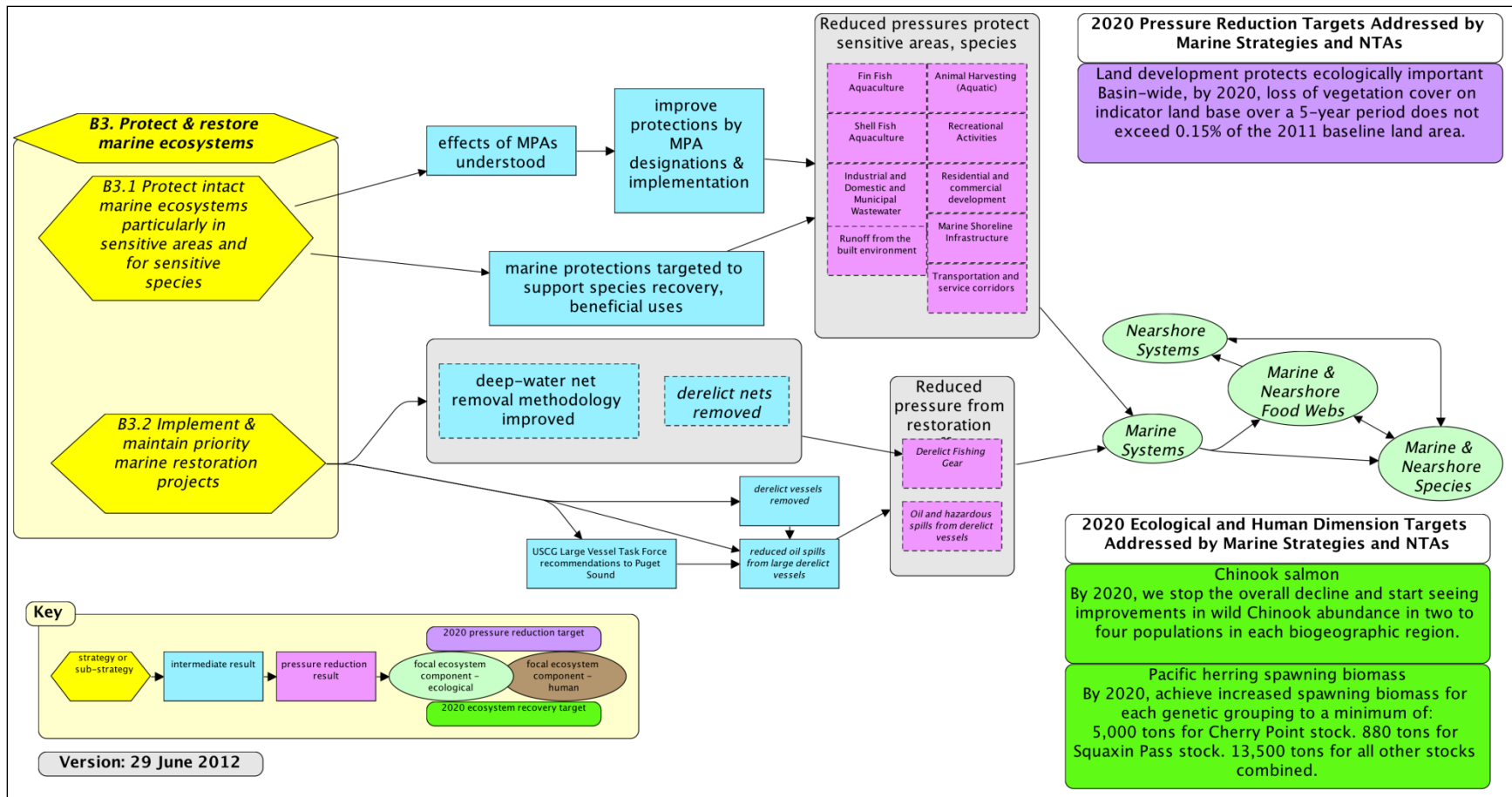


Figure C-28. Results Chain—Strategy B3

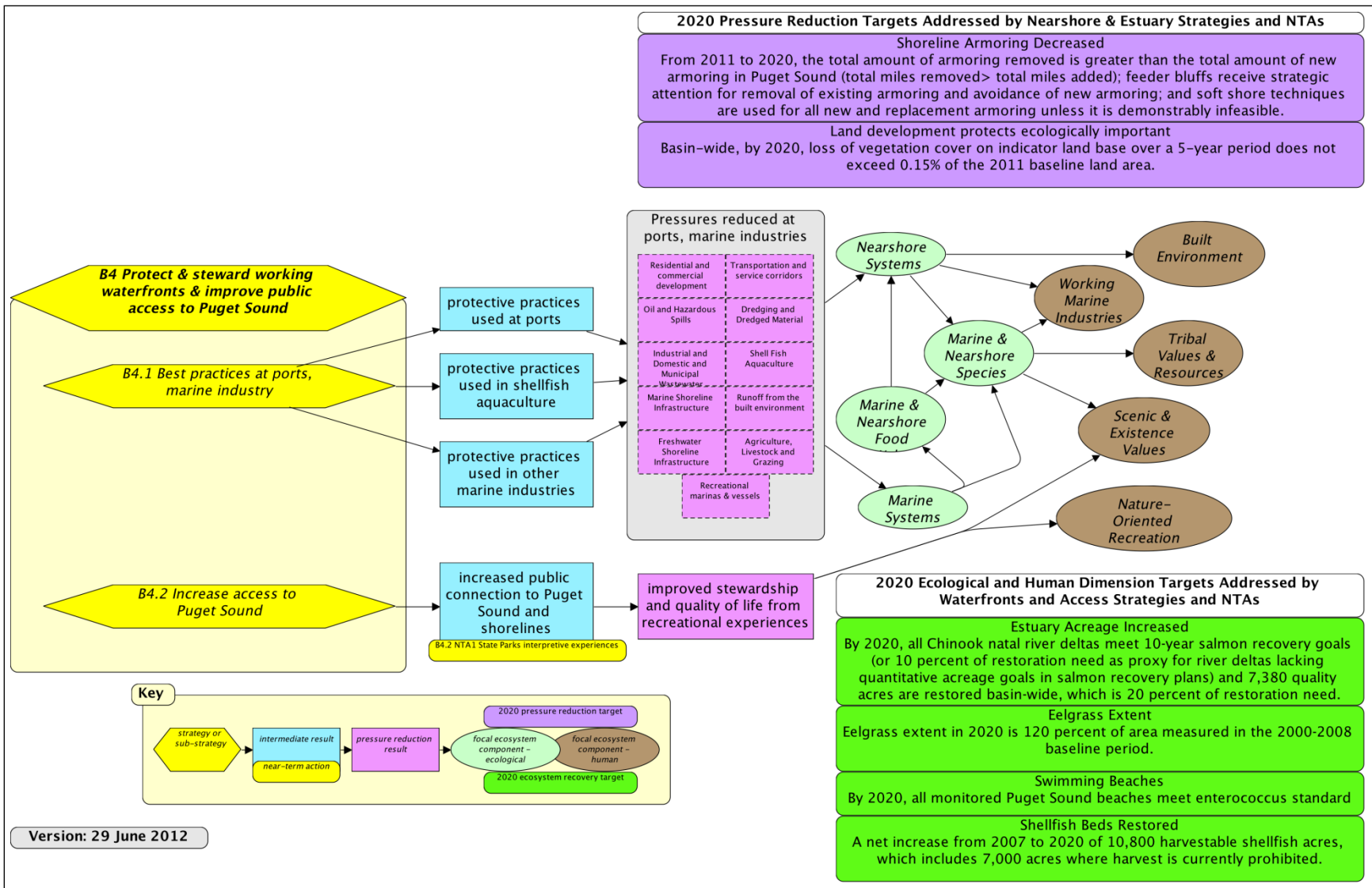


Figure C-28. Results Chain—Strategy B4

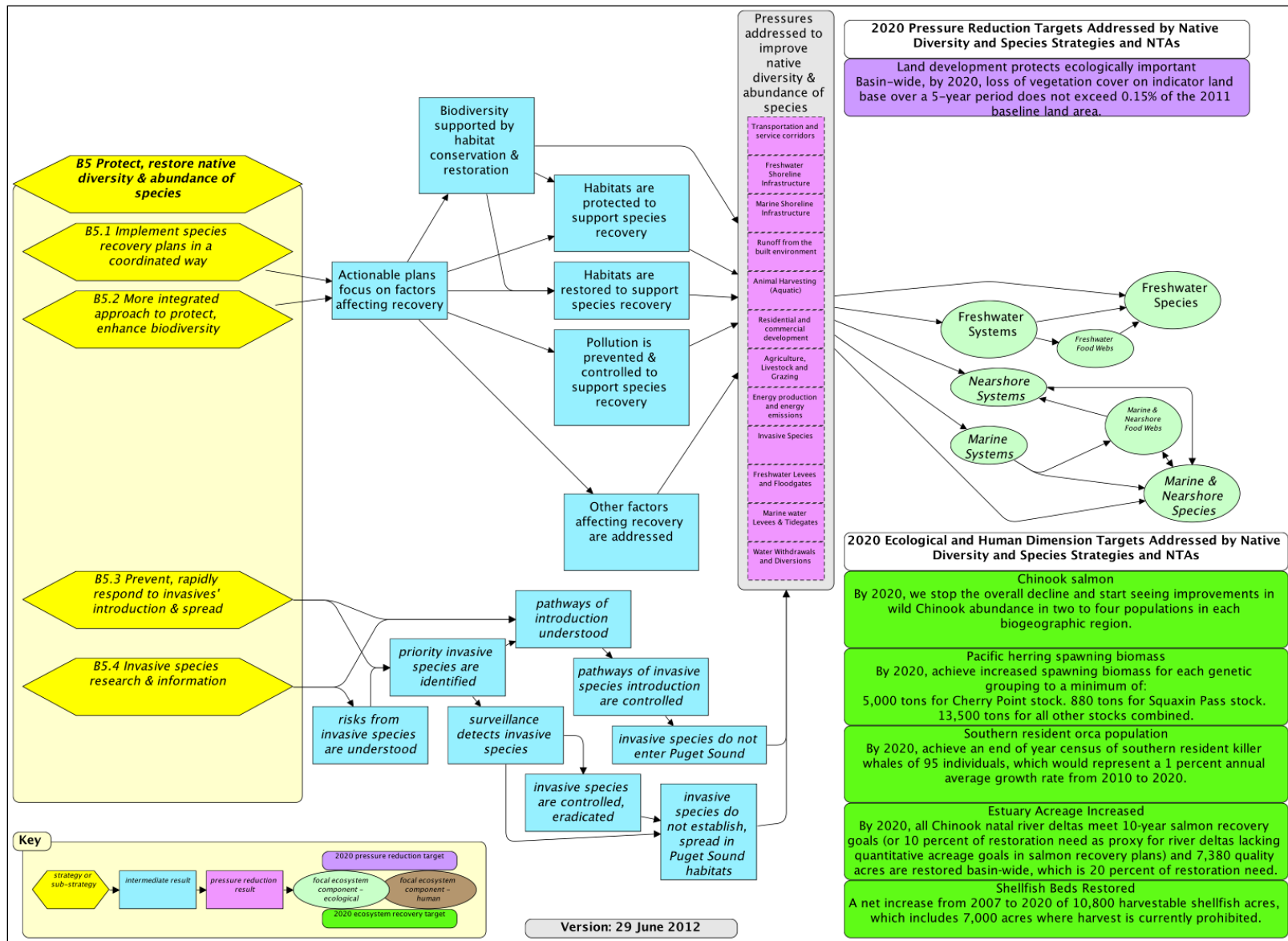


Figure C-29. Results Chain—Strategy B5

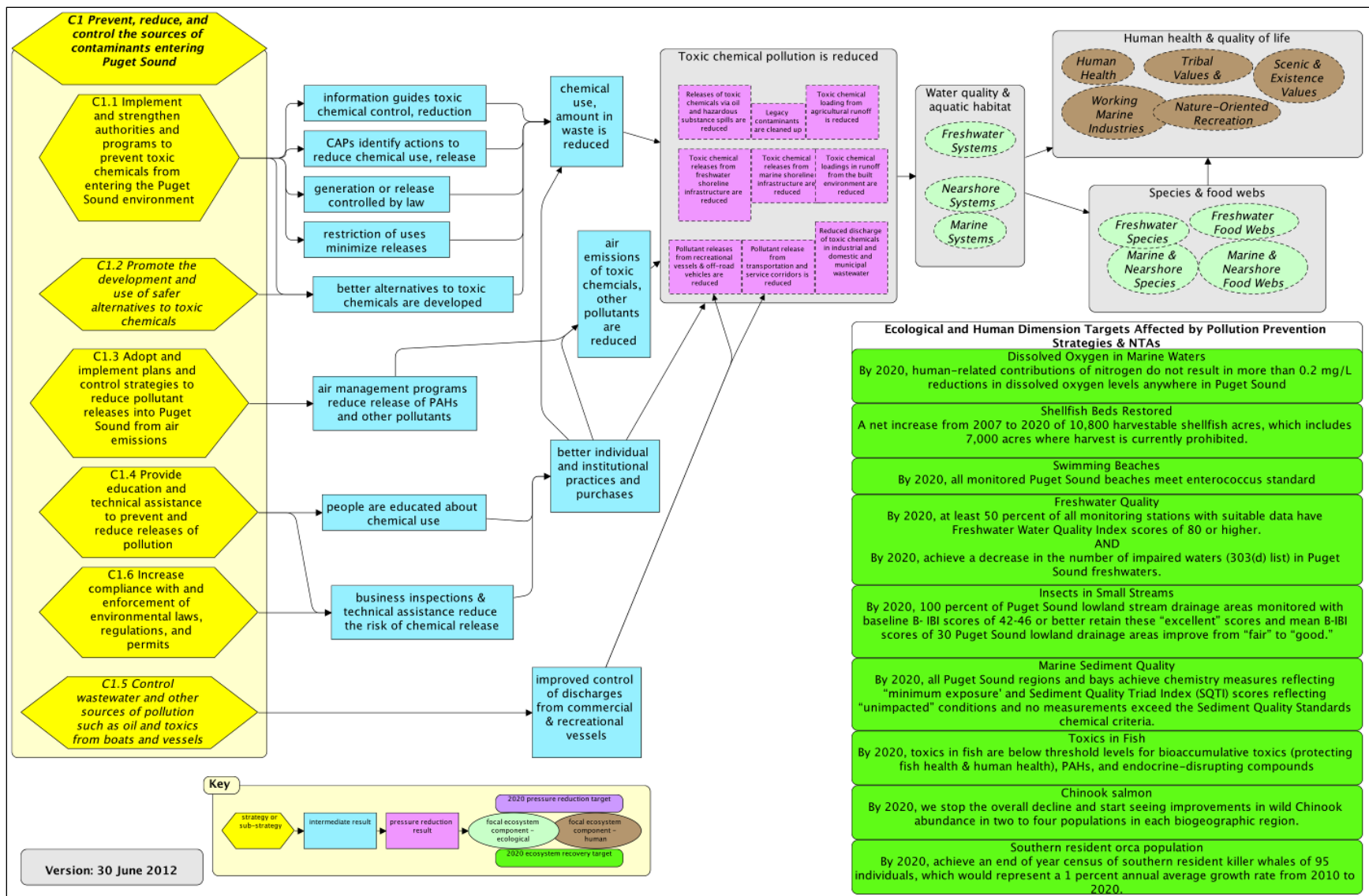


Figure C-30. Results Chain—Strategy C1

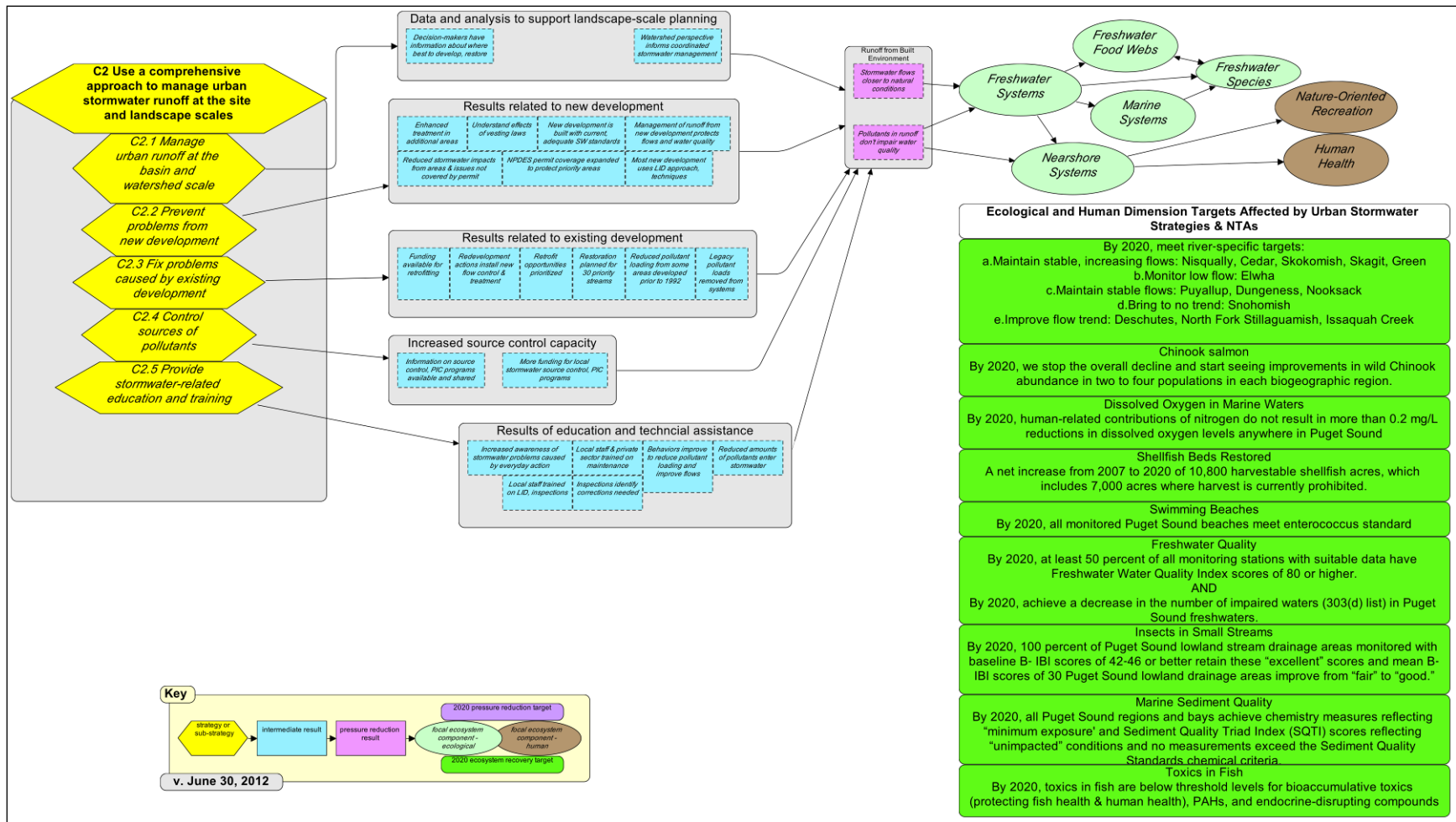


Figure C-31. Results Chain—Strategy C2

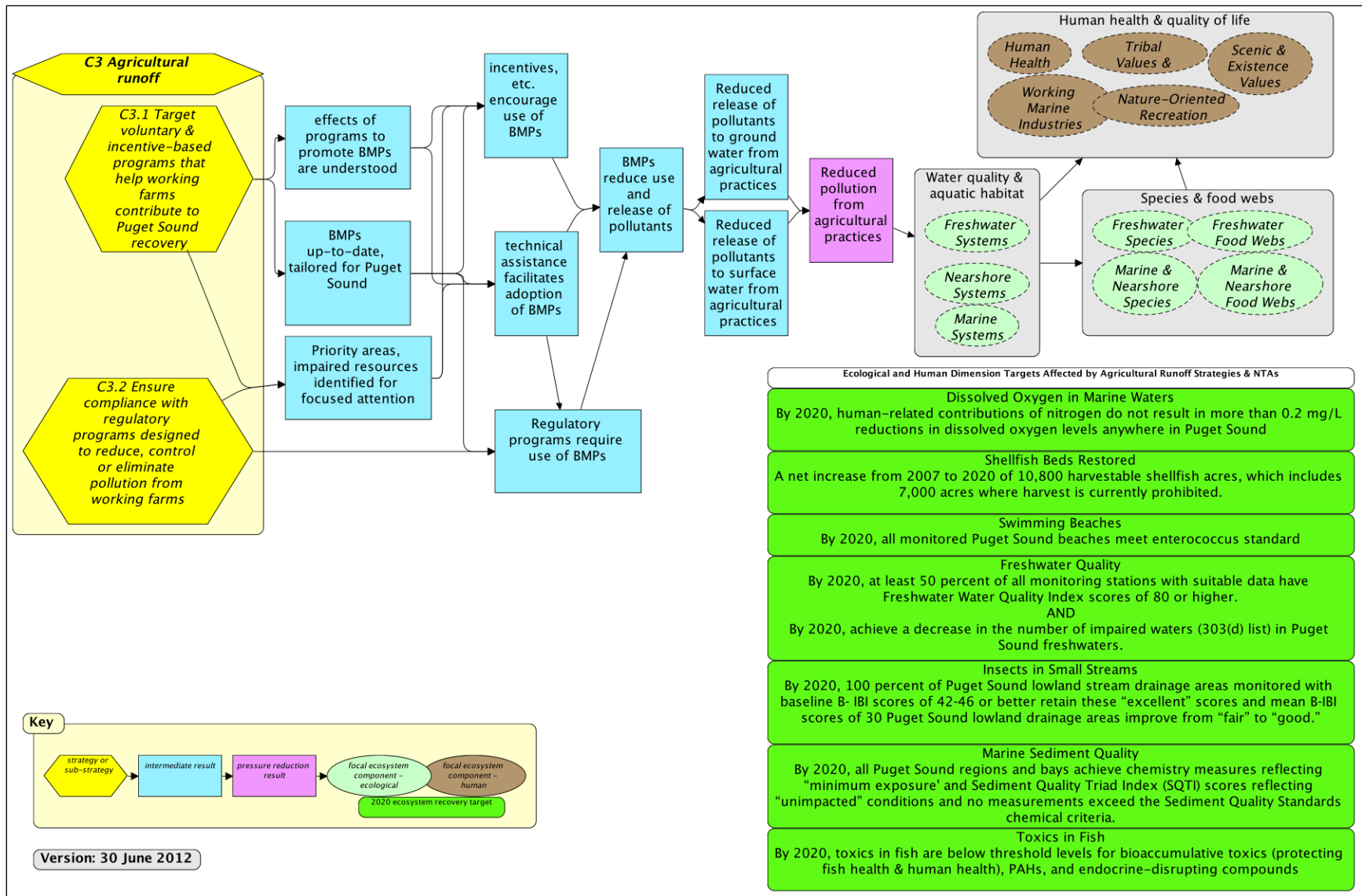


Figure C-32. Results Chain—Strategy C3

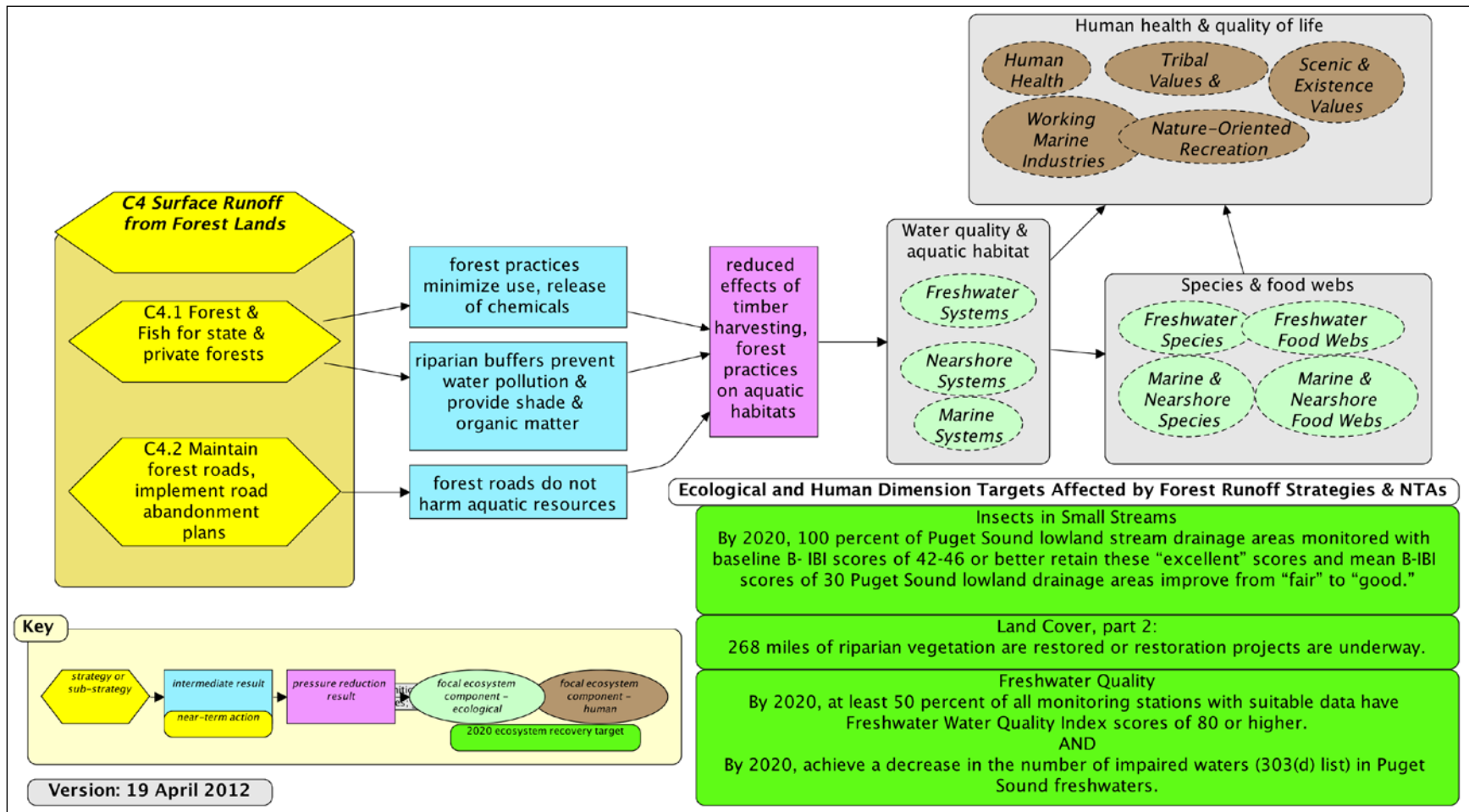


Figure C-33. Results Chain—Strategy C4

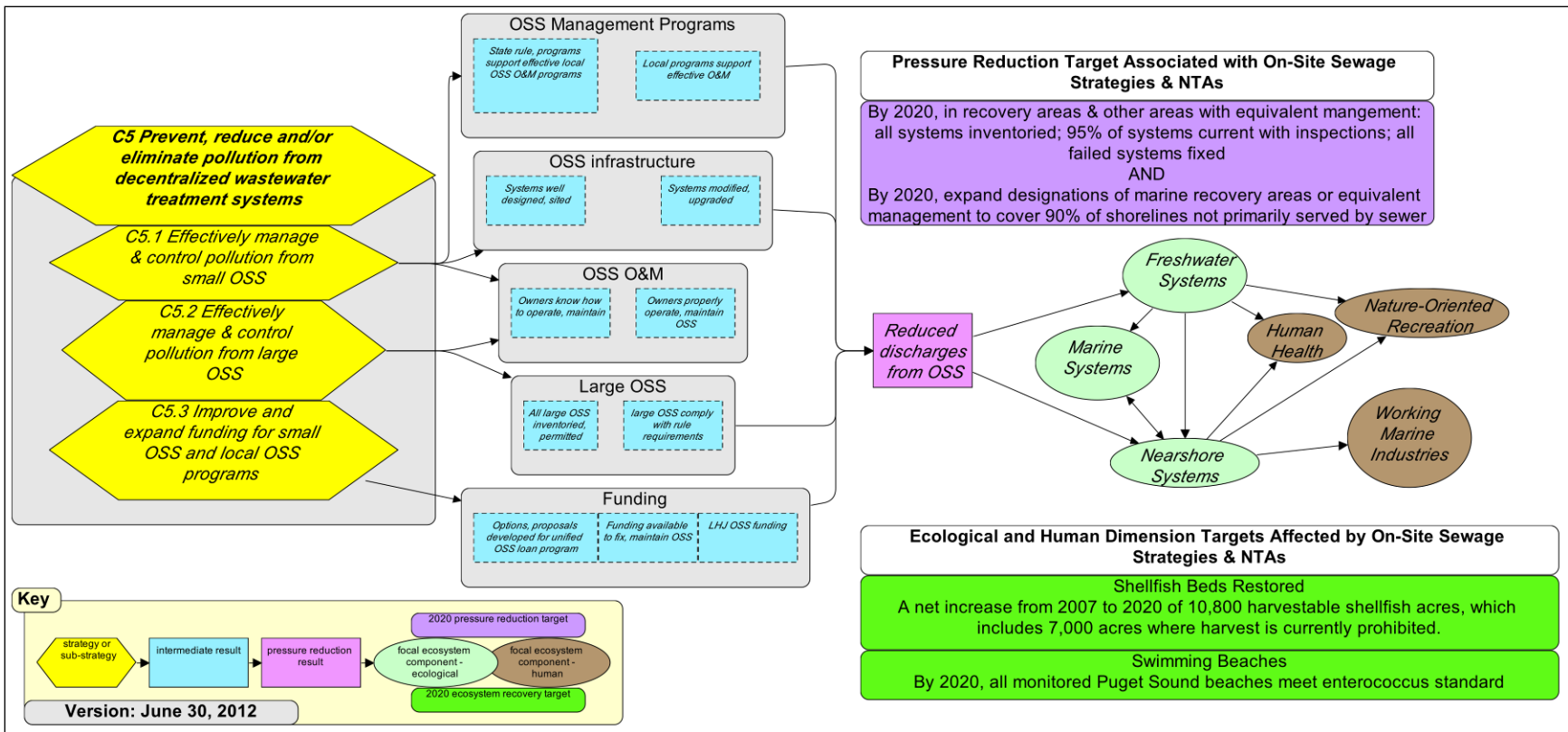


Figure C-34. Results Chain—Strategy C5

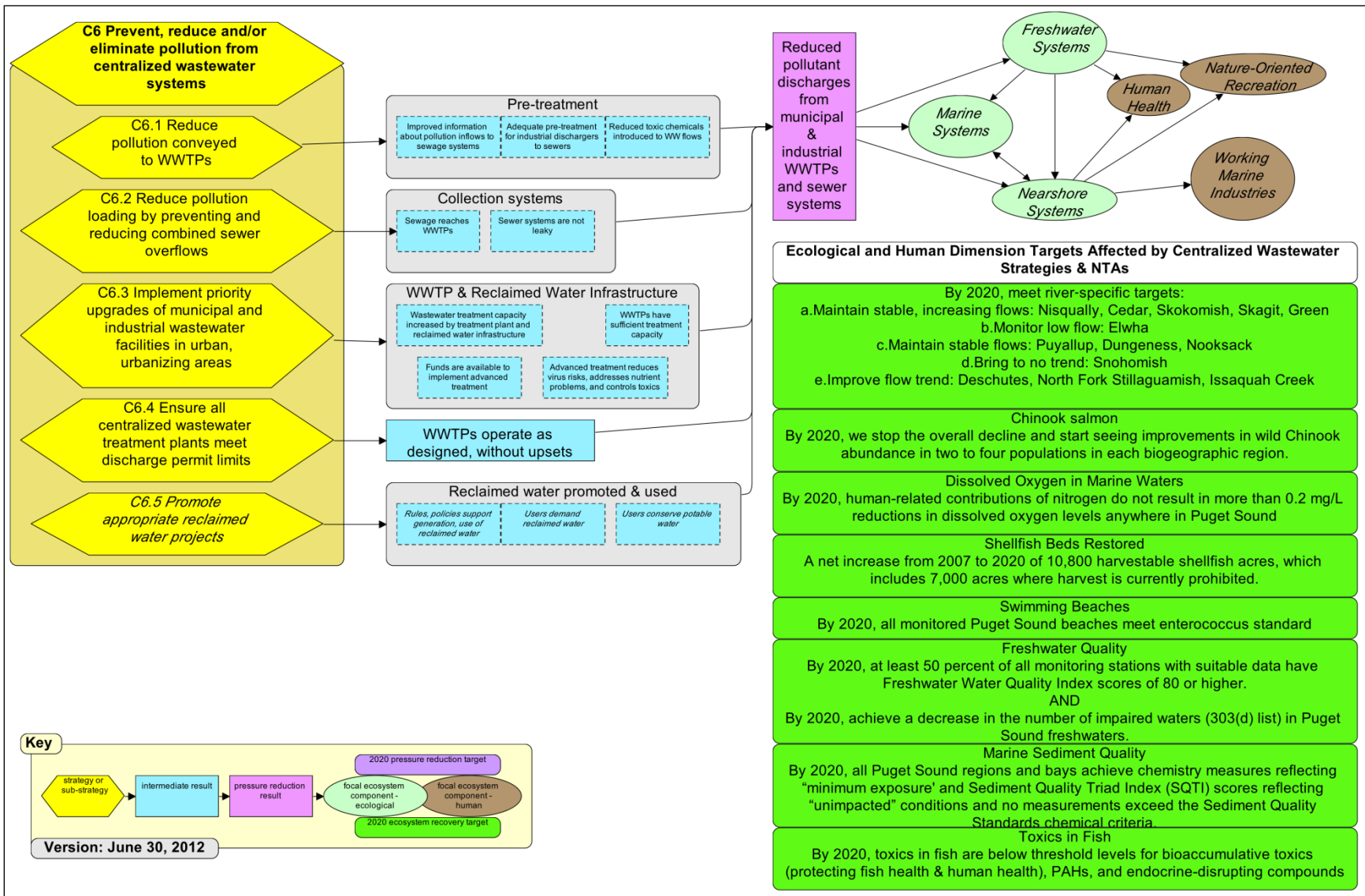


Figure C-35. Results Chain—Strategy C6

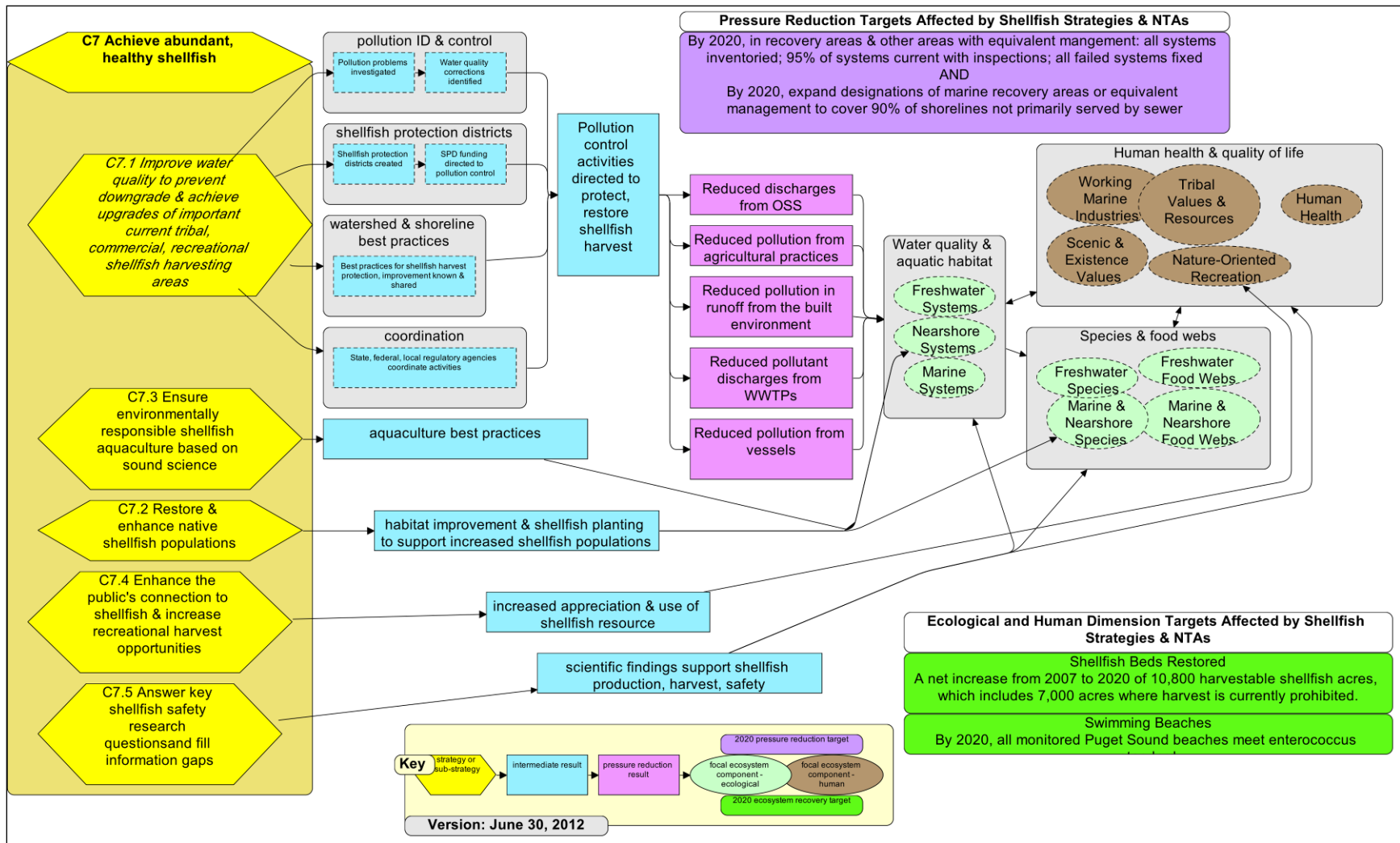


Figure C-36. Results Chain—Strategy C7

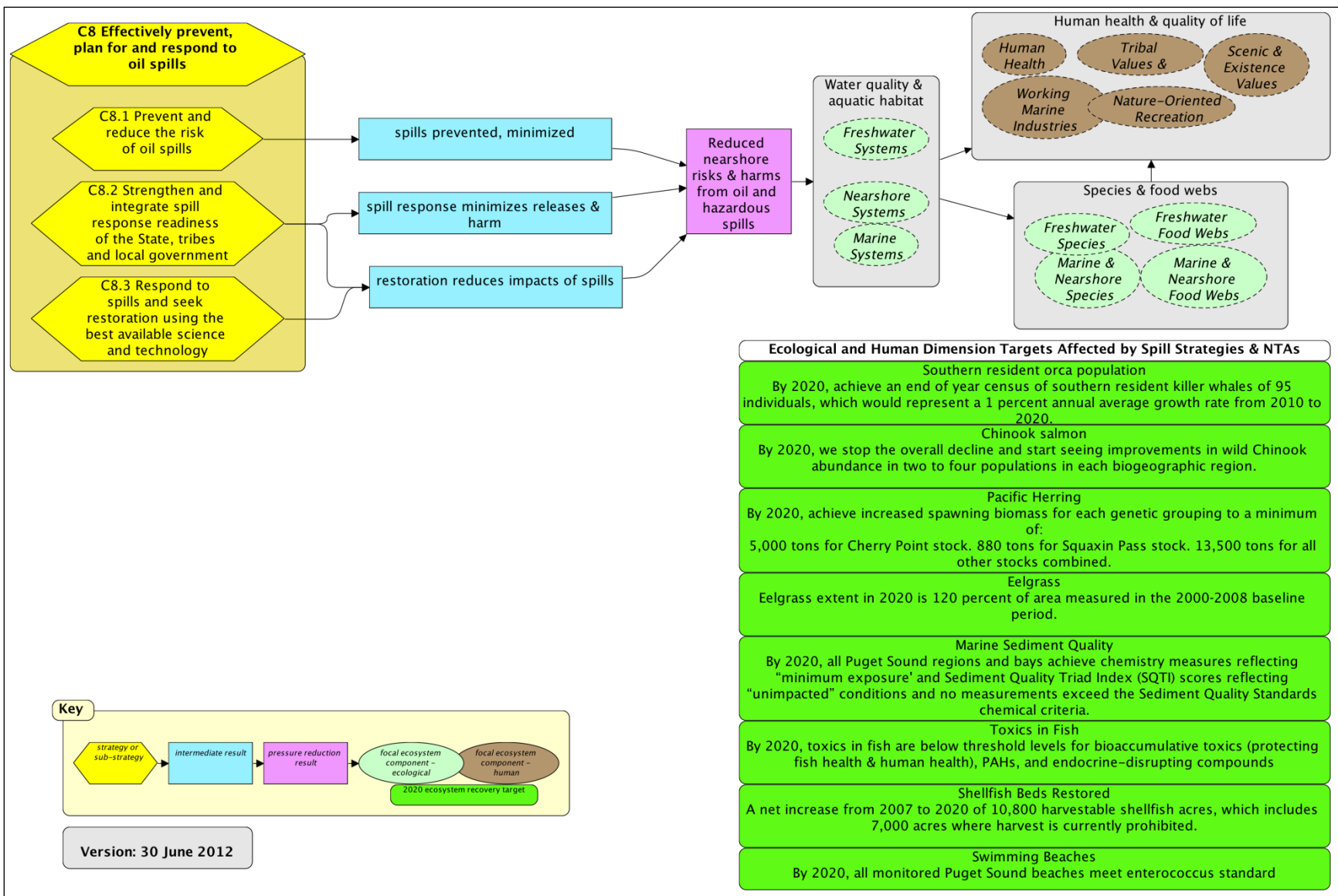


Figure C-37. Results Chain—Strategy C8

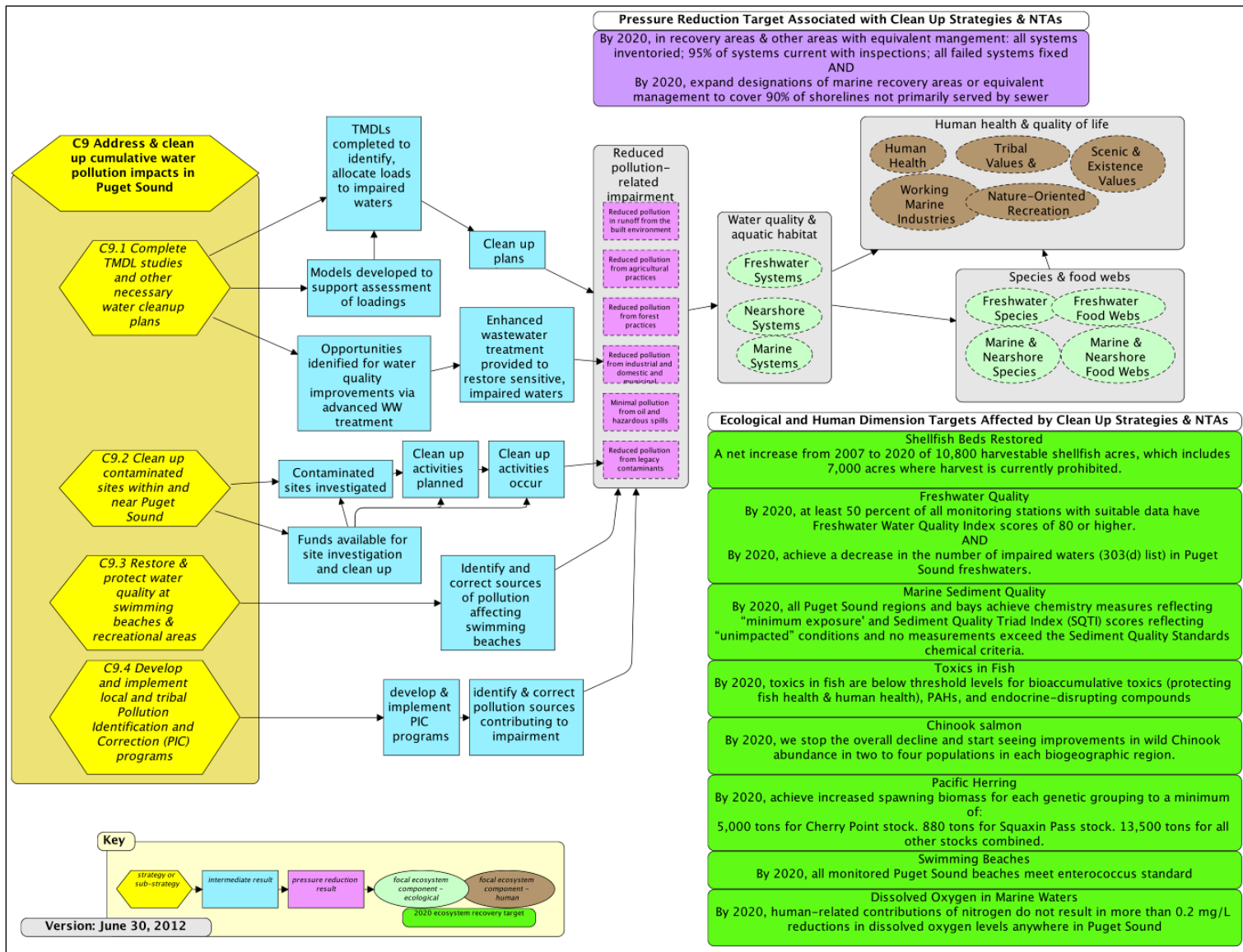
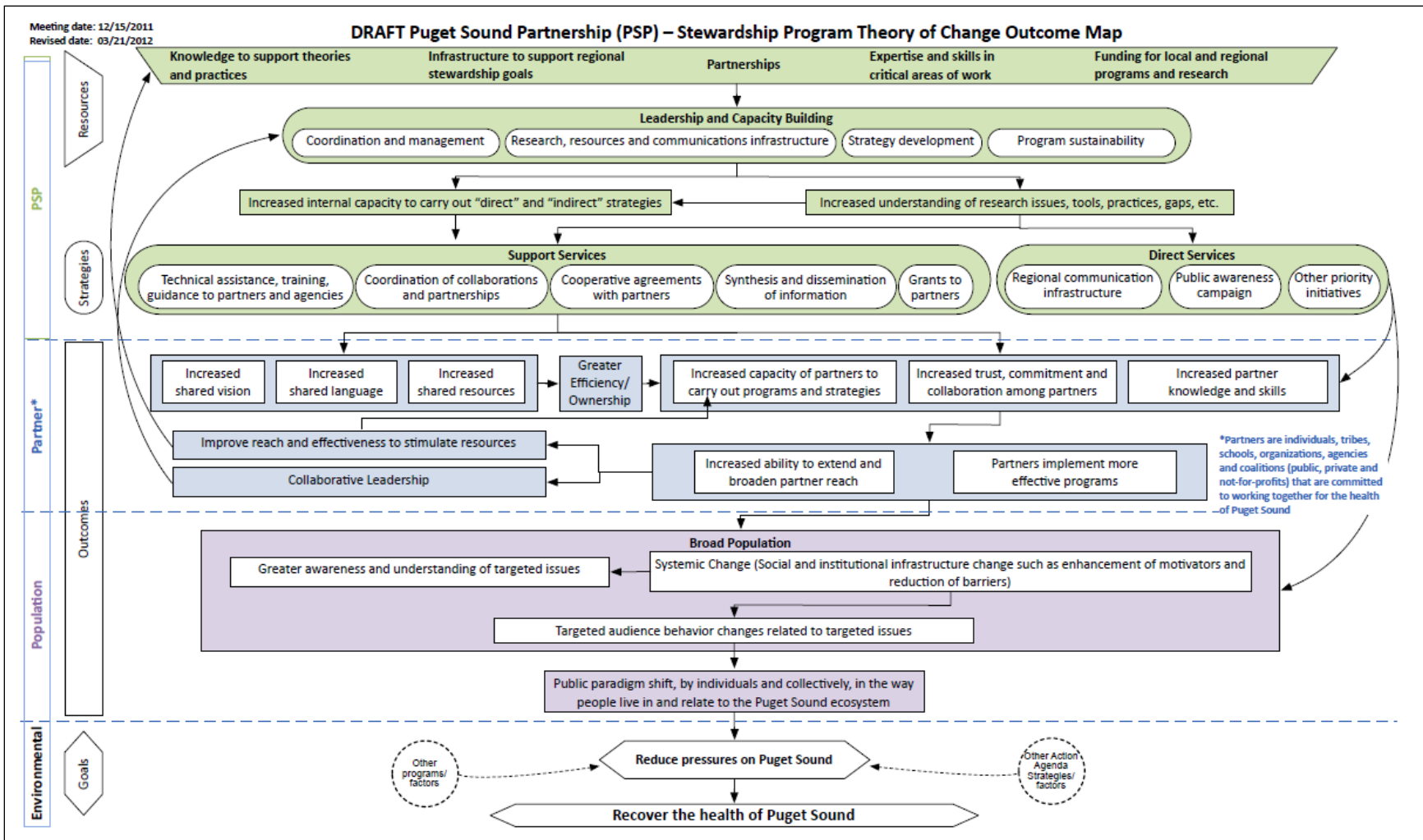


Figure C-38. Results Chain—Strategy C9



Puget Sound Partnership—Stewardship Program Theory of Change Outcome Map

APPENDIX D

NEAR-TERM ACTIONS

Near-Term Actions and Associated Performance Measure and Owners—Organized by Sub-Strategy

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
A	1	Focus land development away from ecologically important and sensitive areas					
A	1.1	Identify and prioritize areas for protection, restoration, and best suitable for (low impact) development.	WC1	West Sound inventory of transportation infrastructure projects. The West Sound Watersheds Council and West Central LIO will develop a process for the review of transportation infrastructure projects that addresses environmental impacts and key fish passage barriers.	<ul style="list-style-type: none"> By January 2015, identify process for the review of transportation infrastructure projects that addresses environmental impacts and key fish passage barriers by January 2013. 	Local	West Central LIO (reporter)
A	1.2	Support local governments to adopt and implement plans, regulations, and policies consistent with protection and recovery targets, and incorporate climate change forecasts.	1	Land use planning barriers, best management practices, and example policies. Commerce and Ecology, working with local governments, will identify the primary barriers to incorporating policies consistent with implementation of the Action Agenda into local land use planning and decisions and identify best practices and assistance needed to overcome these barriers. This will address implementation of protection strategies, encouraging compact growth patterns, increased density, water quality standards, redevelopment, and rural lands protection. Commerce and Ecology will distribute example growth policies that include best practices that are consistent with protection and recovery targets and the Growth Management Act and Shoreline Management Act.	<ul style="list-style-type: none"> By December 2015, example growth policies distributed or not; extent to which local land use planning and decision making become more consistent with the Action Agenda over time. 	Soundwide	Commerce Ecology


Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
A	1.2 Support local governments to adopt and implement plans, regulations, and policies consistent with protection and recovery targets, and incorporate climate change forecasts.	3	Fund local Growth Management Act comprehensive plan updates. Commerce will seek funding to assist local governments in conducting Growth Management Act comprehensive plan updates.	<ul style="list-style-type: none"> • In 2015, secure funding. • By June 2015 and June 2016, provide funding for Puget Sound area jurisdictions to complete their Growth Management Act comprehensive plan updates. 	Soundwide	Commerce	
A	1.2 Support local governments to adopt and implement plans, regulations, and policies consistent with protection and recovery targets, and incorporate climate change forecasts.	STRT1	Assess vulnerabilities of local communities, tribes, and natural resources to the effects of climate change and concurrent human population increases. <ul style="list-style-type: none"> • Identify adaptive mechanisms for consideration and possible incorporation into the next updates of Growth Management Act comprehensive plans and other local regulatory and planning processes and documents by the five local jurisdictions and other organizations. • Assess the vulnerabilities of the five local jurisdictions and four tribes' usual and accustomed areas to the effects of climate change and concurrent increases in human population on land use, infrastructure, and natural resources. Identify specific adaptive mechanisms (i.e., policies, regulations, programs, and plans) for consideration and possible incorporation into the next updates of Growth Management Act comprehensive 	<ul style="list-style-type: none"> • By December 2016, the Climate Adaptation Plan will be presented to six local municipalities, planning commissions, public utility districts, watershed planning organizations and community development departments in Jefferson and Clallam Counties during the comprehensive plan update process. 	Local	North Olympic Peninsula Resource Conservation and Development Council	Local 2020 Climate Action Group, Olympic Climate Action Group

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
			plans and other local regulatory and planning processes and documents by five local jurisdictions and other organizations.				
A	1.3 Improve, strengthen, and streamline implementation and enforcement of laws, plans, regulations, and permits consistent with protection and recovery targets.	1	The Puget Sound Salmon Recovery Council addresses regulatory exemptions. The Salmon Recovery Council will address regulatory exemptions to provide effective oversight and mitigation sequencing for activities that impact the ecosystem.	<ul style="list-style-type: none"> By June 30, 2014, deliver a report on regulatory exemptions to provide effective oversight and mitigation sequencing for activities that impact the ecosystem. By January 31, 2015, PSP will work through the ECB and Leadership Council to determine whether regulatory changes should be pursued. 	Sounwide	PSSRC	
A	1.3 Improve, strengthen, and streamline implementation and enforcement of laws, plans, regulations, and permits consistent with protection and recovery targets.	SNST1	Improve regulatory effectiveness. Compile and evaluate results from existing studies and those currently being completed on the effectiveness of existing federal, state, and local regulations to protect habitat. Facilitate discussions and building trust among elected officials. Develop strategies to address common issues that are identified.	<ul style="list-style-type: none"> By September 2014, compile studies including Tribal Treaty Rights at Risk White Paper, Tulalip Regulatory Analysis, Stillaguamish Regulatory Analysis, King County Critical Areas Ordinance Effectiveness Study, Snohomish County Critical Areas Regulations Review. By October 2014, synthesize results based on common issues identified and highlighted as most important. By November 2014, establish LIO subcommittee consisting of stakeholders to develop a series of recommendations. 	Local	Snohomish-Stillaguamish LIO (reporter)	Tulalip Tribes, Snoqualmie Tribe, King County, Snohomish County

Strategy	Sub-Strategy	Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
			<ul style="list-style-type: none"> By November 2015, implement recommended actions, including enforcement. 			
A	1.4	Ensure full, effective compensatory mitigation for impacts that cannot be avoided.	No near-term actions. Work is focused on implementation of ongoing programs.			
A	2	Protect and restore upland, freshwater, and riparian ecosystems				
A	2.1	Protect and conserve ecologically important lands at risk of conversion.	<p>Updated avoidance and minimization guidance. Ecology will reinforce the importance of avoiding and minimizing impacts to wetlands, particularly those with high ecological value and that are difficult to replace, by developing and implementing updated avoidance and minimization guidance.</p>	<ul style="list-style-type: none"> By May 2016 Guidance completed. 	Soundwide	Ecology
A	2.1	Protect and conserve ecologically important lands at risk of conversion.	<p>Port Gamble land conservation. Forterra, working in collaboration with Kitsap County, the Port Gamble S’Klallam Tribe, and the Suquamish Tribe, will coordinate funding and participation to secure the conservation of ~6,700 acres of land near Port Gamble, including 1.5 miles of shoreline.</p>	<ul style="list-style-type: none"> By March 2016, coordinate funding and participation to secure conservation of 6,700 acres and 1.5 miles of shoreline. <ul style="list-style-type: none"> By February 2014, complete first acquisition of 535 acres and 1.5 miles of shoreline. (COMPLETED) By April 2014, complete second acquisition of 366 acres. 	Soundwide	Fonterra

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
A	2.1 Protect and conserve ecologically important lands at risk of conversion.	SC2	Identify and protect high-value salmon recovery habitat and lands at immediate risk of conversion. Secure funding to acquire high-priority, high-threat land as identified in salmon recovery plans and seek funding to secure property.	<ul style="list-style-type: none"> ● By December 2015, secure funding for acquiring land and protecting the following high-priority, high-threat areas in each WRIA. <ul style="list-style-type: none"> WRIA 8: \$7,950,000: <ul style="list-style-type: none"> ○ Middle Cedar River: 70 acres of floodplain. ○ Issaquah Creek: 125 acres of floodplain and riparian area. ○ Bear Creek: 150 acres of riparian areas, wetlands, and forested uplands. WRIA 9: \$18,600,000: <ul style="list-style-type: none"> ○ Lower Green River: 273 acres of floodplain and riparian area. ○ Middle Green River tributary streams: 230+ acres of floodplain and riparian area. ○ Marine Nearshore (Vashon-Maury Island): 10 acres of nearshore habitat and riparian area. ○ Duwamish River: 10 acres of floodplain, wetland and riparian area. ○ Hamm Creek City Light North DUW-11 	Local	South Central Caucus Group (reporter)	

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
				<p>WRIA 10: \$6,600,000:</p> <ul style="list-style-type: none"> ○ Puyallup River main stem: 130 acres of upland, floodplain, and riparian area. ○ Carbon River canyon area: 500 acres of forested upland and riparian area. ○ Carbon River main stem: 25+ acres of floodplain and riparian area. ○ South Prairie Creek: 60 acres of riparian area and floodplain. <ul style="list-style-type: none"> ● Beginning in March 2014, and semi-annually thereafter, WRIAs will report to LIO on the list of high-priority, high-threat land acquisitions as identified in salmon recovery plans. 			
A	2.1 Protect and conserve ecologically important lands at risk of conversion.	SC14	<p>Retain forest canopy cover and soils to attenuate stormwater runoff.</p> <ul style="list-style-type: none"> ● Promote programs that support retention and increase in forest canopy cover on private and public lands, especially those in priority and sensitive areas. ● Identify and implement watershed revegetation in the Swan Creek Watershed through the Pierce County Raise the Grade initiative. 	<ul style="list-style-type: none"> ● By December 2015, WSU will hold workshops on coached forest management planning. ● By January 2015, King Conservation District will implement at least two Forest Health Management Plans with technical and cost-share assistance. ● By December 2015, King Conservation District will seek to secure funding for urban canopy assessment and management plan 	Local	South Central Caucus Group (reporter)	

Strategy	Sub-Strategy	Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
			<p>development for at least one local jurisdiction.</p> <ul style="list-style-type: none"> ● By December 2015, WRIA 8 will: <ul style="list-style-type: none"> ○ Implement Trees for Streams Program to protect and restore riparian area canopy cover and streamside vegetation in high-priority sub-basins (Cedar River, Bear Creek, and Issaquah Creek). ○ Conduct three workshops for property owners to promote riparian area stewardship. ○ Provide technical assistance to at least 30 property owners to develop planting plans and support plantings. ○ By December 2015, Pierce County Conservation District will implement at least two community planting events in the Swan Creek Watershed. ○ By third quarter 2014 and 2015, owners will conduct two workshops for property owners with livestock to protect and enhance riparian functions. 			

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
A	2.1 Implement and maintain priority freshwater and terrestrial restoration projects.	SNST4	<p>Local habitat protection and restoration. Implement effective habitat protection strategies that have been identified in local plans, recommended by stakeholders, and approved by plan sponsors. Examples include the following.</p> <ul style="list-style-type: none"> • Acquisition by the City of Snohomish of 20 acres at the confluence of the Snohomish and Pilchuck River. • Protection strategies identified in the Snohomish Basin Protection Plan and the Port Susan Marine Stewardship Area Conservation Action Plan. • Promote the Conservation Reserve Enhancement Program and the Snohomish Conservation District’s “Free Trees Program”. 	<ul style="list-style-type: none"> • During 2014–2015, identify priority protection actions that can be implemented. • By December 2015, establish conservation easements of unarmored shoreline parcels in Port Susan. • By December 2015, City of Snohomish will acquire 20 acres at confluence of Snohomish and Pilchuck Rivers. • During 2014–2016, acquire parcels in the Stillaguamish Basin to advance habitat protection 10- and 50-year salmon recovery targets. • By December 2015, increase participation in Conservation Reserve Enhancement Program and explore other financial incentive programs. • By December 2015, implement a pilot free trees program to increase tree cover within both the Snohomish and Stillaguamish watersheds. 		Snohomish-Stillaguamish LIO	City of Snohomish, Snohomish County, Snohomish CD, Forterra, The Nature Conservancy, King County
A	2.1 Protect and conserve ecologically important lands at risk of conversion.	WC14	<p>Kitsap Forest & Bay Divide Property acquisition. The West Central LIO, along with Great Peninsula Conservancy and other partners, will seek and secure funding to complete acquisition of the Kitsap Forest &</p>	<ul style="list-style-type: none"> • By June 2016, secure funding for acquisition. 	Local	Great Peninsula Conservancy	West Central LIO (reporter)

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
			Bay Divide Property, part of a larger effort to protect over 7,000 acres of forest and wetland habitat in north Kitsap County.				
A	2.2 Implement and maintain priority freshwater and terrestrial restoration projects.	1	Prairie and oak woodland restoration. WDFW in consultation with DNR, USFWS, and Joint Base Lewis McCord, will implement priority prairie and oak woodlands restoration projects.	<ul style="list-style-type: none"> • Maintain a prioritized list of restoration activities. Work with South Sound partners to fund the restoration activities. Update list with completed action items. 	Soundwide	WDFW	DNR, USFWS
A	2.2 Implement and maintain priority freshwater and terrestrial restoration projects.	HC2	HCCC in lieu fee mitigation. The HCCC established an In Lieu Fee Mitigation Program and will continue to manage it to provide mitigation for unavoidable adverse impacts from development projects within the program's service area. Specific mitigation projects and progress of the program will be reported as part of the 2016 Action Agenda.	<ul style="list-style-type: none"> • Ongoing through spring 2016, HCCC (LIO) will continue to work with local jurisdictions for the implementation of the In Lieu Fee Mitigation Program as a mitigation alternative for project applicants. HCCC staff will meet with county staff at least once per year to review the implementation of the program within each local jurisdiction. • Ongoing through spring 2016, HCCC will strive to implement mitigation projects within the 3-year post-credit sale timeframe. Project implementation could include one marine project and one freshwater wetland project. • Ongoing through spring 2016, HCCC will continue to work with watershed partners to identify potential receiving areas and place acceptable sites on a roster 	Local	HCCC (reporter)	

Strategy	Sub-Strategy	Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
			of potential mitigation receiving areas. HCCC will target two receiving areas per service area for a total of eight.			
A	2.2 Implement and maintain priority freshwater and terrestrial restoration projects.	WC12 West Sound Priority Watersheds for Protection. The Suquamish Tribe will develop a detailed protection and restoration plan for the upper Chico Creek watershed. The Tribe will seek funding to undertake similar work for the high priority refugia, Curley and Blackjack Creek watersheds.	<ul style="list-style-type: none"> By February 2015, protection and restoration plan for the Upper Chico Creek watershed. By December 2015, funding in place for plans for Curley and Blackjack Creek watersheds. 	Local	Suquamish Tribe	
A	2.2 Implement and maintain priority freshwater and terrestrial restoration projects.	WC15 Springbrook Creek fish passage enhancement and water quality retrofit. The City of Bainbridge Island will seek funding to complete study and design for a watershed scale project that would ultimately replace two stream crossing culverts to improve fish passage; eliminate stream bank erosion through habitat enhancement; and reduce pollutants from road runoff by adding water quality retrofits, including addressing fecal coliform sources upstream of an important shellfish growing area and eliminating impound ponds.	<ul style="list-style-type: none"> By June 30, 2014, complete project study and design. By June 30, 2015, secure funds and begin project construction. 	Local	City of Bainbridge Island	
A	2.2 Implement and maintain priority freshwater and terrestrial restoration projects.	WC16 Duwe’iq stormwater treatment wetland and stream restoration. Kitsap County Surface and Stormwater Management will complete construction of the Duwe’iq Stormwater Treatment Wetland and Stream	<ul style="list-style-type: none"> By January 2016, complete Phase 2: 60/90/Final Design Plan, Specifications and Estimates. By June 2016, complete construction. 	Local	Kitsap County Surface and Stormwater Management	

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
			Restoration project, which will reduce fecal coliform and other stormwater pollutants from 30 acres of commercial runoff into Clear Creek, improve stream habitat, advance public education about stormwater via Clear Creek Trail access, and increase green space in the urban Silverdale corridor.	<ul style="list-style-type: none"> Public education signage installed. Provide a higher level of water quality treatment of 30 acres of commercial runoff post-project. A statistically significant improving trend of fecal coliform during the wet season at the northern Dyes Inlet marine stations. Increased public green space along the Clear Creek Trail. 			
A	2.2 Implement and maintain priority freshwater and terrestrial restoration projects.	WC17	<p>Clear Creek floodplain restoration. With an ultimate goal of freshwater habitat restoration and enhancement, Kitsap County Surface and Stormwater Management will complete a project to construct floodplain, restore stream habitat, remove road, enhance trails, reduce downstream flooding, and advance public education about floodplains/wetlands/stormwater in Clear Creek. This includes:</p> <ul style="list-style-type: none"> Completion of restoration design. Completion of project permitting. Completion of project construction. 	<ul style="list-style-type: none"> By December 31, 2016, completion of project design and permitting. By December 31, 2017, completion of project construction. By December 31, 2017, 8.2 acres of floodplain constructed. By December 31, 2017, 2,120 feet of stream habitat improved. 	Local	Kitsap County Surface and Stormwater Management	
A	2.2 Implement and maintain priority freshwater and terrestrial restoration projects.	WH4	<p>Padden Creek enhancements—24th to 30th Streets. This freshwater project greatly improves existing habitat conditions for the section of Padden Creek that is immediately upstream of the newly daylighted tunnel. This site is now accessible to salmonid species. The project will increase the</p>	<ul style="list-style-type: none"> By November 2015, complete design. By January 2016, complete bid specifications and permit applications. By December 2016, complete construction. 	Local	City of Bellingham	

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
			diversity and amount of fish habitat available by reconnecting Padden Creek to its floodplain, adding log jams, boulders and pools in an urban environment. Steps include completing design, obtaining permits, constructing, planting the site, maintaining plantings, and monitoring site evolution.	<ul style="list-style-type: none"> By January 2017, complete planting. 			
A	2.2 Implement and maintain priority freshwater and terrestrial restoration projects.	WH5	WRIA 1 culvert inventory maintenance. Whatcom County completed an inventory of culverts in WRIA 1 in 2005. The document may need to be updated to reflect culverts replaced or repaired and inventories recently completed by WDFW. Completing designs for priority fish passage barriers would enable those barriers to be “shovel-ready” when funding becomes available to implement projects.	<ul style="list-style-type: none"> By December 2014, WDFW in collaboration with partners prepare an addendum to 2005 WRIA 1 Culvert Inventory. By December 2015, Sponsors prepare designs to fix up to three priority fish passage barriers. 	Local	To be determined	USFS, Whatcom County Public Works, Nooksack Salmon Enhancement Association, WDFW
A	2.3 Implement restoration projects in urban and developed areas while accommodating growth, density, and infill development.		No near-term actions. Work is focused on implementation of ongoing programs.				

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
A	3	Protect and Steward Ecologically Sensitive Rural and Resource Lands					
A	3.1	Use integrated market-based programs, incentives, and ecosystem markets to steward and conserve private forest and agricultural lands.	1	Use of Agriculture Conservation Program funds. WSCC will enhance use of conservation and habitat restoration program funding from a variety of sources, (i.e., Conservation Reserve Enhancement Program and Environmental Quality Incentives Program) that are currently underused by and not tailored for western Washington growers.	<ul style="list-style-type: none"> By August 2015, WSCC will work with conservation districts to enhance the use of WSCC's Conservation Practice Data System or identify an alternative database system, for project identification. By Sept 30, 2015, 12 Puget Sound districts will enter data into the Conservation Practice Data System and identify projects that, when implemented, will address threats to Puget Sound. By December 2015, there will be a 50 percent increase in the use of the Conservation Practice Data System to link projects to funding sources. By June 2016, WSCC will work with conservation districts, Ecology, federal agencies and others to identify opportunities for improvements to agriculture conservation program funding. 	Soundwide	WSCC
A	3.1	Use integrated market-based programs, incentives, and ecosystem markets to steward and conserve private	2	Landowner incentives for transfer of development rights and ecosystem markets. Commerce and Ecology, in coordination with DNR and WSCC, will provide technical support and fund local projects to identify and implement	<ul style="list-style-type: none"> Commerce will provide technical support and funding to progress established transfer of development rights in at least four counties. Commerce will provide assistance 	Soundwide	Commerce Ecology, DNR, WSCC

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
	forest and agricultural lands.		landowner incentives, including transfer of development rights and ecosystem services markets.	to at least two additional counties with new transfer of development rights.			
A	3.2 Retain economically viable working forests and farms.	1	Protect working forests. DNR will work with other interested parties to develop a comprehensive strategy for retaining economically viable, long-term working forestlands.	<ul style="list-style-type: none"> By October 2014, develop collaborative strategy. 	Soundwide	DNR	
A	3.2 Retain economically viable working forests and farms.	2	Agriculture strategy. PSP, in collaboration with WSDA, Ecology, WSCC, and agricultural partners has convened an advisory committee to consider development of a Puget Sound agricultural strategy. The strategy will identify a) needs for maintaining the health of the industry b) key areas where the agricultural industry can contribute to the protection and restoration of Puget Sound and c) challenges to be addressed for achieving these goals and implementing a successful strategy. This near-term action could be further amended or integrated into the regional funding strategy as appropriate.	<ul style="list-style-type: none"> By July 2014, produce draft recommendations for consideration by the ECB and Leadership Council 	Soundwide	PSP	WSDA, Ecology, WSCC
A	4 Encourage compact regional growth patterns and create dense attractive mixed-use and transit-oriented communities						
A	4.1 Integrate growth, infrastructure, transportation, and conservation planning at sub-regional levels and across jurisdictions.	2	Regional sustainable communities program. Commerce will work with local communities to implement Soundwide integrated regional planning that will integrate ecosystem protection, land use, transportation and housing, similar to the federal sustainable communities program.	<ul style="list-style-type: none"> By December 2014, implement regional planning in at least two local communities. By December 2015, implement in at least two additional local communities. 	Soundwide	Commerce	

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
A	4.2 Provide infrastructure and incentives to accommodate new development and re-development within urban growth areas.	SC13	<p>Complete Regional Alliances Project and share results to increase infill development in urban centers while meeting stormwater requirements and Growth Management Act mandates. Through the Regional Alliance Project,</p> <ul style="list-style-type: none"> • Develop recommendations for incentives and cost-effective tools to meet stormwater management and Growth Management Act requirements for development in urban areas in order to encourage infill development in urban centers instead of greenfield locations and to improve water quality. • Develop recommendations related to comprehensive plan policy and development regulations to inform 2015 updates. • Other actions may be identified. <p>Key partner in these efforts: Commerce</p>	<ul style="list-style-type: none"> • By February 2015, develop a formal report on agreed next steps to Puget Sound Regional Council Growth Management Policy Board. • By March 2015, present a final report to the PSP ECB. 	Local	South Central Caucus Group (reporter)	Commerce, Puget Sound Regional Council, Growth Management, local governments participating in this work
A	4.3 Enhance and expand the benefits of living in compact communities.		No near-term actions identified.				
A	5 Protect and restore floodplain function						
A	5.1 Improve data and information to accelerate floodplain protection, restoration, and flood	2	<p>Regional floodplain vision and program. Identify the goals, capital project plans and funding needs associated with achieving the floodplain recovery goal.</p>	<ul style="list-style-type: none"> • Report describing regional vision, goals, 10-year capital project plan and funding needs associated with achieving the floodplain recovery goal 	Soundwide	The Nature Conservancy	PSP, Ecology

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)	
	hazard management.							
A	5.1	Improve data and information to accelerate floodplain protection, restoration, and flood hazard management.	WH3	<p>Lower Nooksack floodplain management. Complete habitat assessments and restoration plans for Reaches 1 through 4 of the mainstem Nooksack. The restoration plans will advance the Flood/Fish Integration action in the WRIA 1 Salmonid Recovery Plan (through incorporation into Systemwide Improvement Framework Plan and/or Comprehensive Flood Hazard Management Plan), and will provide technical information to support the Whatcom Conservation District's restoration and riparian efforts in agricultural areas. This action is critical to ultimately restoring Nooksack River floodplain.</p>	<ul style="list-style-type: none"> By December 2015, Salmon Recovery Staff Team completes restoration plan for mainstem Nooksack River (reaches 1 through 4). By December 2014, Whatcom Conservation District prepares agricultural riparian corridor plan in collaboration with salmon recovery, water quality, and other interests to establish vegetative prescriptions for agricultural watercourses to achieve water quality and fish habitat goals. By December 2014, agreement with Whatcom Conservation District develops a community vision for a green infrastructure plan that identifies working lands and essential environmental features including fish and wildlife habitat that will inspire individual landowner participation in protection and restoration actions. By February 2016, Salmon Recovery Staff Team develops preliminary design for integrated floodplain restoration project and associated grant proposal to 	Local	WRIA 1 Salmon Recovery Board	Whatcom County Public Works, Lummi Natural Resources, Whatcom CD, Nooksack Natural Resources

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
				procure construction funding.			
A	5.2 Align policies, regulations, planning, and agency coordination to support multi-benefit floodplain management, incorporating climate change forecasts.	1	Improved permit process. Support WDFW, Ecology, Corps, USFWS, and NOAA in making changes to improve the current permit process	<ul style="list-style-type: none"> By December 2014, secure commitments from key permitting agencies to collaborate on improvements to the permit process. By December 2015, dedicated permitting team(s) or alternate mechanism in place to support project implementation – contingent on funding 	Soundwide	The Nature Conservancy	Ecology, PSP
A	5.2 Align policies, regulations, planning, and agency coordination to support multi-benefit floodplain management, incorporating climate change forecasts.	SC5	Improve floodplains management by creating partnerships of interested parties (especially local governments and business community). <ul style="list-style-type: none"> Work with federal and state agencies to address and resolve conflicts between regulations that are a barrier to completing multi-benefit projects. Over the next 2 years, support King County’s effort to lead the advisory committees of the Green River System-Wide Improvement Framework (SWIF) in developing integrated priorities for levee improvements that meet flood protection, safety, economic development, and, habitat, vegetation management, agriculture, and recreation objectives and that bridge conflicts in federal regulations. Over the next 2 years, support the Russell 	<ul style="list-style-type: none"> By December 2015, the Green River System-Wide Improvement Framework will make substantial progress in developing priorities for levee improvements. By December 2015, brief the PSP Leadership Council and ECB and the state legislature on quantifiable benefits of floodplain management initiatives, including status of Level of Protection from Flooding goals established for the Green River System – a new human dimension ecosystem recovery goal. By June 2015, compile the percentage of local jurisdictions with significant floodplain area that comply with the FEMA Biological Opinion. 	Local	South Central Caucus Group (reporter)	PSP, Ecology, WDFW, Massachusetts Institute of Technology, Corps, NOAA, FEMA

Strategy	Sub-Strategy	Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
		<p>Foundation’s work with WRIA 10 to complete a Watershed Open Space Strategy (WOSS). The process will focus on development of a regional strategy by aligning with current ecological management efforts in the watershed to promote inter-organizational collaboration and action.</p> <ul style="list-style-type: none"> ● Share information among local governments on successful approaches to meeting requirements of the FEMA Biological Opinion. ● Participate in forums to address conflicts between agriculture, flood hazard reduction projects, and habitat restoration projects in the floodplain. ● Advocate for state to improve alignment and coordination between minimum requirements for local Flood Hazard Reduction Plans, Comprehensive Plans under the Growth Management Act (GMA), and minimum requirements for regulation of Frequently Flooded Areas. ● Implement major floodplain protection and restoration projects in King and Pierce Counties funded under state 2013 Capital Improvement Plan appropriation for Coordinated Investment Strategy, including Carlin Project and Lower Cedar River Integrated Floodplain Restoration Project in King County and the Green and 	<ul style="list-style-type: none"> ● By September 2014, King County will develop concept, strategy, and candidate projects for 2014 legislative session and report to LIO. ● By December 2015, King and Pierce County will report on progress in implementing major floodplain protection and restoration projects in King and Pierce Counties. ● By August 2014 WRIA 9 will report out to LIO on progress Howard Hanson Dam Biological Opinion 			

Strategy	Sub-Strategy	Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
		<p>White rivers in Pierce County.</p> <ul style="list-style-type: none"> Continue to identify, implement, and publicize floodplain restoration projects, including the Needham Road Setback Levee Project and Calistoga Reach Setback Levee and Side Channel Construction Project that provide multiple benefits, including public safety, salmon habitat enhancement, open space, and recreation. Demonstrate quantifiable benefits of major floodplain restoration projects to salmon recovery, flood resilience, water quality, and agriculture and help make the case for ongoing investments of state funding in multi-objective flood hazard reduction projects. Work with King County, Corps, and other partners to identify alternatives to the existing policies on levee vegetation. 				
A	5.2 Align policies, regulations, planning, and agency coordination to support multi-benefit floodplain management, incorporating climate change forecasts.	<p>SNST7 Floodplain management for farm-fish-flood. Snohomish County, together with project partners, will complete the development of reach-scale plans for the Sustainable Lands Strategy project and begin the implementation of those plans.</p> <ul style="list-style-type: none"> Continue development of Farm-Fish-Flood Coordination efforts led by King County. Utilize synergies between local and state agencies to coordinate and leverage efforts that deal with farm-fish-flood 	<ul style="list-style-type: none"> By July 2014, complete Sustainable Lands Strategy reach-scale plans for four individual reaches (lower Snohomish River, Snohomish River estuary, Stillaguamish River estuary and mainstem, and Lower Skykomish River). By December 2014, complete a countywide plan and strategy for implementing reach-scale plans. 	Local	Snohomish County	Snohomish CD, King County, King CD, The Nature Conservancy

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
			issues, such as Floodplains by Design.	<ul style="list-style-type: none"> By December 2015, complete the design and construction of two high priority projects listed in the plans. By December 2015, secure funding to help support a cost-share program for farm pads or elevated farm structures. 			
A	5.3 Protect and maintain intact and functional floodplains.	2	Critical areas ordinance updates on frequently flooded areas. Ecology, Commerce, and other interested state agencies will develop a strategy for and lead effective state engagement with local governments in the next round of critical areas ordinance updates on frequently flooded areas.	<ul style="list-style-type: none"> By 2015, strategy is complete. 	Soundwide	Ecology	Commerce
A	5.3 Protect and maintain intact and functional floodplains.	3	Biological opinion compliance and floodplain target. PSP will evaluate how biological opinion compliance contributes to achieving the floodplains target. This includes policy analysis of jurisdictional compliance, development that has occurred since the biological opinion, and recommendations for next steps.	<ul style="list-style-type: none"> By December 2015, evaluation is complete. 	Soundwide	To be determined	
A	5.3 Protect and maintain intact and functional floodplains.	4	Levee vegetation. PSP will continue to support King County and Whatcom County, in coordination with the Corps and regional partners, to craft a prioritized list of floodplain capital projects addressing flood risk and habitat issues and, as needed, variances for specified segments of levees	<ul style="list-style-type: none"> By June 2015, develop a prioritized list of floodplain capital projects addressing flood risk and habitat issues and, as needed, variances for specified segments of levees. By June 2016, based on the SWIF 	Soundwide	PSP, King County (pilot lead), Whatcom County (pilot lead)	Corps

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
			through the system-wide improvement framework (SWIF) pilot projects being led by each county. Upon completion of the SWIF pilot projects and working with the pilot leads and the Corps, PSP will develop lessons learned and technical and process best practices for conducting integrated flood risk and habitat capital planning, and share this information through all appropriate means. PSP will work with pilot leads, the Corps, and additional regional entities to identify policy issues emerging from the work as related to Puget Sound recovery and consider appropriate actions to address them.	<p>pilot efforts, develop lessons learned and technical process best management practices, and share information broadly.</p> <ul style="list-style-type: none"> By June 2016, based on the SWIF pilot efforts, identify policy issues related to floodplain management and Puget Sound recovery and identify potential actions to address the issues. 			
A	5.3 Protect and maintain intact and functional floodplains.	5	Floodplain permitting assistance. Ecology and Commerce will develop policy and technical assistance programs that integrate the recommendations and requirements listed within a) NMFS' National Flood Insurance Program Biological Opinion, and b) FEMA's National Flood Risk Information Project policy and program recommendations for implementation.	<ul style="list-style-type: none"> By 2015, develop policy and technical assistance programs to integrate and implement the recommendations and requirements listed within NMFS' National Flood Insurance Program Biological Opinion and FEMA's National Flood Risk Information Project policy and program. 	Soundwide	Ecology	Commerce
A	5.4 Implement and maintain priority floodplain restoration projects.	1	Prioritization of state highways with floodplain impacts. WSDOT will identify and prioritize the state highway bridges (approximately 550 structures) that have the biggest impacts on floodplain function and connectivity, including consideration of WSDOT's 2011 Climate Impacts	<ul style="list-style-type: none"> Obtain funding for the impact analysis from the NEP Watershed grant program. Complete the analysis and, in conjunction with the Floodplains by Design Partnership, share the results with local governments to 	Soundwide	WSDOT	Ecology, PSP, The Nature Conservancy

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
			Vulnerability Assessment Report.	<p>identify complimentary locations for floodplain restoration projects and adjust the prioritization as appropriate. Present the results to the ECB and Leadership Council.</p> <ul style="list-style-type: none"> • Within 18 months of obtaining funding, identify future actions and performance measures in consideration of integrating the prioritization work into the WSDOT decision-making process for bridge replacement projects. Target dates for milestone 2 and 3 are dependent on obtaining grant funding. 			
A	5.4 Implement and maintain priority floodplain restoration projects.	2	Agricultural land ecosystem services markets. WSCC, working with conservation districts, watershed groups, and counties will identify three pilot project opportunities that demonstrate ecosystem services markets associated with flood hazard prevention and agricultural lands in floodplains.	<ul style="list-style-type: none"> • By November 2015, WSCC will have convened discussions and identified candidate areas. • By December 2015, the WSCC will identify three possible pilot projects demonstrating ecosystem service markets for floodplains. 	Soundwide	WSCC	
A	5.4 Implement and maintain priority floodplain restoration projects.	3	Candidate areas for land swaps. WSCC will work with conservation districts, agricultural community, watershed planning groups, and local jurisdictions to use the outputs from the characterization work (A5.1.1) to identify potential land swaps (i.e., county land use and conservation districts) and identify candidate areas available to expand	<ul style="list-style-type: none"> • By December 2015, WSCC will convene interested parties in at least two organizing meetings to identify candidate areas. • By June 2016, potential land swaps will be identified in five candidate areas available to expand for agriculture. 	Soundwide	WSCC	


Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
			for agriculture outside of priority floodplain areas.				
A	5.4 Implement and maintain priority floodplain restoration projects	4	Implement priority multiple-benefit floodplain restoration projects. Secure funding for high-priority projects listed.	<ul style="list-style-type: none"> By December 2014, identify the projects within Puget Sound that best advance floodplain ecosystem recovery while also achieving important flood risk reduction and other important community benefits. By June 2015, obtain funding to support priority projects through Ecology's Floodplains by Design grant program. 	Soundwide	Ecology	PSP, The Nature Conservancy
A	5.4 Implement and maintain priority floodplain restoration projects	5	Implement priority multiple-benefit floodplain restoration projects. Develop and initiate a regional technical team to support the development of integrated reach-scale plans and projects.	<ul style="list-style-type: none"> By December 2014, regional technical team scoped and included in Ecology and/or PSP budget request(s). By June 2015, obtain funding. By December 2015, initiate team. 	Soundwide	Ecology	The Nature Conservancy, PSP
A	5.4 Implement and maintain priority floodplain restoration projects.	WH8	Marietta Acquisition. Acquire properties in repetitive flood loss area to prevent future loss and to enhance upstream habitat restoration opportunities. Clean up three former gas stations sites as dictated by site conditions.	<ul style="list-style-type: none"> By December 2015, complete ESRP acquisitions. By December 2015, complete additional acquisitions. By December 2015, assess and remediate former gas station sites. 	Local	Whatcom County	
A	6 Protect and recover salmon						
A	6.1 Implement high priority projects identified in each	1	Secure annual chinook investment. PSP, in collaboration with the Salmon Recovery Council, the Governor's Salmon Recovery	<ul style="list-style-type: none"> By December 2014, a strategy for securing funds has been jointly developed by WDFW, GSRO, PSP 	Soundwide	PSP	


Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
	salmon recovery 3-year work plan.		Office in the Recreation and Conservation Office, WDFW, and the Northwest Indian Fisheries Commission will develop and implement a strategy to secure from a combination of sources, the annual investment of \$120 million to fully implement the approved Puget Sound Chinook Salmon Recovery Plan. PSP will work with its salmon recovery partners to align that funding in support of the highest priority protection and restoration projects as identified by salmon recovery lead entities.	and other salmon recovery folks. <ul style="list-style-type: none"> By December 2015, significant steps have been taken to implement the new strategy completed in the previous milestone. By December 2016, obtain the new annual investment. 			
A	6.1 Implement high priority projects identified in each salmon recovery 3-year work plan.	2	Restoration permit barriers. Develop a strategy for a new interagency permitting team that would assist in faster permitting of habitat recovery projects, including multiple objective restoration projects.	<ul style="list-style-type: none"> By July 2014, a strategy for a new interagency permitting team to assist in faster permitting of habitat recovery projects is completed. By December 2015, have interagency team in place assist in faster permitting of habitat recovery projects. By July 2014, work with lead to addressing permitting barriers for floodplain restoration projects. 	Soundwide	The Nature Conservancy	
A	6.1 Implement high priority projects identified in each salmon recovery watershed's 3-year work plan.	HC6	Hood Canal salmon recovery funding. HCCC is both the Lead Entity for Chinook salmon and the regional recovery organization for Hood Canal and eastern Strait of Juan de Fuca summer chum. HCCC will develop a process for prioritizing acquisition,	<ul style="list-style-type: none"> By spring 2014, under direction of the Board, HCCC will complete salmon recovery prioritization to identify the list of actions in priority order for recovering summer chum, Skokomish 	Local	HCCC Lead Entity	

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
			protection, and restoration actions and continue to target funding to the highest priority salmon recovery actions.	<p>Chinook, and Mid Hood Canal Chinook.</p> <ul style="list-style-type: none"> • By 2015, HCCC will work with partners to develop a funding strategy for the 10 highest priority habitat/harvest/hatchery actions for salmon recovery and track and publish progress on funding of these projects through 2016. • By spring 2016, HCCC will work with partners to secure funding and/or develop feasibility studies for the top 10 priority projects. • By fall 2015, initial construction will be completed for the Skokomish Estuary floodplain project, selected for state funding under the floodplains by design, the Skokomish Tribe, Mason Conservation District, and Ecology. • By fall 2014, North Olympic Salmon Coalition will complete final design and begin initial construction of the Kilisut Harbor restoration project as funded by Puget Sound Acquisition and Restoration large capital request and Estuary and Salmon Restoration Program. 			
A	6.1 Implement high priority projects	HC7	Hood Canal salmon recovery monitoring and adaptive management. HCCC working	<ul style="list-style-type: none"> • By summer 2014, the Lead Entity committees and HCCC Board will 	Local	HCCC (Lead)	

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
	identified in each salmon recovery 3-year work plan.		with many partners, state and federal agencies, and the tribes will complete a Monitoring and Adaptive Management Framework for both Skokomish Chinook and Mid Hood Canal Chinook. Monitoring protocols and plans for both Chinook salmon recovery chapters will be completed.	<p>approve a Skokomish Chinook Monitoring and Adaptive Management Framework.</p> <ul style="list-style-type: none"> • By summer 2014, the Lead Entity and HCCC Board will approve a Mid Hood Canal Chinook Monitoring and Adaptive Management Framework. • By spring 2015, the Lead Entity will develop a process for developing monitoring protocols for priority indicators for both Skokomish Chinook and Mid Hood Canal Chinook. • By spring 2016, monitoring protocols and plans for both Chinook salmon recovery chapters will be completed. 			
A	6.1 Implement high priority projects identified in each salmon recovery 3-year work plan.	ISL6	<p>Restore tidal inundation. Island County will restore tidal inundation to one or more isolated pocket estuaries or tidal wetlands. The project selected will address either poor design or malfunctioning tidegates to improve habitat for juvenile salmon.</p>	<ul style="list-style-type: none"> • By December 2014, reconnect one tidal wetland or pocket estuary to tidal influence. • By December 2014, secure funding to monitor habitat changes and/or juvenile salmon for restoration project to monitor improvements. 	Local	WRIA 6 Lead Entity	

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
				<ul style="list-style-type: none"> By July 2014, develop a prioritization of blockages, failing culverts, flood risks, etc. Prioritization report to include ecosystem benefits for each project. 			
A	6.1 Implement high priority projects identified in each salmon recovery 3-year work plan.	SC3	Implement high-priority projects listed in local salmon recovery plans. Secure funding for high-priority projects listed in the salmon recovery 3-year work plans for WRIAs 8, 9, and 10.	<ul style="list-style-type: none"> By December 2015, secure funding for implementation of high-priority restoration actions in each watershed. <ul style="list-style-type: none"> WRIA 8: \$16,690,000 for habitat restoration and \$50,000,000 for infrastructure improvements, including fish passage facilities at Hiram H. Chittenden (a.k.a. Ballard) Locks. <ul style="list-style-type: none"> Lower Cedar River: 77 acres of riparian and floodplain restoration. South Lake Washington: 750 linear feet of lakeshore restoration and 1,500 linear feet of tributary stream restoration. Hiram H. Chittenden Locks: Corp’s list of prioritized infrastructure improvements, including critical fish passage facilities as secured funding from headquarters. 	Local	South Central Caucus Group (reporter)	

Strategy	Sub-Strategy	Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
			<ul style="list-style-type: none"> ○ Issaquah Creek: 1,800 linear feet of stream channel restoration and 155 acres riparian area restoration. ○ Bear Creek: 370 linear feet of stream channel restoration and 2.3 acres riparian restoration. ○ Sammamish River: 5,500 feet of stream channel restoration and 85 acres of floodplain and riparian restoration. ○ Marine Nearshore: 1,750 linear feet of coastal tributary stream channel restoration and 28 acres of salt marsh restoration. <p>WRIA 9: \$16,035,000.</p> <ul style="list-style-type: none"> ○ Lower Green River: 31+ acres floodplain restoration. ○ Duwamish River: 5 to 10 acres of shallow water habitat and 2 acres of riparian restoration. ○ Marine Nearshore: remove 4,400 linear feet of shoreline armoring, revegetate 3.2 acres of shoreline with native plants, and restore 550 feet of linear stream channel. ○ Middle Green River: 14+ acres floodplain and riparian area. 			

Strategy	Sub-Strategy	Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
			<ul style="list-style-type: none"> ○ Downstream fish passage at Howard Hanson Dam; work with NOAA and USA Corp of Engineers to obtain approvals and funding ○ Nearshore outreach (grant) – for consultants, homeowners and other influencers <p>WRIA 10: \$80,000,000.</p> <ul style="list-style-type: none"> ○ Upper White River forest road decommissioning and flood plain restoration: about 100 miles of forest road. ○ South Prairie Creek floodplain reconnection and habitat restoration: 300 acres. ○ Replace dam and build new fish collection facilities at Buckley Fish Trap. ○ Alward Road Levee Setback: Acquisition Phase: 142 acres. ○ Puyallup Estuary Acquisition at Union Pacific: 30 acres. <ul style="list-style-type: none"> ● By June 2014, WRIAs will report to LIO on status of implementation of high-priority habitat protection and restoration in salmon recovery plans. 			

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)	
A	6.1	Implement high priority projects identified in each salmon recovery 3-year work plan.	SJI10	Salmon recovery, habitat protection and restoration (Near Term Shoreline Action II).	<ul style="list-style-type: none"> Between 2014 and 2016, target funding to highest priority salmon recovery projects, as listed in the San Juan Salmon Recovery 3-year work plan for WRIA 2. Projects include acquisition and conservation easements, and protection and restoration actions. Identify landowners who are willing and restore shorelines and habitats affected by armoring. Between 2014 and 2016, engage six shoreline landowners. By 2016, commence shoreline restoration on four properties. 	Local	San Juan County Lead Entity for Salmon Recovery	Green Shores for Homes, Friends of the San Juans
A	6.1	Implement high priority projects identified in each salmon recovery 3-year work plan.	SNST13	Salmon/multi-species recovery plans. Support priority projects as specified in the salmon recovery plan, salmon recovery 3-year work plans, and basin's 10- and 50-year salmon recovery goals. <ul style="list-style-type: none"> Identify and implement one to three top priority habitat restoration projects in each basin. Establish the baseline condition of key habitats such as forest cover, wetlands, riparian areas, floodplains, nearshore, and assess trends and rate of change. Use analysis to predict future anticipated gains/losses based on population and build out trajectories as well as evaluating 	<ul style="list-style-type: none"> By December 2014, identify top habitat restoration projects that are ready to go in the next 2 years. In 2015, obtain funding for projects. During 2014–2016, obtain permitting for projects. During 2014–2016, projects are installed/implemented successfully. During 2014–2016, evaluate progress toward meeting Basin's 10 and 50-year salmon plan recovery goals. 	Local	Stillaguamish Lead Entity, Snohomish Lead Entity	Snohomish County, Stillaguamish Watershed Council, Snohomish Basin Salmon Recovery Forum, King County, Snoqualmie Valley cities

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
			current restoration and protection benchmarks.	<ul style="list-style-type: none"> In 2014, use existing land cover change analyses such as WDFW's High Resolution Change Detection Project for baseline assessment. (King County) In 2015, project rate of conversion and habitat loss. 			
A	6.1 Implement high priority projects identified in each salmon recovery 3-year work plan.	SS12	Salmon recovery 3-year work plan implementation—WRIA 10/12. Each lead entity will implement at least one top tier project each year from their South Sound Salmon Recovery 3-Year Work Plan. They will determine year one project and set up performance measures at the start of each fiscal year.	<ul style="list-style-type: none"> By June 2016, target funding to the highest priority salmon recovery projects between 2014 and 2016, as listed in 3-year work plan for WRIA 10/12 Lead Entity. Projects may include acquisition, protection, and/or restoration actions. 	Local	WRIA 10/12 Lead Entity	
A	6.1 Implement high priority projects identified in each salmon recovery 3-year work plan.	SS13	Salmon recovery 3-year work plan implementation—WRIA 13. Each lead entity will implement at least one top tier project each year from their South Sound Salmon Recovery 3-Year Work Plan. They will determine year one project and set up performance measures at the start of each fiscal year.	<ul style="list-style-type: none"> Between 2014 and 2016, target funding to the highest priority salmon recovery projects, as listed in 3-year work plan for WRIA 13. Projects may include acquisition, protection, and/or restoration actions. 	Local	WRIA 13 Lead Entity	
A	6.1 Implement high priority projects identified in each salmon recovery 3-year work plan.	SS14	Salmon recovery 3-year work plan implementation—WRIA 14. Each lead entity will implement at least one top tier project each year from their South Sound Salmon Recovery 3-Year Work Plan. They will determine year one project and set up performance measures at the start of each fiscal year.	<ul style="list-style-type: none"> Between 2014 and 2016, target funding to the highest priority salmon recovery projects as listed in 3-year work plan for WRIA 14. Projects may include acquisition, protection, and/or restoration actions. 	Local	WRIA 14 Lead Entity	

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
A	6.1	Implement high priority projects identified in each salmon recovery 3-year work plan.	SS15	Salmon recovery 3-year work plan implementation—WRIA 11. Each lead entity will implement at least one top tier project each year from their South Sound Salmon Recovery 3-Year Work Plan. They will determine year one project and set up performance measures at the start of each fiscal year.	<ul style="list-style-type: none"> • Complete acquisition of 250-acre McKenna Ranch property. • Begin floodplain restoration of McKenna Ranch property. • Complete analysis, including modeling, and restoration designs for lower Nisqually/upper Nisqually estuary restoration. • Begin acquisition and restoration planning for Wilcox Reach. 	Local	WRIA 11 Lead Entity
A	6.1	Implement high priority projects identified in each salmon recovery 3-year work plan.	SS16	Salmon recovery 3-year work plan implementation—WRIA 15. Each lead entity will implement at least one high priority project each year from their South Sound Salmon Recovery 3-Year Work Plan. They will determine year one project and set up performance measures at the start of each fiscal year.	<ul style="list-style-type: none"> • Between 2014 and 2016, target funding to the highest priority salmon recovery projects as listed in 3-year work plan in the West Sound Watersheds Lead Entity. Projects may include acquisition, protection, and/or restoration actions. 	Local	West Sound Watersheds Lead Entity
A	6.1	Implement high priority projects identified in each salmon recovery 3-year work plan.	STRT4	Implement the highest priority habitat restoration and protection projects in the Elwha River ecosystem as informed by adaptive management. Refer to the monitoring and adaptive management plans for the Elwha and the North Olympic Lead Entity for Salmon’s 3-year work plan, in part, for guidance. Adaptive management over the coming years may show that habitat restoration and protection projects become a higher priority. The 3-year work plan currently includes the following high priority restoration projects: Little River Large	<ul style="list-style-type: none"> • By 2016, three projects will be funded. 	Local	Lower Elwha Klallam Tribe North Olympic Park, North Olympic Lead Entity for Salmon

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
			Woody Debris, Elwha Dike Removals, Elwha River Estuary Restoration Engineering Feasibility, and Elwha Conservation Planning. Elwha Revegetation and Elwha Engineered Log Jams projects are also a part of the 3-year work plan but are specifically cited as separate Strait Action Area local near-term actions. See the 3-year work plan for descriptions and costs for each project.				
A	6.1 Implement high priority projects identified in each salmon recovery 3-year work plan.	STRT5	Implement the high priority actions listed within the most current North Olympic Lead Entity for Salmon’s 3-year work plan. This effort includes working with the HCCC-Lead Entity on summer chum recovery. Eventually, steelhead actions will also be incorporated into the 3-year work plan. Note: Number of projects funded each year is dependent on funding available and cost of each project.	<ul style="list-style-type: none"> In 2014, seven Salmon Recovery Funding Board and Puget Sound Acquisition and Restoration projects funded. In 2015, 10 Salmon Recovery Funding Board and Puget Sound Acquisition and Restoration projects funded. 	Local	North Olympic Lead Entity for Salmon (reporter)	
A	6.1 Implement high priority projects identified in each salmon recovery 3-year work plan.	STRT6	Implement the restoration and revegetation plan for Lake Mills and Lake Aldwell on the Elwha River.	<ul style="list-style-type: none"> By 2016, plant 360 total acres (i.e., 130 acres in both 2014, 130 acres in 2015, 100 acres in 2016). Each year, through 2016 (and beyond if needed), treat the 700 acres associated with the drained reservoirs to achieve a 75% reduction in invasive species. 	Local	Olympic National Park	Lower Elwha Klallam Tribe
A	6.1 Implement high priority projects identified in each salmon recovery 3-	STRT7	Implement Dungeness river floodplain restoration projects.	<ul style="list-style-type: none"> By end of 2016, complete design to reconnect 100 acres floodplain [Note: Floodplain acquisition and stewardship (planting and 	Local	Clallam County Department of	Corps, Jamestown S’Klallam Tribe, WDFW,

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
			year work plan.			Community Development	WSDOT, North Olympic Lead Entity for Salmon
A	6.1	Implement high priority projects identified in each salmon recovery 3-year work plan.	STRT8 Monitor interaction of existing engineered log jams with sediment load from removed Elwha River dams and consider additional engineered log jams, when and where necessary.	<ul style="list-style-type: none"> By 2016, document pool and spawning gravel formation. 	Local	Lower Elwha Klallam Tribe	
A	6.1	Implement high priority projects identified in each salmon recovery 3-year work plan.	STRT9 Implement the Pysht River salt marsh estuary restoration project. Project includes removal of suction and clamshell dredge deposits placed on a 21.5 acre area of historic salt marsh within the Pysht River estuary. Also, construct a series of tidal channels (2 miles) to allow for natural recolonization of salt tolerant native plants.	<ul style="list-style-type: none"> By 2016, restore 21.5 acres of saltmarsh and 2 miles of tidal channels. 	Local	Lower Elwha Klallam Tribe	Merrill and Ring, Forterra
A	6.1	Implement high priority projects identified in each salmon recovery 3-year work plan.	STRT10 Implement the high priority actions for the Strait Action Area listed within the most current HCCC-Lead Entity salmon recovery 3-year work plan. This effort includes working with the North Olympic Lead Entity for Salmon on summer chum recovery. Eventually, steelhead actions will also be incorporated into the 3-year work plan. Note: Number of projects funded each year is dependent on the funding available, cost of each project, and the current reevaluation of priorities.	<ul style="list-style-type: none"> By 2016, 13 projects funded in eastern Strait of Juan de Fuca. 	Local	HCCC - Lead Entity (reporter)	

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
A	6.1	Implement high priority projects identified in each salmon recovery 3-year work plan.	STRT11 Implement the Snow Creek Estuary and Maynard Beach nearshore restoration project. Project includes railroad grade fill removal, bulkhead removal, estuary restoration, and beach restoration. (Note: Effort will also address the Olympic Discovery Trail)	<ul style="list-style-type: none"> • Snow Creek Estuary: By year end 2015, removal of 11.1 acres of fill/delta cone in salt marsh, and 2.5 acres of riparian plantings. • Maynard Nearshore: By year end 2014, removal of 4 acres of nearshore fill, 1,250 linear feet of bulkhead, and 3 acres of riparian plantings. 	Local	North Olympic Salmon Coalition	
A	6.1	Implement high priority projects identified in each salmon recovery 3-year work plan.	STRT37 Implement stream flow improvement projects within the Dungeness portion of the Elwha-Dungeness Water Resources Area (WRIA 18). Stream flow improvement projects include Water Acquisitions, Irrigation Efficiency, Water Storage & Aquifer Recharge, and Source Substitution; Also, work to update Ecology's 2003 Final Environmental Impact Statement on water conservation needs.	<ul style="list-style-type: none"> • Irrigation Efficiency Project Implementation: By 2015, 2.0 cubic feet per second (600 acre-feet) restored to the river. • Water Storage and Aquifer Recharge Project Implementation: By 2015, 1.0 cubic feet per second (300 acre-feet) restored to the river. • Source Substitution Project Implementation: By 2016, 0.5 cubic feet per second restored to river. • Water Acquisition Project Implementation: By 2016, 0.5 cubic feet per second restored to river. 	Local	Clallam CD, Washington Water Trust	Ecology, Water Users Associations
A	6.1	Implement high priority projects identified in each salmon recovery watershed's 3-year	WC9 West Sound SR3 Chico Creek culvert replacement. The WSDOT will develop a funding strategy and schedule for replacing the SR3 culvert with a bridge on Chico Creek. Chico is the most productive salmon	<ul style="list-style-type: none"> • By December 2015, funding strategy and schedule completed. 	Local	West Central LIO (reporter)	WSDOT

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
	work plan.		stream in West Sound and a high priority watershed for protection and restoration, and replacing the culvert with a bridge will improve fish passage and restore estuarine functions.				
A	6.1 Implement high priority projects identified in each salmon recovery 3-year work plan.	WC18	Chico/Keta Park culvert replacement and floodplain restoration. Kitsap County Roads and the Suquamish Tribe will replace a triple box culvert and reconnect/restore upstream floodplain habitat at Keta Park, on the mainstem of Chico Creek. This includes completion of project design, for which funding has already been secured.	<ul style="list-style-type: none"> By December 2014, culvert design completed. By June 2016, culvert replaced. 	Local	Kitsap County Roads	Suquamish Tribe
A	6.1 Implement high priority projects identified in each salmon recovery 3-year work plan.	WH1	Implement Chinook restoration projects in the WRIA 1 Salmon Recovery 3-Year Work Plan. The preparation and updating of the 3-year work plan is an element of salmon recovery and is a regional requirement for lead entities, occurring annually. The local recovery plan and restoration strategies are the foundation for the updates, and reflect local restoration strategies and priorities.	<ul style="list-style-type: none"> By January 2016, WRIA 1 Sponsors prepare designs for up to six priority chinook projects in the Nooksack River Forks. By January 2016, WRIA 1 Sponsors complete up to five instream projects in the Nooksack River Forks that create up to 20 primary pools and 4 miles of channel and off-channel habitat. By January 2016, WRIA 1 Sponsors acquire up to 100 acres of priority habitat for protection and/or restoration in the Nooksack River Forks. By January 2016, WRIA 1 Sponsors submit up to six applications for project funding. 	Local	WRIA 1 Salmon Recovery Board (Lead Entity)	Nooksack Tribe, Lummi Nation, Whatcom County, Whatcom Land Trust, Nooksack Salmon Enhancement Association, Whatcom CD, City of Bellingham, WDFW, USFS, others are supporting partners

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
A	6.2 Implement the high priority salmon recovery actions identified in other parts of the Action Agenda and the Biennial Science Work Plan.	1	Implement the Puget Sound federal agency action plan. Work with the Puget Sound Federal Caucus to advance Puget Sound recovery. Federal agencies with authorities in Puget Sound will work in coordination to address key barriers to recovery. For example, federal agencies will work together to address fish passage barriers, shoreline armoring regulation, and floodplain and riparian habitat restoration. These actions will contribute to advancement of the Action Agenda and respond to the concerns raised by treaty tribes in western Washington.	<ul style="list-style-type: none"> EPA will develop progress reports on an annual basis summarizing the Puget Sound Federal Caucus agencies' work on these topics and submit them to regional federal leadership for review and comment. At a minimum the reports will summarize actions on the three key issues mentioned in this near-term action (fish passage barriers, shoreline armoring regulation, and floodplain and riparian habitat restoration). Progress in addressing these three issues will be reported to PSP for inclusion in the State of the Sound report. 	Soundwide	EPA	
A	6.3 Implement harvest, hatchery, and adaptive management elements of salmon recovery.	1	Implementation of hatchery actions. WDFW and the tribes, in coordination with NMFS, will advance implementation of hatchery actions by completing and approving hatchery genetic management plans.	<ul style="list-style-type: none"> Co-managers will complete balance of the hatchery genetic management plans. NMFS issues permits. 	Soundwide	WDFW, Tribes	Tribes
A	6.3 Implement harvest, hatchery, and adaptive management elements of salmon recovery.	2	Salmon recovery monitoring and adaptive management plans. PSP, in coordination with the Puget Sound Recovery Council and the Puget Sound Regional Implementation Technical Team, will facilitate and support salmon recovery watershed groups to complete monitoring and adaptive management plans for each Puget Sound	<ul style="list-style-type: none"> By June 2014, frameworks for the 16 watershed chapters of the Puget Sound Chinook Recovery Plan will be completed. These frameworks will include translations of the existing chapters and any subsequent work to update the plans that was 	Soundwide	PSP	

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
			Salmon Recovery watershed chapters. This is a condition of the approved Chinook Recovery Plan to improve the quality and success of plan implementation.	<p>approved by their local policy body. They will also identify significant gaps in their current plans that needs to be addressed before developing a monitoring and adaptive management plan.</p> <ul style="list-style-type: none"> • By December 2015, the 16 watershed chapter frameworks will have gaps filled in for quantitative goals for salmon populations and priority habitat components, connecting strategies and actions to pressures and ecosystem goals, and pressures will be prioritized in a manner consistent with the Soundwide pressure assessment. • By December 2016, monitoring priorities for status and trends, effectiveness and implementation will be identified for each of the 16 watershed chapters using the frameworks they completed and plans for how the results of the monitoring will inform adaptive management decisions will be in place. 			
A	6.3 Implement harvest, hatchery, and adaptive management elements of salmon	STRT3	Implement the Elwha River restoration project monitoring and management plans. Plans include two hatchery genetic management plans, one for each hatchery	<ul style="list-style-type: none"> • Implement a monitoring strategy for adults, juveniles, and smolts that provide statistically valid information on abundance and 	Local	Olympic National Park	Lower Elwha Klallam Tribe, NOAA, USFWS, USGS, WDFW,

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
	recovery.		facility, and the Elwha Project’s Chinook and Steelhead Monitoring Plan. Implementation of these plans will also be informed by a comprehensive Elwha monitoring and adaptive management plan to be published by the USFWS (currently in peer review).	<p>distribution required to achieve restoration goals.</p> <ul style="list-style-type: none"> Specifically, achieve 15% coefficient of variation on data collected. Annually achieve monitoring results for: Juvenile outmigration from mid-February to June. Monitor adult chinook abundance from June through October. Monitor adult steelhead abundance February through July. Monitor adult coho and chum spawn abundance November through beginning of January. Monitor adult pink spawn abundance. Abundance (natural-origin adult spawning escapement): 1,028 for Chinook and 500 for Steelhead. Productivity (# juveniles/female): 200 for Chinook and 75 for Steelhead 			Bureau of Reclamation, North Olympic Lead Entity for Salmon
A	6.4 Protect and recover steelhead and other imperiled salmonid species.	2	Steelhead recovery plan. In collaboration with NMFS’ Steelhead Recovery Team, PSP and the Puget Sound Salmon Recovery Council will support the development of a Puget Sound steelhead recovery plan. This will include creating a framework for use by all watersheds in developing local chapters of the recovery plan, and securing sufficient	<ul style="list-style-type: none"> By June 2015, fully fund and implement the joint U.S.-Canada marine survival research program. By July 2015, work with NMFS’ Steelhead Recovery Team and other partners to develop a framework for watershed-scale recovery plan chapters. 	Soundwide	PSP	NMFS, Long Live the Kings

Strategy	Sub-Strategy	Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
		<p>funding to support watersheds in populating these local chapters. The overall planning process will be inclusive and integrated with regional work by NMFS and the co-managers, and will look at various actions to achieve recovery, including full funding and implementation of a 5-year, joint U.S.-Canada marine survival research program developed by the Salish Sea Marine Survival Project Technical Team. It will also include actions like the designation of Wild Steelhead Management Zones where consistent with the objectives identified in watershed recovery chapters. WDFW and the tribes, by agreement of the co-managers, will work to establish three streams (one in each Technical Recovery Team identified Major Population Group) where no juvenile hatchery steelhead would be released, no recreational fisheries for steelhead would occur, and habitat protection and restoration actions would be accelerated. This early steelhead recovery action would consider information already compiled for the steelhead recovery plan that is under development.</p>	<ul style="list-style-type: none"> • By June 2015, identify and secure funding to supporting watersheds in populating the recovery plan chapters. • By December 2016, complete the primary fieldwork aimed at identifying the primary factors affecting juvenile steelhead, Chinook, and coho marine survival, and release preliminary findings. 			
A	6.4 Protect and recover steelhead and other imperiled salmonid species.	WC11 West Sound Steelhead Recovery Chapter. The West Sound Watersheds Council will develop a local chapter of a Steelhead Recovery Plan. The Council will propose a budget and implementation strategy for its local chapter of the recovery plan.	<ul style="list-style-type: none"> • By July 2015, local chapter developed. • By December 2015, budget and implementation strategy for local chapter. 	Local	West Sound Watersheds Council	

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
A	6.5 Maintain and enhance the community infrastructure that supports salmon recovery.	1	Lead entity and partner funding strategy. PSP, in collaboration with the Salmon Recovery Council, the Governor’s Salmon Recovery Office in the Recreation and Conservation Office and WDFW, will identify a funding strategy and approach to support salmon recovery lead entities and the associated partner programs essential to implementing the salmon and steelhead recovery.	<ul style="list-style-type: none"> By December 2014, strategy and approach completed. 	Soundwide	PSP	
A	7 Protect and conserve freshwater resources to increase and sustain water availability for instream flows						
A	7.1 Update Puget Sound instream flow rules to encourage conservation	1	Set instream flows in priority watersheds. Ecology, with support from WDFW, will by 2020 set flow rules in the remaining priority Puget Sound watersheds that currently do not have instream flow rules: <ul style="list-style-type: none"> 1) WRIA 16. 2) The western portion of WRIA 17 (Sequim Bay watershed). 3) The western portion of WRIA 18 (Elwha-Morse watershed planning area). Priority will be given to critical basins or those with known significant problems meeting instream or out-of-stream demands. Note that including the Elwha River in an instream flow rule may be delayed because of the need to develop a method to determine and set instream flows in the Elwha after dam removal and river stabilization.	<ul style="list-style-type: none"> Done or not. 	Soundwide	Ecology	WDFW

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
A	7.1 Update Puget Sound instream flow rules to encourage conservation.	2	PEP development and implementation. Ecology will develop and implement the comprehensive basin flow protection and enhancement programs called for in the recovery plans for Puget Sound Chinook and Hood Canal/Strait of Juan de Fuca Summer Chum.	<ul style="list-style-type: none"> By 2015, Ecology will identify near-term flow recovery targets and initiate a protection and enhancement program for a high priority watershed. 	Soundwide	Ecology	
A	7.1 Update Puget Sound instream flow rules to encourage conservation.	3	Water code compliance and enforcement. Ecology will establish a strong program for Puget Sound watersheds to increase water code compliance and enforcement. This program will include the creation of Ecology “compliance officer” staff positions. These positions would be similar to “water masters” used in other parts of the state, but also different because of the absence of adjudication and increased focus on mitigation strategies.	<ul style="list-style-type: none"> By 2015, Ecology will develop a program plan to meet this goal. This plan will include identifying funding sources, a schedule, duties, and geographic jurisdiction for compliance officers, who will be local contacts to water users, provide a local compliance presence, protect the resource, support mitigation, reduce water use, and protect senior water rights, including instream flows. 	Soundwide	Ecology	
A	7.1 Update Puget Sound instream flow rules to encourage conservation.	STRT36	Develop, adopt, and implement the water resources management program rules for Elwha-Dungeness WRIA 18. This action includes implementing the adopted rule that applies to eastern WRIA 18, the Dungeness watershed, from Bell Creek on Sequim Bay to the Bagley Creek sub-basin (WAC 173-518). Development of the Water Resources Program Rule for the Elwha portion of WRIA 18, that would involve the Elwha-Morse Management Team, is delayed awaiting completion of removal of the	<ul style="list-style-type: none"> Through February 2016, 100% of mitigation certificates issued relative to applications received by Clallam County (and beyond) within the Dungeness watershed. 	Local	Ecology	Clallam County Department of Community Development, Jamestown S’Klallam Tribe, Lower Elwha Klallam Tribe, Washington Water Trust, Dungeness River

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
			Elwha dams and river restoration.				Management Team, Elwha-Morse Management Team
A	7.1 Update Puget Sound instream flow rules to encourage conservation.	STRT38	Develop, adopt, and implement a water resources management program rule for eastern Clallam County's portion of WRIA 17. Eastern Clallam County's Sequim Bay–Miller Peninsula portion of the Quilcene-Snow WRIA 17 is within the Dungeness River Management Team's purview.	<ul style="list-style-type: none"> Development, adoption, and implementation of a rule (start date for process is uncertain). 	Local	Ecology	Jamestown S'Klallam Tribe, Clallam County Department of Community Development, Dungeness River Management Team
A	7.1 Update Puget Sound instream flow rules to encourage conservation.	STRT39	Develop, adopt, and implement a water resources management program rule for WRIA 19 the Lyre Hoko watershed.	<ul style="list-style-type: none"> Development, adoption, and implementation of a rule (start date for process is uncertain). 	Local	Ecology	Lower Elwha Klallam Tribe, Makah Tribe, Clallam County Department of Community Development
A	7.2 Decrease the amount of water withdrawn or diverted and per capita water use.		No near-term actions. Work is focused on implementation of ongoing programs.				
A	7.3 Implement effective management programs for groundwater.	1	Exempt wells. Ecology will work with Tribal Nations, local governments, and other partners to develop and support a consistent approach to making decisions about exempt wells, and to ensure that both	<ul style="list-style-type: none"> Done or not. 	Soundwide	Ecology	

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
			the physical and legal availability of water is considered in decisions. This will include workshops on exempt well issues to be completed by 2015.				
A	7.3 Implement effective management programs for groundwater.	SNST16	Groundwater study. Identify the costs and potential funding sources for conducting an impairment analysis for groundwater resources in the Stillaguamish and/or Snohomish River basins.	<ul style="list-style-type: none"> By December 2015, identify the costs and potential funding sources for conducting an impairment analysis including saltwater intrusion and impacts of sea level rise for groundwater resources in the Stillaguamish and/or Snohomish basins. 	Local	Snohomish County	
B	1 Focus development away from ecologically important and sensitive nearshore areas and estuaries						
B	1.1 Use complete, accurate, and recent information in shoreline planning and decision making at the site-specific and regional levels.	2	Human use patterns in marine areas. Ecology will identify human use patterns for marine areas in Puget Sound, to support marine spatial planning.	<ul style="list-style-type: none"> By June 30, 2015, complete human use mapping. 	Soundwide	Ecology	
B	1.1 Use complete, accurate, and recent information in shoreline planning and decision making at the site-specific and regional levels.	ISL3	Improve Island County GIS capability to support land use analysis, planning, permitting decisions, and enforcement with respect to adaptive management and Shoreline Master Program requirements. Island County will develop standard operating procedures for updating data and consistency in its data storage network to ensure usage consistency and relevant data.	<ul style="list-style-type: none"> By September 2014, develop GIS standard operating procedures for Island County departments that support GIS data management procedures, which would enable geographically tracking professional reports and permitting activity in shoreline areas. By September 2014, increase number of GIS licenses available 	Local	Island County Department of Natural Resources	

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
				<p>to Island County staff.</p> <ul style="list-style-type: none"> • By December 2014, increase number of Island County staff trained in GIS technology, and increase use in daily activities that result in geospatial data collection. • By June 2015, develop a comprehensive GIS map of Island County detailing permits, buffers, and forest cover based on updated layers. • By December 2015, develop a formal report recommending monitoring, restoration, and habitat protection priorities. 			
B	1.1 Use complete, accurate, and recent information in shoreline planning and decision making at the site-specific and regional levels.	WC3	West Sound eelgrass and forage fish surveys. The West Sound Watersheds Council, in coordination with the Suquamish Tribe, DNR, and others, will develop and implement periodic surveys of eelgrass and forage fish spawning habitat under a scientifically rigorous methodology, and update spawning habitat maps.	<ul style="list-style-type: none"> • By June 2014, secure funds for eelgrass monitoring. • By June 2015, update eelgrass maps. • By June 2015, start forage fish spawning area surveys. • By June 2016, update forage fish spawning maps. 	Local	Suquamish Tribe	West Sound Watersheds Council
B	1.2 Support local governments to adopt and implement plans, regulations, and policies that protect the marine nearshore and estuaries, and	1	Update local shoreline master programs. Ecology will provide funding and, with WDFW, technical assistance to local jurisdictions to update local shoreline master programs by current deadlines, with all updates complete by 2014. A key deliverable for Ecology and local	<ul style="list-style-type: none"> • By December 2016, 90% of Puget Sound Shoreline Master Program completed. 	Soundwide	Ecology	WDFW

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
	incorporate climate change forecasts.		governments is to implement shoreline master programs in a manner that validates achievement of no net loss of ecological function and guides Puget Sound toward shoreline armoring target.				
B	1.2 Support local governments to adopt and implement plans, regulations, and policies that protect the marine nearshore and estuaries, and incorporate climate change forecasts.	ISL1	<p>Develop an implementation strategy for Shoreline Master Program compliance.</p> <p>Island County will develop an implementation strategy for Shoreline Master Program compliance that includes the following elements: a) develop an accurate evaluation of shoreline health that meets the state requirement for “no net loss” and Shoreline Master Program effectiveness based on guidance from Ecology; b) retain a consultant to set a baseline percentage of shoreline armoring and percent vegetative cover that will be used to quantitatively and qualitatively evaluate shoreline health status, trends, and compliance monitoring; c) conduct annual county-wide shoreline evaluations for trend analysis.</p>	<ul style="list-style-type: none"> • By January 2014, obtain funding for Shoreline Master Program implementation program. • By April 2014, develop baseline shoreline health report with trend analysis (no net loss measure) (e.g., percent change shoreline armoring, change in vegetation in Island County). • By July 2014, develop a Shoreline Master Program implementation strategy. • By March 2015, develop and implement a Shoreline Master Program training program (target: 100 residents to attend per quarter). 	Local	Island County Planning and Community Development	
B	1.2 Support local governments to adopt and implement plans, regulations, and policies that protect the marine nearshore and estuaries, and incorporate climate	SC4	<p>Improve shorelines in the South Central Puget Sound Action Area by limiting new residential shoreline armoring and overwater coverage, and promoting “green” shoreline replacements.</p> <ul style="list-style-type: none"> • Encourage programs and help implement projects that implement and promote incentives and best practices identified in 	<ul style="list-style-type: none"> • Report quarterly to South Central Caucus Group (LIO) on education and other actions funded by Puget Sound Acquisition and Restoration, Estuary Salmon Restoration Project, and other sources. • By third quarter 2015, 	Local	South Central Caucus Group	

Strategy	Sub-Strategy	Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
	change forecasts.	<p>local Shoreline Master Program studies updates. Support actions to retrofit/restore public and private shoreline properties.</p> <ul style="list-style-type: none"> • Assist local governments by providing information on best practices and models. (e.g., hold informational sessions at standing planner forums including Puget Sound Regional Council, King County, and Seattle). • Work to promote existing and new incentive programs. • Use South Central Caucus Group (LIO) as a forum for sharing best practices for shoreline restoration and model shoreline regulations. • Compile incentive information and provide to local governments. • Coordinate outreach and incentive programs with existing industry best practices such as Leadership in Energy and Environmental Development, Green Shores for Homes project, and Built Green Certification program. • Seek funding to engage streamside/riparian, lakeshore, and nearshore area property owners and to increase assistance to shoreline landowners who are willing to implement aquatic area protection and enhancement practices. 	<p>implementers will report to South Central Caucus Group on progress made on working with private property owners and reaching priority audiences to promote green shorelines practices.</p> <ul style="list-style-type: none"> • By second quarter 2015, King Conservation District assists 20 landowners in implementing shoreline protection, restoration, and enhancement practices. • In 2015, explore options for using existing funding mechanisms to assist landowners who are willing to implement aquatic area enhancement protection and enhancement practices. 			

Strategy	Sub-Strategy	Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
		<ul style="list-style-type: none"> • Support WRIA 8 Green Shorelines Steering Committee’s outreach and education to key marine and freshwater shoreline audiences (e.g., property owners, real estate agents, construction and landscaping communities, and local government planning departments) to share green shorelines materials and messages and to encourage improved shoreline restoration stewardship. • Support ECO Net endorsed education and outreach efforts for this action. • Retrofit/restore public and private lands 				
B	1.2 Identify and prioritize areas for protection, restoration, and best suitable for Low Impact Development.	SNST14 Port Susan Marine Stewardship Area conservation. Establish Port Susan as a Marine Stewardship Area and implement the conservation action plan.	<ul style="list-style-type: none"> • In 2014, achieve formal adoption by the Snohomish County Council. • By 2016, work to prevent 100% of future shoreline armoring in Port Susan. During 2014–2016, work to implement the high priority action steps in the Port Susan Conservation Action Plan. 	Local	Snohomish County Marine Resources Committee	
B	1.2 Support local governments to adopt and implement plans, regulations, and policies that protect the marine nearshore and estuaries, and incorporate climate change forecasts.	STRT15 Implement the City of Port Townsend’s Shoreline Master Program through public education and incentive programs. Education and incentive programs will be made available and promoted to City residents. Programs include promotion of improved stormwater management, removal of shoreline armoring, and restoring native marine riparian vegetation	<ul style="list-style-type: none"> • By 2016, hold four public educational events. • By 2015, complete one “shovel-ready” plan for a high-priority stormwater management project. 	Local	Jefferson County Marine Resources Committee	Jefferson County, WSU Extension, City of Port Townsend

Strategy	Sub-Strategy	Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
		along the city's shorelines. Shoreline education and technical assistance will be offered through implementation of Phase 2 of Jefferson County's Watershed Stewardship Resource Center, as described in two other Strait Action Area near-term actions.				
B	1.2 Support local governments to adopt and implement plans, regulations, and policies that protect the marine nearshore and estuaries, and incorporate climate change forecasts.	STRT16 Finalize and adopt the Shoreline Master Program, and update and implement the highest priority projects listed within the City of Port Angeles shoreline restoration plan, a part of the city's updated Shoreline Master Program. In addition to finalizing and adopting the Shoreline Master Program update, the focus is on beach restoration projects within Port Angeles Harbor, including inner Ediz Hook, West End Park, and Hollywood Beach.	<ul style="list-style-type: none"> • By 2014, adopt the Shoreline Master Program. • By 2014 and 2015, restore 8,606 feet (1.62 miles) of marine shoreline in Port Angeles Harbor by completing beach restoration projects, including <ul style="list-style-type: none"> ○ Ediz Hook by 2014. ○ West End Park by 2015. ○ Hollywood Beach (to be fully designed by 2015 with implementation to follow). 	Local	City of Port Angeles Department of Community and Economic Development	
B	1.2 Support local governments to adopt and implement plans, regulations, and policies that protect the marine nearshore and estuaries, and incorporate climate change forecasts.	STRT19 Organize and implement annual Jefferson County restoration planning summits. Organize and implement the first annual Jefferson County Restoration Planning Summits, one for marine and one for freshwater areas. Consider implementing follow up activity, where needed.	<ul style="list-style-type: none"> • By December 2016, complete first annual Restoration Planning Summit. (Note: Marine related summit completed February 2014) 	Local	Jefferson County Marine Resources Committee (marine summit), Jefferson County Department of Community	Jefferson County Department of Community Development

Strategy	Sub-Strategy	Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
						Development (freshwater summit)
B	1.2 Support local governments to adopt and implement plans, regulations, and policies that protect the marine nearshore and estuaries, and incorporate climate change forecasts.	STRT20 Implement the highest priority projects listed within the Jefferson County Shoreline Restoration Plan, a part of the County's updated Shoreline Master Program. Implement the highest priority shoreline restoration projects.	<ul style="list-style-type: none"> • By December 2016, implement two bulkhead removal or bio-stabilization projects and two riparian enhancement projects along high priority shorelines. • Initiate conversations with at least one public agency regarding intertidal fill or culvert removal projects on a high priority shoreline (see page 7-1 of Shoreline Master Program Shoreline Restoration Plan). 	Local	Jefferson County Department of Community Development	
B	1.2 Support local governments to adopt and implement plans, regulations, and policies that protect the marine nearshore and estuaries, and incorporate climate change forecasts.	STRT21 Assess implementation of the Jefferson County Shoreline Restoration Plan, a part of the County's updated Shoreline Master Program. Regularly assess implementation of the Jefferson County Shoreline Restoration Plan.	<ul style="list-style-type: none"> • By December 2014: <ul style="list-style-type: none"> ○ Identify at least two potential bulkhead removal/bio-stabilization projects on high priority shorelines, apply for funding and initiate steps toward implementation. ○ Identify at least two potential riparian enhancement projects on high priority shorelines, apply for funding and initiate steps toward implementation. ○ Initiate conversations with at least one public agency regarding an intertidal fill removal or culvert removal 	Local	Jefferson County Department of Community Development	

Strategy	Sub-Strategy	Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
			<ul style="list-style-type: none"> project on a high priority shoreline. • By December 2018: <ul style="list-style-type: none"> ○ Complete at least two bulkhead removal/bio-stabilization projects. ○ Complete at least two riparian enhancement projects. ○ Initiate technical work to support at least one large-scale intertidal fill removal or culvert removal project on a high priority shoreline. 			
B	1.2 Support local governments to adopt and implement plans, regulations, and policies that protect the marine nearshore and estuaries, and incorporate climate change forecasts.	STRT22 Develop and adopt the update of the Clallam County Shoreline Master Program.	<ul style="list-style-type: none"> • In 2014, adopt Shoreline Master Program. 	Local	Clallam County Department of Community Development	
B	1.2 Support local governments to adopt and implement plans, regulations, and policies that protect the marine nearshore and estuaries, and incorporate climate change forecasts.	STRT23 Identify and implement a framework for measuring and tracking no net loss in Clallam and Jefferson Counties. Complete the Enhanced Shoreline Protection project (EPA Watershed Management Assistance Program Grant) for Clallam and Jefferson Counties and evaluate the results to determine next steps for implementation.	<ul style="list-style-type: none"> • In 2014, adopt the Framework of Indicators and no net loss Project Specific Checklist for Clallam County. • In 2014, adapt and begin field testing of no net loss Project Specific Checklist in Jefferson County. 	Local	Clallam and Jefferson County Departments of Community Development	

Strategy	Sub-Strategy	Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
B	1.2 Support local governments to adopt and implement plans, regulations, and policies that protect the marine nearshore and estuaries, and incorporate climate change forecasts.	STRT24 Expand pilot Ecosystem Services Valuation analysis conducted along the Central Strait nearshore to other shorelines within the Strait Action Area and North Olympic Peninsula. Following lessons learned from the pilot Ecosystem Services Valuation analysis along the Central Strait nearshore within Clallam County and the City of Port Angeles, consider expanding the effort to other shorelines within the Strait Action Area and North Olympic Peninsula. This action is one of a number of efforts to coordinate implementation of shoreline master programs among local governments within the Strait Action Area.	<ul style="list-style-type: none"> By 2016, complete Ecosystem Services Valuation within Clallam and Jefferson Counties. 	Local	Clallam and Jefferson County Departments of Community Development	Cities of Port Angeles, Sequim, Port Townsend
B	1.2 Support local governments to adopt and implement plans, regulations, and policies that protect the marine nearshore and estuaries, and incorporate climate change forecasts.	STRT25 Identify implementation priorities for the adopted update of the Clallam county Shoreline Master Program. Following adoption of Clallam County’s Shoreline Master Program update, identify implementation priorities, such as improved mapping capabilities to identify and monitor functions of vulnerable shorelines, an effective shoreline landowner outreach program, etc.	<ul style="list-style-type: none"> By 2015, list priority actions. 	Local	Clallam County Department of Community Development	
B	1.2 Support local governments to adopt and implement plans, regulations, and policies that protect the marine nearshore	STRT26 Develop a monitoring and adaptive management strategy for the adopted update of the Clallam County Shoreline Master Program, one that’s based on the no net loss indicators. Following adoption of Clallam County’s Shoreline Master	<ul style="list-style-type: none"> By 2015, complete monitoring and adaptive management strategy. 	Local	Clallam County Department of Community Development	

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
	and estuaries, and incorporate climate change forecasts.		Program update, develop a monitoring and adaptive management strategy that's based on the no net loss indicators developed by the Enhanced Shoreline Protection project.				
B	1.2 Support local governments to adopt and implement plans, regulations, and policies that protect the marine nearshore and estuaries, and incorporate climate change forecasts.	WC2	West Sound Shoreline Master Program update alternatives to shoreline armoring. During the Shoreline Master Program update process for all West Central jurisdictions, the West Sound Watersheds Council will ensure that restoration plans for every Shoreline Master Program include alternatives to traditional shoreline armoring, and incentives for the removal of existing armoring.	<ul style="list-style-type: none"> Over the next 2 years, no net gain in shoreline armoring within any West Central jurisdiction. 	Local	West Sound Watersheds Council	
B	1.3 Improve, strengthen, and streamline implementation and enforcement of laws, regulations, and permits that protect the marine and nearshore ecosystems and estuaries.	1	HPA capacity effectiveness. Improve Hydraulic Project Approval Compliance and Effectiveness for water crossing structures and marine shoreline armoring	<ul style="list-style-type: none"> By 2016, secure funding to adequately staff Hydraulic Project Approval Compliance and Effectiveness Monitoring Program. By 2016, add saltwater overwater structures and freshwater bank protection to the Hydraulic Project Approval Compliance and Effectiveness Monitoring Program. 	Soundwide	WDFW	
B	1.3 Improve, strengthen, and streamline implementation and enforcement of laws, regulations, and permits that protect the marine and nearshore ecosystems	2	Hydraulic code rules revision. WDFW will use best available science to revise Hydraulic Code Rules (220-110 WAC) and clarify conditions under which hydraulic projects must be conducted to prevent or mitigate the impacts to fish life and habitat.	<ul style="list-style-type: none"> By December 2014, complete rulemaking. 	Soundwide	WDFW	

Strategy	Sub-Strategy	Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
			<ul style="list-style-type: none"> By 2016, engage with 50 voluntary shoreline property owners in priority areas. Complete feasibility analysis with seven property owners with two to three projects moving forward for full project development. 			
B	1.3 Improve, strengthen, and streamline implementation and enforcement of laws, regulations, and permits that protect the marine and nearshore ecosystems and estuaries.	<p>STRT18 Provide shoreline education, training, and technical assistance in Jefferson County and City of Port Townsend through implementation of Phase 2 of SquareONE (formally called Watershed Stewardship Resource Center). Consider expansion of the SquareONE concept to the other three local jurisdictions within the Strait Action Area.</p> <p>Following lessons learned from the SquareONE pilot project in Jefferson County; consider implementing Phase 2 to include the City of Port Townsend. Also, consider possible expansion of the concept to the other three local jurisdictions within the Strait Action Area. This action is one of a number of efforts to coordinate implementation of shoreline master programs among local governments within the Strait Action Area.</p> <p>(Note: This action has a double benefit in that it is also a part of C2.5 STRT31.)</p>	<ul style="list-style-type: none"> By 2016, hold four workshops with the number of attendees at workshops and before and after surveys showing improved knowledge. By December 2016, complete a final report on decisions to expand the SquareONE concept to other Strait Action Area local jurisdictions. 	Local	Jefferson County Department of Community Development	

Strategy	Sub-Strategy	Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)		
B	2	Protect and restore nearshore and estuary ecosystems						
B	2.1	Permanently protect priority nearshore physical and ecological processes and habitat, including shorelines, migratory corridors, and vegetation particularly in sensitive areas such as eelgrass beds and bluff backed beaches.	1	Protect 10% of bluff-backed beaches. PSP will promote acquisitions, easements, or other protective covenants to permanently protect at least 10% of bluff-backed beaches with high sediment supply or other priority nearshore habitats facing potential shoreline development pressure.	<ul style="list-style-type: none"> By September 2014, determine which Capital projects were awarded. By December 31, 2014, local jurisdictions will enact regulatory protections. By June 30, 2015, 10% of the bluff-backed beaches with high sediment supply or priority nearshore habitats facing development pressure are protected. 	Soundwide	PSP	
B	2.1	Permanently protect priority nearshore physical and ecological processes and habitat, including shorelines, migratory corridors, and vegetation particularly in sensitive areas such as eelgrass beds and bluff backed beaches.	2	Community use dock incentives. For state-owned aquatic lands, DNR, in consultation with WDFW and Ecology, will identify potential permit, economic, and social incentives for encouraging community use docks as an alternative to single family docks.	<ul style="list-style-type: none"> By December 31, 2014, identify incentives for encouraging community use docks. 	Soundwide	DNR	WDFW, Ecology
B	2.1	Permanently protect priority nearshore physical and ecological processes and habitat, including shorelines, migratory corridors, and	3	Overwater structures design guidance. DNR, in consultation with the Aquatic Habitat Guidelines Interagency Group, will publish design guidance on construction, repair and rebuilding of overwater structures to increase light.	<ul style="list-style-type: none"> By December 31, 2014, publish guidance on construction, repair, and rebuilding of overwater structures. 	Soundwide	DNR	

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
	vegetation particularly in sensitive areas such as eelgrass beds and bluff backed beaches.						
B	2.1 Permanently protect priority nearshore physical and ecological processes and habitat, including shorelines, migratory corridors, and vegetation particularly in sensitive areas such as eelgrass beds and bluff backed beaches.	SS18	McNeil Island long-term conservation and low-impact public access. Track state efforts to determine the long-term management strategy of McNeil Island. Support protection and restoration of habitat and natural resources of the island for low-impact public access.	<ul style="list-style-type: none"> By June 2015, determine current status of McNeil Island ownership and management. Semi-annual updates to Alliance for a Healthy South Sound (LIO) Council and Executive Committee from staff and/or invited guests. 	Local	Pierce County	Nisqually Tribe
B	2.2 Implement prioritized nearshore and estuary restoration projects and accelerate projects on public lands.	1	Implementation of projects identified by Puget Sound Nearshore Estuarine Restoration Program. WDFW and the Corps will advance implementation of projects identified by Puget Sound Nearshore Ecosystem Restoration Project, including those described in the Strategic Restoration Conceptual Engineering Final Design Report. Implementation will occur both through Corps programs as anticipated through the General Investigation process, and through other non-Corps federal, state, tribal and local programs.	<ul style="list-style-type: none"> Number of projects funded; number implemented; amount of various nearshore habitats restored. 	Soundwide	WDFW	Corps
B	2.2 Implement prioritized nearshore and estuary restoration projects	2	Washington State Parks nearshore restoration. Washington State Parks will identify opportunities to provide nearshore	<ul style="list-style-type: none"> Progress up to five projects forward within the next 2 to 4 years. 	Soundwide	Washington State Parks	

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			restoration. Based on this assessment, Washington State Parks will refine its performance measures for this action including setting semi-annual estimates of the numbers of projects to be restored. Washington State Parks will restore nearshore habitat identified, including removal of hard armoring at state parks.	<ul style="list-style-type: none"> By December 2015, complete at least two projects. 			
B	2.2 Implement prioritized nearshore and estuary restoration projects and accelerate projects on public lands.	3	Prioritizing restoration on state-owned aquatic lands. DNR will develop a strategy to prioritize restoration projects on state-owned aquatic lands including those within protected landscapes such as Aquatic Reserves to ensure maximum long-term benefit from habitat restoration.	<ul style="list-style-type: none"> By 2014, develop DNR restoration project prioritization criteria. By 2015, develop and begin to implement list of near and long-term projects. 	Soundwide	DNR	
B	2.2 Implement prioritized nearshore and estuary restoration projects and accelerate projects on public lands.	4	Creosote piling inventory and removal. DNR will complete a derelict creosote piling inventory of Puget Sound. DNR has removed 10,000 pilings since 2007, prioritizing removals near important herring spawning beds.	<ul style="list-style-type: none"> By 2017, remove 3,000 pilings (done or not). 	Soundwide	DNR	
B	2.2 Permanently protect priority nearshore physical and ecological processes and habitat, including shorelines, migratory corridors, and vegetation particularly in sensitive areas such as eelgrass beds and	SS8	Johns Creek (Bayshore) Estuary restoration. Restore John's Creek (Bayshore) Estuary, a Puget Sound Nearshore Estuarine Restoration Program project.	<ul style="list-style-type: none"> By June 2016, acquire, protect and fully restore 74 acres of biologically sensitive and culturally significant estuary, nearshore, riparian, and Puget Sound oak prairie habitat. 	Local	Squaxin Island Tribe	

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
			bluff backed beaches.				
B	2.2 Implement prioritized nearshore and estuary restoration projects and accelerate projects on public lands.	SS9	Deschutes River estuary restoration. Remove the 5th Avenue dam and restore 346 acres of estuarine and intertidal habitat. The project was recommended by the Capitol Lake Adaptive Management Plan steering committee and is a WRIA 13 Lead Entity and Puget Sound Nearshore Estuarine Restoration Program priority project.	<ul style="list-style-type: none"> • By June 2015, develop funding strategy. • Support Puget Sound Nearshore Estuarine Restoration Program efforts to obtain federal support. • Build community support for estuary restoration by holding quarterly public meetings. • By June 2015, outline state legislative strategy. • By June 2016, complete strategy. 	Local	Squaxin Island Tribe	
B	2.2 Implement prioritized nearshore and estuary restoration projects and accelerate projects on public lands.	SS10	Sequalitchew Creek restoration. Restore Sequalitchew Creek, a Puget Sound Nearshore Estuarine Restoration Program project.	<ul style="list-style-type: none"> • By June 2015, develop funding strategy. • Meet quarterly with landowners to further develop the recommended restoration action plans. • Continue discussions to update appropriate City of DuPont critical areas ordinances to allow for restoration actions to occur within the city. • Plan and implement appropriate watershed monitoring activities and involve local citizens. 	Local	South Puget Sound Salmon Enhancement Group	
B	2.2 Implement prioritized nearshore and estuary restoration projects and accelerate	SS11	Chambers Bay estuarine and riparian enhancement project. Enhance estuarine habitat structure, increase salt marsh, and restore marine riparian habitat within and	<ul style="list-style-type: none"> • By June 2015, complete the feasibility study and resolve the dam ownership and maintenance responsibility. 	Local	WRIA 10/12 Lead Entity	

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
	projects on public lands.		around Chambers Bay, a Puget Sound Nearshore Estuarine Restoration Program project. These actions will improve shallow-water refuge, increase foraging opportunity, and improve rearing capacity of the shoreline for salmon, particularly early life stages of Chinook, chum and pink salmon.	<ul style="list-style-type: none"> By June 2016, meet with stakeholders to coordinate fish passage and management responsibilities. By June 2016, develop list of funding opportunities to scope and design the next project phase. 			
B	2.2 Implement prioritized nearshore and estuary restoration projects and accelerate projects on public lands.	WC19	Point No Point Marsh restoration. Pending the results of a feasibility study in progress, Kitsap Surface and Stormwater Management, WDFW, and the West Central LIO will design and construct a replacement tidegate at Point No Point State Park by December 31, 2014. The goal is restoration of tidal hydrology and fish passage at a regionally important location for salmon recovery.	<ul style="list-style-type: none"> By December 31, 2014, complete design for a replacement tidegate at Point No Point State Park. By June 30, 2015, begin construction. By June 30, 2016, complete construction/restoration. 	Local	West Central LIO (reporter)	WDFW
B	2.2 Implement prioritized nearshore and estuary restoration projects and accelerate projects on public lands.	WC20	Waterfront Park bulkhead removal and conveyance retrofit. With a goal of enhancing nearshore habitat through armoring removal and beach nourishment, the City of Bainbridge Island will complete a bulkhead removal, beach nourishment, and stormwater conveyance system retrofit. Funding has been secured for initial design work, community outreach, and armoring removal and beach nourishment, and funds necessary to complete stormwater conveyance system retrofit work will be sought. All proposed project work must occur simultaneously in order to minimize	<ul style="list-style-type: none"> By June 2014, secure funds for stormwater conveyance system retrofits. By June 2016, complete bulkhead removal, beach nourishment, and stormwater conveyance system retrofit. 	Local	City of Bainbridge Island	

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
			project costs and maximize ecological outcomes.				
B	2.2 Implement prioritized nearshore and estuary restoration projects and accelerate projects on public lands.	WH7	Waterfront and estuary habitat connectivity projects. Implement restoration projects, and protect marine shorelines through stewardship projects.	<ul style="list-style-type: none"> ● Locust Beach– Marine Resources Committee in cooperation with City of Bellingham Parks Department to: <ul style="list-style-type: none"> ○ By December 2016, host four coordinated beach clean ups with local community groups at Locust Beach (e.g., kiteboarding club, dive club, Surfrider), and design and install interpretive and stewardship signs. ● Little Squalicum Estuary–City of Bellingham to: <ul style="list-style-type: none"> ○ By June 2014, complete design. ○ By June 2014, complete bid specifications and permit applications. ○ By December 2015, complete construction. ○ By January 2016, complete planting. ● Whatcom Waterway Between Roeder and Holly–City of Bellingham to: <ul style="list-style-type: none"> ○ By December 2013, complete feasibility and site characterization. ○ By December 2014, complete design, bid specifications and 	Local	City of Bellingham	

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
				permit applications. <ul style="list-style-type: none"> ● Cornwall Beach Park Habitat Enhancements—City of Bellingham to: <ul style="list-style-type: none"> ○ By August 2014, complete Master Planning and 30% design. ● Willow Spring Culvert Removal—City of Bellingham to: <ul style="list-style-type: none"> ○ By April 2015, complete design. ○ By April 2015, complete bid specifications and permit applications. ○ By December 2016, complete construction. ○ By December 2016, complete planting. 			
B	2.3 Remove armoring, and use soft armoring replacement or landward setbacks when armoring fails, needs repair, is non-protective, and during redevelopment.	ISL4	Decrease the use of shoreline armor, or in those instances where armor is absolutely necessary, increase the utilization of soft shore protection to address shoreline protection concerns. This effort will address two target audiences, Island County permitting staff and shoreline property owners. Education, outreach, and behavior change strategies will be used. Island County will engage its permitting staff and shoreline property owners in an extensive education and outreach campaign to meet its target of decreasing the use of shore armor and soft shore protection. The	<ul style="list-style-type: none"> ● By December 2013, secure funding for armor avoidance and alternatives to hard shore armoring program. ● By February 2014, establish an updated baseline map of shore armor in Island County using historical data. ● By February 2014, train Island County Planning and Community Development staff on hard shore armoring alternatives. Including a checklist (evaluation of soft shore protection potential) for permit 	Local	Island County Planning and Community Development	

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
			campaign will utilize appropriate behavior change strategies and technical/scientific data to support changes within the community. Island County will seek funding to provide technical assistance to landowners and to monitor program effectiveness.	<p>review and planning documents.</p> <ul style="list-style-type: none"> • By March 2014, develop shore protection landowner training program. • By March 2014, develop soft shore protection guidance document for residents (all who come to the Planning and Community Development counter regarding shoreline armoring permit). This would include an interactive website for residents to learn the reasons for choosing alternatives to hard shore armoring. 			
B	2.3 Remove armoring, and use soft armoring replacement or landward setbacks when armoring fails, needs repair, is non-protective, and during redevelopment.	ISL5	Remove hard shore armor and, where feasible, replace with soft shore protection where erosion control is needed to protect houses. Develop a program for education and behavior change on shoreline armoring in Island County. Social marketing will be applied to program development. Financial incentives (e.g., free site visits from experts, and grants for cost share, design, permitting) will be offered to implement armor removal and possibly install soft shore protection. This program will include monitoring beach ecosystem health on removal and conversion projects (from hard shore to soft shore) to provide justification.	<ul style="list-style-type: none"> • By December 2013, secure funding for soft shore protection technical assistance and removal program (vouchers for removing bulkheads) (target: five properties to receive technical assistance per quarter). • By December 2013, secure funding for forage fish spawning surveys to establish baseline data and effectiveness monitoring to validate decision for removing armoring. Monitoring to begin spring 2014. 	Local	Island County Department of Natural Resources	

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
				<ul style="list-style-type: none"> By January 2016, total amount of armor removed is greater than new armor installed (not including armor replacement). 			
B	2.3 Remove armoring, and use soft armoring replacement or landward setbacks when armoring fails, needs repair, is non-protective, and during redevelopment.	SJI11	Continue to develop a voluntary program providing alternatives and incentives for best management practices to avoid hard armoring and to maintain native vegetation (Near Term Shoreline Action III).	<ul style="list-style-type: none"> Ecosystem outcome goal: No new hard armoring in 2015 and 2016. In 2015, engage 24 shoreline landowners, 16 contractors, and 30 realtors. Conduct separate annual workshops for contractors and realtors/shoreline landowners. Between 2014 and 2016, conduct 12 advisory visits to shoreline landowners. Develop maps, checklists, or other usable information materials specifically tailored to conditions in the San Juan Islands. Continue updating website; reach 50 views per month. Develop website-based catalogue of examples. Annual tour of “best alternatives” sites. 	Local	Green Shores for Homes	San Juan County Community Development and Planning Department, Friends of the San Juans
B	2.4 Implement a coordinated strategy to achieve the eelgrass recovery target.	1	Eelgrass recovery target strategy. DNR, working in collaboration with PSP, will convene partners in state and local government, Tribes, the federal agencies, British Columbia, and non-governmental and business groups to develop a broad-	<ul style="list-style-type: none"> By September 2014, identify strategy options. By December 2014, Strategy developed. 	Soundwide	DNR	PSP

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
			based strategy to achieve the 2020 eelgrass recovery target and track progress.				
B	2.4 Implement a coordinated strategy to achieve the eelgrass recovery target.	2	Identification of eelgrass restoration sites. DNR will identify and recommend sites that are suitable for eelgrass restoration in Puget Sound. Sites will be selected using habitat suitability analysis, hydrodynamic modeling, and eelgrass resilience to local stressors. This will include identification of sites on state-owned aquatic lands with a focus on areas with long-term protections already in place.	<ul style="list-style-type: none"> By July 2014, complete maps defining potential eelgrass restoration sites; site evaluations; final recommendations. By July 2014, complete state aquatic land work. 	Soundwide	DNR	
B	3		Protect and restore marine ecosystems				
B	3.1 Protect intact marine ecosystems particularly in sensitive areas and for sensitive species.	2	Outfall strategy on state-owned aquatic lands. DNR, in collaboration with Tribal Governments, Ecology, WDFW, and DOH, will develop and implement a strategy to reduce impacts from outfalls on state-owned aquatic lands in Puget Sound.	<ul style="list-style-type: none"> By December 2014, complete strategy development, including an implementation work plan. 	Soundwide	DNR	Ecology, WDFW, DOH
B	3.2 Implement and maintain priority marine restoration projects.	1	Legacy net removal. The Northwest Straits Foundation will work with WDFW, tribes, fishers and others to remove approximately 500 known remaining legacy nets in shallow sub-tidal waters. Original milestones (1 through 3) were met; however more nets were found. As a result, an additional milestone was added.	<ul style="list-style-type: none"> By June 30, 2015, all shallow water legacy derelict fishing nets will be removed from high priority areas of Puget Sound. 	Soundwide	Surfrider Foundation—Northwest Straits Chapter	WDFW, DNR
B	3.2 Implement and maintain priority marine restoration	2	Deep water net removal. The Northwest Straits Foundation will complete development and at least one pilot implementation of a new methodology for	<ul style="list-style-type: none"> By December 2015, implement a pilot removal deep water derelict fishing nets removal project. Pilot project will involve testing ROV 	Soundwide	Surfrider Foundation—Northwest Straits	

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
	projects.		deep-water net removal. To date, approximately 204 nets are known to exist in Puget Sound in waters deeper than 105 feet. These nets may be degrading important habitat for listed rockfish species. Pilot removal operations will focus on concentrations of known deepwater nets in documented rockfish habitat in the San Juan Islands.	removal protocols in shallow and deep water.		Chapter	
B	3.2 Implement and maintain priority marine restoration projects.	3	Derelict fishing net reporting, response and retrieval program. The Northwest Straits Foundation will coordinate with WDFW and tribes to maintain a program to encourage reporting of newly lost fishing nets, respond promptly to all reported lost nets, and retrieve lost nets.	<ul style="list-style-type: none"> Annually, implement Derelict Fishing Net Reporting, Response and Retrieval Program. Gear reporting system will be maintained. In spring and summer, outreach to fishermen will be completed. Response and to reports and retrieval of reported nets will be accomplished during fishing seasons. 	Soundwide	Surfrider Foundation—Northwest Straits Chapter	
B	4		Protect and steward working waterfronts and improve public access to Puget Sound				
B	4.1 Use, coordinate, expand, and promote financial incentives and programs for best practices at ports and in the marine industry that are protective of ecosystem health.		No near-term actions. Work is focused on implementation of ongoing programs.				

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
B	4.2 Increase access to and knowledge of publically owned Puget Sound shorelines and the marine ecosystem.	1	Washington State Parks interpretive experiences. Increase passive, active and virtual interpretive experiences on Puget Sound ecology, threats, vital signs, and recovery actions at Washington State Parks and other publically owned lands that provide access to Puget Sound. Maximize opportunities to connect Park visitors with the regional ecosystem recovery effort.	<ul style="list-style-type: none"> By December 2014, pull elements from existing interpretative plans that address specific ecosystem services needs for Puget Sound. By December 2015, implement interpretive programs (including signage or other interpretive experiences) at up to two parks. By December 2017, implement interpretive programs at up to two additional parks. 	Soundwide	Washington State Parks	
B	5		Protect and restore the native diversity and abundance of Puget Sound species, and prevent and respond to the introduction of terrestrial and aquatic invasive species				
B	5.1 Implement species recovery plans in a coordinated way.	1	Develop and implement species plans. Develop (where necessary) and implement actionable plans for imperiled Puget Sound species	<ul style="list-style-type: none"> Number of actionable plans for imperiled species currently lacking such plans 	Soundwide	WDFW	
B	5.2 Create a more integrated planning approach to protect and enhance biodiversity in the Puget Sound basin.		No near-term actions. Work is focused on implementation of ongoing programs.				
B	5.3 Prevent and rapidly respond to the introduction and spread of terrestrial and aquatic invasive species.	1	Invasive species baseline assessment. Washington Invasive Species Council, in consultation with WSDA, will expand its baseline assessment to include an additional 15 of the Council's priority invasive species. The assessment provides locations of species, details about management	<ul style="list-style-type: none"> By June 30, 2014, 78% complete. By September 30, 2014, 88% complete. By December 31, 2014, 100% complete. 	Soundwide	Washington Invasive Species Council	WSDA

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
			programs, and identifies gaps that exist.				
B	5.3 Prevent and rapidly respond to the introduction and spread of terrestrial and aquatic invasive species.	2	Invasive species early detection and monitoring. Washington Invasive Species Council, in consultation with WSDA, will develop an early detection and monitoring program plan for priority invasive species in Puget Sound. The Council will coordinate the plan and implementation efforts with the Puget Sound Coordinated Ecosystem Monitoring Program.	<ul style="list-style-type: none"> Plans will be developed for five species. By March 2013, secure funding. By June 2013, issue request for proposal and hire contractor. By December 2013, identify existing invasive species monitoring efforts and protocols used in Puget Sound. By June 2013, develop conceptual monitoring plan that identifies targeted species and locations, and estimated costs to implement. By October 2014, seek funding opportunities to implement monitoring plan. 	Soundwide	Washington Invasive Species Council	WSDA
B	5.3 Prevent and rapidly respond to the introduction and spread of terrestrial and aquatic invasive species.	3	Managing invasive species on/in boats and ships. Prepare implementable recommendations for managing invasive species transported in the hulls of commercial watercraft by developing a 5-year (2015–2020) state ballast water management plan.	<ul style="list-style-type: none"> Complete recommendations for managing invasive species on the hulls of recreational watercraft and commercial ships. Prepare implementable recommendations for managing invasive species transported in the hulls of commercial watercraft by developing a 5-year (2015–2020) state ballast water management plan. 	Soundwide	WDFW	

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
B	5.3 Prevent and rapidly respond to the introduction and spread of terrestrial and aquatic invasive species.	4	Ballast water treatment effectiveness. WDFW will complete an assessment of and make recommendations to improve the effectiveness of open sea exchange and treatment in meeting state ballast water standards.	<ul style="list-style-type: none"> • Complete report and make available to resource managers and the public by June 30, 2015. • By December 31, 2014, draft report reviewed by state Ballast Water Work Group. 	Soundwide	WDFW	
B	5.3 Prevent and rapidly respond to the introduction and spread of terrestrial and aquatic invasive species.	5	Zebra/quagga mussel and New Zealand mud snail plans. WDFW will develop plans to respond to (1) a potential zebra/quagga mussel invasion in the Puget Sound Basin and (2) limit the spread of New Zealand mud snails.	<ul style="list-style-type: none"> • By June 30, 2015, complete zebra/quagga mussel invasion management plan. • By June 30, 2015, complete plan to limit spread of New Zealand mud snails. <ul style="list-style-type: none"> ○ By June 30, 2014, assess EPA grant opportunities and/or department legislation request for project funding. ○ By June 30, 2014, secure project funding; and issue contract to prepare management plans. ○ By December 31, 2014, draft management plans reviewed by Puget Sound Science Panel and Washington Invasive Species Council. 	Soundwide	WDFW	
B	5.3 Prevent and rapidly respond to the introduction and spread of terrestrial and aquatic invasive species.	6	Invasive species baseline assessment. Washington Invasive Species Council, in consultation with WSDA, will expand its baseline assessment to include the last remaining 20 priority invasive species. The assessment provides locations of species, details about management programs, and	<ul style="list-style-type: none"> • By December 2015, 50% complete. • By December 2016, 100% complete. 	Soundwide	Recreation and Conservation Office	WSDA

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
			identifies gaps that exist.				
B	5.3 Prevent and rapidly respond to the introduction and spread of terrestrial and aquatic invasive species	7	State ballast water management. Support effectiveness of state ballast water management by developing a Memorandum of Agreement with the U.S. Coast Guard and EPA for cooperative state/federal management of ballast water.	<ul style="list-style-type: none"> • Develop MOA. 	Soundwide	WDFW	
B	5.3 Prevent and rapidly respond to the introduction and spread of terrestrial and aquatic invasive species.	ISL11	Implement a noxious and invasive weed eradication program.	<ul style="list-style-type: none"> • By December 2014, secure funding to assess invasive species in Island County. • By June 2015, create plan for eradication program. • By December 2015, increase property owners' awareness about invasive species of concern, control methods for specific plants, and their legal obligations to control regulated species. • By December 2015, increase acreage of native vegetation restoration. 	Local	Noxious Weed Control Board	
B	5.3 Prevent and rapidly respond to the introduction and spread of terrestrial and aquatic invasive species.	SNST12	Riparian corridor knotweed control. Program leads will be divided among basins: Stillaguamish—Stillaguamish Tribe and Snohomish County; Skykomish/Snohomish—Tulalip Tribes and Snohomish County; Snoqualmie—Snoqualmie Tribe and King County. Leads will work to vet methods and strategies, and develop control and elimination plans, and monitoring programs.	<ul style="list-style-type: none"> • By December 2014, develop methods and strategies that work best in their areas of concern including evaluation of effectiveness of biological control. • By March 2015, finalize control and elimination plans. • By June 2015, hire additional staff, if necessary, to implement the control and elimination plans. 	Local	Snoqualmie Tribe	King County, Snohomish County, Tulalip Tribes

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
				<ul style="list-style-type: none"> From June 2015–June 2018, implement control and elimination plans, using principles of adaptive management. From June 2015–June 2019, implement monitoring programs concurrently with control and elimination actions. 			
B	5.3 Prevent and rapidly respond to the introduction and spread of terrestrial and aquatic invasive species.	WH6	Implement and expand the noxious weed eradication program. The Noxious Weed Board has implemented a program in Whatcom County to remove knotweed from the Nooksack Forks and spartina species from marine intertidal areas including the Nooksack and Lummi River deltas. Long-term surveys and continued annual removal/treatment is necessary to prevent the establishment of spartina and to manage knotweed infestations.	<ul style="list-style-type: none"> In 2014, continue follow-up treatments in forks using existing funding. By the end of 2015, if full funding is made available, extend treatments to all tributaries to the forks with first treatment of all tributaries and touch up treatments in previously treated areas. Through 2014, continue spartina surveys for early detection with existing funding. <ul style="list-style-type: none"> Remove new spartina clones detected. Continue seasonal removal of spartina close currently known. Recommend and implement herbicides if determined necessary. 	Local	Whatcom County	Whatcom County Noxious Weed Board
B	5.4 Answer key invasive species research questions and fill	1	Environmental and economic impact of invasive species. Washington Invasive Species Council, in consultation with WSDA,	<ul style="list-style-type: none"> By August 2014, submit draft pathway analysis to the Science Panel. 	Soundwide	Washington Invasive Species	WSDA

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
	information gaps.		will complete a risk assessment to evaluate the environmental and economic impacts of invasive species in the Puget Sound marine and nearshore ecosystems and incorporate short-term climate change considerations.	<ul style="list-style-type: none"> By June 2015, complete final study. 		Council	
C	1	Prevent, reduce, and control the sources of contaminants entering Puget Sound					
C	1.1 Implement and strengthen authorities and programs to prevent toxic chemicals from entering the Puget Sound environment.	1	<p>Polycyclic aromatic hydrocarbons and perfluorooctane sulfonate chemical action plans. Ecology, working with its partners, will complete a polycyclic aromatic hydrocarbons chemical action plan and a chemical action plan for perfluorooctane sulfonate or all perfluorinated compounds, and begin to implement the recommendations from the Plans. (Wood smoke actions in the polycyclic aromatic hydrocarbons chemical action plan will build from the control strategies outlined in the Tacoma State Implementation Plan for fine particulates. The polycyclic aromatic hydrocarbons chemical action plan may also include recommendations to reduce polycyclic aromatic hydrocarbons from incomplete combustion and/or other sources. The perfluorooctane sulfonate/perfluorinated compounds chemical action plan will include an evaluation of safer alternatives and recommendations for reducing use of perfluorooctane sulfonate and/or perfluorinated compounds.)</p>	<ul style="list-style-type: none"> By 2014, complete chemical action plan for PCB, or all perfluorinated compounds. By 2014, begin to implement the recommendations from the PAH plan (pounds/year of polycyclic aromatic hydrocarbons reduced). 	Soundwide	Ecology	

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
C	1.1 Implement and strengthen authorities and programs to prevent toxic chemicals from entering the Puget Sound environment.	2	Mercury lamp product stewardship. Ecology will establish a mercury lamp product stewardship program.	<ul style="list-style-type: none"> By December 2015, establish a mercury lamp product stewardship program. 	Soundwide	Ecology	
C	1.1 Implement and strengthen authorities and programs to prevent toxic chemicals from entering the Puget Sound environment.	3	Fish consumption rates. Ecology will finalize a technical report on fish consumption rates. Ecology will initiate rulemaking to develop Human Health Criteria for Washington and advance a related rule that will provide options for permit holders to comply with water quality standards. In one other related action, Ecology will complete changes to the Sediment Management Standards rule to include methods and policies for establishing sediment cleanup standards based on human health protection.	<ul style="list-style-type: none"> As soon as possible, establish accurate default fish consumption rates. By the end of 2014, complete rulemaking process for Sediment Management Standards. Beginning in October 2012, report to the Leadership Council at least quarterly. 	Soundwide	Ecology	
C	1.1 Implement and strengthen authorities and programs to prevent toxic chemicals from entering the Puget Sound environment.	6	Emerging contaminants. Ecology and PSP will assemble information on chemicals of emerging concern, beyond the 17 chemicals of concern in the Puget Sound Toxics Loading Studies, including PBTs, endocrine disruptors, other chemicals, and nanotechnology and nanomaterials, and will recommend actions to (1) better understand the threats to Puget Sound and (2) address the highest priority problems.	<ul style="list-style-type: none"> By December 31, 2014, Ecology will publish recommendations for actions to understand and address emerging contaminants. 	Soundwide	Ecology	PSP

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
C	1.2 Promote the development and use of safer alternatives to toxic chemicals.	1	Chemical alternatives assessments. Ecology will work with the Interstate Chemicals Clearinghouse (IC2) to develop a guidance document on chemical alternatives assessment and, depending on funding availability, will complete assessments of five chemicals to identify safer alternatives.	<ul style="list-style-type: none"> By December 31, 2014, issue draft guidance document. 	Soundwide	Ecology	
C	1.2 Promote the development and use of safer alternatives to toxic chemicals.	2	Toxics in roofing materials. Ecology will establish a task force that will oversee a study evaluating toxic materials (including toxic metals and, possibly, phthalates) in roofing materials and recommend strategies for promoting less-toxic alternatives or ways to use materials that minimize releases of toxic materials to receiving waters. To support the task force's work, Ecology will solicit information from manufacturers on the presence of toxic chemicals in roofing materials. Using any data from manufacturers or previously published studies, Ecology will create and implement a sampling strategy to assess the release of contaminants from different roofing materials. The task force will use this information to develop its recommendations.	<ul style="list-style-type: none"> The Task Force met in November 2013 and determined that more data collection was needed. NEP funds will allow a Phase 2 study to occur In May 2014, meeting with Task force to review new dataset and finalize recommendations for next steps. In September 2014, complete addendum to final report that combines Phase 1 and Phase 2. 	Soundwide	Ecology	
C	1.2 Promote the development and use of safer alternatives to toxic chemicals.	SC11	Keep toxics and excess nutrients out of the waste stream. <ul style="list-style-type: none"> Identify and implement strategies to keep toxics and excess nutrients out of the waste stream through product 	<ul style="list-style-type: none"> By September 2014, ECO Net will report on education and outreach efforts for this near-term action. By September 2014, Ecology and/or NW Product Stewardship 	Local	South Central Caucus Group	Ecology, local governments in this Action Area

Strategy	Sub-Strategy	Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
		<p>stewardship and source control.</p> <ul style="list-style-type: none"> ● Support state and local programs for safe reduction, recycling, or disposal of hazardous wastes from households, small businesses, and agriculture. ● Support programs and projects that implement, teach, or otherwise encourage BMPs that remove toxic pollutants from the environment (source control; alternative products; hazardous waste technical assistance). ● Inventory toxics reduction efforts and programs and additional chemicals of concern that need to be reduced. ● Through the NW Product Stewardship Council, coordinate efforts for product-focused strategies to reduce the use of toxic chemicals. ● Coordinate with and support new product stewardship initiatives. ● Support and promote the implementation of the Washington Toxics Reduction Strategy Workgroup Recommendations of January 16, 2013. ● Support efforts to increase funding. ● Implement and strengthen authorities and programs to prevent toxic chemicals from entering the Puget Sound environment. 	<p>Council will report to South Central Caucus Group (LIO) on status of their efforts.</p> <ul style="list-style-type: none"> ● By December 2015, obtain new funding for key toxic reduction activities. ● By March 2015, develop inventory of toxics reduction efforts and programs and additional chemicals of concern that need to be reduced. ● By December 2015, increase funding for the Washington Toxics Reduction Strategy Workgroup Recommendations of January 16, 2013. 			

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
C	1.3		Adopt and implement plans and control strategies to reduce pollutant releases into Puget Sound from air emissions.	No near-term actions. Work is focused on implementation of ongoing programs.			
C	1.4	ISL9	Provide education and technical assistance to prevent and reduce releases of pollution.	Stormwater technical assistance and incentive programs implementation. Island County will implement a stormwater retrofit program to target private properties. The program will include designing and conducting workshops for landowners and providing incentives for compliance (incentives may include cost sharing for rain gardens, no-cost engineering).	<ul style="list-style-type: none"> By June 2014, implement stormwater management and low-impact development program to assist urban and rural landowners (target: WICD will complete 25 low-impact plans as well as technical assistance site visits as needed for stormwater management). 	Local	Whidbey Island CD
C	1.4	SS7	Provide education and technical assistance to prevent and reduce releases of pollution.	Prevention of pollution and/or recovery of shellfish beds through education, outreach, and advocacy. Customize outreach efforts aimed at each watershed-inlet for citizen involvement and improved effectiveness to achieve behavioral change through ECO Net.	<ul style="list-style-type: none"> By June 2015, develop and launch a pilot program in two inlets that a) is specific to that inlet but that has categories that can be adapted to the needs of other inlets; b) addresses pollution prevention and/or shellfish recovery and c) identifies clear measures of success. By June 2016, adapt that program to the other inlets. 	Local	WSU Extension ECO Net, Thurston CD, Mason CD
C	1.4	SS17	Provide education and technical assistance to prevent and reduce releases of pollution.	Habitat and shellfish recovery through education and outreach. Implement the Shore Stewards Program throughout the South Puget Sound Action Area. The voluntary program engages shoreline	<ul style="list-style-type: none"> By June 2016, report number of new shore stewards signed up. Every 2 years, conduct self-reporting survey to identify the number of shore stewards 	Local	WSU Extension Thurston CD, Thurston County Planning Department,

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
			homeowners to implement BMPs and behavior practices to reduce pollutant inputs and to improve habitat. Develop a local welcome packet to engage, connect, and educate new shoreline homeowners about local issues and resources available to them.	<ul style="list-style-type: none"> reporting behavior changes as a result of the program. By June 2016, report number of new shoreline property owners reached. By June 2016, report number of additional contacts for assistance resulting from the welcome packets. Net acres of shellfish beds re-opened. 			Pierce CD, Mason CD
C	1.5 Control wastewater and other sources of pollution such as oil and toxics from boats and vessels.	1	No Discharge Zone evaluation and petition. Ecology, in collaboration with State Parks and EPA, will administer grants to fund the development of a petition to EPA to establish a No Discharge Zone to prohibit recreational and commercial vessels from discharging sewage in all or parts of Puget Sound.	<ul style="list-style-type: none"> By December 2015, will assess draft petition comments, continue stakeholder outreach, finalize the petition, and complete implement planning. 	Soundwide	Ecology	Washington State Parks, EPA
C	1.5 Control wastewater and other sources of pollution such as oil and toxics from boats and vessels.	2	Pump-out station improvements. Ecology and DOH, with National Estuary Program grant funding, will coordinate with Washington State Parks' Clean Vessel Program to assist in construction, repair and monitoring of pump-out stations to meet requirements of the NDZ petition.	<ul style="list-style-type: none"> Number of pump-out stations added or improved. Amount of sewage pumped out. Pump out capacity is able to support a NDZ designation. Add two to three stationary pumps for command vessels. 	Soundwide	Ecology	DOH
C	1.5 Control wastewater and other sources of pollution such as oil and toxics from boats and vessels.	WC10	West Sound pump out stations. Kitsap Public Health District will identify pump out stations and develop needs assessment to address marine vessel sewage.	<ul style="list-style-type: none"> By January 2015, deliver needs assessment report to Kitsap County Surface and Stormwater Management. 	Local	Kitsap Public Health District	

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
				<ul style="list-style-type: none"> By June 2015, identify pump out station locations (likely candidates are Port Madison Bay, Port Gamble Bay, and Seabeck). By June 2015, identify long-term funding source for work on vessel waste issues. 			
C	1.6 Increase compliance with and enforcement of environmental laws, regulations, and permits.	1	Hazardous waste, wastewater, and air quality compliance and enforcement. Increase Ecology's hazardous waste, and wastewater compliance inspection and enforcement programs in the Puget Sound.	<ul style="list-style-type: none"> Annually, identify number of compliance inspections completed. Annually, identify pounds of hazardous wastes and air pollutants reduced. Annually, identify volume of wastewater discharges reduced. 	Soundwide	Ecology	
C	1.6 Increase compliance with and enforcement of environmental laws, regulations, and permits.	2	Compliance for use of toxics in products. Ecology will conduct compliance activities for state laws banning the use of toxic materials (e.g., PBDEs) in products, including taking appropriate enforcement actions against noncompliant products.	<ul style="list-style-type: none"> By June 2014, Ecology will publish a report on product sampling and follow up actions taken. 	Soundwide	Ecology	
C	1.6 Implement and strengthen authorities and programs to prevent toxic chemicals from entering the Puget Sound environment.	3	Water quality enforcement. Ecology, working with DOH, will increase the capacity for enforcement, and enforce all regulations pertaining to pathogens and contaminants that pollute waters of the state to ensure achievement of approved shellfish growing water certification.	<ul style="list-style-type: none"> By 2014, increase the number of inspections. 	Soundwide	Ecology	DOH

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
C	2	Use a comprehensive approach to manage urban stormwater runoff at the site and landscape scales					
C	2.1	Manage urban runoff at the basin and watershed scale.	1	<p>Watershed based stormwater management. The Ecosystem Coordination Board requested an evaluation of the feasibility, cost, and effectiveness of transitioning the existing municipal stormwater jurisdiction by jurisdiction permit approach using “general permits,” to watershed-based municipal stormwater management. PSP agreed to work with interested parties, particularly Ecology and local governments, to ensure their perspectives and concerns are addressed and accounted for when developing the scope of work for their evaluation.</p> <p>Based on limited funding, a decision was made: to first survey other programs to examine experiences in implementing a watershed-based permit and to learn from those experiences. Any subsequent tasks will be evaluated by the ECB for further action as appropriate.</p>	<ul style="list-style-type: none"> By August 31, 2014, present survey findings, and summary of facilitated meetings at Ecosystem Coordination Board meeting¹. 	Soundwide	PSP; to be determined if strategy is adopted
C	2.1	Manage urban runoff at the basin and watershed scale.	2	<p>Protect best remaining streams. King County, in cooperation with agencies populating the Puget Sound Stream Benthos database, will identify and map remaining streams with Benthic Index of Biotic Integrity scores of at least 42 to 46 and develop an overall strategy and tailored</p>	<ul style="list-style-type: none"> In early 2015 develop strategies and actions to protect targeted stream drainages. 	Soundwide	King County

¹ Conversation needed with partners on roles and future work.

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
			actions to protect these areas.				
C	2.1 Manage urban runoff at the basin and watershed scale.	3	Stormwater system mapping. King County, in cooperation with Ecology, local governments, WSDOT, and DNR, will help improve understanding and management of the region's stormwater infrastructure by developing data collection protocols, methodology and definitions for stormwater system mapping	<ul style="list-style-type: none"> By June 2016, develop a geo referenced database of the Sound's regulated municipal stormwater system. 	Soundwide	King County	Ecology, WSDOT, DNR
C	2.1 Manage urban runoff at the basin and watershed scale.	ISL7	The City of Oak Harbor will implement Freund Marsh restoration and stormwater improvement project. The project will restore natural treatment functions to reduce nutrient loading and improve flow rates by increasing infiltration in Oak Harbor, the only urban watershed in the County. The project will complete the Freund Marsh improvements including a trails network and interpretive center to educate public about stormwater, water quality, and wetland issues.	<ul style="list-style-type: none"> By December 2015, restore 18.1 acres of wetland. By December 2015, reduce stormwater flow rates and nutrient and bacterial loading into Puget Sound. By December 2015, complete trails network around Freund Marsh and install interpretive center. 	Local	City of Oak Harbor	
C	2.1 Manage urban runoff at the basin and watershed scale.	SNST2	Identify existing data and prioritize needs. <ul style="list-style-type: none"> Water quality: Compile water quality data from the previous 10 years for streams in the Snohomish and Stillaguamish River watersheds, and evaluate available data to establish priority areas for water quality improvements. Culverts: Collect and assess existing data on public and private stream culverts in the Snohomish and Stillaguamish basins 	<ul style="list-style-type: none"> By December 2014, compile available stream water quality data and identify gaps in data. By December 2015, analyze water quality data to identify priority areas for water quality improvements. In 2014 and 2015, explore and facilitate partnerships. 	Local	Snohomish-Stillaguamish LIO (reporter)	King County and cities, Snohomish County and cities, Snohomish CD

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
			<p>to identify high priority culverts for replacement based on multiple factors, such as fish passage.</p> <ul style="list-style-type: none"> Map systems: Inventory and map stormwater facilities and conveyance systems in the Snohomish and Stillaguamish basins, and begin to prioritize the need for public and private stormwater retrofits. 	<ul style="list-style-type: none"> By December 2014, compile available culvert data, including past analyses of fish passage and flooding conditions, as well as upstream habitat. By February 2015, identify data gaps. By December 2015, identify specific public and private priority culverts for replacement. By December 2014, compile available inventory data for public and private stormwater facilities and conveyance systems and identify data gaps. By December 2015, evaluate existing public and private stormwater facilities in selected areas for their potential to be retrofitted to improve water quality or downstream flows. 			
C	2.1 Manage urban runoff at the basin and watershed scale.	SS6	<p>South Puget Sound nutrient reduction strategy. Implement nutrient reduction strategies as recommended in the Ecology dissolved oxygen study or as indicated from modeling results based on that report.</p>	<ul style="list-style-type: none"> Continue to track dissolved oxygen study. By June 2015, begin discussions with Ecology to identify recommendations for nutrient reduction. By June 2016, Alliance for a Healthy South Sound (LIO) technical team will work with Ecology to develop specific 	Local	Alliance	ECO Net

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
				recommendations for sub-basin nutrient reduction plans (based on dissolved oxygen report) in South Sound.			
C	2.1 Manage urban runoff at the basin and watershed scale.	WH11	<p>Implement the Birch Bay watershed and aquatic resources management (BBWARM) district stormwater program. The BBWARM program includes both capital and programmatic elements to improve water quality, reduce flooding, and protect aquatic habitat. BBWARM works with a variety of partners including the Birch Bay Shellfish Protection District, Birch Bay Water Sewer District, Whatcom Conservation District, Nooksack Salmon Enhancement Association, MRC, and other Whatcom County programs. BBWARM program areas include:</p> <ul style="list-style-type: none"> • Capital Improvement Projects • Maintenance and Operations • Water Quality Monitoring • Education and Outreach 	<ul style="list-style-type: none"> • Design and construct stormwater retrofit projects per the 6-Year Water Resources Improvement Program. • In 2014, complete the Central-North and Central-South Subwatershed Master Plans. • In 2015, complete the draft Terrell Creek Subwatershed Master Plan. • Host a minimum of three outreach events each year (e.g., rain barrel workshops, Discovery Days, Whatcom Water Weeks event). • Write and distribute an annual newsletter. • Maintain 11 pet waste stations near Birch Bay. • Participate in Whatcom County’s pollution identification and correction program. • Participate in Whatcom County’s NPDES Phase II program. 	Local	Whatcom County	Birch Bay Watershed and Aquatic Resources Management

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
C	2.2 Prevent problems from new development at the site and subdivision scale.	1	NPDES municipal permits. Ecology will issue municipal permits for western Washington and provide financial assistance to permittees for implementation, particularly for code changes, stormwater system mapping, operations and maintenance, inspections and enforcement. This will require additional resources to Ecology for permit oversight, technical assistance, and enforcement. Ecology will provide incentives to NPDES permittees who, by interlocal agreement, lead or carry out regional or watershed scale NPDES implementation.	<ul style="list-style-type: none"> • Incentives provided to permittees for regional implementation each biennium depending upon the legislative appropriation. This is an on-going measure. 	Soundwide	Ecology	
C	2.2 Prevent problems from new development at the site and subdivision scale.	2	Stormwater treatment standards. Ecology will evaluate under which circumstances (i.e., for which pollutants, from which land uses) discharges to Puget Sound should be required to provide treatment beyond sediment removal (i.e., TSS removal) to help meet 2020 recovery targets.	<ul style="list-style-type: none"> • Updated performance measures under review. 	Soundwide	Ecology	
C	2.2 Prevent problems from new development at the site and subdivision scale.	3	Stormwater management outside permitted areas. Ecology, in coordination with DOH, will identify two high priority shellfish growing areas degraded by urban stormwater discharges and work with local governments and other key parties to reduce these impacts to the areas.	<ul style="list-style-type: none"> • Updated performance measures under review. 	Soundwide	Ecology	DOH
C	2.2 Prevent problems from new development at the	4	New development under earlier stormwater programs. Ecology will initiate a process to assess projected implications and	<ul style="list-style-type: none"> • Updated performance measures under review. 	Soundwide	Ecology	

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
	site and subdivision scale.		impacts of current state law concerning the level of stormwater control from new development approved under earlier stormwater programs.				
C	2.2 Prevent problems from new development at the site and subdivision scale.	SC9	<p>Share information on low impact development/green stormwater infrastructure and facilitate the transition from conventional stormwater management.</p> <ul style="list-style-type: none"> • Use LIO as a forum for sharing approaches to implementing Low Impact Development policies. • Encourage local government participation in Washington State University Low Impact Development technical workshops. • Support ECO Net endorsed education and outreach efforts for this near-term action. • Support development of regulations that implement Action Agenda priorities. 	<ul style="list-style-type: none"> • By December 2015, hold two forums that highlight successful integration of low impact development/green stormwater infrastructure into local regulations. 	Local	South Central Caucus Group	
C	2.2 Prevent problems from new development at the site and subdivision scale.	SJ15	<p>Control and mitigate stormwater runoff (Near Term Run Off Action I).</p>	<ul style="list-style-type: none"> • Improve county stormwater permit review process and existing codes. <ul style="list-style-type: none"> ○ Between 2014 and 2016, actions in process and codes should include pre-disturbance site review and follow-up site visits for at least 50% of properties permitted. • The Town of Friday Harbor will continue existing permitting and 	Local	San Juan LIO (reporter)	San Juan County Community Development and Planning Department, Town of Friday Harbor

Strategy	Sub-Strategy	Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
			<p>pre-review for 100% of site disturbance development to ensure compliance with sediment control and water runoff issues. Friday Harbor will also conduct follow-up site visits of largest disturbed sites to review applicants' compliance with the town's Storm Water Technical Manual for at least 10% of all sites.</p> <ul style="list-style-type: none"> ○ By December 2014, the Town of Friday Harbor is investigating feasibility and engineering for waterfront stormwater vault containing Ecology-approved cartridge filters. ○ By December 2015, the Town of Friday Harbor will construct a waterfront stormwater vault containing Ecology-approved cartridge filters. 			
C	2.2 Prevent problems from new development at the site and subdivision scale.	SNST15 Low impact development. Provide funding for the construction of up to five Low Impact Development projects in the Snohomish and Stillaguamish basins, including the City of Everett's Green Stormwater Infrastructure Implementation Program.	<ul style="list-style-type: none"> ● By December 2015, construct five low impact development projects. 	Local	Snohomish-Stillaguamish LIO (reporter)	King County and cities, Snohomish County and cities, Snohomish CD

Strategy	Sub-Strategy	Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
C	2.2 Prevent problems from new development at the site and subdivision scale.	STRT17 Implement the highest priority projects listed within the City of Sequim Restoration Plan, a part of the city's updated Shoreline Master Program. The current focus for this action is on Restoration Priority 7.1 from the city's Restoration Plan, namely "Improve Water Quality and Reduce Pollutant Delivery". This focus area is also a part of the local near-term action titled Develop a Storm and Surface Water Management Plan for the City of Sequim.	<ul style="list-style-type: none"> By 2016, adopt Storm and Surface Water Management Plan and drafts of ordinances 	Local	City of Sequim Department of Community Development	
C	2.2 Prevent problems from new development at the site and subdivision scale.	STRT27 Adopt the City of Port Townsend's Stormwater Management Plan. Review and adopt local Low Impact Development codes and standards related to stormwater management and land development practices, to include an evaluation of stormwater conditions and needs within the 18 sub-basins of Port Townsend.	<ul style="list-style-type: none"> By 2016, adopt Stormwater Management Plan 	Local	City of Port Townsend Public Works Department	
C	2.2 Prevent problems from new development at the site and subdivision scale.	STRT28 Develop and adopt a Storm and Surface Water Management Plan for the City of Sequim. Develop a Storm and Surface Water Management Plan, including adoption of Low Impact Development incentives and stormwater ordinances to support surface water pollution reduction. Initially, conduct a stormwater management needs assessment and develop a Storm and Surface Water Management Master Plan, including the possibility of a utility.	<ul style="list-style-type: none"> By 2016, adopt Storm and Surface Water Management Plan and drafts of ordinances 	Local	City of Sequim Public Works Department	

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
C	2.2 Prevent problems from new development at the site and subdivision scale.	STRT30	Implement the City of Port Angeles NPDES Phase II permit and Stormwater Management Program. Implement NPDES Phase II Stormwater Management Program, including Low Impact Development incentives and ordinances to support surface water pollutant reduction.	<ul style="list-style-type: none"> By March 2015, meet 100% of permit compliance conditions as documented in the 2015 annual report. By March 2016, meet 100% of permit compliance conditions as documented in the 2016 annual report. 	Local	City of Port Angeles Public Works Department	
C	2.2 Prevent problems from new development at the site and subdivision scale.	STRT32	Update, adopt, and implement the Clallam County Stormwater Management Plan. Update and implement the Clallam County Stormwater Management Plan, including adoption of Low Impact Development incentives and ordinances to support stormwater management.	<ul style="list-style-type: none"> Adopt Stormwater Management Plan and ordinances (no target adoption date available at this time) 	Local	Clallam County Department of Community Development	
C	2.3 Fix problems caused by existing development.	1	Stormwater retrofit projects. Ecology will lead a process to identify high priority retrofit projects that will contribute to the recovery of Puget Sound and complete conceptual design to a stage sufficient to seek project implementation funding. The work will build on retrofit prioritization work by WSDOT, King County and others, and will be replicable in other urban and suburban areas around the Sound.	<ul style="list-style-type: none"> New regional stormwater retrofit prioritization process and list of projects by December 2014. 	Soundwide	Ecology	
C	2.3 Fix problems caused by existing development.	2	Map, prioritize, and restore degraded streams. King County, in cooperation with agencies populating the Puget Sound Stream Benthos database, will identify and map stream drainages with “fair” Benthic Index of Biotic Integrity scores, and	<ul style="list-style-type: none"> By March 2013, complete map of targeted drainages Early 2015, complete prioritized list for restoration and strategies, actions, and budgets. 	Soundwide	King County	

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
			develops a prioritized list, strategies and actions to improve scores of 30 of these streams.				
C	2.3 Fix problems caused by existing development.	3	Legacy pollutant removal. Ecology, in cooperation with local governments, will provide guidance and financial assistance to local governments to help them remove legacy pollutant loads from their stormwater systems.	<ul style="list-style-type: none"> • Shared guidance. • By December 2014, provide financial assistance to permittees. 	Soundwide	Ecology	
C	2.3 Fix problems caused by existing development.	HC4	HCCC stormwater retrofit plan. Stormwater retrofit and Low Impact Development practices improve water quality, help protect shellfish beds, decrease flooding risks, and increase aquifer recharge. HCCC is developing a Hood Canal Regional Stormwater Retrofit Plan to coordinate stormwater and Low Impact Development retrofit efforts on a regional scale. The plan will include conceptual designs for 10 to 12 retrofit projects in the Hood Canal Action Area, which will be implemented by the county governments or other partners as funding is available.	<ul style="list-style-type: none"> • By fall 2014, HCCC will complete and distribute the Hood Canal Regional Stormwater Retrofit Plan with priority retrofit projects to jurisdictions, regional partners, and relevant state agencies. • Through spring 2016, HCCC will provide support to Hood Canal jurisdictions to plan and seek funds for implementing two priority retrofit projects. • Through spring 2016, HCCC will track jurisdiction implementation and barriers to implementation (such as funding constraints) of priority retrofit projects. 	Local	HCCC (Coordination/Facilitation)	
C	2.3 Fix problems caused by existing development.	ISL12	Identify, map, and prioritize blocked and failing culverts and replace one to two priority culverts using fish-friendly passage designs. Fish-blocking culverts negatively affect flood risk, scouring, erosion, landslides, and water quality. Island County	<ul style="list-style-type: none"> • By January 2014, hire a full-time equivalent employee to be project manager for culvert replacement with fish-friendly passage. • By July 2014, develop a prioritization of blockages, failing 	Local	Island County Department of Natural Resources	

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
			will map all existing culverts noting which are blocked and failing, and will create a prioritization schedule for replacing these culverts.	culverts, flood risks, etc. Report to include ecosystem benefits for each project. <ul style="list-style-type: none"> By December 2015, reduce flood risk and remove fish blockage for top two to three prioritized culverts. 			
C	2.3 Fix problems caused by existing development.	SC6	Identify, guide, and fund stormwater retrofits. <ul style="list-style-type: none"> Complete WRIA 9 retrofit study and promote it as a model. Advocate locally and sound-wide through the LIO for increased funding for priority stormwater retrofit projects. Develop a list of high-priority stormwater retrofit projects to support local investments and state funding request in 2014 and 2015, using upcoming guidance from Ecology and findings from the WRIA 9 study on stormwater retrofit priorities. Participate in the Commerce’s technical assistance and study of examples of urban-specific implementation or stormwater retrofit projects. Support ECO Net endorsed education and outreach efforts for this near-term action. 	<ul style="list-style-type: none"> By September 2014, comment on Ecology’s retrofit prioritization and allocation criteria. By January 2015, identify and analyze funding mechanisms that incorporate existing and new funding. By June 2015, complete WRIA 9 retrofit study. By December 2015, identify next steps to support carrying out stormwater retrofit planning and projects throughout the South Central Puget Sound Action Area. By June 2014, report on monitoring and modeling tools for future stormwater retrofit evaluations. By December 2015, implement 15 stormwater retrofit projects. By December 2015, complete Swan Creek Watershed Characterization and Action Plan, and implement at least one 	Local	South Central Caucus Group	

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
				retrofit project. <ul style="list-style-type: none"> By third quarter 2014 and 2015, provide information to the Washington State Legislature on the high priority stormwater retrofit projects for 2014/2015 legislative session. 			
C	2.3 Fix problems caused by existing development.	SC7	Promote operation and maintenance and improvements to existing stormwater systems. Promote, support and guide technical assistance for local government adoption of improved operation and maintenance techniques for existing stormwater infrastructure, such as: <ul style="list-style-type: none"> System flushing Vactoring High-efficiency street cleaning 	<ul style="list-style-type: none"> By December 2015, create a list of the number of local jurisdictions implementing, and types of local operation and maintenance techniques. 	Local	South Central Caucus Group	
C	2.3 Fix problems caused by existing development.	SNST10	Inspections and maintenance. Provide regular inspections of public and private stormwater facilities in the Snohomish and Stillaguamish basins and identify prescriptive maintenance needs and retrofit opportunities.	<ul style="list-style-type: none"> By December 2014, secure funding for local cities that are challenged to provide regular inspections of existing stormwater facilities. By December 2015, conduct stormwater facility inspections to identify prescriptive maintenance needs and retrofit opportunities. 	Local	Snohomish-Stillaguamish LIO (reporter)	King County and cities, Snohomish County and cities, Snohomish CD
C	2.3 Fix problems caused by existing development.	STRT35	Complete the collection of habitat information for use by WSDOT to inform the prioritization of stormwater road retrofit projects within the Strait Action Area.	<ul style="list-style-type: none"> By 2016, 100% complete and habitat information submitted to WSDOT, depending on staffing constraints. 	Local	To be determined	WDFW

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
C	2.3 Fix problems caused by existing development.	WC21	Ridgetop Boulevard Green Street. Kitsap Surface and Stormwater Management will install 10 to 14 median bioretention (rain gardens) facilities on Ridgetop Boulevard near Silverdale, treating 18 acres of road runoff and reducing fecal coliform and other contaminants flowing into Dyes Inlet.	<ul style="list-style-type: none"> • By December 2015, install 10–14 median bioretention (rain gardens) facilities on Ridgetop Boulevard. • Statistically significant declining fecal coliform trend at the northern Dyes Inlet marine stations during the wet season. Volume of runoff reduced based upon modeling and amount of annual rainfall can be reported. • Protection of shellfish acres. 	Local	Kitsap Surface and Stormwater Management	
C	2.3 Fix problems caused by existing development.	WC22	Poulsbo Low Impact Development retrofit study for Upper South Fork Dogfish Creek basin and downtown Poulsbo. City of Poulsbo will seek funding and complete stormwater retrofit plans for the Upper South Fork Dogfish Creek Basin and Downtown Poulsbo basins.	<ul style="list-style-type: none"> • By June 30, 2014, secure funding for plan development. • By June 30, 2016, complete stormwater retrofit plans. 	Local	City of Poulsbo	
C	2.3 Fix problems caused by existing development.	WC23	Gig Harbor stormwater retrofit study. City of Gig Harbor and Pierce County will complete a stormwater retrofit study for the City of Gig Harbor. The primary deliverable will be a comprehensive, prioritized list of beneficial stormwater projects within the City. Once completed, Gig Harbor and Pierce County can include identified projects on their Capital Facilities Plans and/or apply for relevant stormwater retrofit grants to fund construction.	<ul style="list-style-type: none"> • By December 2014, prioritize list of beneficial stormwater projects. 	Local	City of Gig Harbor	Pierce County

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
C	2.3 Fix problems caused by existing development.	WC27	<p>Marine Drive/Kitsap Way/Oyster Bay Avenue storm system filtration retrofit. With a goal of improving water quality impacting shellfish harvest in Oyster and Ostrich bays, the City of Bremerton will install a passive stormwater filtration system prior to the outfall into Oyster Bay and Low Impact Development components along approximately 1.5 miles and 65 acres on Marine Drive, approximately 31 acres along the north portion of Kitsap Way, and approximately 1.5 miles and 40 acres on Oyster Bay Avenue.</p>	<ul style="list-style-type: none"> • By March 2015, install passive stormwater filtration system and Low Impact Development components. • Contaminants in road runoff reduced. • Shellfish beds re-opened or upgraded. • Determine baseline flow and water quality characteristics and compare with post-construction to determine effects of the project. 	Local	City of Bremerton	
C	2.3 Fix problems caused by existing development.	WC28	<p>Ostrich Bay Creek retrofit plan design. With a goal of improving water quality impacting shellfish harvest in Oyster and Ostrich bays, the City of Bremerton will complete a stormwater retrofit design study for Ostrich Bay Creek. The retrofit design plan will evaluate and determine the best locations and types of Low Impact Development components to use for this drainage basin. The basin is more than 230 acres of pervious and impervious surface used for light commercial facilities, residences and State Highway. The plan will address water quality and quantity issues that impact Ostrich Bay Creek by using various Low Impact Development components and treatment systems. The City will pursue funding through the LIO process, grants, and local</p>	<ul style="list-style-type: none"> • By December 2014, complete stormwater retrofit design study for Ostrich Bay Creek. 	Local	City of Bremerton	

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
			partnerships to construct the designed components as funding is made available.				
C	2.3 Fix problems caused by existing development.	WH12	<p>Lake Whatcom watershed stormwater projects. Implement stormwater retrofit projects identified in the Lake Whatcom Comprehensive Stormwater Plan.</p> <ul style="list-style-type: none"> • Coronado-Fremont Stormwater Improvements: Construction of Phase 1 in 2013 included a bio-infiltration swale and stormwater vaults. The project will treat runoff from approx. 10 acres. • Academy Road Stormwater Improvements: Partner with the City of Bellingham on a joint stormwater retrofit project to improve stormwater quality in the Lake Whatcom Watershed. This project will treat runoff from approximately 80 acres. • Cedar Hills/Euclid Stormwater Improvements: Install rain gardens, filter vaults, and treatment swales. This project will treat runoff from approximately 60 acres. 	<ul style="list-style-type: none"> • Coronado-Fremont Stormwater Improvements: <ul style="list-style-type: none"> ○ By October 2014, Whatcom County to complete restoration of about 600 feet of creek channel and install treatment vaults. • Academy Road Stormwater Improvements—Whatcom County with City of Bellingham to: <ul style="list-style-type: none"> ○ By September 2014, complete engineering design. ○ By October 2015, construct pretreatment unit, biofiltration swale, filter cartridge vault, high flow bypass, and a vegetated buffer along the lake front. • Cedar Hills/Euclid Stormwater Improvements: <ul style="list-style-type: none"> ○ By September 2015, Whatcom County to complete design. 	Local	Whatcom County	
C	2.3 Fix problems caused by existing development.	WH13	<p>Birch Bay area stormwater projects. Implement stormwater retrofit projects identified in the Birch Bay Comprehensive Stormwater Plan:</p> <ul style="list-style-type: none"> • Birch Bay Stormwater Priority Retrofit Projects Pre-Design: Ecology Watershed protection and Restoration grant-funded project to complete preliminary design 	<ul style="list-style-type: none"> • Birch Bay Stormwater Priority Retrofit Projects Pre-Design: <ul style="list-style-type: none"> ○ By December 2014, complete four preliminary solutions reports and four pre-design reports. • Beachway Drive & Fern/Park 	Local	Whatcom County	

Strategy	Sub-Strategy	Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)	
		<p>and analysis for priority capital projects.</p> <ul style="list-style-type: none"> • Beachway Drive & Fern/Park Stormwater Improvements: Stormwater retrofit project to improve stormwater quality entering Birch Bay and reduce flooding impacts. • Harborview Road Culvert Replacement: Replace undersized driveway culverts and catch basins to alleviate flooding along Harborview Road. • Cottonwood Drive Drainage Improvements: Stormwater retrofit project to improve conveyance from uplands areas, reduce nearshore flooding, and provide additional drainage connections along Birch Bay Drive. Water quality treatment options will be incorporated. 	<p>Stormwater Improvements:</p> <ul style="list-style-type: none"> ○ By December 2014, replace one to two outfall structures, install an improved stormwater conveyance system, and install water quality treatment swales. • Harborview Road Culvert Replacement: <ul style="list-style-type: none"> ○ By December 2014, complete engineering design. ○ By December 2015, replace 10 undersized driveway culverts and two undersized catch basins. • Cottonwood Drive Drainage Improvements: <ul style="list-style-type: none"> ○ By September 2015, complete engineering design. 				
C	2.3 Fix problems caused by existing development.	WH14	<p>Ferndale stormwater projects. Implement stormwater projects that address runoff to the Nooksack River, and that are identified in the City of Ferndale Stormwater Management Plan.</p> <ul style="list-style-type: none"> • Gateway Stormwater Facility projects: Upgrade the stormwater conveyance reaches identified in the 2013 Ferndale Gateway Stormwater Study and planned for implementation (project reaches W-R-2 and W-R-3). • Decant Design and Construction: Design and construct a covered facility for the 	<ul style="list-style-type: none"> • Gateway Stormwater Facility projects: <ul style="list-style-type: none"> ○ By December 2016, construct two stormwater facilities. • Decant Design and Construction: <ul style="list-style-type: none"> ○ By December 2014, complete the decant design, pending a new site location. ○ By December 2016, construct. • City of Ferndale Stormwater Studies: <ul style="list-style-type: none"> ○ By December 2014, complete 	Local	City of Ferndale	

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
			<p>City of Ferndale stormwater decant process, which currently is located in the floodplain.</p> <ul style="list-style-type: none"> City of Ferndale Stormwater Studies: Complete stormwater drainage studies for two areas within the City of Ferndale: Main Street and Labounty and Thornton Street Stormwater Pond. 	<p>Main Street RAB Stormwater Study.</p> <ul style="list-style-type: none"> By December 2016, complete Thornton Street Stormwater Pond. 			
C	2.4 Control sources of pollutants.	1	<p>Compliance assurance program. Ecology and local governments will increase inspection, technical assistance, and enforcement programs for high-priority businesses and at construction sites.</p>	<ul style="list-style-type: none"> By December 2015, increase number of inspections, technical assistance, and enforcement activities. Updated performance measures under review. 	Soundwide	Ecology	
C	2.4 Control sources of pollutants.	2	<p>Vehicle leak detection program. King County, in cooperation with Seattle, WSDOT, the STORM advisory committee, and PSP will lead a regional discussion to develop options and recommendations for a new program to inspect and eliminate privately owned vehicle drips and leaks. This work builds on the related work of existing grants to STORM and Seattle on vehicle leaks and drips.</p>	<ul style="list-style-type: none"> By June 2014, complete a recommendation report for policy changes, public education and behavior change campaigns, and funding needs, and present recommendation report to the Ecosystem Coordination Board, Science Panel, and Leadership Council for consideration. 	Soundwide	King County	
C	2.4 Control sources of pollutants.	STRT34	<p>Continue Clallam County Streamkeepers ambient monitoring program to understand stormwater baseline conditions and expand monitoring according to the Washington State Stormwater Work Group recommendations. Consider partnerships with the cities of Port Angeles and Sequim</p>	<ul style="list-style-type: none"> By 2016, obtain funding to revise and expand ambient monitoring program, as per Washington State Stormwater Work Group Recommendations, in anticipation of future adoption of a Clallam County Stormwater Management Plan and Ordinance. 	Local	Clallam County Streamkeepers	

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
			to accomplish this action.				
C	2.5 Provide focused stormwater-related education, training, and assistance.	1	Low Impact Development training and certification. Ecology will provide focused training for local government staff on Low Impact Development project review, and inspections and approvals, as well as to local government staff and private sector on maintenance. Develop new professional certification for stormwater maintenance specialists. Provide business staff and contractors with training on source control, spill recognition, spill response, and erosion control.	<ul style="list-style-type: none"> Through July 2015, provide stormwater-related training. Through July 2015, provide follow-up training opportunities. 	Soundwide	Ecology	
C	2.5 Provide focused stormwater-related education, training, and assistance.	2	Education for the next generation of stormwater professionals. The Tulalip Tribes will develop a near-term plan to provide sustainable water resource management academic curriculum in all Puget Sound counties for future stormwater professionals that is inclusive of tribal treaty rights, history, civics, and emphasizes continuing improvements in stormwater management in the context of the larger issues of sustainable water resource management and climate change.	<ul style="list-style-type: none"> To be determined. 	Soundwide	Tulalip Tribes	
C	2.5 Provide focused stormwater-related education, training, and assistance.	SC8	Increase education of and stewardship by homeowners and businesses to reduce stormwater pollution. <ul style="list-style-type: none"> Increase education of and stewardship by homeowners, businesses, and institutions to reduce pollutant loadings to 	<ul style="list-style-type: none"> By December 2015, identify number of persons and businesses reached. 	Local	ECO Net	Ecology

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
			<p>stormwater (e.g., fertilizers, pesticides, oils, cleaners).</p> <ul style="list-style-type: none"> Support ECO Net endorsed education and outreach efforts for this action. 				
C	2.5 Provide focused stormwater-related education, training, and assistance.	SJ17	<p>Provide technical and financial assistance, outreach, incentives, education and natural resource planning on a voluntary basis to interested residents to improve stormwater management and reduce polluted runoff and nutrient loading into the marine environment (Near-Term Run Off Action III).</p>	<ul style="list-style-type: none"> Complete 30 voluntary farm management plans, provide cost-share funding to implement 50 BMPs. Provide education and outreach to at least 200 residents. Publicize BMPs at the San Juan County Department of Health and Community Services, San Juan County Community Development and Planning Department, and Town of Friday Harbor permit center. 	Local	San Juan LIO (reporter)	San Juan Islands CD, Green Shores for Homes, Friends of the San Juans, San Juan County Community Development and Planning Department, San Juan County Public Works Stormwater Utility, Town of Friday Harbor, Department of Health and Community Services, WSU Extension
C	2.5 Provide focused stormwater-related education, training, and assistance.	SS5	<p>Small community stormwater reduction program. Develop and enhance program with education, advocacy, and restoration elements addressing non-NPDES mandated</p>	<ul style="list-style-type: none"> Develop or enhance programs with education, advocacy, and restoration elements in each of the following communities: 	Local	WSU Extension	Mason CD, Nisqually Tribe, Squaxin Island Tribe,

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		stormwater programs in small communities.	<p>Oakland Bay, Hammersley Inlet, Case Inlet, Pickering Passage, and Nisqually Watershed.</p> <ul style="list-style-type: none"> ● Program measures for the development and enhancement of these programs should include the following. <ul style="list-style-type: none"> ○ By June 2015, outline pilot programs and enhancements, as well as identify success measures. ○ Integrate with other ongoing programs where feasible. ○ By December 2015, implement programs. ○ By January 2016, evaluate and report. ○ By June 2016, adapt all programs to use successful measures. 			Mason County, Thurston County, Thurston CD, Pierce CD, Town of Eatonville, City of Yelm, other non-NPDES communities
C	2.5 Provide focused stormwater-related education, training, and assistance.	<p>STRT31 Provide stormwater education, training, and technical assistance in Jefferson County and Port Townsend using a watershed-based approach through implementation of Phase 2 of SquareONE.</p> <p>Consider expansion of the SquareONE concept to the other three local jurisdictions within the Strait Action Area. Following lessons learned from the SquareONE pilot project in Jefferson County, consider implementing Phase 2 to include the City of</p>	<ul style="list-style-type: none"> ● By 2016, hold four workshops. ● Number of attendees at workshops and before and after surveys showing improved knowledge. ● By December 2016, complete a final report on decisions to expand the SquareONE concept to other Strait Action Area local jurisdictions. 	Local	Jefferson County Department of Community Development	

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		Port Townsend. Also, consider possible expansion of the concept to the other three local jurisdictions within the Strait Action Area. Phase 2 would (a) Implement the stormwater management public education plans in Jefferson County and Port Townsend by increasing citizen awareness and capacity to self-select preferred actions and methods; (b) Provide training on BMPs and Low Impact Development to the development community to increase capacity for successful site assessment and facility design, installation, and maintenance; and (c) Provide training to county and city staff to increase capacity for successful plan review and site inspections. (Note: This action has a double benefit in that it is also linked to B1.3 STRT18.)				
C	2.5 Provide focused stormwater-related education, training, and assistance.	STRT33 Provide stormwater management education, training, and technical assistance in Clallam County using a watershed-based approach. Consider partnerships with the cities of Port Angeles and Sequim to accomplish this action. Work to (a) increase citizen awareness and understanding of the importance, need, and techniques for stormwater management and familiarity with the new stormwater management plans requirements; (b) provide technical assistance to homeowners in Clallam County to assist in implementation of Low Impact	<ul style="list-style-type: none"> • Number of attendees at workshops and before and after surveys showing improved knowledge. • Usage of the Permit Center (no target dates available at this time). 	Local	Clallam County Department of Community Development	

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			Development BMPs contained with the Small Project Drainage Manual; and (c) provide training in Low Impact Development and BMPs to Clallam County staff to improve development plan review, site inspections, and assistance at the Permit Center. Consider partnerships with the cities of Port Angeles and Sequim. Also consider the Watershed Stewardship Resource Center concept used in Jefferson County and City of Port Townsend to accomplish this action.				
C	2.5 Provide focused stormwater-related education, training, and assistance.	WC4	West Sound Low Impact Development Training. Kitsap County Surface and Stormwater Management Program – with direct assistance from and close coordination with other stormwater utilities and agencies in the County – will provide training for 80% of Low Impact Development professionals in Kitsap County, including plan review staff, designers, installers, inspection, and maintenance staff.	<ul style="list-style-type: none"> • Training for 80% of LID professionals in Kitsap County by December 2014 	Local	Kitsap Surface and Stormwater Management	
C	2.5 Provide focused stormwater-related education, training, and assistance.	WC24	Low Impact Development peer leaders network. With funding provided through Kitsap County Surface and Stormwater Management, WSU Cooperative Extension will develop and implement a Low Impact Development professionals network program.	<ul style="list-style-type: none"> • By December 2014, grant funds secured. • By June 30, 2016, Low Impact Development professionals network implemented. • Increased Low Impact Development in Kitsap (if resources exist to measure). 	Local	WSU Extension Kitsap	Kitsap Surface and Stormwater Management

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C	3	Prevent, reduce, and control agricultural runoff					
C	3.1	1	Water quality BMPs. Ecology, WSDA, and WSCC, after conferring with federal, tribal, and local partners will work on a solution to improved implementation of BMPs that protect water quality.	<ul style="list-style-type: none"> By December 2016, develop a plan to improve BMP implementation. 	Soundwide	Ecology	WSCC, WSDA
C	3.1	2	Effectiveness of incentive programs. WSCC—in consultation with WSDA, DOH, and Ecology; conservation districts; federal agencies; and tribes—will report to the Governor and the Legislature on the effectiveness of incentive programs to achieve resource objectives. The report will include a section from Ecology on compliance with water quality standards.	<ul style="list-style-type: none"> By December 2013, hold two coordinating meetings to evaluate the effectiveness of the agriculture incentive programs. By June 2014, produce a draft report with recommendations on necessary changes. Between June 2014 and November 2014, present the draft report to the agencies, tribes, and stakeholder groups for comment. By November 2014, present the report to the ECB and Leadership Council. Following presentation of the final report to the legislature and governor, the WSCC will work with the other entities on strategies to implement the recommendations in the report. 	Soundwide	WSCC	Ecology, WSDA, DOH
C	3.1	3	Voluntary stewardship program. WSCC, Ecology, and WSDA should support implementation, funding, and assistance to those counties participating in the Voluntary Stewardship program, as well as new	<ul style="list-style-type: none"> By May 2015, the WSCC will identify potential funding sources. By June 2015, funding will be made available to the four 	Soundwide	WSCC	

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
	Sound recovery.		capacity for enforcement of state and federal water quality regulations.	counties in the program.			
C	3.1 Target voluntary and incentive-based programs that help working farms contribute to Puget Sound recovery.	ISL8	Implement a small farm water quality improvement project in Ebey's Prairie. The project will include water quality treatment technology (e.g., grassy swales, filter strips, phytoremediation) and landowner farm practices (e.g., manure management, filter strips) to reduce non-point stormwater pollution.	<ul style="list-style-type: none"> By December 2015, reduce nutrient and bacteria levels in stormwater runoff. By December 2015, implement five water quality BMPs in watershed. 	Local	Whidbey Island CD	
C	3.2 Ensure compliance with regulatory programs designed to reduce, control, or eliminate pollution from working farms.	1	Priority Areas for voluntary incentive and regulatory programs. WSCC, WSDA, Ecology, and DOH will identify priority areas to better target and coordinate implementation of voluntary incentive and regulatory programs for rural landowners, small-acreage landowners, and working farms.	<ul style="list-style-type: none"> By June 30, 2015, the WSCC will convene at least two meetings to identify priority areas. By December 31, 2015, WSCC will implement voluntary incentive programs in five target areas. 	Soundwide	WSCC	WSDA, Ecology, DOH
C	3.2 Ensure compliance with regulatory programs designed to reduce, control, or eliminate pollution from working farms.	4	Concentrated Animal Feeding Operation General Permit. Ecology will issue an updated Concentrated Animal Feeding Operation General Permit by December 2016.	<ul style="list-style-type: none"> July 2015: Estimated public comment draft date. November 2016: Estimated permit issuance date. December 2016: Estimated permit effective date. 	Soundwide	Ecology	
C	3.2 Ensure compliance with regulatory programs designed to reduce, control, or eliminate pollution from working farms	SNST3	Agricultural runoff. Engage with the WSCC Agriculture Stormwater Committee to develop implementation and monitoring priorities related to agricultural runoff in the Snohomish and Stillaguamish basins. Both the King Conservation District and the Snohomish Conservation District will work	<ul style="list-style-type: none"> During 2014–2015, attend and participate in drafting of priorities. During 2014–2016, share information with Snohomish-Stillaguamish LIO to include in Action Agenda. 	Local	Snohomish CD	King CD

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		with agricultural producers and livestock owners to implement BMPs that will address water quality and habitat resource concerns.	<ul style="list-style-type: none"> • During 2014–2016, assist landowners to voluntarily implement BMPs, including but not limited to, livestock fencing, off-stream and solar pumps for stock watering, nutrient management, manure bins, installation of hedgerows and riparian forest buffers, pasture management, and filter strips on their land to improve habitat and protect water quality. • During 2014–2016, assist landowners with compliance of existing water pollution and Critical Areas Regulations requirements. 					
C	4	Prevent, reduce, and control surface runoff from forest lands						
C	4.1	Achieve water quality standards on state and privately owned working forests through implementation of the Forest and Fish Report.	1	Forest Practices Adaptive Management Program review. DNR will work to secure long-term and dependable funding for the Forest Practices Adaptive Management Program to conduct science and research to assist the Forest Practices Board to achieve the resource goals and objectives of the Forests and Fish Report	• By December 2015, identify date for the review.	Soundwide	DNR	Ecology
C	4.1	Achieve water quality standards on state and privately owned working forests through	2	Forest Practices Adaptive Management Program. DNR will work to secure long-term and dependable funding for the Forest Practices Adaptive Management Program, training, compliance monitoring, and	• By July 2014, DNR identifies date for securing a stable base.	Soundwide	DNR	

Strategy	Sub-Strategy	Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
	implementation of the Forest and Fish Report.	enforcement.				
C	4.1 Achieve water quality standards on state and privately owned working forests through implementation of the Forest and Fish Report.	3 Continue to implement road maintenance and abandonment programs on forested trust lands. DNR will continue to complete scheduled and planned road work on forested trust lands in the Puget Sound basin to protect water quality and provide for fish passage.	<ul style="list-style-type: none"> • Number of road management blocks that have all of the road maintenance and abandonment plan projects completed. 2014 Baseline: 144 of 201 road management blocks have all the road maintenance and abandonment plan projects completed • Percent of fish barrier culverts that have been corrected. 2014 Baseline: 94% of fish barrier culverts have been corrected in sound Puget Sound basin. 	Soundwide	DNR	
C	4.2 Maintain forest roads and implement road abandonment plans for working forest lands subject to the Forest Practices Rules on schedule, and ensure federal forest managers meet or exceed state standards for road maintenance and abandonment on federal lands.	1 Risk assessment of small forest landowner roads. DNR, in consultation with Ecology, will design and complete a resource risk assessment of small forest landowner roads for the delivery of sediment to waters of the state. Work with stakeholders to propose an approach to solving identified problems, and focus restoration efforts on small forest landowner lands in the Puget Sound Basin.	<ul style="list-style-type: none"> • By June 2014, design resource risk assessment and implementation plan. 	Soundwide	DNR	Ecology

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)	
C	4.2	Maintain forest roads and implement road abandonment plans for working forest lands subject to the Forest Practices Rules on schedule, and ensure federal forest managers meet or exceed state standards for road maintenance and abandonment on federal lands.	2	Accelerate Family Forest Fish Passage Program implementation. DNR, will continue to implement and seek to expand financial support for the Family Forest and Fish Passage Program which improves water crossing projects within the Puget Sound Basin.	<ul style="list-style-type: none"> Remove 75 fish passage barriers per year. 	Soundwide	DNR	
C	4.2	Maintain forest roads and implement road abandonment plans for working forest lands subject to the Forest Practices Rules on schedule, and ensure federal forest managers meet or exceed state standards for road maintenance and abandonment on federal lands.	3	Fish passage barriers. WDFW will assess and prioritize fish passage barriers by watershed within the Puget Sound.	<ul style="list-style-type: none"> Number of watershed habitat assessments and prioritization analyses conducted. 	Soundwide	WDFW	DNR, Recreation and Conservation Office
C	4.2	Maintain forest roads and implement road abandonment plans	4	Enhance road maintenance and abandonment plan database. DNR will continue to update the Large Landowner	<ul style="list-style-type: none"> By 2016 (or 2021 with approved extension), road maintenance and abandonment plan database 	Soundwide	DNR	

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
	for working forest lands subject to the Forest Practices Rules on schedule, and ensure federal forest managers meet or exceed state standards for road maintenance and abandonment on federal lands.		Road Maintenance And Abandonment Plan database to ensure tracking of progress in bringing roads up to current standards.	updated quarterly with reports from landowners.			
C	4.2 Maintain forest roads and implement road abandonment plans for working forest lands subject to the Forest Practices Rules on schedule, and ensure federal forest managers meet or exceed state standards for road maintenance and abandonment on federal lands.	5	Road maintenance and abandonment plan coordination with federal partners. DNR will work to secure participation in annual road maintenance and abandonment plan coordination meetings with landowners, WDFW, Ecology, affected tribes, NMFS, USFWS, affected counties, watershed councils and other interested parties within each watershed (per WAC 222-24-051(11)). Participants will discuss opportunities to provide a coordinated approach within each watershed resource inventory area by (1) prioritizing road maintenance and abandonment planning and (2) exchanging information on road maintenance and stream restoration projects.	<ul style="list-style-type: none"> By December 2014, DNR convenes 19 WRIA meetings annually and includes USFS in the meetings for WRIAs where USFS owns land. 	Soundwide	DNR	
C	4.2 Maintain forest roads and implement road abandonment plans for working forest	WH2	WRIA 1 Forest Road Inventory and Assessment for implementation. Compile information on federal, state, and private forest roads identified as risks to aquatic	<ul style="list-style-type: none"> By December 2014, USFS complete Inventory and Assessment for Priority Drainages on USFS land. 	Local	WRIA 1 Salmon Recovery Board	USFS, Nooksack Natural Resources, Lummi Natural

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)	
	lands subject to the Forest Practices Rules on schedule, and ensure federal forest managers meet or exceed state standards for road maintenance and abandonment on federal lands.		resources. In addition, identify additional non-system roads and prioritize road segments based on potential for mass wasting and sediment delivery to streams. Develop treatments for road decommissioning, storage, and seek funding for implementation.	<ul style="list-style-type: none"> By December 2014, Nooksack and Lummi Natural Resource Staff provide information on private forest roads risk in priority drainages. By June 2015, USFS and technical staff prioritize road segments for treatment. By June 2016, USFS finalize contract for treatment on road segments in priority areas. 			Resources	
C	5	Prevent, reduce, and/or eliminate pollution from decentralized wastewater treatment systems						
C	5.1	Effectively manage and control pollution from onsite sewage systems.	2	Onsite sewage system operation and maintenance program best practices. DOH will work with Local Health Jurisdictions (LHJs) to identify successes and best practices, develop common performance standards, and recommend approaches to improve core functions of local operation and maintenance programs.	<ul style="list-style-type: none"> By December 31, 2014, project design completed. By June 30, 2015, draft analysis completed. By December 31, 2015, final analysis completed. By December 2014, onsite sewage system inspection levels at 60% in designated areas. 	Soundwide	DOH	Local Health Jurisdictions
C	5.1	Effectively manage and control pollution from onsite sewage systems.	3	Onsite sewage system nitrogen treatment technologies. DOH will evaluate public domain onsite sewage system treatment technologies for nitrogen reduction and develop standards and guidance for their use if testing results indicate the technologies are effective and reliable. The evaluation will be completed and work on standards and guidance, if needed, will	<ul style="list-style-type: none"> By December 2014, develop plans for standards and guidance. 	Soundwide	DOH	

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
			begin after that.				
C	5.1 Effectively manage and control pollution from onsite sewage systems.	4	Wastewater facilities treatment. Outside urban growth areas. Commerce, in partnership with Ecology and DOH, will identify shoreline areas outside urban growth boundaries where residential densities are great enough that it may be appropriate to extend centralized wastewater collection systems and that are in close enough proximity to centralized treatment that extension of infrastructure may be feasible. The goal of this effort is completion of the design of at least one pilot project and construction of a least one pilot project.	<ul style="list-style-type: none"> • By June 2015, Commerce, in consultation with Ecology and DOH, will: <ul style="list-style-type: none"> ○ Identify/characterize the need for centralized treatment outside urban growth areas (DOH task). For example, how big a problem is this and how widespread? What are the ecological implications? ○ Understand the technical and legal challenges associated with pursuing centralized treatment outside urban growth areas. • By November 2015, areas meeting those criteria will be mapped and analyzed for suitability pilot projects. • By July 2016, develop conceptual solutions, and if legally feasible, design at least one pilot project. • By September 2017, Ecology will lead completion of construction for at least one pilot project 	Soundwide	Commerce	Ecology, DOH
C	5.1 Effectively manage and control pollution from onsite sewage systems.	SJ16	Fully implement the Onsite Sewage System Operation and Maintenance Program Plan (Near-Term Run Off Action II).	<ul style="list-style-type: none"> • 100% of systems in sensitive areas to remain in compliance with current inspections. • Between 2012 and 2016, 75% of alternative systems countywide to have inspections. 	Local	San Juan County Health Department	

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				<ul style="list-style-type: none"> Between 2012 and 2016, 60% of gravity systems countywide to have inspections. 			
C	5.2 Effectively manage and control pollution from large on-site sewage systems.		No near-term actions. Work is focused on implementation of ongoing programs.				
C	5.3 Improve and expand funding for onsite sewage systems and local onsite sewage system programs.	1	Regional onsite sewage system homeowner loan program. DOH and Ecology and the PSP will help evaluate options and support proposals to fund a unified, self-sustaining, low-interest loan program in the Puget Sound region to help onsite sewage system owners repair and replace their systems.	<ul style="list-style-type: none"> By May 31, 2014, draft analysis of issues and proposed actions completed. By September 30, 2014, final analysis completed. 	Soundwide	DOH	PSP, Ecology
C	5.3 Improve and expand funding for onsite sewage systems and local onsite sewage system programs.	2	Regional onsite sewage system program funding source. DOH will evaluate approaches and mechanisms (e.g., a regional flush tax or sewer surcharge) to generate and distribute funds to Puget Sound counties to implement their onsite sewage system management plans and programs.	<ul style="list-style-type: none"> By May 30, 2014, draft analysis of issues and proposed actions completed. By September 30, 2014, final analysis completed. 	Soundwide	DOH	
C	5.3 Improve and expand funding for onsite sewage systems and local onsite sewage system programs.	SNST5	Onsite septic systems maintenance and retrofit. Seek stable funding and expand Snohomish Health District program to provide technical assistance to property owners with septic systems. Investigate role of failing onsite septic systems in elevating stream bacteria and nutrient loads in Kimball and Coal Creek subbasins. Explore	<ul style="list-style-type: none"> By September 2015, identify sustainable funding source(s) including no-cost loans for repairs. During 2014–2016, educate homeowners about septic system maintenance. During 2014–2016, investigate extent of failing septic systems. 	Local	Snohomish-Stillaguamish LIO (reporter)	Snohomish Health District, Snohomish County, King County, Seattle/King County Public Health,

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		upgrading or decommissioning septic systems and connecting to municipal sewer systems.	<ul style="list-style-type: none"> • During 2014–2016, repair/replace defective septic systems. • During 2014–2016, track homeowner compliance in King County with DOH septic system maintenance requirements. • During 2014–2016, perform surface/groundwater monitoring and modeling as needed in Kimball and Coal Creeks following review of existing data. • By November 2015, estimate corrective action costs and provide cost-share options (e.g., low-interest loans to pay for retrofits, sewer line extensions, hookup fees). • By December 2015, share findings/approaches with Snoqualmie Valley cities and King County. 			Snoqualmie Tribe
C	5.3 Improve and expand funding for onsite sewage systems and local onsite sewage system programs.	SNST8 Pollution identification and correction project. Snohomish County, together with project partners, will conduct a pollution identification and correction project to identify specific sources of fecal coliform bacteria contamination in the Lower Stillaguamish sub-basin and expand to the Snohomish Basin.	<ul style="list-style-type: none"> • By December 2015, complete investigation and identification of specific sources of fecal coliform bacteria contamination in the Lower Stillaguamish sub-basin. • By December 2015, begin process of correcting some of the high priority sites that are sources of fecal coliform bacteria contamination. 	Local	Snohomish County	Snohomish Health District, Snohomish CD

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				<ul style="list-style-type: none"> By January 2016, expand project to the Snohomish Basin. 				
C	5.3	Improve and expand funding for onsite sewage systems and local onsite sewage system programs.	SS1	Mason County enhanced septic repair grant and loan program. Achieve a self-sustaining septic repair loan program through a partnership with Craft3, expressly targeting shellfish reopening and/or preserved open status in Oakland Bay, North Bay, Hammersley, Totten, and Little Skookum Inlet watersheds.	<ul style="list-style-type: none"> Funded by 2016 Number of inquiries Number of completed loans 100% of septic system receiving loans repaired Net acres of shellfish beds re-opened 	Local	Alliance	Mason County
C	5.3	Improve and expand funding for onsite sewage systems and local onsite sewage system programs.	SS2	Thurston County enhanced septic repair grant and loan program. Achieve a self-sustaining septic repair grant and loan program, expressly targeting shellfish reopening and/or preserved open status in Henderson and Eld Inlet watersheds.	<ul style="list-style-type: none"> Funded by 2016 Number of inquiries Number of completed loans 100% of septic system receiving loans repaired Net acres of shellfish beds re-opened 	Local	Alliance	Thurston County
C	5.3	Improve and expand funding for onsite sewage systems and local onsite sewage system programs.	SS3	Pierce County enhanced septic repair grant and loan program. Achieve a self-sustaining septic repair grant and loan programs, expressly targeting shellfish reopening and/or preserved open status in Nisqually, Case, Pickering, Carr and Island Inlet watersheds.	<ul style="list-style-type: none"> Funded by 2016 	Local	Alliance	Pierce County
C	6	Prevent, reduce, and/or eliminate pollution from centralized wastewater systems						
C	6.1	Reduce the concentrations of contaminant sources of pollution conveyed to wastewater		No near-term actions. Work is focused on implementation of ongoing programs.				

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	treatment plants through education and appropriate regulations, including improving pre-treatment requirements.					
C	6.2 Reduce pollution loading to Puget Sound by preventing and reducing combined sewer overflows.	STRT29 Implement City of Port Angeles combined sewer overflow reduction projects. Implement suite of combined sewer overflow Phase 1 and Phase 2 projects to reduce combined sewer overflow events into the Port Angeles Harbor to one per outfall per year on average.	<ul style="list-style-type: none"> Not more than one combined sewer overflow per outfall per year, as per city's agreed order with Ecology. 	Local	City of Port Angeles Public Works Department	
C	6.3 Implement priority upgrades of municipal and industrial wastewater facilities.	No near-term actions. Work is focused on implementation of ongoing programs.				
C	6.4 Ensure all centralized wastewater treatment plants meet discharge permit limits through compliance monitoring, technical assistance, and enforcement where needed.	1 Water quality standards update. Ecology has initiated rulemaking to amend the Water Quality Standards to update and develop predictable regulatory compliance tools that address short and long-term source control programs. The proposed changes will provide predictable regulatory tools to help entities comply with existing and new source control requirements or discharge limits. The changes will allow compliance with requirements while they effectively work toward meeting permit limits and control sources of pollutants.	<ul style="list-style-type: none"> By December 31, 2014, rule adopted. 	Soundwide	Ecology	

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C	6.5 Promote appropriate reclaimed water projects to reduce pollutant loading to Puget Sound.	No near-term actions. Work is focused on implementation of ongoing programs.				
C	7	Ensure abundant, healthy shellfish for ecosystem health and for commercial, subsistence, and recreational harvest consistent with ecosystem protection				
C	7.1 Improve water quality to prevent downgrade and achieve upgrades of important current tribal, commercial and recreational shellfish harvesting areas.	1 Shellfish best practices library. DOH will work with the PSP, Ecology, WSCC, and conservation districts and local governments to create a best practices library or menu highlighting successful locally driven efforts to assist in the development of shellfish protection districts, shellfish protection programs, and shellfish growing area restoration activities, such as the Henderson Inlet, Oakland Bay, and Samish Bay efforts.	<ul style="list-style-type: none"> By September 30, 2014, develop best practices library. 	Soundwide	DOH	PSP, Ecology, WSCC
C	7.1 Improve water quality to prevent downgrade and achieve upgrades of important current tribal, commercial and recreational shellfish harvesting areas.	3 Local clean water programs. Ecology, working with WSDA, DOH, EPA, and the tribes will form a Pollution Control Action Team to respond quickly when areas are identified where water quality problems threaten shellfish areas. They will initiate community outreach and education, pollution identification, inspection, technical assistance to local agencies and landowners and finally, enforcement. The team will focus its work in priority areas and support pollution identification and correction programs where they are established. The first effort will be in Drayton Harbor and	<ul style="list-style-type: none"> Reduce fecal coliform loading in each priority area to upgrade the status of closed areas and prevent further degradation for those with a negative trend. 	Soundwide	Ecology	DOH, WSDA, EPA

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			Portage Bay.				
C	7.1 Improve water quality to prevent downgrade and achieve upgrades of important current tribal, commercial and recreational shellfish harvesting areas.	WC26	South Dyes Inlet wastewater infrastructure. With an ultimate goal of making Oyster Bay viable for commercial shellfish harvest, the City of Bremerton will assess, improve, and expand sewer infrastructure in South Dyes Inlet.	<ul style="list-style-type: none"> • By August 31, 2014, completion of an Infrastructure Integrity Assessment. • By July 31, 2014, completion of 100% sewer system designs for Phinney Bay, and by November 30, 2014, Ostrich Bay Creek. • By August 31, 2015, construction of sewer system extensions for Phinney Bay and by June 30, 2016, Ostrich Bay Creek. • Fecal coliform content of water reduced (or other contaminants). • Shellfish acres re-opened or upgraded. 	Local	City of Bremerton	
C	7.2 Restore and enhance native shellfish populations.	WC13	West Sound shellfish gardening. Kitsap Public Health will continue to work with the Puget Sound Restoration Fund on the expansion of community shellfish gardens in Kitsap County. This dovetails with the Health District's plans to implement a permanent marine shoreline survey program throughout Kitsap County in 2014.	<ul style="list-style-type: none"> • By April 2015, shellfish gardening pilot program expanded to one additional site. • By December 2015, expand to two additional sites. 	Local	Kitsap Public Health District	
C	7.3 Ensure environmentally responsible shellfish aquaculture based on sound science.	1	Aquaculture Shoreline Master Program Handbook. Ecology will publish an aquaculture Shoreline Master Program Handbook section with special emphasis on geoduck aquaculture and finfish net pen operations, update its aquaculture web resources to make them more	<ul style="list-style-type: none"> • By June 30, 2014, handbook complete or not, number of local governments reached through training and technical assistance. 	Soundwide	Ecology	

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			comprehensive, and provide direct assistance and training to local governments on the aquaculture handbook.				
C	7.3 Ensure environmentally responsible shellfish aquaculture based on sound science.	2	Areas suitable for future shellfish aquaculture. Ecology will coordinate with interested local governments, DNR, and stakeholders to support pre-planning and implementation of marine spatial planning and local shoreline master program updates by gathering, compiling an ground-truthing baseline information on current aquaculture and filling data gaps and completing research to identify areas that are suitable and unsuitable for future shellfish aquaculture. Ecology will support marine spatial planning related to aquaculture by coordinating with interested local governments, DNR, and stakeholders on gathering, compiling, and ground-truthing baseline information on current aquaculture and filing data gaps.	<ul style="list-style-type: none"> • Mapping completed. • Updated milestones under development. 	Soundwide	Ecology	
C	7.3 Ensure environmentally responsible shellfish aquaculture based on sound science.	3	Shellfish Model Permitting Program. Ecology will work with the Governor’s Office of Regulatory Assistance to lead and facilitate a state team to develop and implement a Model Permitting Program that ensures early and continued coordination among state and federal agencies, tribes and local governments for permitting and licensing of shellfish aquaculture.	<ul style="list-style-type: none"> • Updated milestones under development. 	Soundwide	Ecology	Governor’s Office of Regulatory Assistance

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C	7.3 Ensure environmentally responsible shellfish aquaculture based on sound science.	4	Nitrogen control pilots using shellfish. Ecology will work with DNR, the shellfish industry and researchers to create pilot projects testing the use of mussel culture or other suspended or beach culture to help address nitrogen pollution in sensitive areas, such as Quartermaster Harbor.	<ul style="list-style-type: none"> By January 2015, initiate two pilot projects. 	Soundwide	Ecology	DNR
C	7.4 Enhance the publics' connection to shellfish and increase recreational harvest opportunities.	1	Shellfish interpretive programs and events. Washington State Parks, in collaboration with other public, tribal and private interests, will conduct shellfish interpretive programs and events to help forge personal connections between clean, productive Puget Sound waters, the shellfish we eat, and the iconic role shellfish occupy in Washington's cultural and culinary identify.	<ul style="list-style-type: none"> By June 2015, migrate existing program to two different state parks, incorporating evaluation results from pilot programs. By June 2017, migrate program to two different/new parks. Washington State Parks will seek partners who can help expand the number of locations and events. 	Soundwide	Washington State Parks	
C	7.5 Answer key shellfish safety research questions and fill information gaps.	1	Point source dilution analyses modeling. Ecology and DOH will work cooperatively under an existing EPA grant to evaluate use of Ecology environmental models for point source dilution analyses in DOH's commercial shellfish area classification program.	<ul style="list-style-type: none"> By June 2014, complete modeling study. 	Soundwide	Ecology	DOH
C	7.5 Answer key shellfish safety research questions and fill information gaps.	SNST6	Water quality monitoring for ocean acidification. Collect water quality data for temperature, salinity, dissolved oxygen, pH, CO ₂ (pCO ₂) to identify local trends.	<ul style="list-style-type: none"> During 2014–2016, install, maintain, and present data collected from Sunburst Sensor SAMI2-CO₂ sensor system. During 2014–2016, install and maintain YSI 6600 data logger. 	Local	Tulalip Tribes	Stillaguamish Tribe, King County

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
C	8	Effectively prevent, plan for, and respond to oil spills					
C	8.1	Prevent and reduce the risk of oil spills.	2	Promote and coordinate the proactive use of maritime risk assessments. The Puget Sound Partnership will share findings from its 2010 Vessel Traffic Risk Assessment and related studies in policy forums: like the Puget Sound Harbor Safety Committee, the National Energy Board of Canada (supporting Ecology, the Makah Tribe and other interveners) and various other regional and local groups in order to further develop and inform vetted recommendations that promote continuous improvements in safe shipping.	<ul style="list-style-type: none"> Obtain one to three vetted risk mitigation recommendations for each major terminal project at least one year in advance of significant changes in permitting status. Implementation of one to three vetted recommendations as a condition of any facility's permit. Broaden Washington's shipping safety coalition to include active, ongoing engagement from Canadian/BC counterparts (includes at least three trans-boundary group meetings) 	Soundwide	PSP
C	8.1	Prevent and reduce the risk of oil spills.	SJ14	Expand and maintain Derelict Vessel Compliance Program (Near-Term Major Oil Spills Action IV).	<ul style="list-style-type: none"> By 2015, obtain funding to expand program to six jurisdictions. Additional jurisdictions suggested by DNR include Jefferson, Island, Kitsap, Snohomish, Whatcom, and Mason. 	Local	San Juan County PSP
C	8.2	Strengthen and integrate spill response readiness of the state, tribes, and local government.	SJ11	Coordinate actions and prepare to respond to major oil spills (Near-Term Major Oil Spills Action I).	<ul style="list-style-type: none"> By December 2015, update the Trans-boundary Inter-local Agreement between San Juan County and Islands Trust to include a jointly developed Washington and British Columbia report on Recommendations for Wildlife and Natural Resource Damage Assessment and 	Local	San Juan LIO (reporter) San Juan County Council Islands Oil Spill Association, San Juan County Marine Resources Committee

Strategy	Sub-Strategy	Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
			<p>Restoration.</p> <ul style="list-style-type: none"> • By December 2015, implement a Marine Specimen Bank to establish baseline data that would be useful for future marine resource damage assessments. Coordinate with WDFW and Ecology. Include participation in the Mussel Watch Program. • Through 2016, maintain Islands Oil Spill Association local oil spill readiness and response programs with the ability to initiate first response to a major oil spill. This program will be tracked with training, workshops, equipment, and annual # of responses to any oil spills. Includes the Vessel of Opportunity Program with 13 vessels currently trained (2013). For each year, Islands Oil Spill Association plans to train 70 people, by holding at least 12 trainings or drills/year. Also, by December 2014, plan to train three additional volunteer vessels in Vessel Assist (Vessel of Opportunity) Program, and by December 2015, plan to train three more. 			

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
C	8.2 Strengthen and integrate spill response readiness of the state, tribes, and local government.	SJ12	Integrate and define parameters for responses to increased vessel traffic and potential vessel spills (Near-Term Major Oil Spills Action II).	<ul style="list-style-type: none"> • Monitor the results of Coast Guard Authorization Act of 2010 and the Coast Guard and Maritime Transportation Act of 2012. • By December 2015, work with Ecology, tribes, state representatives, and the Governor to identify San Juan County as a staging area to ensure that equipment for the 4- and 6-hour planning standards are resident in San Juan County. • By December 2014, complete feasibility assessment for Particularly Sensitive Sea Area study. Implement the study to communicate what important ecological and cultural values are present in the Salish Sea and how they would be negatively affected by vessel traffic if not well managed. • Identify risks to environmental and cultural resources and the probability of risks from large-scale shipping traffic with potentially hazardous cargo and/or propulsion fuel. • Provide citizens, local groups, eco-tourism operators, and decision makers with information about 	Local	San Juan LIO (reporter)	San Juan County Council (Trans-boundary agreement), Friends of the San Juans

Strategy	Sub-Strategy	Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
			<p>experiences of similar communities.</p> <ul style="list-style-type: none"> • Demonstrate a successful alternative to reduce both probability and consequences of an oil spill in the Salish Sea. 			
C	8.2 Strengthen and integrate spill response readiness of the state, tribes, and local government.	STRT12 Expand oil spill drills along the Strait of Juan de Fuca and coast. Regularly conduct worst-case oil spill exercises, including equipment deployment, in this region. The combined spill response assets housed in Neah Bay and Port Angeles afford substantial opportunities to drill. In addition, consider coordinating efforts with the Northwest Maritime Center in Port Townsend to host and expand drills and table-top exercises along the Strait of Juan de Fuca, outer Coast, and Puget Sound waterways utilizing their Pilothouse/Oil Spill Training Center. Drills and exercises should incorporate vessels of opportunity, publicly funded response equipment caches, and maritime industry participants as well. All of these assets are owned by various different organizations, that if drilled together, would afford opportunities to improve efficiencies through coordination.	<ul style="list-style-type: none"> • By 2016, participate in the worst-case or deployment drill planning process. (Note: Participants will likely include representatives from the Makah Tribe Office of Marine Affairs, Northwest Maritime Center, and possibly, the local offices of the Marine Spill Response Corporation and other appropriate Strait ERN LIO member organizations.) 	Local	Makah Tribe, Northwest Maritime Center	Appropriate members of Strait Ecosystem Recovery Network LIO, U.S. Coast Guard, Ecology, Department of Fisheries and Oceans Canada, Transport Canada
C	8.2 Strengthen and integrate spill response readiness of the state, tribes, and	STRT13 Improve trans-boundary coordination on oil spill preparedness and response. Support enhancement of the U.S. and Canadian Coast Guards' annual joint spill	<ul style="list-style-type: none"> • By 2016, ensure one (or possibly more) CANUSPAC Exercise (or deployment) is conducted that incorporates trans-boundary 	Local	Makah Tribe	Appropriate members of Strait Ecosystem

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
	local government.		response exercises, known as U.S./Canadian Joint Response Team (CANUSPAC), on both sides of the border with additional equipment and personnel. Also, support implementation of the U.S. Coast Guard Reauthorization Act that called for both countries to reevaluate the comparability of spill response, tug escort, and rescue towing assets on either side of the border as cited within the Combined Vessel Traffic Service Treaty. Additionally, the current estimates of Canadian vessel traffic projections need to be incorporated into updates of vessel traffic risk assessments.	movement of personnel and/or equipment. (Note: Participate in exercises when held in Strait Action Area; when possible, observe appropriate exercises held outside of Strait Action Area.)			Recovery Network LIO, U.S. Coast Guard, Ecology, Department of Fisheries and Oceans Canada, Transport Canada
C	8.2 Strengthen and integrate spill response readiness of the state, tribes, and local government.	STRT14	Support the establishment of a Neah Bay Vessel of Opportunity Program. Once established in Neah Bay, support expansion of the program to other locations along the Strait of Juan de Fuca, including the Ports of Port Angeles and Port Townsend.	<ul style="list-style-type: none"> By December 2016, enhance existing Neah Bay Vessel of Opportunity Program standards, and assist other efforts, through participation in existing regional rulemaking and permitting processes. 	Local	Makah Tribe	Ecology, Industry Groups, U.S. Coast Guard
C	8.3 Respond to spills and seek restoration using the best available science and technology.	4	Identify species and locations at risk in spills. WDFW will establish planning efforts for coordinated, scientific collection of ephemeral data by local and regional entities for key species and locations at risk in oil spills to enhance response and Resources Damage Assessment and Restoration program.	<ul style="list-style-type: none"> Number of ephemeral data plans developed for areas or facilities in high risk locations. Relevant training or preparation completed once the plan is in place. 	Soundwide	WDFW	Ecology

Strategy	Sub-Strategy	Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
C	9	Address and clean up cumulative water pollution impacts in Puget Sound				
C	9.1	Complete Total Maximum Daily Load (TMDL) studies and other necessary water cleanup plans for Puget Sound to set pollution discharge limits and determine response strategies to address water quality impairments.	No near-term actions. Work is focused on implementation of ongoing programs.			
C	9.2	Clean up contaminated sites within and near Puget Sound.	No near-term actions. Work is focused on implementation of ongoing programs.			
C	9.3	Restore and protect water quality at swimming beaches and recreational areas.	1	Freshwater swimming beach program. By 2014, Ecology and DOH will develop a proposal to coordinate a monitoring and notification freshwater swimming beach program for the Puget Sound region.	• To be determined.	Soundwide Ecology DOH
C	9.3	Restore and protect water quality at swimming beaches and recreational areas.	2	Correct pollution problems at marine beaches. Ecology and DOH will develop a plan to conduct pollution source surveys and correct pollution problems at marine beaches used for swimming, surfing, diving and other recreational uses. Ecology and DOH will coordinate with local, state and tribal programs that address point source and nonpoint source pollution to assure that activities are not duplicative.	• By June 30, 2014, complete 10 additional shoreline surveys on the priority list previously developed.	Soundwide Ecology DOH

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
C	9.4 Develop and implement local and tribal pollution identification and correction programs.	1	Pollution Identification and Correction Programs. DOH and Ecology will administer EPA grants to help counties and tribes set up sustainable programs to identify and correct nonpoint pollution sources to improve and protect water quality in shellfish growing areas and at marine swimming beaches. These sustainable programs will have ongoing monitoring to identify pollution sources and assess effectiveness of efforts, a local sustainable funding source, and a compliance assurance component.	<ul style="list-style-type: none"> By July 2015, award pollution identification and correction program funds and distribute Agricultural BMP funds to at least eight Puget Sound counties. Metric for each program will be individually set to reflect targets for numbers of BMPs implemented and maintained and systems repaired to address water quality. 	Soundwide	DOH	Ecology, EPA
C	9.4 Develop and implement local and tribal pollution identification and correction programs.	HC3	Hood Canal Pollution Identification and Correction Program. By April 2014, HCCC will complete Phase I of a regional Hood Canal Pollution Identification and Correction Program to determine the needs for a comprehensive regional program and advance funding proposal(s) for implementation. If funding is secured, Phase II of the program will be advanced. Phase II may include (depending on funds), program work in priority areas, monitoring, and education and outreach. The program will provide information about the sources of pollution, including failing septic systems.	<p>Phase I</p> <ul style="list-style-type: none"> By April 2014, HCCC will complete Phase I of a regional Hood Canal Pollution Identification and Correction Program to determine the needs for a comprehensive regional program and advance funding proposal(s) for implementation. <p>Phase II</p> <ul style="list-style-type: none"> By summer 2014, HCCC will collaborate with jurisdictions to identify and secure funding. By fall 2014, or as funding is available, HCCC will collaborate with jurisdictions to develop strategy for regional coordination and documentation. 	Local	HCCC	

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
				<ul style="list-style-type: none"> • By fall 2014, or as funding is available, HCCC will collaborate with jurisdictions to identify priority areas for projects. • By December 2016, or as funding is available, HCCC will collaborate with jurisdictions to identify priority areas and implement six shoreline surveys. 			
C	9.4 Develop and implement local and tribal pollution identification and correction programs.	HC8	Seepage pits and cesspools. Reduce the use of seepage pits and eliminate cesspools as discovered in all Hood Canal shoreline (marine and freshwater) properties.	<ul style="list-style-type: none"> • By July 2014, convene meeting of local health jurisdictions to assess and determine if Onsite Management Plan strategies relevant to cesspools and seepage pits on shoreline properties adequately address human health and safety. • By July 2014, identify sites with no records available. • By July 2015, local health jurisdictions locate and verify all shoreline seepage pits and cesspools. Conduct field investigations for all shoreline properties that have no records for seepage pits available. • Local health jurisdictions create a management plan for seepage pits that includes inspection frequency 	Local	Local Health Jurisdictions (Mason, Kitsap ² , Jefferson)	

² Kitsap Health District has completed these tasks and does not have any cesspools or seepage pits. Kitsap does not permit new seepage pits and cesspools.

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
				and education on funding or replacement options for decommission. <ul style="list-style-type: none"> By December 2015, management plan for seepage pits in Hood Canal adopted by county Boards of Health, if not in existing plans. 			
C	9.4 Develop and implement local and tribal pollution identification and correction programs.	STRT2	Implementation of water quality cleanup plans for Sequim-Dungeness Bay and East Jefferson County Clean Water Districts. Implement Sequim-Dungeness Bay and East Jefferson County Clean Water District Cleanup Plans and projects according to implementation strategies, onsite sewage system management plans, monitoring, and other activities required in Marine Recovery Areas under RCW 70.118A.	<ul style="list-style-type: none"> Clallam County: By December 2014, develop and adopt a pollution identification and correction program in 2015–2016, begin implementation of the plan. Jefferson County: By July 2015, develop a Comprehensive Water Quality Improvement Plan; by December 2016, develop a Prioritized Work Plan. 	Local	Clallam and Jefferson Counties	Sequim-Dungeness Clean Water Work Group, Jamestown S’Klallam Tribe, Clallam CD, Jefferson CD
C	9.4 Develop and implement local and tribal pollution identification and correction programs.	WH9	Implement a pollution identification and control project in northern Chuckanut Bay (Mud Bay) to restore the recreational shellfish area. Through a partnership of community groups and local agencies, identify bacteria sources and implement water quality improvement projects to reduce bacteria levels in Mud Bay and restore the recreational shellfish area. This program includes: <ul style="list-style-type: none"> Monitoring. Community outreach. Technical and financial assistance for onsite sewage system operation and 	<ul style="list-style-type: none"> By December 2014, develop a strategy with DOH with specific milestones to reopen the Mud Bay recreational shellfish area. In January 2015, January 2016, and December 2016, host three meetings (one per each date listed) to inform and engage community members in water quality improvement). Through December 2016, conduct monthly sampling at approximately 10 stations. Conduct bracketing monitoring to 	Local	Whatcom County Marine Resources Committee	Whatcom County Department of Health

Strategy	Sub-Strategy	Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
		<p>maintenance.</p> <ul style="list-style-type: none"> Stormwater retrofits. 	<p>identify pollution sources.</p> <ul style="list-style-type: none"> By December 2015, evaluate 75% of onsite sewage system in the drainage area and repair 100% of identified failing systems. By December 2015, develop and implement outreach strategies to address domestic pet and urban wildlife sources of bacteria. By December 2015, identify opportunities for stormwater retrofits. 			
C	9.4 Develop and implement local and tribal pollution identification and correction programs.	<p>WH10 Implement Whatcom County Pollution Identification and Control Program. Through a partnership of local, state, and tribal agencies identify priority areas and implement projects to decrease bacteria levels in local marine waters, rivers, and streams. This program includes:</p> <ul style="list-style-type: none"> Monitoring and focus area identification. Community outreach and engagement. Technical and financial assistance for agricultural operations. Technical and financial assistance for onsite sewage system operation and maintenance. Stormwater retrofits. Regulatory backstop. Nutrient Management, TMDL Implementation. 	<ul style="list-style-type: none"> Through December 2016, conduct monthly sampling at approximately 90 stations. Conduct short-term ambient and bracketing monitoring in each focus area to identify pollution sources. Complete annual reviews of water quality results. Through December 2016, identify a minimum of two focus areas per year. Provide technical/financial assistance to 50 agricultural operations in focus areas per year. Evaluate 75% of onsite sewage system in focus areas per year. Repair 100% of identified failures. By December 2016, complete designs for two priority 	Local	Whatcom County	Whatcom CD, DOH, Ecology, WSDA, Lummi Nation, Nooksack Tribe

Strategy	Sub-Strategy	Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
			stormwater retrofits. <ul style="list-style-type: none"> • Water quality. • Shellfish beds. 			
D	1	Provide the leadership frameworks to guide the Puget Sound recovery effort and set action and funding priorities				
D	1.1	Provide backbone support for the recovery effort and management conference.	No near-term actions. Work is focused on implementation of ongoing programs.			
D	1.2	Maintain and update the Action Agenda as the shared recovery plan.	No near-term actions. Work is focused on implementation of ongoing programs.			
D	2	Support and build strategic, collaborative partnerships				
D	2.1	Advance the coordination of local recovery actions via LIOs. SC1	Support state and local partnerships to advance the Action Agenda. Use South Central Caucus Group (LIO) as a forum to advance local actions by sharing information and supporting local governments in the following. <ul style="list-style-type: none"> • Sharing approaches to developing and implementing policies, regulations, and incentives. • Developing model ordinances. • Identifying and developing incentive programs. • Promoting funding and technical assistance for updating, adopting and implementing policies and regulations. • Promoting education and outreach 	<ul style="list-style-type: none"> • By May 2015, hold two meetings to review and share incentives and model regulations. After full South Central Caucus Group (LIO) review, bring findings to the ECB. • In 2015, recommend ways to incorporate findings into state and local policies and regulations. 	Local	South Central Caucus Group

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
			through ECO Net.				
D	2.1 Advance the coordination of local recovery actions via LIOs.	HC1	HCCC Integrated Watershed Plan. In coordination with local and tribal governments, state and federal government agencies, nonprofit organizations, and other community partners, HCCC will continue to develop and implement the IWP through June 30, 2014. The IWP is the roadmap and organizing concept for ecosystem recovery, protection, and restoration in Hood Canal and will include identification of the highest priority focal components, goals, actions and strategies, and indicators for measuring progress. Based on critical, high priority strategies and actions identified in the IWP, HCCC will develop and revise local near-term actions for incorporation into the 2016 Action Agenda.	<ul style="list-style-type: none"> By spring 2014, HCCC will complete development of Phase I of the IWP website and will publicly launch the site. By fall 2015, HCCC will publish the first State of Hood Canal report based on measuring progress towards goals as outlined in the IWP and utilizing the indicators adopted in the IWP. This analysis is anticipated to be conducted by HCCC staff with the assistance of consultants. By fall 2015, HCCC will develop a set of new or revised near-term actions and performance measures based on the final IWP for incorporation into the 2016 Action Agenda using the Open Standards for Conservation method adopted by Puget Sound Partnership. 	Local	HCCC	
D	2.1 Advance the coordination of local recovery actions via LIOs.	HC5	HCCC climate change adaptation. HCCC will convene a climate change forum with our members to identify unique vulnerabilities and potential adaptation strategies for the Hood Canal Action Area. As part of the Integrated Watershed Plan process and working with our members and partners, HCCC will determine climate adaptation	<ul style="list-style-type: none"> By December 2014, distribute Hood Canal climate change report, summarizing the results of the conference to Hood Canal community. By fall 2015, incorporate climate change mitigation and adaptation strategies and actions into 	Local	HCCC	

Strategy	Sub-Strategy	Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
		approaches that can be incorporated into the Integrated Watershed Plan and various plans in progress.	<p>relevant focal components of the Integrated Watershed Plan.</p> <ul style="list-style-type: none"> By fall 2015, incorporate climate change related indicators into relevant focal components of the Integrated Watershed Plan. 			
D	2.2 Build and maintain collaborative partnerships with tribes to identify and advance recovery actions.	None. Addressed by near-term actions related to other sub-strategies.				
D	3 Implement performance management					
D	3.1 Work collaboratively to track and report on implementation performance.	No near-term actions. Work is focused on implementation of ongoing programs.				
D	3.2 Work collaboratively to report on recovery progress.	No near-term actions. Work is focused on implementation of ongoing programs.				
D	4 Coordinate and advance science and monitoring					
D	4.1 Oversee strategic planning for Puget Sound recovery science.	No near-term actions. Work is focused on implementation of ongoing programs.				
D	4.2 Implement a coordinated, integrated ecosystem monitoring program.	ISL10 Develop and implement a stormwater monitoring program. Island County will enhance its stormwater monitoring program to address stormwater discharges from the built environment. The monitoring is	<ul style="list-style-type: none"> Nutrient loading during storm events at outfalls and in streams (identified in watershed prioritization). Decrease in percentage of 303d- 	Local	Island County Department of Natural Resources	

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			intended to focus community attention on source identification and key areas of concern. Based on the monitoring data, technical assistance will be provided to landowners.	<ul style="list-style-type: none"> listed impaired waters in Island County. Net increase in recreational shellfish harvest area. 			
D	4.2 Implement a coordinated, integrated ecosystem monitoring program.	SJ13	Implement the Marine Stewardship Area Monitoring Plan to track key species (Near-Term Major Oil Spills Action III).	<ul style="list-style-type: none"> By December 2015, identify and prioritize indicator species to track in relation to oil spills. 	Local	San Juan County Marine Resources Committee	UW Friday Harbor Labs, Salmon Recovery San Juan Lead Entity, intertidal monitoring by citizens and students
D	4.2 Implement a coordinated, integrated ecosystem monitoring program.	SJ18	Devise monitoring and management plans for priority and/or focus basins (Near-Term Run Off Action IV).	<ul style="list-style-type: none"> By January 2014, implement an annual strategic monitoring plan to measure levels of fecal coliform, heavy metals, persistent organic pollutants, and polycyclic aromatic hydrocarbons in priority basins. In the first year post-implementation, monitor 100% of priority basins, with monitoring actions ongoing after 2014. In 2012 and 2013, evaluate data collected and revise sampling plans based on results. Revisions may include changes in priority basins, sampling procedures, constituents, and frequency. 	Local	San Juan County Public Works Stormwater Utility	San Juan County Stormwater Committee, San Juan County Water Resources Committee, San Juan Marine Resources Committee, Town of Friday Harbor, San Juan Islands CD

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
				<ul style="list-style-type: none"> By June 2014, prepare management plans for focus basins to manage existing runoff from public streets and lots. Develop mitigation strategies for ferry parking lots. 			
D	4.2 Implement a coordinated, integrated ecosystem monitoring program.	SJ112	Continue development of Salmon Recovery Adaptive Management and Monitoring Plan (Near Term Shoreline Action IV).	<ul style="list-style-type: none"> By June 2014, draft Adaptive Management and Monitoring Framework for Chinook including narrative (document) and Miradi files. Finalize results chains, develop monitoring priorities, draft monitoring framework. Results will also inform the Marine Stewardship Area Monitoring Plan. In 2015, start monitoring implementation. 	Local	San Juan LIO	San Juan County Lead Entity, San Juan County Marine Resources Committee
D	4.2 Implement a coordinated, integrated ecosystem monitoring program.	WC25	Continued funding for shoreline monitoring programs in Kitsap and Pierce Counties. Help fund routine marine shoreline E. coli bacteria monitoring program in Kitsap and Pierce Counties to protect and restore commercial shellfish areas. Provide 100% funding for 2-year shoreline monitoring program on Bainbridge Island. Provide 50% match for shoreline monitoring program along unincorporated Kitsap and Pierce Counties, within all classified areas (including Port Orchard Passage).	<ul style="list-style-type: none"> Maintain current level of monitors. Acres of shellfish monitored. Fecal coliform content of water reduced (or other contaminants). Acres of shellfish re-opened or upgraded. By December 31, 2014, deliver needs assessment report to Kitsap County Surface and Stormwater Management. Report on number of stations sampled. 	Local	Kitsap Public Health District, Tacoma-Pierce County Health Department	

Strategy	Sub-Strategy	Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
			<ul style="list-style-type: none"> • Report on number of stations identified as “hot spots.” • Investigate and close 90% of identified “hot spots.” • Report on number of failing onsite sewage systems identified/corrected. • Report on number of animal waste management violations identified/corrected. • Report on number of public/side sewer leaks identified/corrected. • Report on number of shoreline miles monitored. • Report on acres of classified commercial shellfish growing area protected or down grade prevented. • Report on acres of commercial shellfish growing area re-opened or receiving improved classification. • Report on number and percentage of shoreline discharges with reduced bacterial concentrations. 			
D	5	Cultivate broad-scale stewardship practices and behaviors among Puget Sound residents that benefit Puget Sound				
D	5.1	Prioritize targeted stewardship issues, actions and audiences based on (1) problem	No near-term actions. Work is focused on implementation of ongoing programs.			

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	severity, (2) problem frequency, (3) availability of and confidence in science (natural and social) behind the problem, and (4) ability to influence change.						
D	5.2 Collaboratively develop and promote science-based targeted communications and behavior change strategies across the region.	1	Strategic social marketing frameworks. PSP works with partners to develop strategic social marketing frameworks to support soundwide behavior change initiatives by conducting, synthesizing and disseminating formative research relative to the adoption of specific priority practices.	<ul style="list-style-type: none"> • By July 2014, formative research on at least ten local social marketing projects is underway. • By July 31, 2014, formative research on at least five regional model BMP programs is underway. • By April 2015, complete at least ten local social marketing projects. • By June 1, 2015, 80% of social marketing grantees will have conducted the 10 Essential Steps to Social Marketing. • By June 15, 2015, 100% of social marketing grantees will provide PSP with evaluation results from their Social Marketing project. • By June 30, 2015, PSP staff will provide a synthesis of evaluation results and distribute to the grantees. • By July 2015, disseminate social marketing framework guidance on 	Soundwide	PSP	

Strategy	Sub-Strategy	Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
			<p>at least five regional model BMP programs to partners.</p> <ul style="list-style-type: none"> By July 2015, disseminate social marketing framework guidance on at least ten local social marketing projects to partners. 			
D	5.2 Collaboratively develop and promote science-based targeted communications and behavior change strategies across the region.	<p>SNST11 Coordinated education and outreach leading to behavior change. Snohomish County, together with local and regional partners, will develop a prioritized list of BMPs to promote through education and outreach programs. Implement strategies that target specific audiences and use targeted messages to achieve awareness and meet behavior change goals. The following programs will be considered.</p> <ul style="list-style-type: none"> Forest stewardship and sustainable agriculture. Riparian solutions program. Community and youth education/outreach program. Stormwater management training. Nearshore and bluff behavior change outreach (WSU Extension) Connection of upland farmers with shellfish farmers to discuss clean water for safe shellfish harvest and consumption. Development and implementation of multiparty integrated water quality themed education and behavior change programs to address shellfish protection. 	<ul style="list-style-type: none"> During 2015–2016, secure funding to offer WSU Extension classes and services in WRIA 7. During 2014–2016, Sound Salmon Solutions and Snohomish Conservation District will host and attend events, and provide technical consultation and site visits for streamside landowners to help improve salmon habitat. During 2014–2016, Snohomish Conservation District will host 25 educational workshops for agricultural landowners. In 2015, conduct nearshore and bluff landowner workshops and distribute an updated Guide for Shoreline Living. In 2015, Snohomish Marine Resources Committee will host a meeting/field trip for upland farmers and shellfish farmers. During 2014–2015, conduct outreach on aquaculture at gatherings of farmers at events 	Local	Snohomish-Stillaguamish LIO	Snohomish County, King County, Sound Salmon Solutions, Snohomish CD, King CD, WSU Extensions in King and Snohomish Counties, STORM, ECO Nets, Tulalip Tribes, Everett Community College, Marine Resources Committee

Strategy	Sub-Strategy	Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
			<p>such as the Snohomish County Focus on Farming, Country Living Expo, and Washington State Tilth Producers Convention.</p> <ul style="list-style-type: none"> • During 2014–2016, Sound Salmon Solutions, WSU Extension, Snohomish County, and others will design and focus education and outreach efforts to target suspected sources that contribute and threaten commercial shellfish farm water certification as well as commercial fishery operations. • In 2015, identify the needs of participating homeowners through the pollution identification and correction program as a follow-up to corrective actions. 			
D	5.3 Enable and encourage residents to take informed stewardship actions addressing infiltration, pollution reduction, habitat improvement, forest cover, soil development, critical areas, reductions in shoreline armoring, and specific actions	1	<p>Stewardship BMPs. PSP and partners analyze priority BMPs as early-action initiatives. Complete five regional model programs addressing those priority BMPs by July 2015.</p>	<ul style="list-style-type: none"> • By June 1, 2014, all five of the grantees will have evaluation plans that enable them to measure progress made on changing their target behavior (e.g., preventing derelict vessels, changing use of weed and feed/alternative yard care, use of small business spill kits). • By June 2015, complete Model Stewardship Program for derelict vessels. 	Soundwide	PSP

Strategy	Sub-Strategy	Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
	identified in D5.1.		<ul style="list-style-type: none"> • By June 2015, complete Model Stewardship Program for residential pesticides. • By June 2015, complete Model Stewardship Program for small business spill control. • By June 2015, complete Model Stewardship Program for bacterial source control on marine shorelines in priority shellfish areas. • By June 2015, complete Model Stewardship Program for bacterial source control on distributary channels in priority shellfish areas. • By June 15, 2015, 100% of Model Stewardship grantees will provide PSP with evaluation results from their projects. • By June 30, 2015, PSP staff will provide a synthesis of evaluation results and distribute to the five Model Stewardship grantees. • By June 30, 2015, PSP, in partnership with successful Model Stewardship grantees, will have developed sustainability plans for the programs future implementation. 			

Strategy	Sub-Strategy	Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
D	5.4 Improve effectiveness of local and regional awareness-building and behavior change programs through vetted messages, proven strategies and outcome-based evaluation; guide partners in use of formative research and diffusion of priority BMPs.	No near-term actions. Work is focused on implementation of ongoing programs.				
D	5.5 Enhance resources to sustain and expand effective behavior change and volunteer programs that support Action Agenda priorities and that have demonstrated, measurable outcomes.	No near-term actions. Work is focused on implementation of ongoing programs.				
D	5.6 Create a repository of market, social, and audience research to support stewardship work; include research and data from local, state, and federal governments,	No near-term actions. Work is focused on implementation of ongoing programs.				

Strategy	Sub-Strategy	Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
	nonprofit, and private sector sources; synthesize and disseminate to partners.					
D	5.7 Review practices and issues that require solutions beyond the Puget Sound region such as automotive, manufacturing and distribution of toxins, and pharmaceutical waste management; develop strategies and partnerships outside the Puget Sound region to address issues.	No near-term actions. Work is focused on implementation of ongoing programs.				
D	6 Build issue awareness and understanding to increase public support and engagement in recovery actions					
D	6.1 Implement a long-term, highly visible, coordinated public-awareness effort using the Puget Sound Starts Here brand to increase public understanding of Puget Sound's health, status, and threats; conduct regionally	1 Phase 2 of Puget Sound Starts Here. PSP and partners implement Phase 2 of Puget Sound Starts Here campaign. PSP, STORM, and Ecology ensure that messages reflect the demography, regional identity and issues facing the Puget Sound.	<ul style="list-style-type: none"> By July 2014, BMP content revised. By July 2016, complete two rounds of micro grants to local organizations to disseminate the PSSH brand. By July 2015, complete an analysis of campaign status including media strategy, brand awareness, and audiences reached. By July 2015, campaign achieves 	Soundwide	PSP	

Strategy	Sub-Strategy	Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
	scaled communications to provide a foundation for local communications efforts; conduct locally scaled communications to engage residents in local issues and recovery efforts.		50% brand awareness among Puget Sound's 4.5 million residents.			
D	6.2 Incorporate and expand Puget Sound related content in diverse delivery settings (e.g., recreation, education institutions, local government, neighborhood and community groups, nonprofit organizations, businesses); connect residents with public engagement and volunteer programs.	No near-term actions. Work is focused on implementation of ongoing programs.				
D	6.3 Incorporate Puget Sound place-based content into K-12 curricula throughout	1	K-12 curricula. Incorporate Puget Sound place-based content into K-12 curricula by continuing to support existing partnerships with teachers, curriculum directors and	<ul style="list-style-type: none"> By July 2016, at least 50 school districts in Puget Sound have place-based education programs. By July 2016, minimum of 120 	Soundwide	Pacific Education Institute

Strategy	Sub-Strategy	Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
	the Puget Sound region; connect schools with technical assistance, inquiry-based learning opportunities, and community resources. Implement student service projects connected to ecosystem recovery; and link schools to organizations with structured volunteer opportunities.	school leaders, and developing new partnerships with additional Puget Sound school districts.	classrooms and 5,000 students will conduct Puget Sound Action Projects. <ul style="list-style-type: none"> By July 2016, at least eight regional trainings for ECO Net members will prepare a minimum of 160 informal educators to work effectively. 			
D	6.4 Foster a long-term sense of place among Puget Sound residents; encourage direct experiences with Puget Sound’s aquatic and terrestrial resources through recreation, informal learning, and public access sites.	No near-term actions. Work is focused on implementation of ongoing programs.				
D	6.5 Build awareness of stewardship-building efforts among elected officials, executive staff, funders,	SNST9 Fisheries/watershed ecology education for officials and decision-makers. Sound Salmon Solutions and partners will develop a branded education curriculum and program on ecology issues necessary for	<ul style="list-style-type: none"> By June 2014, determine what information stakeholders, such as the Stillaguamish Watershed Council members, feel is important for elected officials. 	Local	Sound Salmon Solutions	

Strategy	Sub-Strategy	Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
	<p>resource managers, and others with resource allocation ability; emphasize program roles, needs, relationship with other Action Agenda strategies and program outcomes.</p>	<p>salmon recovery, targeted at elected officials. This is not a lobbying campaign but a science-based, politically neutral curriculum, allowing officials to make informed decisions about land use and development, with Puget Sound and salmon recovery in mind. The training will also initiate a relationship between decision-makers and organizations with the expertise to provide information and decision support. By completing the training, officials earn a Salmon Savvy Certification, a brand they can use to demonstrate their efforts to constituents. The program would result in ongoing classes in Snohomish County and could serve as a model for other areas.</p>	<ul style="list-style-type: none"> ● By June 2014, determine what information elected officials require to make decisions that will improve the health of Puget Sound and allow salmon recovery. ● By September 2014, develop curriculum, making use of prior efforts where applicable. ● By December 2014, review and refine curriculum with the members of the Stillaguamish Watershed Council Stewardship Committee. ● By June 2015, publicize and promote the Salmon Savvy–branded curriculum with elected officials. ● In 2015, hold classes with 10 to 15 officials to test curriculum and get feedback. ● By December 2015, finalize curriculum. <p>In 2016 and beyond, land use decisions are made by a measurable number of officials (target of 15) commanding a basic level of understanding and a decision support network.</p>			

Strategy	Sub-Strategy	Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
D	7	Build social and institutional infrastructure that supports stewardship behaviors and removes barriers				
D	7.1	Apply appropriate social science to Puget Sound recovery to increase clarity and effectiveness of targeted actions, audiences, opportunities, strategies, and evaluation metrics.	No near-term actions. Work is focused on implementation of ongoing programs.			
D	7.2	Build capacity among partner organizations to advance priority stewardship actions; provide technical support and training to advance program effectiveness, evaluation, and support of Action Agenda priorities.	1 Behavior Change Program Guidance. PSP provides uniform guidance for partners conducting behavior change programs to (1) enhance priority practices, (2) ensure that programs intended to address these priority practices are based on proven methods, (3) incorporate the necessary formative research to help programs achieve desired outcomes, and (4) incorporate effective evaluation strategies.	<ul style="list-style-type: none"> By December 2015, complete at least six training opportunities for local and regional partners. By June 1, 2015, grantees demonstrate a 15%³ increase in their sense of competency (either quite competent or extremely competent) in delivering a structured social marketing program. By July 2015, develop and disseminate guidance for partners. 	Soundwide	PSP
D	7.3	Maintain centralized capacity to sustain and enhance the regional Puget Sound Starts Here campaign.	No near-term actions. Work is focused on implementation of ongoing programs.			

³ Based on the PSP Grantee Survey delivered in February 2014 (baseline), November 2014, and May 2015.

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
D	7.4 Provide public information conduits connecting individuals to local activities, resources and decision-making processes, including cost-share programs, technical assistance, volunteer experiences and ways to engage in civic structures and processes.	1	Citizen Action Training School. PSP and grantee(s) establish a Citizen Action Training School to (1) build awareness of Puget Sound issues and related governmental structures and processes, and (2) increase citizen participation in local, state and federal decision-making processes affecting Puget Sound.	<ul style="list-style-type: none"> • By June 1, 2015, participants in the Citizen Action Training School program will demonstrate a 25% increase in their knowledge of the role of key policy-making agencies effecting Puget Sound’s health. • By June 1, 2015, 75% of the participants in the Citizen Action Training School program will have attended a community meeting or policy making session related to the health of Puget Sound. • By July 2015, five iterations of the program completed; a minimum of 125 community leaders trained; 6,200 hours invested in resulting community projects; and written curricula on effective civic engagement disseminated for partner use. 	Soundwide	PSP	
D	7.5 Enhance strategic networks and tools that support stewardship partners and outcomes, including ECO Net, STORM, The Northwest Straits Initiative and Marine Resource Committees, tribes, municipalities		No near-term actions. Work is focused on implementation of ongoing programs.				

Strategy	Sub-Strategy	Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
	not covered by stormwater permits, public agencies, funders, universities, NGOs and others.					
D	7.6 Work regionally and locally to remove implementation barriers (e.g., physical, economic, regulatory, enforcement, policy), and enable and incentivize adoption of stewardship actions.	No near-term actions. Work is focused on implementation of ongoing programs.				
E	1 Funding Strategy					
E	1.1 Maintain and enhance federal funding for implementation of Action Agenda priorities. 1	Puget Sound Recovery Act passage. PSP to continue work with Washington, coastal, and other key delegation staff to encourage passage of the Puget Sound Recovery Act by December 31, 2016.	<ul style="list-style-type: none"> Not likely to be passed in the 113th Congress. If not passed during 113th session of Congress: By February 2015, meet with key Washington delegation members to ensure House and Senate champions have been secured for bill in the 113th session. Encourage passage of the Puget Sound Recovery Act by December 31, 2016 	Soundwide	PSP	
E	1.1 Maintain and enhance federal funding for implementation of Action Agenda 2	Pacific coast salmon recovery funds. Increase Pacific Coast Salmon Recovery Fund and other federal habitat protection and restoration funding sources to	<ul style="list-style-type: none"> By October 2014, hold four meetings and briefings with key decision-makers within federal government to influence federal 	Soundwide	PSP	PSSRC

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
	priorities.		implement Puget Sound Chinook Recovery plan. PSP, in collaboration with the PSSRC, the Recreations and Conservation Office, the WDFW, and the Northwest Indian Fisheries Commission will craft and lead an outreach strategy to secure funding necessary to implement the Puget Sound Chinook Recovery plan's protection and restoration priorities by securing federal funds from multiple agency sources to leverage local and state dollars, to fully fund the at \$120M per year. Federal habitat and restoration funding sources include NOAA, USFWS, and EPA agency programs among other, with special focus on the NOAA Pacific Coast Salmon Recovery Fund.	fiscal year 2015 appropriations and fiscal year 2016 budget formulation to increase federal share towards meeting \$120M per year funding target. <ul style="list-style-type: none"> By October 2015, provide four briefings and in-state field visits with key decision-makers within the federal government to provide status of update to the Puget Sound Chinook Recovery Plan funding estimate and ways to incorporate into federal fiscal year 2016 budget process. 			
E	1.2 Focus federal agency budgets and national programs on Action Agenda priorities.	1	Farm Bill and water quality. WSCC will work with NRCS and Partners to identify and increase funding to Puget Sound through the Farm Bill to improve water pollution prevention efforts and habitat protection and restoration efforts in rural areas in this biennium. Program targets will be based upon the level of funding and effort that is advanced.	<ul style="list-style-type: none"> By July 2014, develop a proposal for submission to NRCS to fund programs in Puget Sound. Increase funding for on the ground efforts by 10%. Based on funding receive, set targets for resource goals for each calendar year. 	Soundwide	WSCC	PSP, NRCS, The Nature Conservancy, Farmland Trust
E	1.3 Maintain, enhance, and focus state funding for implementation of Action Agenda priorities.	2	Puget Sound Acquisition and Restoration Fund. PSP, in collaboration with the PSSRC and the Recreation and Conservation Office, will craft and lead an outreach strategy to renew and increase Washington state's Puget Sound Acquisition and Restoration	<ul style="list-style-type: none"> By October 2015, hold four meetings and briefings or field visits with key decision makers to educate them about Puget Sound acquisition and restoration opportunities and the funding 	Soundwide	PSP	PSSRC

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
			Fund with a goal of securing state match towards goal of fully funding the Puget Sound Chinook Salmon Recovery Plan at \$120M per year by December 2015.	levels needed to do the work.			
E	1.3 Maintain, enhance, and focus state funding for implementation of Action Agenda priorities.	SC10	<p>Support restoration of the voter approved local Model Toxics Control Account.</p> <ul style="list-style-type: none"> • Advocate for fund protection. Support the use of the Model Toxics Control Account for grants and programs that expedite multiparty cleanup efforts. • Support and promote programs that leverage other grants to expedite cleanups. • Educate and promote the protection of the Local Toxics Control Account and identify. Opportunities for acquisition and redevelopment of vacant, orphaned, or abandoned property. 	<ul style="list-style-type: none"> • By December 2015, increase awareness of state and local government about the value of protecting the Local Toxics Control Account in 2016. • By December 2015, hold a forum on opportunities for acquisition and redevelopment of vacant, orphaned, or abandoned property. 	Local	South Central Caucus Group	Ecology
E	1.4 Maintain and enhance local funding for implementation of Action Agenda priorities.	1	<p>Strategic initiatives funding mechanism.</p> <p>PSP, working with the ECB funding committee, will lead the development of a legislative strategy to adopt a funding mechanism for the three strategic initiatives (habitat, stormwater, and shellfish), which local governments around Puget Sound could elect to use to address Puget Sound recovery priorities.</p>	<ul style="list-style-type: none"> • By September 30, 2014, gain Leadership Council approval for a funding strategy for the three strategic initiatives. • Develop legislative package to implement the funding recommendations and introduce in the 2015 Legislative Session. The funding package will be designed to meet the 6-year funding needs for the three strategic initiatives. 	Soundwide	PSP	ECB

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)	
E	1.4	Maintain and enhance local funding for implementation of Action Agenda priorities.	SC12	<p>Secure additional funding necessary to implement priority fish and wildlife habitat and high-value aquatic habitat area enhancement projects.</p> <p>Provide input to the PSP’s work to develop a gap analysis and funding strategy for implementation of the Action Agenda, including the following.</p> <ul style="list-style-type: none"> • Articulate need for better funding coordination of habitat, water quality, and flood investments at a watershed level. • Describe specific financial needs and challenges of urbanized watersheds in protecting and restoring habitat and in prioritizing and carrying out stormwater retrofits. • Involve research and analysis conducted by WRIAs 8 and 9 on watershed funding options and models. • Provide examples of successful watershed-based decision-making models and successful multi-benefit projects that help “tell the story.” • Provide the WRIA 9 issue paper on watershed investment concepts for consideration. • Provide input on state legislative proposals for potential new watershed-based governance structures and funding authorities. • Develop specific project proposals in 	<ul style="list-style-type: none"> • By December 2014, identify large-scale habitat restoration projects for the next round of Puget Sound Acquisition and Restoration. • By third quarter 2014 and 2015, promote the current round of “coordinated investment” floodplain restoration projects and development of the next set of candidate projects for 2014/2015 legislative session. 	Local	South Central Caucus Group	

Strategy	Sub-Strategy		Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
			<p>support of federal and state appropriation requests to support salmon habitat restoration, habitat acquisition, major floodplain restoration, and stormwater retrofits.</p> <ul style="list-style-type: none"> • Support WRIAs 8, 9, and 10 in maintaining and refining the 3-year list of habitat protection and restoration implementation priorities. • Support the King Conservation District in securing additional funding to address regional and local aquatic area enhancement and water quality protection priorities, with special emphasis on private property, subject to the outcome of joint task force recommendations. • Support the work of WRIA 9 in preparing issue papers on key watershed-based investment concepts, including governance, geography, multiple benefit projects, and funding, and in preparing legislation for the session. 				
E	1.4 Maintain and enhance local funding for implementation of Action Agenda priorities.	SS4	<p>NPDES municipal stormwater permit implementation funding strategy development. Municipal stormwater jurisdictions will develop a funding strategy to achieve a balance of local, state and federal funding for their stormwater programs, as needed.</p>	<ul style="list-style-type: none"> • By June 2015, municipal stormwater jurisdictions will convene a meeting of stormwater permittees/stakeholders to determine the framework, process, and key issues to be included in a funding strategy that includes an agreed upon balance 	Local	Alliance	

Strategy	Sub-Strategy	Near-Term Action	Performance Measures	Type	Owner	Secondary Owner(s)
			<p>of local, state, and federal funding.</p> <ul style="list-style-type: none"> By June 2016, municipal stormwater jurisdictions will develop a funding strategy draft, vetted by a task force from the first set of meetings, for presentation to, and as a start to negotiations with, federal and state partners. 			
E	1.5 Develop opportunities for private sector and philanthropic funding for implementation of Action Agenda priorities.	1	<p>Coordination with philanthropic community. PSP will coordinate with the philanthropic community to encourage collaboration on implementation of highest priority actions in the Action Agenda.</p> <ul style="list-style-type: none"> Through June 2016, hold two meetings per year with major philanthropic donors to provide outreach about Puget Sound priorities and progress, philanthropic needs and roles of partners. 	Soundwide	PSP	
E	1.6 Develop and implement market-based mechanisms for implementation of priorities in the Action Agenda.		No near-term actions. Work is focused on implementation of ongoing programs.			

Acronyms and Abbreviations

Alliance = Alliance for a Healthy South Sound
BMP = best management practice
CD = Conservation District
Commerce = Washington State Department of Commerce
Corps = U.S. Army Corps of Engineers
DNR = Washington State Department of Natural Resources
DOH = Department of Health
ECB = Ecosystem Coordination Board
ECO Net = Education, Communication and Outreach Network
Ecology = Washington State Department of Ecology
EPA = U.S. Environmental Protection Agency
ESRP = Estuary and Salmon Restoration Program
FEMA = Federal Emergency Management Agency
GIS = Geographic Information System
HCCC = Hood Canal Coordinating Council
LIO = local integrating organization
NMFS = National Marine Fisheries Service
NOAA = National Oceanic and Atmospheric Administration

Local Area Abbreviations

HC = Hood Canal Action Area
ISL = Island County Watershed
SJI = San Juan County Watershed
SMST = Snohomish-Stillaguamish Watersheds
SC = South Central Puget Sound Action Area
SS = South Puget Sound Action Area
STRT = Strait of Juan de Fuca Action Area
WC = West Central Puget Sound (North Central Puget Sound Action Area)
WH = Whatcom County/Nooksack Watershed

NPDES = National Pollutant Discharge Elimination System
NRCS = Natural Resources Conservation Service
PSP = Puget Sound Partnership
PSSRC = Puget Sound Salmon Recovery Council
SquareONE = Watershed Stewardship Resource Center
STORM = Stormwater Outreach for Regional Municipalities
USFS = U.S. Forest Service
USFWS = U.S. Fish and Wildlife Service
USGS = U.S. Geological Survey
UW = University of Washington
WAC = Washington Administrative Code
WDFW = Washington Department of Fish and Wildlife
WRIA = Water Resources Inventory Area
WSCC = Washington State Conservation Commission
WSDA = Washington State Department of Agriculture
WSDOT = Washington State Department of Transportation
WSU = Washington State University

APPENDIX E

ACTION AGENDA
SUB-STRATEGY
RANKINGS

Table E-1. Sub-Strategy Rankings—Section A: Freshwater and Terrestrial

Sub-Strategy			Section Rank
A	5.3	Protect and maintain intact and functional floodplains.	1
A	2.1	Protect and conserve ecologically important lands at risk of conversion	2
A	5.4	Implement and maintain priority floodplain restoration projects	3
A	1.3	Improve, strengthen and streamline implementation and enforcement of laws, plans, regulations, and permits consistent with protection and recovery targets	4
A	1.2	Support local governments to adopt and implement plans, regulations and policies consistent with protection and recovery targets, and incorporate climate change forecasts	5
A	6.5	Maintain and enhance the community infrastructure that supports salmon recovery.	6
A	6.1	Implement high priority projects identified in each salmon recovery watershed's 3 year work plan.	7
A	6.4	Protect and recover steelhead and other imperiled salmonid species	8
A	6.2	Implement the high priority salmon recovery actions identified in other parts of the Action Agenda and the Biennial Science Work Plan.	9
A	1.1	Identify and prioritize areas for protection, restoration, and best suitable for (low impact) development	10
A	5.2	Align policies, regulations, planning, and agency coordination to support multi-benefit floodplain management, incorporating climate change forecasts.	11
A	4.2	Provide infrastructure and incentives to accommodate new and re-development within urban growth areas	12
A	3.1	Use integrated market-based programs, incentives, and ecosystem markets to steward and conserve private forest and agricultural lands	13
A	7.1	Update Puget Sound instream flow rules to encourage conservation	14
A	5.1	Improve data and information to accelerate floodplain protection, restoration and flood hazard management	15
A	4.1	Integrate growth, infrastructure, transportation, and conservation planning at sub-regional levels and across jurisdictions	16
A	3.2	Retain economically viable working forests and farms	17
A	2.2	Implement and maintain priority freshwater and terrestrial restoration projects	18
A	4.3	Enhance and expand the benefits of living in compact communities	19
A	1.4	Ensure full, effective compensatory mitigation for impacts that cannot be avoided.	20
A	7.2	Decrease the amount of water withdrawn or diverted and per capita water use.	21
A	6.3	Implement harvest, hatchery, and adaptive management elements of salmon recovery	22
A	7.3	Implement effective management programs for groundwater.	23
A	2.3	Implement restoration projects in urban and developed areas while accommodating growth, density, and infill development	24

Table E-2. Sub-Strategy Rankings—Section B: Marine and Nearshore

Sub-Strategy			Section Rank
B	2.1	Permanently protect priority nearshore physical and ecological processes and habitat, including shorelines, migratory corridors, and vegetation particularly in sensitive areas such as eelgrass beds and bluff backed beaches	1
B	1.2	Support local governments to adopt and implement plans, regulations, and policies that protect the marine nearshore and estuaries, and incorporate climate change forecasts.	2
B	1.3	Improve, strengthen and streamline implementation and enforcement of laws, regulations, and permits that protect the marine and nearshore ecosystems and estuaries	3
B	2.2	Implement prioritized nearshore and estuary restoration projects and accelerate projects on public lands	4
B	3.1	Protect intact marine ecosystems particularly in sensitive areas and for sensitive species	5
B	5.3	Prevent and rapidly respond to the introduction and spread of terrestrial and aquatic invasive species	6
B	1.1	Use complete, accurate and recent information in shoreline planning and decision making at the site-specific and regional levels	7
B	3.2	Implement and maintain priority marine restoration projects	8
B	2.3	Remove armoring, and use soft armoring replacement or landward setbacks when armoring fails, needs repair, is non protective, and during redevelopment	9
B	5.4	Answer key invasive species research questions and fill information gaps	10
B	5.1	Implement species recovery plans in a coordinated way	11
B	2.4	Implement a coordinated strategy to achieve the 2020 eelgrass recovery target	12
B	5.2	Create a more integrated planning approach to protect and enhance biodiversity in the Puget Sound basin	13
B	4.1	Use, coordinate, expand and promote financial incentives and programs for best practices at ports and in the marine industry that are protective of ecosystem health	14
B	4.2	Increase access to and knowledge of publically owned Puget Sound shorelines and the marine ecosystem	15

Table E-3. Sub-Strategy Rankings—Section C: Water Pollution

Sub-Strategy			Section Rank
C	2.2	Prevent problems from new development at the site and subdivision scale	1
C	1.1	Implement and strengthen authorities and programs to prevent toxic chemicals from entering the Puget Sound environment	2
C	9.1	Complete Total Maximum Daily Load (TMDL) studies and other necessary water cleanup plans for Puget Sound to set pollution discharge limits and determine response strategies to address water quality impairments	3
C	1.6	Increase compliance with and enforcement of environmental laws, regulations, and permits	4
C	2.1	Manage urban runoff at the basin and watershed scale	5
C	2.3	Fix problems caused by existing development (structural upgrades; regular and enhanced maintenance)	6
C	2.4	Control sources of pollutants	7
C	4.1	Achieve water quality standards on state and privately owned working forests through implementation of the Forest and Fish Report	8
C	1.3	Adopt and implement plans and control strategies to reduce pollutant releases into Puget Sound from air emissions	9
C	7.1	Improve water quality to prevent downgrade and achieve upgrades of important current tribal, commercial and recreational shellfish harvesting areas.	10
C	4.2	Maintain forest roads and implement road abandonment plans for working forest lands subject to the Forest Practices Rules on schedule, and ensure federal forest managers meet or exceed state standards for road maintenance and abandonment on federal lands.	11
C	1.4	Provide education and technical assistance to prevent and reduce releases of pollution	12
C	1.2	Promote the development and use of safer alternatives to toxic chemicals	13
C	9.4	Develop and implement local and tribal pollution identification and correction (PIC) programs	14
C	8.1	Prevent and reduce the risk of oil spills	15
C	3.2	Ensure compliance with regulatory programs designed to reduce, control or eliminate pollution from working farms	16
C	5.1	Effectively manage and control pollution from small on-site sewage systems	17
C	6.3	Implement priority upgrades of municipal and industrial wastewater facilities	18
C	2.5	Provide focused stormwater-related education, training, and assistance	19
C	8.2	Strengthen and integrate spill response readiness of the State, tribes and local government	20
C	9.2	Clean up contaminated sites within and near Puget Sound	21
C	6.1	Reduce the concentrations of contaminant sources of pollution conveyed to wastewater treatment plants through education and appropriate regulations, including improving pre-treatment requirements	22
C	3.1	Target voluntary and incentive-based programs that help working farms contribute to Puget Sound recovery	23
C	1.5	Control wastewater and other sources of pollution such as oil and toxics from boats and vessels	24

Sub-Strategy			Section Rank
C	6.5	Promote appropriate reclaimed water projects to reduce pollutant loading to Puget Sound	25
C	8.3	Respond to spills and seek restoration using the best available science and technology	26
C	6.2	Reduce pollution loading by preventing and reducing Combined Sewer Overflows	27
C	5.3	Improve and expand funding for small on-site sewage systems and local onsite septic system (OSS) programs	28
C	6.4	Ensure all centralized wastewater treatment plants meet discharge permit limits through compliance monitoring, technical assistance, and enforcement where needed	29
C	7.3	Ensure environmentally responsible shellfish aquaculture based on sound science.	30
C	9.3	Restore and protect water quality at swimming beaches and recreational areas	31
C	5.2	Effectively manage and control pollution from large on-site sewage systems	32
C	7.5	Answer key shellfish safety research questions and fill information gaps	33
C	7.2	Restore and enhance native shellfish populations	34
C	7.4	Enhance the publics' connection to shellfish and increase recreational harvest opportunities.	35

APPENDIX F

FEDERAL RESPONSE—
HABITAT MATRIX

Recent concerns raised by western Washington treaty tribes as part of their “Treaty Rights at Risk” initiative have led to a renewed federal effort to contribute to the protection and restoration of Puget Sound habitat. This effort is led by the Environmental Protection Agency (EPA), National Marine Fisheries Service (NMFS), and U.S. Department of Agriculture’s (USDA’s) Natural Resource Conservation Service (NRCS). Under the leadership of the three co-chairs, federal agencies with authorities in Puget Sound are re-focusing existing efforts and working together to protect and restore habitat important to salmon, shellfish and other species. This coordinated approach includes a review of existing policies, authorities, and funding programs to identify opportunities for strengthening the ability of those programs to contribute to Puget Sound habitat restoration.

Through this effort, federal agencies in the region agreed to coordinate their programs with one another and with the state and tribes to protect and restore habitat in Puget Sound; coordinate funding to support habitat protection and restoration; prioritize protection and restoration of shoreline and nearshore habitats, flood plains, and water quality; and develop a coordinated reporting mechanism to ensure the initiative results in steady improvements in habitat. Next steps include the development of a federal-tribal forum, creation of a system for measuring results, and crosswalking this effort with the work contained in the Habitat Strategic Initiative to further highlight areas for cooperation and support.

The response to tribal concerns consisted of an action plan that describes this inter-agency approach and highlights key actions agencies are taking. The following table was included as an appendix to that plan and provides a detailed description of specific agency commitments, accountability measures, and timeframes for implementation.

2012–2015 Planned Puget Sound Related Total Maximum Daily Loads

- Sinclair-Dyes Inlet Tribs
- Whatcom Lake
- Whatcom Creek
- Cranberry, Johns, and Mill Creeks
- Deschutes
- Drayton Harbor
- Clark’s Creek
- Squalicum Creek
- Soos Creek
- S. Fork Nooksack
- Skykomish
- French-Pilchuck
- Blackman’s Lake
- Des Moines, Massey Creeks
- Jaunita Creek
- Newaukum
- Lower White
- Green River

Acronyms and Abbreviations

BiOp	Biological Opinion	FS	United States Forest Service	NPS	National Park Service
BMP	Best Management Practice	FTA	Federal Transit Administration	NPS	Nonpoint Source Program
CAA	Clean Air Act	FTE	Full-Time Employee	NRCS	National Resources Conservation Service
CAC	Community Assistance Contacts	FY	Fiscal Year	NWFSC	Northwest Fisheries Science Center
CAFO	Concentrated Animal Feeding Operations	GRP	Grassland Reserve Program	NWP	Nationwide Permit
CAP	Community Assistance Program	HFRP	Healthy Forest Reserve Program	OLE	Office of Law Enforcement
CAV	Community Assistance Visit	HPA	Hydraulic Project Approval	PPA	Performance Partnership Agreement
CCMP	Comprehensive Conservation and Management Plan	HQ	Headquarters	PPG	Performance Partnership Grant
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act	HUD	United States Department of Housing and Urban Development	PS	Puget Sound
CIG	Conservation Innovation Grants	ILF	In-Lieu Fee	PSCIS	Puget Sound Cumulative Impacts Study
Corps	United States Army Corps of Engineers	IRT	Interagency Review Team	PSP	Puget Sound Partnership
CREP	Conservation Reserve Enhancement Program	JBLM	Joint Base Lewis-McChord	RFP	Request for Proposal
CRS	Community Rating System	LMR	Living Marine Resources	RPA	Reasonable and Prudent Alternative
CWA	Clean Water Act	MAP Teams	Multi Agency Permit Teams	SEE	Senior Environmental Employee
DO	Dissolved Oxygen	MB	Mitigation Bank	SLOPES	Standard local operating procedures for endangered species
DoD	United States Department of Defense	MOU	Memorandum of Understanding	SRF	State Revolving Fund
DOH	Washington State Department of Health	MPS	Marine Protected Species	SSSE	State Support Services Element
DOT/WSDOT	Washington State Department of Transportation	MS4	Municipal Separate Storm Sewer Systems	TMDL	Total Maximum Daily Load
Ecology	Washington State Department of Ecology	MSA	Magnuson-Stevens Act	USDA	United States Department of Agriculture
EMD	Washington State Emergency Management Division	NEI	National Enforcement Initiative	USFWS	United States Fish and Wildlife Service
EPA	Environmental Protection Agency	NEP	National Estuary Program	USGS	United States Geological Survey
EQIP	Environmental Quality Incentives Program	NEPA	National Environmental Policy Act	WHIP	Wildlife Habitat Incentives Program
ESA	Endangered Species Act	NFIP	National Flood Insurance Program	WQS	Water Quality Standards
FA	Financial Assistance	NHPA	National Historic Preservation Act	WRP	Wetlands Reserve Program
FEMA	Federal Emergency Management Agency	NMFS	National Marine Fisheries Service	WWTP	Wastewater Treatment Plant
FHWA	Federal Highway Administration	NOAA	National Oceanic and Atmospheric Administration		
FRPP	Farm and Ranch Land Protection Program	NPDES	National Pollutant Discharge Elimination System		

Coordination

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Enforcement								
EPA	CWA §404	EPA will convene a meeting with the Corps and Ecology to assess the best ways of improving CWA 404 compliance and enforcement in Puget Sound. EPA will hire a senior environmental employee (SEE) to support compliance/enforcement actions.	EPA, Corps, Ecology	Initial meeting held 1/24. Timing of additional work will depend on filling 2 vacant positions and selecting SEE.	Meeting to assess 404 compliance -> recommendations to improve compliance -> implementation of recommendations -> improved compliance -> improved habitat conditions -> improved salmon, other finfish, and shellfish health	Staff and SEE support redirected toward 404 compliance work OR implementation of other effective enforcement action measures.	New	EPA currently has 2 vacancies: Enforcement Coordinator and Puget Sound enforcement support, that will be key to implementing any new enforcement strategies.
EPA	CWA §404	A field level agreement between all four Corps Districts and EPA was recently revised. EPA and the Corps meet quarterly to discuss enforcement actions and issues. In the past 5 years, EPA has issued §404 enforcement orders or has ongoing case work involving violations on the Blair/Hylebos Peninsula, in Bothell, on the Skykomish River, in Arlington, and in Lynden. Two of these cases involve farming operations.	EPA, Corps	Last quarterly meeting held 1/24. Will continue meeting quarterly. Timing of additional enforcement/compliance work will depend on filling 2 vacant positions.	Improved enforcement of regulations -> improved habitat conditions -> improved salmon, other finfish, and shellfish health	# of enforcement and compliance assistance actions taken	Ongoing	EPA currently has 2 vacancies: Enforcement Coordinator and Puget Sound enforcement support that will be key to implementing any new enforcement strategies.
NOAA	Endangered Species Act (ESA), Magnuson-Stevens Act (MSA)	NOAA OLE will initiate an enforcement initiative in conjunction with the Corps and EPA to reduce the number and effect of unpermitted bank armoring projects.	Co-Leads: NOAA and Corps, State Department of Ecology and WDFW possible partners	Initial NOAA meetings completed December 2011; NOAA regulatory guidance to be completed by April 2012	Complete programmatic consultation for overwater structures in nearshore marine habitat-> Implement streamlined permit process ->	Revised permitting approach should lead to expanded use of bioengineered alternatives to bank hardening -> improved habitat for salmonids	New initiative between NOAA and Corps	The joint agency habitat enforcement initiative aims to prevent additional incremental habitat loss
Corps	CWA §404 and Rivers and Harbors Act	Dependent on funding increase efforts on enforcement. Will need assistance from NOAA to complete after the fact consultation in order to complete actions. Work with EPA on potential to lower the threshold for their involvement to increase effort. Regulatory Compliance and Enforcement: The Seattle District will continue to maintain an appropriate balance among permit, compliance, and enforcement actions. Among the Corps Regulatory Program balanced scorecard metrics in Fiscal Year 2011, Seattle District exceeded its compliance inspection targets two-fold and meets enforcement targets. It seeks to continue to be responsive to reports of violations from Tribes, agencies, and the public.	Corps with assistance from NOAA, EPA	Ongoing; annual reporting on enforcement	Area of jurisdiction and district boundaries	Enforcement of permits and noncompliance with permit requirements->increased compliance with CWA 404 ->better protection of existing habitat and improved mitigation measures	Enforcement statistics	Ongoing
Mitigation								
EPA	CWA §404	EPA will serve on the Interagency Review Team (IRT) for In-Lieu Fee (ILF) and Mitigation Bank (MB) programs in the Puget Sound Basin, with	EPA, Corps, Ecology	Ongoing - multiple projects & multiple monthly meetings	Participation on IRT-> ability to positively influence ILF programs -> more effective mitigation -> improved	Participation on IRT and adoption of policies that increase mitigation	New	

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		priorities given to all ILF and all Tribal MB development. EPA will continue to participate as an IRT member on the Policy Level Meetings with the Corps and Ecology for both ILF and MBs.			habitat conditions -> improved salmon, other finfish, and shellfish health	effectiveness		
Corps	CWA §404	Mitigation Banking and In-Lieu-Fee (ILF) Programs: The Seattle District will continue to encourage the use of mitigation banks and ILF programs that provide high quality compensatory mitigation for unavoidable impacts associated with permitted projects. Presently, mitigation banks totaling over 1,600 acres exist in Washington, with the majority of acreage in the Puget Sound basin, with another 1,500 acres and four proposed ILF programs in the basin. Among these are the first Tribal mitigation banks and ILF program, and the first marine ILF program. Further, the Seattle District continues to explore opportunities for joint mitigation-conservation banks and ILF programs with the Federal Services. Existing Mitigation Banks and In Lieu Fee programs to serve compensatory mitigation requirements (not purely restoration). Approved mitigation banks in the Puget Sound basin include Skagit; Skykomish; Nookachamps; Snohomish; Paine Field/Snohomish County Airport; WSDOT Springbrook Creek.	Corps/Ecology co-leads, local gov't, tribes, other fed agencies as necessary for individual banks	Ongoing; each bank has its own schedule which depends on negotiations	Negotiations with involved parties->creation of ILF programs and mitigation banks ->protects existing habitat	Sufficiently functioning Mitigation Banks; ILF acres protected; completion of ILF and MB	Ongoing	Issue is that mitigation banks don't always replicate lost functions
Corps	CWA §404	Pending: several Banks/ILF in Puget Sound for compensatory mitigation purposes (Lummi Bank; King County ILF; Hood Canal Coordinating Council ILF; Quil Ceda Village ILF; Puget Sound Partnership/Pierce County ILF). <ul style="list-style-type: none"> • Exploring other opportunities with the Services to develop Banks/ILF projects for both agencies mitigation needs • Continue to increase tribal coordination during permitting process, have drastically increased this over last several years. • Work with NMFS/USFWS to identify and develop/expand programmatic opportunities to encourage more environmentally friendly projects. 	Corps/Ecology co-leads, local gov't, tribes, other fed agencies as necessary for individual banks	Negotiations ongoing	Negotiations with involved parties->creation of ILF programs and mitigation banks ->protects existing habitat	Sufficiently functioning Mitigation Banks; ILF acres protected	New	
Navy	ESA Section 7 consultation - habitat loss	Navy looking to use a new mitigation hierarchy, i.e., approved mitigation banks, approved in-lieu fee (ILF), permittee (i.e., Navy) responsible mitigation. Working with the Hood Canal Coordinating Council (HCCC) regarding the	Corps primary to approve ILF. HCCC is ILF sponsor. Interagency Review Team (reviews the	Program approval would be in June '12 at the earliest	ILF program established => Navy enters program => payment made into program =>restoration, creation, enhancement or preservation activity conducted		New program for HCCC and for Navy participation	Allows a concentration of effort on project sites and allows for better coordination to restore the health of the Hood

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		proposed ILF program in Hood Canal.	instrument and advises the Corps and Ecology in selection of projects) includes USFWS, NOAA/ NMFS, EPA, and several state and local agencies, and tribes. Navy: option to use program as a "permittee" once established.					Canal watershed.
Stormwater Permits								
EPA	CWA §402	EPA developed a draft municipal storm water permit for Joint Base Lewis-McChord (JBLM) that incorporates advanced hydrologic flow control requirements for new development, including green infrastructure, and storm water improvements in areas that are already developed. This permit supports Ecology stormwater permits and also serves as a model in subsequent federal permits at federal facilities and within Indian Country.	EPA and Joint Base Lewis McChord	Draft permit completed 1/31/12, final permit 10/1/12	EPA model stormwater permit - >stronger state and federal stormwater permits (consistent with model)->lower PS concentrations of pollutants from stormwater -> improved salmon, other finfish, and shellfish health	Permit in place	New	
NOAA	ESA	<p><u>Habitat Protection</u></p> <ul style="list-style-type: none"> • NMFS will work with EPA on model Federal discharge permits, e.g., the Joint Lewis McCord efforts, to establish appropriate WQ standards and BMPs • NMFS will work with EPA and Ecology on the state industrial general stormwater discharge permit, which is up for renewal, to include appropriate conservation measures for fish habitat. • NMFS will work with EPA and Ecology to implement the existing municipal general stormwater discharge permit to improve compliance and water quality results. <p><u>Enforcement</u></p> <ul style="list-style-type: none"> • NMFS will work with the enforcement team to seek strategic permit compliance/enforcement opportunities. 	Lead: NMFS, Partner agencies: WA Governor's Office, Department of Ecology, EPA Region 10	Work to implement existing general permits is ongoing, but will receive additional effort from NMFS in response to this initiative. Consultations on Federal discharge permits will be new and engaged as requests from EPA are received.	Until WA state water quality standards are up for review, we will engage in existing implementation opportunities, including existing general permits and new consultations on Federal reservations for which EPA retains direct jurisdiction	Biological opinions on Federal actions will have RPAs and or RPMs to provide binding conservation measures to protect and restore water quality in Puget Sound receiving waters	New and ongoing	EPA will develop a model stormwater permit for a federal facility in Puget Sound (see row 11 on EPA worksheet).
Coordinated Permitting								
EPA	CWA §404	Increase participation in regional general permit development, multi-agency Permit teams (MAP Teams), and Nationwide Permit agency review and coordination. An example is the Shellfish	Corps issues permits; EPA will review and comment as	Ongoing	# of §404 applications-> # permits-> Δ in acres of Puget Sound wetlands or other aquatic resources	# of permits reviewed and comments provided by EPA that improve environmental outcome	Ongoing	

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EPA	CWA §404	Interagency MAP Team below. Washington Shellfish Initiative - Shellfish Interagency Review Team will identify ways to appropriately streamline shellfish aquaculture permits, while ensuring compliance with State WQS, Section 404 permitting requirements, and protection of critical shellfish, salmon, and other habitats.	appropriate NOAA, Ecology, WDNR, WDFW, WDOH, Corps, EPA, Tribes	Monthly meetings	Balancing streamlined permits with environmental protection -> ensuring compliance with WQS -> improved WQ -> improved habitat -> improved shellfish health	Participation in review team meetings that result in increased compliance with WQS	New	
NOAA	Endangered Species Act (ESA), Magnuson-Stevens Act (MSA)	<u>Habitat Protection</u> <ul style="list-style-type: none"> Work with the Corps to develop new programmatic consultation(s) using regional general permits, standard local operating procedures for endangered species (SLOPES), etc. to streamline the permit review process and establish fish-friendly, bioengineering alternatives to bank armoring. Work with the Corps to modify nationwide permits or develop regional conditions (e.g., NWP #13, 31) to avoid cumulative effects and incremental habitat losses. Where applicants choose individual permit consultations in lieu of programmatic approaches, NMFS will require compensatory mitigation for incremental habitat loss; use reasonable and prudent alternatives where necessary to avoid adverse modification of critical habitat to achieve adequate conservation of estuarine and nearshore habitats. 	Co-Leads: NOAA and Corps, State Department of Ecology and WDFW possible partners	Initial NOAA meetings completed December 2011; NOAA regulatory guidance to be completed by April 2012	Complete programmatic consultation for overwater structures in nearshore marine habitat-> Implement streamlined permit process ->	Revised permitting approach should lead to expanded use of bioengineered alternatives to bank hardening -> improved habitat for salmonids	New initiative between NOAA and Corps; Completion of an ongoing activity by NOAA-Guidance document on installing overwater structures in marine nearshore areas	The joint agency habitat enforcement initiative aims to prevent additional incremental habitat loss
NOAA	ESA, MSA	<u>Habitat Protection</u> <ul style="list-style-type: none"> Work with the Corps to develop new programmatic consultation(s) in the Snohomish Basin using regional general permits, standard local operating procedures for endangered species (SLOPES), etc., to streamline the permit review process, establish fish-friendly tide gate design criteria, and require compensatory mitigation for estuarine habitat loss from tidegate operation (similar to Skagit tide gate approach). NMFS will work with proponents to develop and implement new habitat conservation banks to compensate for incremental habitat loss. 	Co-Leads: NOAA and Corps State Department of Ecology and WDFW possible partners		Revised permit process-> improved tidegate design criteria-> implement fish-friendly tidegates	Revised design criteria and compensatory mitigation requirements -> reductions in incremental estuarine habitat loss	New initiative between NOAA and Corps	
Corps	CWA §404 and Rivers and Harbors Act	Tribal Notification Procedures: The Seattle District has established notification procedures with 14 Tribes to solicit review and comment on	Corps and Tribes	Ongoing	Basin or watershed based determination depending on service area developed for each bank	Coordination with Tribes -> more rigorous reviews -> better protection of	notification process with additional tribes	Ongoing

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		proposed projects subject to its Regulatory program jurisdiction in areas where they possess Usual and Accustomed hunting and fishing Tribal Treaty rights. Notifications to Tribes increased by 80% (570 total) in Fiscal Year 2011 and Seattle District is working with additional Tribes to develop similar procedures.				existing habitat and improved mitigation measures		
Puget Sound Cumulative Impacts Study (PSCIS)								
EPA	CWA §404	EPA will provide financial and technical support through an Interagency agreement to the Corps for the Puget Sound Cumulative Impacts Study (PSCIS). This study is being conducted to document the cumulative impacts of many small shoreline development projects on Puget Sound and will be used to prevent incremental loss of habitat.	Corps manages the PSCIS; EPA provides financial and technical support	PCIS Phase I will be completed in April 2012. Phase II will be completed by approximately April 2013.	PSCIS -> documentation of the cumulative impacts of development projects on Puget Sound -> prevent future incremental loss of habitat ->reduction in miles of Puget Sound shoreline modified.	Completion of Phase II (Intended to result in more protective federal permitting under CWA section 10/404 in shoreline areas of PS.)	Ongoing	Phase I included the highly developed eastern shoreline of PS between Marysville and Brown's Point north of Tacoma - including the tidally influenced portions of the Duwamish and Snohomish Rivers. The area for Phase II of the study is still to be determined.
Corps	Other Programs	IIS Program (EPA funded) Puget Sound Cumulative Impacts Study (PSCIS) - The scope is a section of Puget Sound from Brown's Point to Tulalip Point, that is expected to show significant resource decline (process, function, habitat) in support of federal regulatory decision making and potentially for state and local land use decisions.	Corps	Ongoing, completion expected end of 2012	PSCIS -> documentation of the cumulative impacts of development projects on Puget Sound -> prevent future incremental loss of habitat ->reduction in miles of Puget Sound shoreline modified.	Completion of Phase II	Ongoing	
Corps	Other Programs	Further development of the information regarding cumulative effects in Puget Sound to inform federal agencies in decision making (USFW, NOAA, EPA, Corps)	Corps	2013	PSCIS -> documentation of the cumulative impacts of development projects on Puget Sound -> prevent future incremental loss of habitat ->reduction in miles of Puget Sound shoreline modified.	Completion of Phase III	New	
National Flood Insurance Program								
FEMA	NFIP (42 U.S.C. 4001 et seq)	The primary purpose of the NFIP is to encourage preventive and protective measures by state and local government to reduce the risk of flooding and share the cost of flood losses with those whose property is at risk of flooding. There are no provisions in either the enacting legislation or the NFIP regulations in the Code of Federal Regulations (CFR) providing for the protection or restoration of salmon habitat.	FEMA with support from State and local governments	Major changes have occurred in the manner in which the NFIP is being administered locally to comply with the BiOP and RPA by NMFS as of September 22, 2011	FEMA developed and issued technical guidance>communities have selected an option as of September 2011>all floodplain development is now being done in compliance with the RPA	Local gov't implements federal gov't (FEMA) along with state gov't (Dept. of Ecology) monitors on an annual basis	New as of Sept. 2011	44 CFR60.3(a)(2) requires that communities comply with ESA
FEMA	NFIP (42 U.S.C. 4001 et seq)	FEMA programmatically monitors state and local government's implementation of the NFIP by	FEMA with support from State	Increased focus on Puget Sound beginning in FY12 but continuing	Closer monitoring of community administration of FPZ ordinances is	CAC (Community Assistance Contact) or CAV	New	

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		conducting Community Assistance Contacts (CAC) and Community Assistance Visits (CAV). During a CAV a cursory review of a communities permit files is completed to evaluate effectiveness of their permitting processes Beginning in October 2011 CAVs in the 122 Puget Sound communities impacted by NMFS Biological Opinion will begin to examine on how well communities are implementing new guidance designed to help them comply with the ESA.		into the future indefinitely	expected to improve compliance	(Community Assistance Visit) with all Tier 1 & 2 communities in FY12 that have selected 'Door 3' FEMA reports annually to NMFS		
FEMA	NFIP (42 U.S.C. 4001 et seq)	FEMA R10 has participated in multiple workshops with NMFS to explain to community officials how to develop, adopt and enforce procedures based on their land-use authorities to avoid adverse affects to salmon habitat	FEMA and NMFS with support from Ecology	Workshops have been held beginning in 2009 and have been held each year since.	Technical assistance to local government will improve compliance with ESA	FEMA reports to NMF	New	
NOAA	ESA	Work with FEMA leadership, NFIP litigation plaintiffs, and key local jurisdictions to identify additional actions to supplement FEMA NFIP biop implementation efforts	Co-leads: NMFS and FEMA Regional Administrators, Collaborators: NWF and Selected local jurisdictions		NMFS is working with FEMA to provide technical assistance to local jurisdictions as they develop their approaches to comply with the FEMA biop RPA.	NMFS and FEMA are using a triage approach to overlay important salmon populations and the local jurisdictions that are least likely to offer a responsive program enabling a targeted compliance effort.	Ongoing	
Corps	Civil Works - Flood Reduction	<ul style="list-style-type: none"> Work with other federal/non federal partners on developing comprehensive plans that address flooding as well as incorporate environmental considerations. Continue to increase partnership with Tribes on flood reduction projects 	Corps, FEMA other partners	Ongoing	Comprehensive watershed plan on flooding->plan includes environmental considerations - > improved floodplain connectivity - >improved habitat	Plans that achieve balance between flood and habitat protection	New	
Levee Vegetation								
NOAA	ESA	<ul style="list-style-type: none"> NMFS will work with the Corps Seattle District to develop model local variances and system wide improvements under the new Policy Guidance Letter and System Wide Improvement Framework to retain and establish riparian trees on levees and accommodate other fish-friendly levee design measures. NMFS will work with the Corps through the PGL variance and SWIF processes to establish ESA section 7 consultation approaches for fish-friendly levee construction and maintenance. NMFS and the Corps will jointly develop levee repair and design criteria that can be applied through Puget Sound and the region. Where opportunities become available to 	Seattle District Corps, WA Dept. of Ecology, King County, Puget Sound Partnership, WDFW and the Muckleshoot Tribe in the Green River process. The Milton Freewater process includes locals, DEQ, ODFW, EPA, Umatilla Tribes, USFWS and NMFS.	Several initial scoping meetings have been held. Awaiting final PGL guidance from Corps HQ.	NMFS and other partners have had some, but limited, success influencing Corps national levee policies. Current approach is to work with motivated partners to develop model vegetation variances that can then be applied throughout Puget Sound under the new procedures.	The Corps chairs a working group with both technical and policy subgroups, which also includes other PSP players, to develop a levee vegetation management approach for the Green River and Cedar River. Solutions will be immediately shared more broadly with other local jurisdictions.	Ongoing	The places identified for the SWIF/variance processes are in the Green River watershed with the Seattle District Corps, and the Walla Walla River near Milton-Freewater with the Walla Walla Corps District. (While the Walla Walla River is obviously not in Puget Sound, it represents the initial opportunity to apply the new SWIF process and lessons

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		<p>condition levee repair or construction through Section 7 consultation, NMFS will require re-vegetation, installation of large wood, or other compensatory mitigation for incremental habitat loss. Adverse modification of critical floodplain habitat will be avoided by the appropriate prescription of reasonable and prudent alternatives. Where opportunities become available through Section 7 Consultation on levee repair or construction, USFWS Will work to have fish friendly designs incorporated to avoid unnecessary habitat loss.</p> <ul style="list-style-type: none"> Develop NMFS NWR guidance on the development, approval and use of conservation banks. Use selected project consultations to encourage the use of new and existing conservation banks. 						learned there will inform similar efforts in Puget Sound).
Corps	PL 84-99, Flood Control and coastal Emergencies (FCCE)	<p>1) PL 84-99 Flood Control and Coastal Emergencies Programs: The Corps Seattle District continues to work collaboratively with levee owners, Tribes, the Federal Services (USFWS and NOAA Fisheries), and stakeholders to develop flood risk management solutions for the Public Law (P.L.) 84-99 Flood Control and Coastal Emergencies (FCCE) programs. These programs support levee integrity, ESA compliance, and fulfillment of Tribal Trust responsibilities. The Corps anticipates the ESA Section 7 consultation inherent in these efforts will yield endangered species/fish-friendly criteria for levee design, construction, maintenance, and repair and best practices guidance for Puget Sound and the region. The District will try to complete P.L. 84-99 consultations with the federal Services prior to doing the actual repairs where circumstances allow, taking into consideration issues such as funding, emergency circumstances and work windows.</p> <p>a) Levee Vegetation System Wide Improvement Framework (SWIF): The Seattle District will serve as the local federal lead for interagency efforts when the Corps' new SWIF approach is used by levee sponsors. The SWIF helps identify solutions that use resources efficiently, prioritize improvements and corrective actions based on risk, and better align programs and</p>	<p>a)Corps b) Corps with NOAA, USFWS, EPA, and FEMA</p>	Ongoing	<p>a) Finalize Policy Guidance Memorandum-> develop new typical levee repair designs with Services and Tribes; share data and serve as technical resource for variance applicants -> implement team-generated decision process when emergency is declared -> project completion->no further loss of habitat along armored bank b) Implement regional guidance on levee setback and vegetation-> setback levees; maintain allowable vegetation where setback is not possible; share data and serve as technical resource for variance applicants ->avoidance of new impact on salmon habitat and water temp</p>	<p>a) Project completion b)Issuance of regional guidance on levees that is protective of the environment 1)completion of SWIF 2)Completion of PGL 3)pilot Products 4)emergency declaration process defined</p>	<p>a) Ongoing b)New</p>	

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		<p>requirements.</p> <p>b) Levee Vegetation Variance Policy Guidance Letter (PGL): The Seattle District will serve as the local federal lead for interagency coordination efforts on variances from mandatory Corps vegetation-management standards. The District will work with levee sponsors (for non-federal levees) and seek their concurrence (for qualifying federal-constructed non-federal sponsor-maintained levees) to request variances under the new DRAFT Vegetation Variance policy. These variances will preserve, protect, and/or enhance natural resources and protect Tribal treaty rights, while ensuring levee function.</p> <p>c) Emergency Flood Response Activities: The Seattle District will seek to improve its method for determining whether local jurisdiction flood assistance requests (Advance Measures and Emergency Operations) will protect against significant threats to life, health, welfare, property, and infrastructure. Where emergency action is warranted, the Seattle District will coordinate as early possible with the Federal Services, EPA, and Tribes so that the action's scope and implementation avoid or minimize adverse habitat impacts, with appropriate after-the-fact mitigation when impacts do occur.</p> <p>d) Levee Rehabilitation: The Seattle District will continue to coordinate its post-damage levee repairs with interested federal, state, local, and Tribal entities. Where possible, based on federal and non-federal resources and other case-specific conditions, the Corps will consider implementing levee setbacks rather than levee rehabilitation in-place.</p> <p>This approach was recently utilized for the Yakima, WA Sportsman Park levee rehabilitation. The Seattle District has been successful at applying best practices such as the Habitat Capacity Mitigation tool developed with the Federal Services, Skagit Diking District sponsors, and Tribal Skagit River System Cooperative to calculate appropriate mitigation. This tool quantified benefits of re-vegetation, willow lift planting benches, and installation of large woody debris, for a series of levee rehabilitations performed in the Skagit Basin during 2011. Application of this tool is limited to the Skagit</p>						

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		River but could be adapted for application to other rivers.						
Restoration Funding								
NRCS	Farm Bill/WRP	Wetlands Reserve Program (WRP) - WRP is a voluntary program offering landowners the opportunity to protect, restore, and enhance wetlands on their property. NRCS provides technical and financial support to help landowners with their wetland restoration efforts. The NRCS goal is to achieve the greatest wetland functions and values, along with optimum wildlife habitat, on every acre enrolled in the program. This program offers landowners an opportunity to establish long-term conservation and wildlife practices and protection. Some of the activities that can be done under EQIP to protect and restore habitat include Property acquisition and conservation, topography restoration.	Corps, NOAA, cities, counties collaborate on restoration	Ongoing	Help develop a plan to buy easements to protect existing wetlands or restoration of wetlands -> environmental benefits	Acres of wetland restored or protected	Ongoing	
NOAA	ESA, CREP	Work with NRCS to identify opportunities to use Farm Bill incentives to cost share with the NOAA Restoration Center on floodplain restoration projects in targeted watersheds to support local recovery plan projects.	Co-leads: NMFS, NOAA Restoration Center NRCS, EPA Region 10				New	
NOAA	ESA	Work with NRCS, FSA and soil and water conservation districts to increase CREP enrollment for riparian buffers.	Co-leads: NMFS and NRCS, Partners: FSA and EPA Region 10				Ongoing	
Corps	Estuary Restoration Act Grants and Funding Opportunities	We will work to integrate grant funding, associated with ERA program with NRCS, USFWS, EPA, NOAA Restoration Center and others as appropriate, to maximize benefits to salmon resources and ecosystem function	Grant lead assigned to Corps	Ongoing	Maximize effectiveness of federal habitat restoration programs; benefit to salmonids	Number of acres of habitat restoration	New	Corps a member of the Estuary Habitat Restoration Council. Corps can award funds grant funds to approved projects to support local estuary restoration projects.
NOAA	ESA	Work with NRCS to identify opportunities to target selected Farm Bill programs to address agricultural water quality issues identified as factors limiting salmon and steelhead recovery in local watershed recovery plans.	Co-Leads: NMFS, NOAA Restoration Center and NRCS				New	
NRCS	Farm Bill/EQIP	Puget Sound Initiative - Water quality treatments related to excessive suspended sediment and turbidity in surface water on non-industrial forestland, primarily related to forest roads and fish passage. Use of both the EQIP and the Healthy Forest Reserve Program (HFRP) to	Due to recent healthy forest campaigns launched by Washington NRCS and other outreach that has	On going and new HFRP for 2012	EQIP and HFRP programs -> reduced runoff from forest roads -> improved water quality -> improved habitat -> improved salmon, other finfish, and shellfish health	# of forestry clients enrolled	HFRP would be new for WA	By focusing first on the same watersheds as the US Forest Service or State Department of Natural Resources are working in, there is an

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		apply conservation practices and establish easements with forest ownership for perpetual protection from development. The highest priority watersheds within the basin would be identified using the US Forest Service's criteria for watershed priority or similar state assessment data, which would be incorporated into NRCS application rating and ranking tools	occurred, in addition to the availability of the new Forestry Conservation Activity Plans, there is a ready pool of forestry clients who are eligible for either EQIP and/or HFRP and are willing to work with NRCS to address the concerns affecting the water resources					opportunity to leverage activities on both private and public forestland to have the greatest impact
USFWS	Various Grants and Technical Assistance Program Funding Opportunities	We will work to integrate funding, associated with grants and technical assistance programs, with NRCS, EPA, NOAA, and others as appropriate, to maximize benefits to fisheries resources.	USFWS	Ongoing	Maximize effectiveness of federal habitat restoration programs; benefit to salmonids	Number of acres of habitat restoration	New	
Research-Driven Recovery Actions								
Corps	Civil Works - Ecosystem Restoration	Skokomish Watershed (in addition to and potentially a result of the GI study): Working with PSFC and Tribes to implement ecosystem restoration projects thru maximizing all agencies programs (Corps, USFW, others) <ul style="list-style-type: none"> CAP and PSAW: dependent on funding there are multiple projects sponsors have approached Corps to sponsor Puget Sound Nearshore: Study has identified opportunities for restoration (working with USFWS and a non-federal sponsor) and will deliver recommended plan to congress in 2015 	Corps, other fed, state, local agencies, tribes as appropriate	Ongoing	Ecosystem restoration work->project completion->improved habitat	Project construction completion	New	contingent on sponsor and Congressional funding (cost share program)
USFWS	Fish and Wildlife Coordination Act	We will provide recommendations, focused on conservation of fisheries resources, to the U.S. Army Corps of Engineers regarding the Skokomish General Investigation as well as the Puget Sound Nearshore project and any other large, water resources planning projects. Additionally, the Puget Sound Nearshore Ecosystem Restoration Project (PSNERP) has identified 13 restoration sites that are likely ready to proceed through the Corps of Engineers process for construction authorization. The PSNERP has developed conceptual design, cost-estimates and other site-specific information for these 13 "ready" sites, as well as 14 other	USFWS	Ongoing	Continue to facilitate selection of the best habitat restoration opportunities in Puget Sound; maximize benefits of habitat restoration from limited restoration resources	Number of habitat restoration projects ready to be implemented	Ongoing	Accomplishments rest primarily with the U.S. Army Corps of Engineers

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		ecosystem restoration projects not yet ready for Corps authorization. These projects represent important opportunities to advance process-based restoration of nearshore ecosystems with important benefits to salmonids and other fishery resources. The U.S. Fish and Wildlife Service will work with the Corps and other agency partners to advance priority projects identified by PSNERP, by providing technical assistance, seeking grant program funding, and assisting with environmental compliance.						
Corps	Civil Works - Flood Reduction	Multiple Programs to utilize for Puget Sound Recovery: 1. General Investigations (GI): Puyallup and Skagit River 2. Operations: Levee Rehab, Levee Vegetation Initiative, LWSC, Mud Mountain Dam and Howard Hanson Dam 3. FPMS: numerous small scale studies/projects in PS 4.CAP 205 constructed projects Lower Dungeness River, Horseshoe Bend in Kent and Tukwila	Corps, other fed, state, local agencies, tribes as appropriate	Ongoing	Ecosystem restoration work->project completion->improved habitat	Project construction completion	Ongoing	
USGS	NA	USGS conducts restoration project-specific monitoring and assessments to establish pre-project baselines, habitat (and other) responses to restoration, and other studies relevant to supporting restoration planning and adaptive management. The USGS also develops protocols for others to use for scientifically-defensible monitoring related to habitat protection and restoration, particularly relating to Department of the Interior trust resources.	USGS Science Centers lead projects and protocol development.	Project dependent. Not applicable to protocols.	NA	NA	Ongoing	
Sustainability Partnership								
FHWA	N/A	Sustainability Partnership. Partnership between EPA, HUD, and DOT which encourages smart growth and land use choices such as compact growth within urban growth boundaries. Funds projects which preserve environmentally sensitive lands and safeguard rural landscapes by targeting development to locations that already have infrastructure and offer transportation choices.	HUD, EPA, FHWA and FTA staff.	Ongoing	Identifying ways to improve sustainability by integrating our programs and removing barriers to sustainable projects.	Pilot projects and information-sharing.	New	
FTA		Sustainability Partnership- Partnership between EPA, HUD, and DOT which encourages smart growth and land use choices such as compact growth within urban growth boundaries. The Sustainable Partnership funds projects which preserve environmentally sensitive lands and safeguard rural landscapes by targeting development to locations that already have	DOT, HUD, & EPA	Funding in PS basin dependent on competitive process.	Coordination of funding and expertise between HUD, EPA & DOT -> reduced development in undeveloped areas-> protection of upland areas, wetlands, and other sensitive areas.	Continued coordination with EPA and HUD through the partnership	Ongoing	

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EPA	N/A	infrastructure and offer transportation choices. Sustainability Partnership. Partnership between EPA, HUD, and DOT which encourages smart growth and land use choices such as compact growth within urban growth boundaries. Funds projects which preserve environmentally sensitive lands and safeguard rural landscapes by targeting development to locations that already have infrastructure and offer transportation choices.	HUD, EPA, FHWA and FTA staff.	Ongoing	Identifying ways to improve sustainability by integrating our programs and removing barriers to sustainable projects.	Continued coordination with other partners	New	
General and Specific Project Coordination								
NOAA	ESA	<ul style="list-style-type: none"> NMFS will use the best science from the NWFSC and other consultations on WQS, pesticides, etc. to identify adverse effects to listed salmon and steelhead in project specific consultations on discharge permits, transportation actions, dredging projects, etc. NMFS will require best management practices, biological thresholds, low impact development techniques, bio-assays, monitoring, etc. as needed to avoid, reduce or mitigate adverse effects to listed salmon and steelhead in specific project consultations that generate toxic contaminants in stormwater runoff, point and non-point source discharges, dredging discharges, etc. 	Lead: NMFS, Partner agencies: EPA, Corps, FHWA, DOD,	Ongoing as consultation requests are received	In the absence of NMFS consultation on EPA approval of water quality standards, NMFS will address individual standards that are relevant to listed fish conservation in consultations on various Federal actions that involve pollutant discharges.	Biological opinions on Federal actions will have RPAs and or RPMs to provide binding conservation measures to protect and restore water quality in Puget Sound receiving waters	New and Ongoing	EPA will focus additional attention on oversight and enforcement of State stormwater permits, including MS-4 permits under the National Enforcement Initiative for Municipal Infrastructure, to improve Puget Sound water quality (see row 13 on EPA worksheet).
FEMA	Presidential Preparedness Directive 8	Increase participation by resource agency under the National Response Framework and National Disaster Recovery Framework. Partnerships with other federal agencies and State Emergency Management Division for combining grant opportunities to maximize multiple objects under the various authorities, like FEMA acquisition projects combining with USFWS Restoration activities.	FEMA, DOI, NMFS, USFWS, Corps (Primary); State EMD and Resource Agencies (Supporting)	Disaster dependent or Annually	Increase collaboration of funding => concentrated effort on recovery efforts => improvement to habitat	# of pooled projects funded	New	NDRF is being introduced Mar 1.
Corps	Presidential Preparedness Directive 8	Development of policies and associated metrics for ensuring success which require collaboration of "whole community" participation (which include natural resource and environmental departments) in the development of plans. This includes statewide planning efforts.	FEMA, State Planning Agencies (primary); State and Fed Resource Agencies (supporting)	N/A	Coordinated planning => increased effort for avoidance/minimization => reduction in rate of harm to habitat/species	see Whole Community metrics	New	
USFWS	ESA	We will consult with the Corps and other federal action agencies, pursuant to Section 7 of the ESA, on actions that affect habitat (marine, estuarine, and freshwater habitats) in Puget Sound including shoreline armoring, floodplain development, U.S. Navy and U.S. Army	USFWS	Ongoing	Continue to minimize impacts to federally listed species; reduced impact to habitat	Number of consultations completed	Ongoing	

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		construction and operational activities, and wastewater treatment plant expansions and construction. Also, we will revise designated critical habitat for the Northern Spotted Owl. The proposed rule will be published by February 28, 2012, and the final rule will be completed by November 2012.						
USFWS	CERCLA	We will continue to work with Washington Department of Ecology as well as Tribes and NOAA to pursue settlements on non-federal-lead sites in Puget Sound.	USFWS	Ongoing	Contribute to habitat restoration; benefit to salmonids	Number of acres of habitat restoration	Ongoing/New	
FS	NFMA	All USFS projects are designed to protect and restore habitat, and effects of projects are consistent with forest plans and applicable federal and state laws and regulations. Other projects (e.g., mining, energy developments) are mitigated as allowed by law and regulations.	USDA Forest Service implements and ensures consistency with the Northwest Forest Plan on all National Forest lands. The Forest Service works closely with regulatory agencies to complete necessary ESA consultation and acquire appropriate permits. Regulatory agencies include the NMFS, USFWS, US Army Corps of Engineers, Washington Dept. of Fish and Wildlife, and Washington Dept. of Ecology.	The Northwest Forest Plan has been in effect since 1994. The Forest Service has agreements in place with NMFS, USFWS, US Army corps of Engineers, and WDFW to meet consultation and permitting requirements for most projects. Other projects are consulted on a case-by-case basis	The Northwest Forest Plan contains land management objectives with specific requirements for aquatic protection and restoration. Consultation with all of the appropriate regulatory agencies insure actions meet all Federal and State laws and regulations	The Regional Forester and Forest Supervisors monitor implementation of the Northwest Forest Plan. Forest personnel and regulatory agencies monitor compliance of individual projects with consultation and permitting agreements and laws and regulations.	Ongoing	The Northwest Forest Plan applies to all National Forest System Lands within western Washington. Consultation/permitting agreements apply to all Forest Service lands and projects within the State of Washington.
FS	ESA, CWA, Fish NEPA, and Wildlife Coordination Act	Streamlining project approval process (e.g., categorical exclusions, ESA consultation) could accelerate aquatic restoration projects. USDA Forest Service restoration projects are streamlined through the Aquatic Restoration Biological Opinion (ARBO), the Hydraulics MOU with the State of Washington, ESA Consultation Streamlining (where needed), and through the NEPA process (where possible). The ARBO streamlines certain restoration actions through USFS, NOAA Fisheries, and USFWS consultation procedures for consistency with ESA. The Hydraulic MOU is an agreement between WDFW and USFS that supports the improvement of	The Forest Service works closely with regulatory agencies to streamline the permit process. Regulatory agencies include the NMFS, USFWS, US Army Corps of Engineers, Washington Dept. of Fish and Wildlife, and Washington Dept. of Ecology. Activities occur	The Forest Service has agreements in place with NMFS, USFWS, US Army corps of Engineers, and WDFW to streamline permitting/consultation for aquatic restoration projects. The Washington Office is pursuing a new Categorical Exclusion category for road decommissioning. The timeline is uncertain at this time.	Aquatic Restoration Biological Opinion (ARBO) streamlines ESA consultation for aquatic restoration projects. The agreement has been in place for 5 years and is in the process of being renegotiated. The US Army Corps of Engineers recently issued a Regional General Permit (RGP-8) for Forest Service Restoration projects in the State of Washington. WDFW recently signed a new MOU with the Forest Service that addresses Forest Service hydraulic projects within the State of Washington	Forest Service Regional Office personnel collaborate with regulatory agencies to prepare agreements and complete annual reporting. Forest personnel collaborate with local agency contacts to implement projects	Ongoing	Streamlining agreements cover Forest Service lands and projects within the State of Washington

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		road/stream crossings. Where needed (not previously covered by ARBO), restoration projects are reviewed through a streamlining process with ESA regulatory agencies. Some projects can be categorically excluded from the preparation of EAs or EISs through the use of Decision Memos (a more abbreviated NEPA analysis) in the NEPA process. Effectiveness and BMP Monitoring occur.	primarily at the Regional and Forest levels. The Washington Office is pursuing a new Categorical Exclusion category for road decommissioning to streamline the NEPA process for those projects.					
FS	NFMA	Project-specific, Forest-wide, and Region-wide monitoring data are collected and shared with other agencies. Some data, such as temperature, are being incorporated into Regional-scale analyses (e.g., climate-stream temperature sensitivity). The effectiveness of the NW Forest Plan is being monitored through the AREMP program. Forest Plan and specific project level monitoring are also occurring. Best Management Practices continue to be monitored for implementation and effectiveness.	Data-sharing occurs between the following entities: USDA Forest Service, US National Park Service, USGS, WA Department of Ecology, WA Dept. of Fish and Wildlife, Tribes, County and City Governments, Universities.	Data sharing has been on-going and increases constantly since the advent of the internet. The Forest Service has implemented several National databases, and the processes to share these data with other agencies are either underway or still under development.	Share data with interested parties -> improve knowledge and understanding of resource conditions and effects -> reduce costs to execute effective Natural Resource Programs -> improve habitat conditions more cost-effectively	Data-sharing is encouraged at all levels of the agency. (It would cost more to track all data-sharing that is occurring, thus tracking this measure would be oppose the associated logic model to find more cost-effective ways of managing Natural Resource Programs and improving habitat conditions.)	Ongoing	
Navy	Sikes Act and DoD Regulations for Military lands. Naval Air Station Whidbey Island's (NASWI) Integrated Natural Resource Management Plan (INRMP).	Under the INRMP, WA Dept. of Fish & Wildlife (WDFW) performs annual forage fish spawning surveys at NASWI. b. Whidbey staff, WDFW, and NOAA(NMFS) will conduct a survey in both 2013 and 2016 for Puget Sound chinook salmon presence to compare change over time to assist in assessing the effectiveness of the plan	Navy - Primary. WDFW & NOAA-NMFS support.	Annual for forage fish. 2013 & 2016 for salmon survey.	Completed surveys=> provide to agencies=>improve INRMPS as needed.	Naval Air Station Whidbey Island will measure/report to WDFW or NOAA-NMFS as appropriate	Ongoing	
JBLM	Sikes Act and Army Regulation 200-1	If possible and funding allows, restoration activities and habitat protection efforts are built into project development plans.	JBLM and Corps	Continuous	Initial Planning and Programming Documents include Natural Resource Components (including RFP's)	Annual review of the INRPM to compare accomplishments versus commitments	Ongoing	
FTA	NEPA	Some FTA funded projects benefit habitat through mitigation related activities such as removing creosote-treated pilings, land banking, mitigation banking, wetland preservation, and improved water quality.	Mitigation determined through FTA and project proponent consultation with NOAA/NMFS, USFWS, and Department of Ecology	Mitigation measures are project specific and are determined during and after the NEPA process	FTA funded project implements water quality or habitat related mitigation -> Potential improvement in water quality or habitat (dependent on project)	Continued enforcement of environmental commitments.	Ongoing	

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EPA	Water Quality	Clean Water Act (CWA) §303	Water Quality Standards (WQS) for most of the Puget Sound basin are developed by the Washington Dept. of Ecology (Ecology) and approved by EPA. The State program undergoes a triennial review (currently underway) to ensure the standards provide for fishable and swimmable waters. EPA has recently worked with the State to improve its temperature and dissolved oxygen standards, and is currently in discussions with the State regarding updating the criteria for toxic pollutants.	Ecology develops WQS, EPA provides advice and approval	Ecology will adopt revised sediment management standards (including a new fish consumption rate) by fall/winter 2012, revised WQS implementation tools (e.g., variance provision and compliance schedule provision) will be adopted by fall/winter 2012, and WQS will include a new fish consumption rate to derive human health criteria by 2014. EPA action will occur 90 days after adoption.	EPA review and approval of toxics WQS -> implementation through permits and TMDLs -> improved WQ -> improved human health protection, especially for high end consumption of fish and shellfish	Approval of WQS protective of human health, especially high end consumption of fish and shellfish.	New review round for ongoing activity		
EPA	TMDLs	CWA §303(d)	EPA and State working together to make Total Maximum Daily Loads (TMDLs) more readily implemented in order to improve water quality. For example, the Clarks Creek TMDL effort involves close coordination with the jurisdictions impacting the water body, in order to address problems with sediment, excess plant growth, stormwater flows, and low dissolved oxygen. This includes specifying stormwater best management practices (BMPs), monitoring, and setting numeric targets in the TMDL that can be put into NPDES stormwater general permits, thereby improving water quality for salmon. The Puyallup Tribe is heavily involved in this TMDL development effort. The EPA supports the inclusion of land-use specific BMPs in TMDL implementation plans; and supports the consideration of such BMPs during TMDL development. The EPA is currently working closely with Ecology to determine the best ways to integrate such BMPs into TMDLs throughout the state.	Ecology develops TMDLs, EPA provides technical assistance and approval	Varies by TMDL. See "TMDL" tab at end of workbook for list of water bodies scheduled for adoption in the next 3 years. EPA action will occur 30 - 60 days after adoption.	EPA review and approval of TMDLs -> implementation through permits and Best Management Practices (BMPs) -> improved WQ -> improved salmon, other finfish, and shellfish health	Approval of TMDLs that are readily implemented and improve water quality for fish and shellfish.	Some new TMDLs being developed and some ongoing	Working with 18 water bodies in the Puget Sound basin. See "TMDL" tab for list of water bodies.	

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EPA	TMDLs	CWA §303(d)	Region 10 is supporting Ecology's effort to develop a TMDL for forests on the west side of the Cascades (including all USFS lands in the Puget Sound watershed - Olympic National Forest, Mt. Baker-Snoqualmie National Forest, Gifford Pinchot National Forest), targeting the protection of riparian areas which are vital to salmon habitat. This large scale TMDL will be focused on federal lands and incorporate Northwest Forest Plan riparian protections. While this TMDL would focus on pollutants, its successful implementation would necessarily focus on habitat protection and restoration.	Ecology develops TMDLs, EPA provides technical assistance and approval, USFS implements TMDL	Draft TMDL developed by 4/1; final TMDL approved by 8/1/12	EPA review and approval of TMDLs -> implementation through permits and BMPs -> improved WQ -> improved salmon, other finfish, and shellfish health	Adoption of a west side forest TMDL that incorporates riparian protections.	New	EPA is committed to working with USFS to implement this TMDL.	
EPA	TMDLs	CWA §303(d)	EPA will work with the Ecology to target 20% of their TMDLs toward addressing impaired waters that support Tribal resources. These TMDLs could involve dissolved oxygen (DO), sediment, toxics, temperature (affecting salmon) and pathogens (affecting shellfish). The EPA routinely offers to consult with Tribal Governments before taking action to approve or disapprove TMDLs that may affect Tribal interest, consistent with EPA Policy (EPA Policy on Consultation and Coordination with Indian Tribes, May 4, 2011). The EPA will also commit to notifying potentially affected Tribal governments at the early stages of TMDL development for those TMDLs in which EPA is involved.	Ecology develops TMDLs, EPA provides technical assistance and approval	Varies by TMDL. See attached sheet for list of water bodies scheduled for adoption in the next 3 years. EPA action will occur 30 - 60 days after adoption.	Effective TMDL -> change in discharges or inputs to water body -> WQ change -> improved salmon and shellfish health	Adoption of commitment in the WA/EPA PPA to target 20% of Ecology TMDLs toward waters that support Tribal resources.	New		
EPA	TMDLs	CWA §303(d)	EPA is currently using contractor resources to develop pilot TMDLs which more effectively address the water quality and aquatic habitat degradation caused by stormwater runoff in Squalicum and Soos Creek. These pilot projects are for watersheds in north and central Puget Sound and their development includes active participation by the local Tribes, State, and municipal governments. EPA is also funding bioassessment for these	Ecology develops TMDLs, EPA provides advice and approval	Draft TMDLs for these two watersheds are scheduled for public review before the end of 2012.	Effective TMDL -> change in discharges or inputs to water body -> WQ change -> improved salmon health	Adoption of TMDLs that address stormwater impacts on water quality and aquatic (salmon) habitat. These pilot TMDLs are expected to provide examples for addressing this widespread problem.	New		

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			projects to ascertain current stream habitat conditions and to set restoration targets that will fully support designated beneficial uses, including all salmon life stages.							
EPA	Low D.O. problems in the nearshore	CWA §303(d)	EPA Region 10 continues to support Ecology's development of a water quality model to evaluate dissolved oxygen in South Puget Sound. It is anticipated this model will determine if additional nutrients from human activities are contributing to dissolved oxygen problems in these waters. The model will also provide a tool for developing a TMDL which can be used to set loading targets for the many sources of nutrients in Central and South Puget Sound which cause and contribute to dissolved oxygen problems.	EPA, Ecology	Model and technical report currently scheduled for public review in late 2012.	Water quality model will provide the tool necessary for determining the reduction in nutrient loading necessary to restore dissolved oxygen levels and reduce algae blooms in South Puget Sound.	Adoption of a plan to reduce nitrogen loading	Ongoing		
EPA	Water Quality	CWA §402	EPA will provide technical, financial and policy support to Ecology to improve State stormwater permits.	EPA, Ecology	Ongoing support through 2013	New stormwater permits -> improved WQ -> improved salmon, other finfish, and shellfish health	New Western Washington municipal stormwater permit issued by Ecology by July 2012. EPA will provide comments on draft permits. Comments provided regarding 2012 Washington legislative proposals.	New		
EPA	Water Quality	CWA §402	EPA will review selected Department of Ecology's National Pollutant Discharge Elimination System (NPDES) permits issued in the Puget Sound basin.	EPA, Ecology	Permits to be reviewed in 2012	EPA's permit reviews -> strengthened permit conditions -> improved WQ -> improved salmon, other finfish, and shellfish health	Washington Concentrated Animal Feeding Operations (CAFO) permit to be reviewed in 2012, other permits to be determined.	New		
EPA	Water Quality	CWA §402	EPA developed a draft municipal storm water permit for Joint Base Lewis-McChord (JBLM) that incorporates advanced hydrologic flow control requirements for new development, including green infrastructure, and storm water improvements in areas that are already developed. This permit supports Ecology stormwater permits and also serves as a model in subsequent federal permits at federal facilities and within Indian Country.	EPA and Joint Base Lewis McChord	Draft permit completed 1/31/12, final permit 10/1/12	EPA model stormwater permit -> stronger state and federal stormwater permits (consistent with model)-> lower PS concentrations of pollutants from stormwater -> improved salmon, other finfish, and shellfish health	Permit in place	New		

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EPA	Water Quality	CWA §402	EPA will enhance its oversight of State enforcement in the Puget Sound basin, including an overall evaluation of Ecology's NPDES enforcement program using the State Review Framework, a national tool for evaluating state enforcement programs. EPA will also be using the recent published findings (Jan 2011) of the NPDES permit quality review for Washington, as well as activities listed above under line 9 (permit review) to improve permits.	EPA, Ecology	2012	EPA's evaluation of Ecology's enforcement program -> increased enforcement of NPDES permits -> improved WQ -> improved salmon and shellfish health	State Review Framework evaluation completed	New		
EPA	Water Quality	CWA §402	EPA will be assessing all Phase 1 municipal separate storm sewer systems (MS4) permits in Washington under EPA's National Enforcement Initiative (NEI) for Municipal Infrastructure. Under this NEI, EPA must assess and address compliance issues for MS4 discharging to impaired waters serving urban populations greater than 100,000 by September 30, 2016. In Fiscal Year (FY)12, EPA will assess 4-5 permits, including City of Tacoma, Pierce County, Snohomish County, and Washington Department of Transportation. If problems are found with permit compliance, a range of "addressing" actions may occur by EPA and/or the State, including enforcement responses.	EPA, Ecology	2012-2013	MS4 permit assessment -> identification of compliance issues -> actions to address issues -> improved permit compliance -> improved WQ -> improved salmon and shellfish health.	Assessment of 4-5 MS4 permits	New		
EPA	EPA	CWA §402	EPA is launching a new initiative, in partnership with Ecology, to target and inspect auto salvage and wrecking yards in Washington, with a focus on those that discharges can impact Puget Sound. These facilities, both permitted and unpermitted, can discharge metals, oils and other toxics. EPA will take follow-up actions as appropriate (direct enforcement, referrals to Ecology, etc.)	EPA, Ecology	2012 2013	Inspections, enforcement	Number of follow-up actions taken	New		
EPA	Water Quality, Compliance and Enforcement	CWA §402	Ongoing Puget Sound enforcement initiatives involve concentrated animal feeding operations (CAFOs). In a focused enforcement effort in the Nooksak River basin, 15-17 CAFO/AFO	EPA	2012-2013	Enforcement of NPDES permits -> increased compliance with CWA -> improved WQ -> improved salmon and	Number of enforcement actions	Ongoing		

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			facilities have been inspected in each of the last two years.			shellfish health				
EPA	Water Quality, Compliance and Enforcement	CWA §402	As part of Region 10's enforcement strategy, EPA will focus enforcement and compliance efforts on the Samish Watershed. This will include ongoing discussions with Ecology and the Department of Agriculture and joint inspections with Agriculture.	EPA, WA Dept. of Agriculture, Ecology	Ongoing	Enforcement of NPDES permits -> increased compliance with CWA -> improved WQ -> improved salmon and shellfish health	Number of enforcement actions	Ongoing		
EPA	Water Quality, Compliance and Enforcement	CWA §402	As part of Region 10's enforcement strategy, EPA will focus enforcement and compliance efforts on industrial stormwater discharges to the Lower Duwamish waterway. This will include source tracing activities, collaborative discussions with relevant agencies, and fine-tuning the Duwamish target list. EPA will conduct inspections and ensure appropriate follow-up enforcement.	EPA, Ecology, City of Tukwila, King County, City of Seattle, Seattle Public Utilities	2012-2013	Enforcement strategy-> enforcement actions-> increase in compliance rates -> improved Lower Duwamish environmental conditions -> improved salmon and shellfish health	Number of inspections and followup actions	New		
EPA	Water Quality	CWA §402	Active participation in the Ecology/EPA Pollution Control Action Team, including inspections, overflights and assistance to local, State, and tribal agencies to ensure compliance with federal and state water quality rules (e.g., NPDES). Activities include CAFO inspections and followup enforcement as appropriate (note this is an enhancement of an existing activity for EPA to conduct CAFO inspections in Whatcom county as part of a national priority.	EPA, Ecology, DOH, etc.	2012-2013	Enforcement strategy-> enforcement actions-> increase in compliance rates -> improved water quality in Whatcom County -> improved salmon and shellfish health	# of identified targets (sources), # of inspections	New		
EPA	Shoreline Armoring	CWA §404	EPA will provide financial and technical support through an Interagency agreement to the Corps for the Puget Sound Cumulative Impacts Study (PSCIS). This study is being conducted to document the cumulative impacts of many small shoreline development projects on Puget Sound and will be used to prevent incremental loss of habitat.	Corps manages the PSCIS; EPA provides financial and technical support	PCIS Phase I will be completed in April 2012. Phase II will be completed by approximately April 2013.	PSCIS -> documentation of the cumulative impacts of development projects on Puget Sound -> prevent future incremental loss of habitat ->reduction in miles of Puget Sound shoreline modified.	Completion of Phase II (Intended to result in more protective federal permitting under CWA section 10/404 in shoreline areas of PS.)	Ongoing	Phase I included the highly developed eastern shoreline of PS between Marysville and Brown's Point north of Tacoma - including the tidally influenced portions of the Duwamish and Snohomish Rivers. The area for Phase II of the study is still to be determined.	
EPA	Shoreline Armoring	CWA §404	EPA is currently working with the Corps to explore 'softer' options for	EPA	Ongoing	Adopt bioengineering approaches -> reduce	Shoreline protection system at Manchester Laboratory is repaired	New		

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			preventing erosion of the shoreline (an example is in front of EPA's Manchester Laboratory).			shoreline armoring -> minimize impacts to marine and nearshore environment -> maintained levels of salmon, other finfish, and shellfish health	in a manner that reduces impacts to the nearshore			
EPA	Shoreline Armoring	CWA §404	EPA has requested that the Corps Seattle District adopt stronger regional conditions protective of Puget Sound habitat and shoreline in its new Nationwide Permits (NWPs), and has encouraged other federal agencies, the State and Tribes to comment to the Corps on this same issue.	EPA	Corps reissues NWPs March 2012. Seattle District adopts Regional Conditions by June 2012	More protective Nationwide Permits -> fewer actions negatively impacting salmon habitat -> maintained levels of salmon health	Nationwide Permits issued reflect strong regional conditions protective of Puget Sound habitat	New		
EPA	Mitigation Adequacy	CWA §404	EPA will serve on the Interagency Review Team (IRT) for In-Lieu Fee (ILF) and Mitigation Bank (MB) programs in the Puget Sound Basin, with priorities given to all ILF and all Tribal MB development. EPA will continue to participate as an IRT member on the Policy Level Meetings with the Corps and Ecology for both ILF and MBs.	EPA, Corps, Ecology	Ongoing - multiple projects & multiple monthly meetings	Participation on IRT-> ability to positively influence ILF programs -> more effective mitigation -> improved habitat conditions -> improved salmon, other finfish, and shellfish health	Participation on IRT and adoption of policies that increase mitigation effectiveness	New		
EPA	Water Quality, Compliance and Enforcement	CWA §404	EPA will convene a meeting with the Corps and Ecology to assess the best ways of improving CWA 404 compliance and enforcement in Puget Sound. EPA will hire a senior environmental employee (SEE) to support compliance/enforcement actions.	EPA, Corps, Ecology	Initial meeting held 1/24. Timing of additional work will depend on filling 2 vacant positions and selecting SEE.	Meeting to assess 404 compliance -> recommendations to improve compliance -> implementation of recommendations -> improved compliance -> improved habitat conditions -> improved salmon, other finfish, and shellfish health	Staff and SEE support redirected toward 404 compliance work OR implementation of other effective enforcement action measures.	New	EPA currently has 2 vacancies: Enforcement Coordinator and Puget Sound enforcement support, that will be key to implementing any new enforcement strategies.	
EPA	Water Quality, Compliance and Enforcement	CWA §404	A field level agreement between all four Corps Districts and EPA was recently revised. EPA and the Corps meet quarterly to discuss enforcement actions and issues. In the past 5 years, EPA has issued §404 enforcement orders or has ongoing case work involving violations on the Blair/Hylebos Peninsula, in Bothell, on the Skykomish River, in Arlington, and in Lynden. Two of these cases involve farming	EPA, Corps	Last quarterly meeting held 1/24. Will continue meeting quarterly. Timing of additional enforcement/compliance work will depend on filling 2 vacant positions.	Improved enforcement of regulations -> improved habitat conditions -> improved salmon, other finfish, and shellfish health	# of enforcement and compliance assistance actions taken	Ongoing	EPA currently has 2 vacancies: Enforcement Coordinator and Puget Sound enforcement support, that will be key to implementing any new enforcement strategies.	

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			operations.							
EPA	Water Quality, Habitat Alteration	CWA §404	Increase participation in regional general permit development, multi-agency Permit teams (MAP Teams), and Nationwide Permit agency review and coordination. An example is the Shellfish Interagency MAP Team below.	Corps issues permits; EPA will review and comment as appropriate	Ongoing	# of §404 applications-> # permits-> Δ in acres of Puget Sound wetlands or other aquatic resources	# of permits reviewed and comments provided by EPA that improve environmental outcome	Ongoing		
EPA	Water Quality	CWA §404	Washington Shellfish Initiative - Shellfish Interagency Review Team will identify ways to appropriately streamline shellfish aquaculture permits, while ensuring compliance with State WQS, Section 404 permitting requirements, and protection of critical shellfish, salmon, and other habitats.	NOAA, Ecology, WDNR, WDFW, WDOH, Corps, EPA, Tribes	Monthly meetings	Balancing streamlined permits with environmental protection -> ensuring compliance with WQS -> improved WQ -> improved habitat -> improved shellfish health	Participation in review team meetings that result in increased compliance with WQS	New		
EPA	Water Quality	CWA §106	EPA provides §106 grants to the Department of Ecology for State water quality programs. Work plans are negotiated through the Performance Partnership Agreement (PPA) process. Puget Sound is already a priority for the State.	EPA (grantor), Ecology (grantee)	Ecology grant begins 7/1/12	PPA Work plan implementation -> maintenance of ongoing WQ work -> improved WQ -> improved levels of salmon, other finfish, and shellfish health	Grant issued in year appropriated. See individual PPA for additional performance measures.	Ongoing	Washington's PPA is updated every year	
EPA	Water Quality	CWA §106	EPA also provides §106 grants to a number of Puget Sound Tribes to support corresponding tribal programs.	EPA (grantor), Tribes (grantees)	Tribal grants have varying start dates	PPA Work plan implementation -> maintenance of ongoing WQ work -> improved WQ -> improved levels of salmon, other finfish, and shellfish health	Grant issued in year appropriated. See individual PPAs for additional performance measures.	Ongoing	Updated every 1-2 years	
EPA	Water Quality	Clean Water State Revolving Fund (SRF)	The Clean Water SRF has been used to benefit the Puget Sound basin through funding WWTP improvements and nonpoint source projects. In FY11, EPA awarded a capitalization grant of approximately \$26 million to Ecology. When combined with the State match and revolving fund loan repayments, the FY11 total funds available are expected to be about \$115 million. Washington State intends to issue loans for almost \$100 million to eligible WWTPs projects and about \$17 million for twenty-two nonpoint source	EPA, Ecology	Ongoing grant program that funds new projects annually. Ecology's next grant will begin 7/1/12	SRF grants to WWTPs and for NPS projects -> reduced pollution inputs -> improved WQ -> improved salmon, other finfish, and shellfish health.	Grant issued in year appropriated.	Ongoing		

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			projects. According to Ecology's latest report to EPA, over 50% of Washington's Clean Water SRF went to projects that protect Puget Sound.							
EPA	Water Quality	CWA §312	EPA has provided the Washington Department of Ecology with Puget Sound grant funding to initiate work on a no discharge zone petition and has established a point of contact within the Agency for Ecology to work with on the petition. This could restrict sewage discharge from boats in designated areas where adequate and reasonably available pump-out facilities exist.	EPA, Ecology	Ecology will have conducted an evaluation and drafted a petition to EPA by Fall 2013	Completed petition -> approval of no discharge zone -> reduced nutrient and pathogen inputs -> improved WQ -> improved salmon, other finfish, and shellfish health	Evaluation conducted, petition drafted.	New		
EPA	Water Quality	CWA §319 Nonpoint Source Program (NPS)	EPA will work with the Department of Ecology to investigate redirecting 319 funds toward nonpoint sources impacting Tribal resources (e.g., to increase NPS field presence).	EPA, Ecology	Spring 2012	319 funding -> increased field presence -> identification and resolution of nonpoint pollution issues -> improved water quality -> improved salmon and shellfish health	Re-direction of funds in 319 grant	New		
EPA	Water Quality	CWA §319 Nonpoint Source Program (NPS)	EPA will support and participate in the State's three-agency discussions on agriculture roles, responsibilities, expectations and activities. This is expected to result in better approaches to addressing agricultural pollution.	EPA, Regional Administrator???	On-going	Three-agency discussions -> improved approaches to addressing agricultural pollution -> reduced agricultural pollution -> improved WQ -> improved salmon and shellfish health	Agreed upon approach to addressing agricultural pollution	New		
EPA	Funding	CWA 319 Grants and Construction Grants	Grants are dependent on the quality of proposals submitted and funding available. The existing Washington NPS Management Plan was published in 2005; EPA must approve revisions to the Management Plan. Statewide, about half of the total number of projects and dollar amounts for the most recent Washington CWA §319 grant focus on the Puget Sound region (5 out of 10 projects and \$985,970 out of \$1,836,435 in CWA §319 funding). Nine Puget Sound construction projects are proposed for	EPA, Ecology	319 grant awarded in July 2012; State grant solicitation in Fall 2012	§319 grants -> reduced NPS pollution -> improved WQ -> improved salmon and shellfish health	Grant issued in year appropriated	Ongoing		

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			stormwater retrofit and low impact development grants, totaling \$3,440,000. EPA also provides CWA §319 funding to 15 Puget Sound Tribes for watershed protection and restoration projects, watershed-based planning, and education and outreach efforts.							
EPA	Funding	CWA §320 National Estuary Program (NEP)	<p>Congress has appropriated substantial funds (nearly \$160M in FY07 thru FY12) for the Puget Sound National Estuary Program (NEP). Much of the Puget Sound NEP funding has gone toward habitat protection and restoration. For example:</p> <ul style="list-style-type: none"> • Puget Sound Tribal Capacity Building funding has allowed Tribes to engage in local implementation organizations, the Puget Sound Salmon Recovery Implementation Technical Team and in watershed and shoreline planning, as well as to conduct environmental monitoring and management of habitat restoration projects and to develop restoration project proposals. • Puget Sound Tribal Lead Organization (LO), watershed and Tribal project funding has led to a number of habitat, shellfish and salmon-related subawards, including projects related to engineered-log jams, culvert replacement, floodplain, saltmarsh and wetland restoration, watershed protection, removal of non-native species, and research on factors influencing salmon. • The Nearshore/Marine and Watershed Lead Organizations, which have substantial habitat components, have been funded at nearly \$12m each. • EPA will allocate FY12 NEP funding based in part on a renewed commitment in response to the "Treaty Rights at Risk" paper. The 	EPA, PSP, Lead Organizations, other grant recipients	Ongoing, with FY12 funds committed by end of September, 2012.	Puget Sound NEP Funding -> supports a variety of projects focusing on habitat protection and restoration -> improved habitat -> improved salmon, other finfish, and shellfish health	Cooperative agreement workplans for FY12 and 6-year Lead Organization implementation strategies reflect focus on habitat protection and restoration.	Ongoing		

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			FY12 Puget Sound funding allocation reflects EPA's desire to work with its partners in the Management Conference to reverse the trend in habitat loss at the local level and improve salmon and shellfish recovery. EPA will work with lead organizations to ensure that workplans address impediments identified in each salmon recovery plan. EPA will also work with lead organizations to ensure that LOs solicit feedback from tribes when refining workplans for selected projects.							
EPA	Funding	CWA §320 National Estuary Program (NEP)	EPA has provided NEP funding to the Washington Department of Health (DOH) and Ecology to serve as the Puget Sound LOs for Pathogens and Toxics and Nutrients, respectively. These State agencies are using the NEP funds to make subawards to other entities to reduce these pollutants. DOH made subawards available to Puget Sound Counties, local health jurisdictions, and tribes to develop sustainable pollution identification and correction (PIC) programs. The objective of the PIC program is to identify and address pathogen and nutrient pollution from a variety of nonpoint sources, including on-site sewage systems, farm animals, pets, sewage from boats, and stormwater runoff. Contracts are being awarded in 2012 to San Juan, Skagit, Pierce, Thurston, Mason, and Kitsap Counties, and the Hood Canal Coordinating Council (possible funding to Whatcom County). Puget Sound Tribal input to these PIC subawards improved performance expectations and led to the development of the federal/State Pollution Control Action Team (PCAT). The PCAT will provide an enforcement backstop where the local entity either does not have the necessary ordinances or fails to require	EPA, DOH, Ecology	Ongoing	Puget Sound NEP Funding -> reduced pollutant inputs to streams -> improved water quality -> improved shellfish health	PIC grants awarded and programs launched	New		

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			<p>compliance.</p> <p>DOH and Ecology are also using some of the NEP funding to build on these PIC programs by providing subawards to specifically address agricultural sources of nutrients and pathogens. Subawards will be made for livestock Best Management Practice (BMP) implementation and effectiveness monitoring (baseline monitoring and follow-up monitoring over 3 years) to assess whether these BMPs meet water quality standards and result in watershed health. This work will focus on small farms that cannot apply for Natural Resources Conservation Service Environmental Quality Incentive Program (NRCS EQIP) funds, but all landowners are eligible. The BMPs will include Livestock exclusion fencing (NRCS FOTG standard); off-stream watering (NRCS FOTG for watering facility, pumping plant, heavy use area protection, and pipeline); and livestock feeding (NRCS FOTG for water storage, rain runoff, underground outlet, wind breaks).</p>							
EPA	Funding	CWA §320 National Estuary Program (NEP)	The Puget Sound NEP has existed since 1987. The Puget Sound Partnership (PSP) became the designated lead for the NEP in 2007. The “Action Agenda for 2020” is the approved Comprehensive Conservation and Management Plan (CCMP) and is currently undergoing revision. The PSP is currently updating the Action Agenda to restore and protect Puget Sound. The EPA Puget Sound Team will work with the PSP to ensure that the revised Action Agenda includes effective near and long term actions to protect and restore habitat and recover salmon and shellfish populations and that these actions include clear roles and accountability measures. While these are not the only resources we are trying to protect, the actions taken to protect	EPA, Tribes, PSP	Current schedule has the Action Agenda finalized in April 2012.	Updated Action Agenda with robust measures addressing habitat, salmon and shellfish protection and restoration -> effective implementation and accountability -> improved habitat -> improved salmon, other finfish, and shellfish health	Updated Action Agenda that has the support of Tribes	New		

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			and restore habitat, shellfish and salmon will also directly and indirectly impact other Puget Sound stressors and resource targets. The Team will also work with PSP to ensure that Tribal comments on the draft Action Agenda are addressed in the final document.							
EPA	Water Quality	Coastal Zone Act Reauthorization Amendment §6217	EPA and NOAA have been working with Washington State to resolve remaining management measures with respect to 1) roads, highways, and bridges, 2) onsite sewage disposal systems, 3) new development, and 4) additional management measures for forestry. Based on recent information the state has provided, NOAA and EPA believe the state has sufficiently addressed the remaining conditions on its Coastal Nonpoint Program. NOAA and EPA are drafting a final decision memo proposing to approve Washington's Coastal Nonpoint Program. We plan to notify all of the Washington Tribes within the Coastal Nonpoint Program management area when the draft document is available for review to provide each Tribe an opportunity to comment. In addition, we will also announce our intent to approve Washington's Coastal Nonpoint Program in the Federal Register for a 30 day public comment period. NOAA and EPA will carefully consider all Tribal and public comments received and make a final decision whether or not to fully approve Washington's Coastal Nonpoint Program.	NOAA, EPA, Ecology	Documentation for remaining management measures (completed), 30-day public notice for proposed approval (est winter 2012), final decision document (est Spring 2012)	Approved plan -> reduced NPS pollution -> improved WQ -> improved salmon and shellfish health	Final approval of Washington's coastal nonpoint source plan	Ongoing		
EPA	Water Quality	Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)	EPA's cleanups at freshwater and marine sites will improve water and sediment quality, bringing direct habitat benefits to aquatic resources. Where mitigation work is required as an outgrowth of cleanup work, the program will ensure that specific habitat objectives are incorporated into the mitigation plans and that long term monitoring requirements to meet those	EPA in partnership with the Natural Resource Trustees	Individual early action projects in the Lower Duwamish waterway are targeted for completion as follows: Slip 4, 2012; Terminal 117, 2014, Boeing Plant 2, 2015	Cleanup efforts -> improved water quality and habitat conditions -> improved salmon, other finfish, and shellfish health	Project Completion Reports will be prepared per Superfund requirements	Ongoing		

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			objectives are implemented as well.							
EPA	Water Quality	CERCLA	EPA will work with Potentially Responsible Parties and Natural Resource Trustees to link habitat restoration to the Natural Resource Damage (NRD) Assessment at sites, and will continue to integrate NRD processes with the cleanup process.	EPA in partnership with the Natural Resource Trustees	Depends on timeline for individual sites	Cleanup efforts -> improved water quality and habitat conditions -> improved salmon, other finfish, and shellfish health	Work at NRD Assessment sites encompasses habitat restoration elements.	Ongoing		
EPA	Water Quality	CERCLA	EPA's Superfund and Water Quality programs will work with the State to reduce the potential for recontamination of sediments after cleanup. This will be done through source control programs incorporating approaches such as more tailored stormwater permits to prevent site recontamination. A key example of this work is the Lower Duwamish Early Action Sediment Cleanup. These projects include cleanup, habitat benefits, and long term monitoring. Source control will be key component of Lower Duwamish remedy.	EPA in partnership with Ecology	Proposed Plan for Lower Duwamish waterway, including a source control section, is targeted for completion in 2012 and the Record of Decision for 2013.	Cleanup efforts -> improved water quality and habitat conditions -> improved salmon, other finfish, and shellfish health	Issuance of proposed plan and record of decision.	Ongoing		
EPA	Various	National Environmental Policy Act (NEPA)	EPA involvement and comments have resulted in improved projects, particularly when EPA serves as a 'cooperating agency' in EIS development. EPA has commented on State Environmental Policy Act (SEPA) documents when requested by the Department of Ecology and when the project is a high priority (i.e., may result in significant impacts, especially those that may affect EPA's decisions), or the action is related to a project undergoing analysis under NEPA (e.g., where the SEPA analysis is for the entire operation and the NEPA analysis is limited to some aspect of the project on federal land). The NEPA Review program will target projects in Puget Sound that have the greatest impact on habitat for more rigorous review and early involvement. Our review will be intended to raise	EPA	As projects arise for our review	Targeted NEPA Reviews -> increased attention to actions affecting habitat -> habitat impacts eliminated or minimized -> maintained habitat quality -> maintained salmon and shellfish health	# of NEPA documents that had specific, focused comments regarding habitat.	Ongoing	Example: We submitted scoping comments in the Fall of 2011 on 2 Corps of Engineers proposed General Investigations (Skagit and Puyallup Rivers) for which the Corps is planning to develop EIS documents. From our scoping comment letters: "we note our strong support for actions that restore natural processes and specifically recommend that you consider an EIS alternative which maximizes opportunities to restore natural hydrologic, geomorphic, and, biological processes. Natural process restoration and	

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			habitat loss and degradation issues early in the NEPA process and work with project proponents to eliminate or minimize those impacts.						protection objectives with potential for both flood management and ecosystem benefits include, for example, improved: floodplain connectivity; surface water- groundwater interactions; and, riparian vegetation and wetland development."	
EPA	Various	Various	EPA's Criminal Investigation Division investigates the most significant and egregious violations of environmental laws that pose a significant threat to human health and the environment. EPA has recently worked to prosecute several cases involving knowing discharge of pollutants to salmon-bearing waters and is involved in several others in progress.	EPA	Ongoing Enforcement Actions	Criminal prosecution of CWA and ESA violations -> fines and jail time for violators -> reduced future violations -> reduced instances of impacts to salmon and shellfish habitat.	Criminal enforcement actions taken.	Ongoing		
EPA	Various	N/A	Sustainability Partnership. Partnership between EPA, HUD, and DOT which encourages smart growth and land use choices such as compact growth within urban growth boundaries. Funds projects which preserve environmentally sensitive lands and safeguard rural landscapes by targeting development to locations that already have infrastructure and offer transportation choices.	HUD, EPA, FHWA and FTA staff.	Ongoing	Identifying ways to improve sustainability by integrating our programs and removing barriers to sustainable projects.	Pilot projects and information-sharing.	New		
NOAA	Barrier: Shoreline Modification, Riparian and Floodplain Management Limiting Factor: Estuarine and Nearshore Habitat	Endangered Species Act (ESA), Magnuson-Stevens Act (MSA)	<u>Habitat Protection</u> <ul style="list-style-type: none"> • Work with the Corps to develop new programmatic consultation(s) using regional general permits, standard local operating procedures for endangered species (SLOPES), etc. to streamline the permit review process and establish fish-friendly, bioengineering alternatives to bank armoring. • Work with the Corps to modify nationwide permits or develop regional conditions (e.g., NWP #13, 31) to avoid cumulative effects and 	Co-Leads: NOAA and Corps State Department of Ecology and WDFW possible partners	Initial NOAA meetings completed December 2011; NOAA regulatory guidance to be completed by April 2012	Complete programmatic consultation for overwater structures in nearshore marine habitat-> Implement streamlined permit process ->	Revised permitting approach should lead to expanded use of bioengineered alternatives to bank hardening -> improved habitat for salmonids	New initiative between NOAA and Corps; Completion of an ongoing activity by NOAA-Guidance document on installing overwater	The joint agency habitat enforcement initiative aims to prevent additional incremental habitat loss	

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			<p>incremental habitat losses.</p> <ul style="list-style-type: none"> Where applicants choose individual permit consultations in lieu of programmatic approaches, NMFS will require compensatory mitigation for incremental habitat loss; use reasonable and prudent alternatives where necessary to avoid adverse modification of critical habitat to achieve adequate conservation of estuarine and nearshore habitats. <p><u>Enforcement</u></p> <ul style="list-style-type: none"> NOAA OLE will initiate an enforcement initiative in conjunction with the Corps and EPA to reduce the number and effect of unpermitted bank armoring projects. 					structures in marine nearshore areas		
NOAA	Barrier: Shoreline Modification, Riparian and Floodplain Management Limiting Factor: Estuarine and Nearshore Habitat	ESA, MSA	<p><u>Habitat Protection</u></p> <ul style="list-style-type: none"> Work with the Corps to develop new programmatic consultation(s) in the Snohomish Basin using regional general permits, standard local operating procedures for endangered species (SLOPES), etc., to streamline the permit review process, establish fish-friendly tide gate design criteria, and require compensatory mitigation for estuarine habitat loss from tidegate operation (similar to Skagit tide gate approach). NMFS will work with proponents to develop and implement new habitat conservation banks to compensate for incremental habitat loss. 	Co-Leads: NOAA and Corps State Department of Ecology and WDFW possible partners		Revised permit process-> improved tidegate design criteria-> implement fish-friendly tidegates	Revised design criteria and compensatory mitigation requirements -> reductions in incremental estuarine habitat loss	New initiative between NOAA and Corps		
NOAA	Barrier: Riparian Management Limiting Factor: Estuarine and Nearshore Habitat	ESA	<p><u>Habitat Protection and Restoration</u></p> <ul style="list-style-type: none"> Work with NRCS, FSA and soil and water conservation districts to increase CREP enrollment for riparian buffers. 	Co-leads: NMFS and NRCS Partners: FSA and EPA Region 10				Ongoing		
NOAA	Barrier: Floodplain Management Limiting Factor: Floodplain Connectivity and Function	ESA	<p><u>Habitat Protection</u></p> <ul style="list-style-type: none"> Work with FEMA leadership, NFIP litigation plaintiffs, and key local jurisdictions to identify additional actions to supplement FEMA NFIP BiOp implementation efforts 	Co-leads: NMFS and FEMA Regional Administrators Collaborators: NWF and Selected local jurisdictions		NMFS is working with FEMA to provide technical assistance to local jurisdictions as they develop their approaches to comply with the FEMA biop	NMFS and FEMA are using a triage approach to overlay important salmon populations and the local jurisdictions that are least likely to offer a responsive program enabling a targeted compliance effort.	Ongoing		

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NOAA	Barrier: Floodplain Management Limiting Factor: Floodplain Connectivity and Function	ESA	<u>Habitat Protection</u> <ul style="list-style-type: none"> NMFS will work with the Corps Seattle District to develop model local variances and system wide improvements under the new Policy Guidance Letter and System Wide Improvement Framework to retain and establish riparian trees on levees and accommodate other fish-friendly levee design measures. NMFS will work with the Corps through the PGL variance and SWIF processes to establish ESA section 7 consultation approaches for fish-friendly levee construction and maintenance. NMFS and the Corps will jointly develop levee repair and design criteria that can be applied through Puget Sound and the region. Where opportunities become available to condition levee repair or construction through Section 7 consultation, NMFS will require re-vegetation, installation of large wood, or other compensatory mitigation for incremental habitat loss. Adverse modification of critical floodplain habitat will be avoided by the appropriate prescription of reasonable and prudent alternatives. Develop NMFS NWR guidance on the development, approval and use of conservation banks. Use selected project consultations to encourage the use of new and existing conservation banks. 	Corps Seattle District Corps WA Dept. of Ecology, King County, Puget Sound Partnership, WDFW and the Muckleshoot Tribe in the Green River process. The Milton Freewater process includes locals, DEQ, ODFW, EPA, Umatilla Tribes, USFWS and NMFS.	Several initial scoping meetings have been held. Awaiting final PGL guidance from Corps HQ.	RPA. NMFS and other partners have had some, but limited, success influencing Corps national levee policies. Current approach is to work with motivated partners to develop model vegetation variances that can then be applied throughout Puget Sound under the new procedures.	The Corps chairs a working group with both technical and policy subgroups, which also includes other PSP players, to develop a levee vegetation management approach for the Green River and Cedar River. Solutions will be immediately shared more broadly with other local jurisdictions.	Ongoing	The places identified for the SWIF/variance processes are in the Green River watershed with the Seattle District Corps, and the Walla Walla River near Milton-Freewater with the Walla Walla Corps District. (While the Walla Walla River is obviously not in Puget Sound, it represents the initial opportunity to apply the new SWIF process and lessons learned there will inform similar efforts in Puget Sound).	
NOAA	Barrier: Floodplain Management Limiting Factor: Floodplain Connectivity and Function	ESA, CREP	<u>Habitat Restoration</u> <ul style="list-style-type: none"> Work with NRCS to identify opportunities to use Farm Bill incentives to cost share with the NOAA Restoration Center on floodplain restoration projects in targeted watersheds to support local recovery plan projects. 	Co-leads: NMFS, NOAA Restoration Center NRCS EPA Region 10				New		

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NOAA	Barrier: Pollutant Loading Limiting Factor: Water Quality	ESA	<u>Habitat Protection</u> <ul style="list-style-type: none"> NMFS will work with EPA on model Federal discharge permits, e.g., the Joint Lewis McCord efforts, to establish appropriate WQ standards and BMPs NMFS will work with EPA and Ecology on the state industrial general stormwater discharge permit, which is up for renewal, to include appropriate conservation measures for fish habitat. NMFS will work with EPA and Ecology to implement the existing municipal general stormwater discharge permit to improve compliance and water quality results. <u>Enforcement</u> <ul style="list-style-type: none"> NMFS will work with the enforcement team to seek strategic permit compliance/enforcement opportunities. 	Lead: NMFS Partner agencies: WA Governor's Office, Department of Ecology, EPA Region 10	Work to implement existing general permits is ongoing, but will receive additional effort from NMFS in response to this initiative. Consultations on Federal discharge permits will be new and engaged as requests from EPA are received.	Until WA state water quality standards are up for review, we will engage in existing implementation opportunities, including existing general permits and new consultations on Federal reservations for which EPA retains direct jurisdiction	Biological opinions on Federal actions will have RPAs and or RPMs to provide binding conservation measures to protect and restore water quality in Puget Sound receiving waters	New and ongoing	■ EPA will develop a model stormwater permit for a federal facility in Puget Sound (see row 11 on EPA worksheet).	
NOAA	Barrier: Pollutant Loading Limiting Factor: Water Quality	ESA	<u>Habitat Protection</u> <ul style="list-style-type: none"> NMFS will use the best science from the NWFSC and other consultations on WQS, pesticides, etc. to identify adverse effects to listed salmon and steelhead in project specific consultations on discharge permits, transportation actions, dredging projects, etc. NMFS will require best management practices, biological thresholds, low impact development techniques, bio-assays, monitoring, etc. as needed to avoid, reduce or mitigate adverse effects to listed salmon and steelhead in specific project consultations that generate toxic contaminants in stormwater runoff, point and non-point source discharges, dredging discharges, etc. 	Lead: NMFS Partner agencies: EPA, Corps, FHWA, DOD	Ongoing as consultation requests are received	In the absence of NMFS consultation on EPA approval of water quality standards, NMFS will address individual standards that are relevant to listed fish conservation in consultations on various Federal actions that involve pollutant discharges.	Biological opinions on Federal actions will have RPAs and or RPMs to provide binding conservation measures to protect and restore water quality in Puget Sound receiving waters	New and Ongoing	■ EPA will focus additional attention on oversight and enforcement of State stormwater permits, including MS-4 permits under the National Enforcement Initiative for Municipal Infrastructure, to improve Puget Sound water quality (see row 13 on EPA worksheet).	
NOAA	Barrier: Pollutant Loading Limiting Factor: Water Quality	ESA	<u>Habitat Protection</u> <ul style="list-style-type: none"> Work with NRCS to identify opportunities to target selected Farm Bill programs to address agricultural 	Co-Leads: NMFS, NOAA Restoration Center and NRCS				New		

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			water quality issues identified as factors limiting salmon and steelhead recovery in local watershed recovery plans.							
NOAA	Barrier: Pollutant Loading Limiting Factor: Water Quality	ESA	Conduct water quality project-specific assessments, monitoring and modeling to assess salmon exposure to and effects related to toxic contaminants. These studies support restoration planning and adaptive management to reduce contaminant threats to salmon (e.g., contaminant inputs from stormwater, agricultural activities, wastewater discharges, contaminated sediments, oil spills) and ESA consultations.	NWFSC	Ongoing	Science support for decision making >improved water quality>improved salmon health		Ongoing		
NOAA	Barrier: Shoreline Modification, Riparian and Floodplain Management Limiting Factor: Estuarine and Nearshore Habitat	ESA	Conduct research to 1) assess impacts of barriers to listed salmon populations, 2) monitor biological effects of barrier removal and other types of restoration, 3) establish pre-project baselines, and 4) support restoration planning and adaptive management. Develop protocols for others to use for scientifically-defensible monitoring related to habitat protection and restoration.	NWFSC	Ongoing	Science support for decision making >improved water quality>improved salmon health		Ongoing		
NOAA	Barrier: Floodplain Management Limiting Factor: Floodplain Connectivity and Function	ESA	Conduct research to 1) assess impacts of barriers to listed salmon populations, 2) monitor biological effects of barrier removal and other types of restoration, 3) establish pre-project baselines, and 4) support restoration planning and adaptive management. Develop protocols for others to use for scientifically-defensible monitoring related to habitat protection and restoration.	NWFSC	Ongoing	Science support for decision making >improved water quality>improved salmon health		Ongoing		
NOAA	Barrier: Shoreline Modification, Riparian and Floodplain Management Limiting Factor: Estuarine and Nearshore Habitat	Coastal Zone Management Act (CZMA)	NOAA/OCRM will work with the WA state coastal program to identify "enforceable policies" contained within each state-approved Shoreline Master Programs (SMPs) that the state would like to use for its review under the CZMA's Federal consistency provision. OCRM will help the state prioritize its	NOAA/NOS/OCRM	Ongoing support for identifying policies and submitting for NOAA approval. By July 2012 work with state on establishing priorities for submission.	Approved "enforceable policies" under CZMA -> enhanced authority for the state to review and condition federal activities affecting coastal resources -> increased habitat	Establishing priority list for submission and finalizing structure and content of submissions suitable for NOAA approval	Ongoing under CZMA, new for updated SMPs	Incorporating the updated existing state and local policies into Washington's federally-approved coastal management program would enhance the state's ability to review	

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			submission of SMPs to OCRM for jurisdictions where there would be greatest benefit to having federally approved "enforceable policies" in place to help protect habitat.			protection			and potentially condition federal actions that may have impacts to critical habitat in Washington. If these SMP plans are not reviewed and approved by OCRM, the state will have a significant gap in federally-approved "enforceable policies" to use for their review of federal actions.	
Natural Resources Conservation Service (USDA)		N/A	NRCS is willing to meet with tribes and pinpoint specific geographic areas where barriers exist, identify land owners and determine available programs to address (land ownership establishes eligible programs).	NRCS coordinates with Tribes, the Washington Tribal Conservation Advisory Council, State agencies and Conservation districts	Ongoing	Meetings with tribes -> identification of barriers to recovery -> determination of available remedies to barriers -> remedies taken -> improved habitat -> improved salmon, other finfish, and shellfish health	Meetings held, barriers identified, remedies identified, remedies put in place	New		
Natural Resources Conservation Service (USDA)		Farm Bill/Wildlife Habitat Incentives Program (WHIP)	Puget Sound Initiative - Water quality treatments on non-commercial livestock farms, primarily small acreage pastureland operations, Wildlife Habitat Incentives Program(WHIP). The highest priority areas within Puget Sound would be identified through the WHIP application rating and ranking process which would be targeted to pastures adjacent to surface water that impair habitat for listed threatened and endangered species and shellfish beds, especially those that experience closures due to contamination	NRCS and Conservation District partners already have in roads with these clients and have been working with landowners on these resource concerns in the past.	On going	WHIP program -> reduced contamination from agriculture operations -> improved water quality -> improved habitat -> improved salmon, other finfish, and shellfish health	# of clients enrolled		No funding in WHIP is anticipated in FY 2012	
Natural Resources Conservation Service (USDA)		Farm Bill/Environmental Quality Incentives Program (EQIP)	Puget Sound Initiative - Water quality treatments related to existing at-risk waste storage structures, primarily on dairies. Use of (EQIP) through closure and decommissioning of structures, replacement of structures, and installation of composted bedded pack barns. The highest priority group is structures that still contain waste and have exceeded their design lifespan or	The agency has partnered with and received support from the Washington State Dairy Federation, which has been conducting outreach to dairy operators who		EQIP program -> reduced contamination from waste storage structures -> improved water quality -> improved habitat -> improved salmon, other finfish, and shellfish health	# of structures addressed		Puget Sound initiative is as of yet unapproved and unfunded. Other actions are under development, such as an aquaculture program. NRCS has been deploying funds allocated to the state to focus on the Puget Sound issues.	

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			no longer meet NRCS standards that are in close proximity to surface water	would be the potential participants in the program						
Natural Resources Conservation Service (USDA)		Farm Bill/EQIP	Puget Sound Initiative - Water quality treatments related to excessive suspended sediment and turbidity in surface water on non-industrial forestland, primarily related to forest roads and fish passage. Use of both the EQIP and the Healthy Forest Reserve Program (HFRP) to apply conservation practices and establish easements with forest ownership for perpetual protection from development. The highest priority watersheds within the basin would be identified using the US Forest Service's criteria for watershed priority or similar state assessment data, which would be incorporated into NRCS application rating and ranking tools	Due to recent healthy forest campaigns launched by Washington NRCS and other outreach that has occurred, in addition to the availability of the new Forestry Conservation Activity Plans, there is a ready pool of forestry clients who are eligible for either EQIP and/or HFRP and are willing to work with NRCS to address the concerns affecting the water resources	On going and new HFRP for 2012	EQIP and HFRP programs -> reduced runoff from forest roads -> improved water quality -> improved habitat -> improved salmon, other finfish, and shellfish health	# of forestry clients enrolled	HFRP would be new for WA	By focusing first on the same watersheds as the US Forest Service or State Department of Natural Resources are working in, there is an opportunity to leverage activities on both private and public forestland to have the greatest impact.	
Natural Resources Conservation Service (USDA)		Farm Bill/EQIP	Puget Sound Initiative - Improvements in air quality by replacing aging diesel engines for irrigation with electric or high-efficiency motors, using manure injection practices, and developing comprehensive nutrient management plans. Uses EQIP funding to replace static diesel pumps with more efficient pumps that produce less emissions.	The Washington State Dairy Federation has helped identify dairy operators and has conducted outreach and marketing to promote participation in the program	Ongoing	EQIP air quality programs -> emissions reductions -> improved air quality -> improved environmental quality	# of clients enrolled			
Natural Resources Conservation Service (USDA)		Farm Bill/EQIP	National Water Quality Initiative - During Fiscal Year 2012, each state will be asked to accelerate efforts to improve water quality. States will select at least one, but not more than three, 12-digit watershed(s) with streams on	NRCS coordinates with Tribes, the Washington Tribal Conservation Advisory Council, State agencies	Ongoing	EQIP FA funding - >accelerated efforts to address issues in 303d impaired waters - >improved water quality	Increased program participants in the 303d watershed	Ongoing Program, new focus	Contingent on participation of land owners in program	

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			the Environmental Protection Agency's (EPA's) 303d list of impaired waters. State Conservationists are instructed to hold a minimum of 5% of their EQIP FA Funding to address a new National Water Quality Initiative, but may exercise their discretion to hold more FA for this purpose.	and Conservation districts						
Natural Resources Conservation Service (USDA)		Farm Bill/EQIP	In FY 2012, the Conservation Innovation Grants program (CIG) is offering \$10 million in grants to stimulate the development, adoption, and evaluation of innovative approaches and technologies related to water quality credit trading systems. Water quality credit trading markets are an emerging means to meet existing or potential Federal and State level water quality requirements. The overall goal of these grants is to support State agencies and/or other cooperating entities seeking to design and launch water quality credit trading markets between point and non-point sources.	NRCS coordinates with Tribes, the Washington Tribal Conservation Advisory Council, State agencies and Conservation districts	Ongoing	EQIP CIG funding - >accelerated efforts to address issues in 303d impaired waters - >improved water quality	Grants result in tools whose use can be expanded	Ongoing		
Natural Resources Conservation Service (USDA)		Farm Bill/WHIP	Wildlife Habitat Incentives Program (WHIP) – WHIP is a voluntary program for conservation-minded landowners who want to develop and improve wildlife habitat on agricultural land, nonindustrial private forest land, and Tribal land. The Food, Conservation, and Energy Act of 2008 reauthorized WHIP as a voluntary approach to improving wildlife habitat in our Nation. The Natural Resources Conservation Service administers WHIP to provide both technical assistance and financial assistance to establish and improve fish and wildlife habitat. WHIP cost-share agreements between NRCS and the participant generally last from one year after the last conservation practice is implemented but not more than 10 years from the date the agreement is signed. In order to provide direction to the State and local levels for implementing WHIP to achieve its	NRCS coordinates with Tribes, the Washington Tribal Conservation Advisory Council, State agencies and Conservation districts	Ongoing	Cost share agreements- >improved wildlife habitat and potentially improvements to water quality.	Acres of habitat restored or treated	Ongoing	All WHIP money being held by HQ this year.	

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			objective.							
Natural Resources Conservation Service (USDA)		Farm Bill/CSP	Farm and Ranch Land Protection Program (FRPP) – FRPP provides matching funds to help purchase development rights to keep productive farm and rangeland in agricultural uses. Working through existing programs, USDA partners with State, tribal, or local gov't	NRCS coordinates with Tribes, the Washington Tribal Conservation Advisory Council, State agencies and Conservation districts	Ongoing	CSP funding -> continued and enhanced conservation work -> environmental benefits	Acres enrolled	Ongoing		
Natural Resources Conservation Service (USDA)		Farm Bill/WRP	Wetlands Reserve Program (WRP) - WRP is a voluntary program offering landowners the opportunity to protect, restore, and enhance wetlands on their property. NRCS provides technical and financial support to help landowners with their wetland restoration efforts. The NRCS goal is to achieve the greatest wetland functions and values, along with optimum wildlife habitat, on every acre enrolled in the program. This program offers landowners an opportunity to establish long-term conservation and wildlife practices and protection. Some of the activities that can be done under EQIP to protect and restore habitat include Property acquisition and conservation, topography restoration.	Corps, NOAA, cities, counties collaborate on restoration	Ongoing	Help develop a plan to buy easements to protect existing wetlands or restoration of wetlands -> environmental benefits	Acres of wetland restored or protected	Ongoing		
Natural Resources Conservation Service (USDA)		Farm Bill/GRP	Grassland Reserve Program (GRP) – GRP is an easement program for landowners or operators to protect grazing uses and related conservation values by conserving grassland, including rangeland, pastureland, shrubland, and other certain lands. Enrollment permits grazing on the land in a manner consistent with maintaining the viability of natural grasses, shrubs, and forbs.	NRCS coordinates with Tribes, the Washington Technical Tribal Advisory Committee, State agencies and Conservation districts	Ongoing	Help develop a plan to buy easements to protect existing wetlands or restoration of wetlands -> environmental benefits	Acres of grassland restored or protected	Ongoing	May consider compatible use; use easement to protect property from other uses	
Natural Resources Conservation Service (USDA)		Farm Bill/FRPP	Farm and Ranch Land Protection Program (FRPP) – FRPP provides matching funds to help purchase development rights to keep productive farm and rangeland in agricultural uses. Working through existing programs, USDA partners with State, tribal, or local governments and non-	NRCS coordinates with Tribes, the Washington Technical Tribal Advisory Committee, State agencies and Conservation	Ongoing	Prevents ag working lands from being converted thru deed restrictions (buying development); (no other environmental requirements under this program but	Acres of farm or ranch land restored or protected	Ongoing		

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			governmental organizations to acquire conservation easements or other interests in land from landowners. USDA provides up to 50 percent of the fair market easement value of the conservation easement. To qualify, farmland must: be part of a pending offer from a State, tribe, or local farmland protection program; be privately owned; have a conservation plan for highly erodible land; be large enough to sustain agricultural production; be accessible to markets for what the land produces; have adequate infrastructure and agricultural support services; and have surrounding parcels of land that can support long-term agricultural production.	districts		applicant may take advantage at same time of other NRCS programs)				
Federal Emergency Management Agency (National Flood Insurance Program)	Floodplain Management; Land use development, permitting and zoning.	NFIP (42 U.S.C. 4001 et seq)	The primary purpose of the NFIP is to encourage preventive and protective measures by state and local government to reduce the risk of flooding and share the cost of flood losses with those whose property is at risk of flooding. There are no provisions in either the enacting legislation or the NFIP regulations in the Code of Federal Regulations (CFR) providing for the protection or restoration of salmon habitat.	FEMA with support from State and local governments	Major changes have occurred in the manner in which the NFIP is being administered locally to comply with the BiOP and RPA by NMFS as of September 22, 2011	FEMA developed and issued technical guidance>communities have selected an option as of September 2011>all floodplain development is now being done in compliance with the RPA	Local gov't implements federal gov't (FEMA) along with state gov't (Dept. of Ecology) monitors on an annual basis	New as of Sept. 2011	44 CFR60.3(a)(2) requires that communities comply with ESA	
Federal Emergency Management Agency (National Flood Insurance Program)	Floodplain Management, Land use development permitting and zoning	NFIP (42 U.S.C. 4001 et seq)	FEMA programmatically monitors state and local government's implementation of the NFIP by conducting Community Assistance Contacts (CAC) and Community Assistance Visits (CAV). During a CAV a cursory review of a communities permit files is completed to evaluate effectiveness of their permitting processes Beginning in October 2011 CAVs in the 122 Puget Sound communities impacted by NMFS Biological Opinion will begin to examine on how well communities are implementing new guidance designed to help them comply with the ESA.	FEMA with support from State	Increased focus on Puget Sound beginning in FY12 but continuing into the future indefinitely	Closer monitoring of community administration of FPZ ordinances is expected to improve compliance	CAC (Community Assistance Contact) or CAV (Community Assistance Visit) with all Tier 1 & 2 communities in FY12 that have selected 'Door 3' FEMA reports annually to NMFS	New		

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Federal Emergency Management Agency (National Flood Insurance Program)	Floodplain management; Land use development permitting and zoning	NFIP (42 U.S.C. 4001 et seq)	FEMA R10 has participated in multiple workshops with NMFS to explain to community officials how to develop, adopt and enforce procedures based on their land-use authorities to avoid adverse affects to salmon habitat	FEMA and NMFS with support from Ecology	Workshops have been held beginning in 2009 and have been held each year since.	Technical assistance to local government will improve compliance with ESA	FEMA reports to NMF	New		
Federal Emergency Management Agency (National Flood Insurance Program)	Land use development permitting and zoning; Lack of enforcement	NFIP (42 U.S.C. 4001 et seq)	A significant effort has been made to encourage local governments that participate in the NFIP to adopt and enforce land-use regulations based on their broad police powers to protect life, health and property to protect salmon habitat under 44 CFR60.3(a)(2). FEMA offers discounts in insurance premiums within communities that have implemented higher floodplain management standards that provide increased protection to habitat through it's Community Rating System (CRS). The CRS manual that is used to 'credit' activities will be republished in summer of 2012 to recognize activates identified in the NMFS RPA of Sep. 2008.	FEMA with support from local governments	Summer 2012	CRS activities that lead to improved salmon habitat will be given higher credits beginning in 2012>participating communities will be rewarded with reduce insurance costs for implementing higher regulatory standards that lead to habitat restoration	FEMA evaluates communities implementation of measures	New		
Federal Emergency Management Agency (National Flood Insurance Program)	Land use development permitting and zoning	NFIP (42 U.S.C. 4001 et seq)	FEMA provides technical assistance to communities that participate in the NFIP to rectify procedural or permitting issues identified during CACs or CAVs. Region 10 will increase technical assistance prior to initiating enforcement action where potential ESA compliance issues are identified. State Dept. of Ecology, under a grant from FEMA, will support CAC and CAV	FEMA with support from Ecology	Commencing in FY12 > continuing	CAC/CAV > Improved floodplain management at local level > better habitat protection	Local gov't report to FEMA > FEMA report to NMFS	New		
Federal Emergency Management Agency (National Flood Insurance Program)	Floodplain management; Land use development permitting and zoning	NFIP (42 U.S.C. 4001 et seq)	FEMA provides funding through the CAP-SSSE grant program to the Washington Dept. of Ecology to provide technical assistance to communities to implement their floodplain management ordinances. Part of their focus, beginning in FY12, will be assisting the communities to implement higher regulatory standards to protect salmon habitat	FEMA with support from Ecology	Beginning in FY12	Increased monitoring requires additional resources > Ecology has staff that can support FEMA > FEMA has a grant program to support Ecology staff	FEMA will monitor Ecology progress and reports	New		

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Federal Emergency Management Agency (National Flood Insurance Program)	Floodplain management; Land use development permitting and zoning	NFIP (42 U.S.C. 4001 et seq)	FEMA will continue to discuss ESA implementation plan with all tribes to improve coordination and implementation of the RPA.	FEMA	Ongoing			Ongoing		
Federal Emergency Management Agency (National Flood Insurance Program)	Floodplain management; Land use development permitting and zoning	NFIP (42 U.S.C. 4001 et seq)	FEMA is developing recommendations for reforming the NFIP which will include a higher emphasis on natural and beneficial values of floodplains to encourage stronger protection of natural area;	FEMA	2-3 years	NFIP Reform will lead to improved protection of natural and beneficial values of floodplains	FEMA will report progress to EPA annually through the Puget Sound Federal Caucus	New		
Federal Emergency Management Agency (National Flood Insurance Program)	Mitigation adequacy	NFIP (42 U.S.C. 4001 et seq)	FEMA is collaborating with non-profit organizations to restore habitat in conjunction with the acquisition of homes and other structures through FEMA HMA grant programs	FEMA with support from State and local governments	Beginning in FY12	Collaboration will marry HMA grants with funding from non-profits to restore habitat	FEMA will report progress annually to NMFS	New		
Federal Emergency Management Agency (National Flood Insurance Program)	Impediments to restoration projects	NFIP (42 U.S.C. 4001 et seq)	FEMA issued Regional guidance in 1997 that allows participating communities to permit fish enhancement structures based on the 'judgment' of a qualified professional without requiring extensive and expensive hydraulic analysis if, in the opinion of the qualified professional, the structure is designed to cause flood levels to rise as close to zero as possible.	Local governments with support from FEMA and State	N/A		Local will report to FEMA annually	Ongoing	Policy has been in place since late 1997	
Federal Emergency Management Agency (Stafford Act)	Lack of grant funding	Stafford Act	Some projects have ancillary beneficial effects, such as acquisition of properties for open space use, relocation of facilities out of harm's way. All protection activities are associated with ESA consultations under Section 7.	Public Entities (SubGrantees) State EMD (Grantee), FEMA (Grantor)	Disaster dependent - ongoing	approval of grants for relocation/acquisition => federal review of habitat improvement => improved habitat or opportunity to improve	# of acquisitions; # of relocations out of floodplain	Ongoing	Dependent upon Presidential Disaster declaration	
Federal Emergency Management Agency (Stafford Act)	Lack of enforcement	Stafford Act	Potential ramification of non-compliance is total loss of funding for the action, however, the impact will have already occurred.	FEMA (Grantor), State EMD (Grantee)	Disaster dependent - ongoing	Improved enforcement of regulations -> improved awareness of habitat considerations -> less destruction of habitat	# of non compliant projects resulting in loss of funding	Ongoing		

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Federal Emergency Management Agency (Stafford Act)	Loss/degradation of floodplain functions/values	Stafford Act	FEMA works with the State Emergency Management Division to educate and raise awareness of federal environmental requirements associated with response and recovery actions. Included is streamlining efforts utilized to minimize harm, such as Programmatic Biological Assessments for common activities. Additionally, piggybacking with existing efforts by other federal agency's like the Corps' programmatic Biological Opinions when the action fits and both agencies have a nexus.	FEMA, NMFS, USFWS, Corps (Primary); Other Federal Resource agencies and state resource agencies (Supporting)	Disaster dependent - ongoing	awareness of programmatic => measures taken by action entities to meet CMs => reduced impact/harm to species and habitat	# of projects that meet Programmatic	Ongoing		
Federal Emergency Management Agency (Stafford Act)	Lack of grant funding	Presidential Preparedness Directive 8	Increase participation by resource agency under the National Response Framework and National Disaster Recovery Framework. Partnerships with other federal agencies and State Emergency Management Division for combining grant opportunities to maximize multiple objects under the various authorities, like FEMA acquisition projects combining with USFWS Restoration activities.	FEMA, DOI, NMFS, USFWS, Corps (Primary); State EMD and Resource Agencies (Supporting)	Disaster dependent or Annually	increase collaboration of funding => concentrated effort on recovery efforts => improvement to habitat	# of pooled projects funded	New	NDRF is being introduced Mar 1. Email Lois.lopez@fema.dhs.gov for invite	
Federal Emergency Management Agency (Stafford Act)	Unsupported political decision making; lack of coordination	Presidential Preparedness Directive 8	Development of policies and associated metrics for ensuring success which require collaboration of "whole community" participation (which include natural resource and environmental departments) in the development of plans. This includes statewide planning efforts.	FEMA, State Planning Agencies (primary); State and Fed Resource Agencies (supporting)	N/A	Coordinated planning => increased effort for avoidance/minimization => reduction in rate of harm to habitat/species	see Whole Community metrics	New		
Federal Emergency Management Agency (Stafford Act)	Lack of coordination	NA	FEMA provides technical assistance to the Northwest Tribal Emergency Management Council. FEMA can encourage Tribes to take actions for collaborating between departments for incorporating habitat restoration into disaster response and recovery.	FEMA, Tribes (primary); Governor's Office of Indian Affairs (supporting)	Immediately	increase collaboration of funding => concentrated effort on recovery efforts => improvement to habitat	% of Puget Sound Tribes participating	New	See: www.NWTEMC.org	
U.S. Fish and Wildlife Service	NA	ESA	We will consult with the Corps and other federal action agencies, pursuant to Section 7 of the ESA, on actions that affect habitat (marine, estuarine, and freshwater habitats) in Puget Sound and other waters of western Washington	USFWS	Ongoing	Continue to minimize impacts to federally listed species; reduced impact to habitat	Number of consultations completed	Ongoing		

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			including shoreline armoring, floodplain development, U.S. Navy and U.S. Army construction and operational activities, and wastewater treatment plant expansions and construction. Also, we will revise designated critical habitat for the Northern Spotted Owl. A proposed rule was published on February 28, 2012, and the final rule will be completed by November 2012.							
U.S. Fish and Wildlife Service	Habitat Restoration	Fish and Wildlife Coordination Act	We will provide recommendations, focused on conservation of fisheries resources, to the U.S. Army Corps of Engineers regarding the Skokomish General Investigation as well as the Puget Sound Nearshore project and any other large, water resources planning projects. Additionally, the Puget Sound Nearshore Ecosystem Restoration Project (PSNERP) has identified 15 restoration sites that are likely ready to proceed through the Corps of Engineers process for construction authorization. The PSNERP has developed conceptual design, cost-estimates and other site-specific information for these 15 "ready" sites, as well as 14 other ecosystem restoration projects not yet ready for Corps authorization. These projects represent important opportunities to advance process-based restoration of nearshore ecosystems with important benefits to salmonids and other fishery resources. The U.S. Fish and Wildlife Service will work with the Corps and other agency partners to advance priority projects identified by PSNERP, by providing technical assistance, seeking grant program funding, and assisting with environmental compliance.	USFWS	Ongoing	Continue to facilitate selection of the best habitat restoration opportunities in Puget Sound; maximize benefits of habitat restoration from limited restoration resources	Number of habitat restoration projects ready to be implemented	Ongoing	Accomplishments rest primarily with the U.S. Army Corps of Engineers	
U.S. Fish and Wildlife Service	Habitat Restoration	CERCLA	We will continue to work with Washington Department of Ecology as well as Tribes and NOAA to pursue settlements on non-federal-lead sites in Puget Sound.	USFWS	Ongoing	Contribute to habitat restoration; benefit to salmonids	Number of acres of habitat restoration	Ongoing/ New		

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U.S. Fish and Wildlife Service	Habitat Restoration	Oil Pollution Act	We will continue to actively pursue the recovery (from responsible parties) of money to offset damages to fisheries resources resulting from discharge of oils to our marine and fresh waters of Washington.	USFWS	Ongoing	Contribute to habitat restoration; benefit to salmonids	Number of acres of habitat restoration	Ongoing/ New		
U.S. Fish and Wildlife Service	Efficiency of on-the-ground Habitat Restoration	Various Grants and Technical Assistance Program Funding Opportunities	We will work to integrate funding, associated with grants and technical assistance programs, with NRCS, EPA, NOAA, and others as appropriate, to maximize benefits to fisheries resources.	USFWS	Ongoing	Maximize effectiveness of federal habitat restoration programs; benefit to salmonids	Number of acres of habitat restoration	New		
U.S. Fish and Wildlife Service	Funding for Acquisition is Limited	National Coastal Wetlands Conservation Grants.	We will continue to support this highly successful program by working with others to develop project proposals that focus on the acquisition and restoration of aquatic habitats in western Washington.	USFWS	Ongoing	Contribute to habitat restoration; benefit to salmonids	Number of acres of habitat restoration	Ongoing		
U.S. Fish and Wildlife Service	Habitat Restoration	Endangered Species Recovery Funding	As budgets allow, we intend to continue funding recovery actions that benefit a wide range of species, including bull trout.	USFWS	Ongoing	Contribute to habitat restoration; benefit to salmonids	Number of acres of habitat restoration	Ongoing		
U.S. Fish and Wildlife Service	Habitat Restoration	Partners for Fish and Wildlife Program	As budgets allow, we intend to continue funding projects that benefit a wide range of species, including salmonids.	USFWS	Ongoing	Contribute to habitat restoration; benefit to salmonids	Number of acres of habitat restoration	Ongoing		
U.S. Fish and Wildlife Service	Habitat Restoration	Puget Sound Coastal Program	As budgets allow, we intend to continue funding a projects that benefit a wide range of species, but especially salmonids.	USFWS	Ongoing	Contribute to habitat restoration; benefit to salmonids	Number of acres of habitat restoration	Ongoing		
U.S. Fish and Wildlife Service	Habitat Restoration	National Fish Passage Program	We will continue to assist in the development and funding of projects that facilitate fish passage in western Washington.	USFWS	Ongoing	Contribute to habitat restoration; benefit to salmonids	Number of acres of habitat restoration	Ongoing		
U.S. Fish and Wildlife Service		NA	Develop a web-based system to allow citizens to monitor bank hardening or other in-water work. System should allow people to check if observed work has a permit and to identify unauthorized work to the U.S. Army Corps of Engineers.	U.S. Army Corps of Engineers		Identify more illegal work while it is ongoing; reduce impacts to functions and values of habitat; improve salmon populations	Number of illegal structures/fills identified	New		
U.S. Fish and Wildlife Service	NA	Various	We can commit more staff time toward group efforts to highlight to the public, or any target group, issues of needed emphasis or accomplishments.	USFWS	Ongoing	Increase public awareness and support; more political will; improved habitat	Public Support for Puget Sound Recovery	New		

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USDA Forest Service	Prioritization of recreational river uses over restoration projects, Disconnection of aquatic and terrestrial ecosystems, Pollutant loading and temperature impairments due to lack of buffers, Lack of LWD recruitment, Lack of ecological functions in the riparian zone, Armoring of river banks, Loss of riparian forest cover, Sediment transport and riparian erosion, Changes to hydrology and runoff timing, Sediment aggregation altering hydrology and hydrography, Forest roads discharging sediment, and inducing erosion, Road failures are identified but not fully addressed, Channel scour affecting habitat, No monitoring and tracking of impacts, Stream buffers	Clean Water Act (CWA), National Forest Management Act (NFMA), National Environmental Policy Act (NEPA)	The Northwest Forest Plan provides direction for the protection and restoration of watersheds, aquatic and riparian ecosystems, and salmon habitat on National Forest System (NFS) lands. It directs the protection and restoration through implementation of its Aquatic Conservation Strategy (ACS), which includes four components: 1) Riparian Reserves, 2) Key Watersheds, 3) Watershed Analysis, and 4) Watershed Restoration. It also includes Standards and Guidelines to guide project design and implementation. The primary focus of the ACS is to facilitate natural recovery of riparian and aquatic habitat and the watershed processes that influence them. The strategy includes the use of both broad-scale protection and avoidance measures across all NFS lands, as well as strategically-focused active restoration projects to accelerate recovery in specific priority areas. Adaptive management is informed through monitoring. Monitoring includes implementation monitoring, Aquatic and Riparian Effectiveness Monitoring Program, and physical stream surveys. The primary focus of the ACS is the implementation of actions in a manner that facilitates natural recovery of riparian and aquatic habitat. In addition, where necessary, active restoration projects are implemented to accelerate recovery. The restoration program is focused on implementing whole watershed restoration in priority watersheds, guided by watershed analysis and restoration plans. Projects are designed and implemented in partnership with state and federal agencies, Tribes, and NGOs. Over the last several years, through the Legacy Roads and Trails Program, there has been an emphasis on reducing the effects of forest roads on aquatic	All USFS projects are designed to protect and restore habitat. Effects of projects are consistent with forest plans and applicable federal and state laws and regulations. Other projects (e.g., mining, energy developments) are mitigated as allowed by law and regulations.	The Northwest Forest Plan was initiated in 1994. The specific Key Watersheds were designated in the plan and provide stricter land management objectives geared toward salmonids than in other watersheds. Riparian Reserves were established around water bodies and wetlands to establish management areas with the emphasis on benefiting aquatic and riparian dependent species. Watershed Analyses were initially completed in the 5-10 years following 1994 to identify current conditions and restoration needs. Watershed Restoration projects, an already important practice for the Forest Service, were further supported by the NW Forest Plan.	Create Land Management Objectives with specific requirements for aquatic protection and restoration -> Increased scrutiny of projects and land management activities, as well as more restoration-focused projects being implemented -> Improvements to fish and aquatic habitats through both passive and active restoration techniques	The effects of the Northwest Forest Plan on aquatic and watershed parameters are monitored by the Forest Service's Aquatic Restoration Effectiveness Monitoring Program (AREMP). Active restoration activities are recorded and tracked annually by the Regional Office through the Aquatic Restoration Biological Opinion (ARBO).	Ongoing	The Northwest Forest Plan guidance applies to all National Forest System Lands and any Bureau of Land Management Lands within the Puget Sound and along the ocean coast of the Olympic Peninsula.	

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			ecosystems. Specific project plans and mitigations protect against the barriers described. Best Management Practices Monitoring determines effectiveness of protections and provides adaptive management opportunities.							
USDA Forest Service	Disconnection of aquatic and terrestrial ecosystems, Pollutant loading and temperature impairments due to lack of buffers, Lack of LWD recruitment, Lack of ecological functions in the riparian zone, Armoring of river banks, Loss of riparian forest cover, Sediment transport and riparian erosion, Changes to hydrology and runoff timing, Sediment aggregation altering hydrology and hydrography, Forest roads discharging sediment, and inducing erosion, Stream buffers	NFMA	Riparian Reserves are a key component of the Northwest Forest Plan's Aquatic Conservation Strategy that have been designated around all streams, water bodies, and unstable soil or geologic areas within NFS Lands. These Riparian Reserves encompass not only stream-adjacent areas, but also broader upland areas to ensure sufficient protection of contributing areas to the aquatic ecosystem. The width of Riparian Reserves along all fish-bearing streams is a minimum of 300 feet on each side of the channel, measured from the edge of the channel migration zone. Riparian Reserves are also designated at a minimum of 150 feet on both sides of perennial, nonfish-bearing streams and at least 100 feet on both sides of intermittent and ephemeral channels. As such, Riparian Reserves include a mosaic of riparian, wetland, and upland vegetation and provide a transition between aquatic and terrestrial landscapes. These areas are specifically managed to maintain and restore aquatic and riparian-dependent species of plants, invertebrates and vertebrates. The focus of management activities is for maintenance and restoration of natural patterns of shade, sediment inputs, large woody debris recruitment, and channel-floodplain interaction, and other key processes, as well as maintaining connectivity with upland areas. Riparian Reserves provide protection for vast reaches of salmonid habitat in the Puget Sound and Pacific Northwest. Within the Puget Sound, Riparian Reserves protect approximately 2900	Forest Service	The Northwest Forest Plan established the Riparian Reserves when it was enacted in 1994.	Riparian reserves -> improved riparian and stream habitat -> improved salmon health	Ongoing management of riparian reserves	Ongoing		

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			miles of fish habitat, including 900 miles accessible to salmon. The Forest Service currently manages over 26 percent of the entire Puget Sound basin land base, and over one-third of all NFS Lands are protected within these Riparian Reserves. Therefore, at least 10 percent of the land within the Puget Sound is managed as Riparian Reserves by the Forest Service, which is in addition and complimentary to similar land designations on state and private lands.							
USDA Forest Service	Removal, upgrade and repair of culverts is lagging	NFMA	The Forest Service directly manages approximately 2900 miles of fish habitat, including 900 miles accessible to salmon within the Puget Sound and Ocean Shores area of Western Washington. Since 1989, the Forest Service has removed migration passage barriers at 108 sites to provide passage for all life-stages of anadromous fish and most other aquatic-dependent species. This work has re-opened over 46 additional miles of habitat to anadromous fish. Furthermore, an additional 3 barriers are already in contract or agreement to be removed in 2012, which will provide approximately 2.2 miles of additional salmon habitat. Once completed, over 80 percent of all known salmon migration barriers on National Forest System (NFS) lands will have been removed in this area. An additional 27 barriers remain, which are blocking over 13 miles of anadromous fish habitat. The removal of these remaining barriers is estimated to cost over 4 million dollars, which will take several more years to acquire and accomplish through a wide-variety of sources, including but not limited to Federal Highway Funding, Legacy Roads and Trails funding, and Washington State Salmon Recovery Board funding. Prioritization of this work is based on the amount of habitat located upstream and the associated costs to provide	Forest Service	Ongoing program	Removal of fish passage barriers -> increased access to habitat essential for salmon spawning	Number of barriers removed	Ongoing		

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			access.							
USDA Forest Service	Disconnection of aquatic and terrestrial ecosystems, Pollutant loading and temperature impairments due to lack of buffers, Lack of LWD recruitment, Sediment transport and riparian erosion, Sediment aggregation altering hydrology and hydrography, Forest roads discharging sediment, and inducing erosion, Removal, upgrade and repair of culverts is lagging, Channel scour affecting habitat, Lack of funding for natural resource programs	NFMA	Development and implementation of watershed restoration plans. The frequency of implementing these activities is commensurate with level of funding. Restoration locations are prioritized by the Regional Aquatic Restoration Strategy the National Watershed Condition Framework.	The Forest Service has supported watershed restoration planning since the early 1990s, first through the Regional Aquatic Restoration Strategy, and now through the new national Watershed Condition Framework process. Forest personnel collaborate with local groups, agencies, and tribes to prioritize watersheds, develop restoration plans, and generate funds to implement projects. The Washington Office and Regional Office provide funding allocations.	Under the Watershed Condition Framework process, The Olympic and Mt. Baker-Snoqualmie National Forests have identified six 6th field Focus Watersheds as emphasis areas for restoration. Watershed Restoration plans for each focus Watershed will be completed by the end of FY 2012. Implementation of restoration projects will occur as funds are available. As restoration projects in one watershed are completed, additional Focus Watersheds will be identified with subsequent planning and project implementation.	Assess watershed conditions across the landscape, Identify priority watersheds for restoration, Develop collaborative restoration plans to identify essential restoration needs. Focus available resources to implement necessary restoration projects.	Forest level personnel collaborate with local groups, agencies, and tribes to develop watershed restoration action plans and implement projects.	Ongoing	The Watershed Condition Framework is a National Initiative. The Olympic and Mt. Baker-Snoqualmie National Forests have identified six 6th field Focus Watersheds as emphasis areas for restoration at this time. Additional Focus Watersheds will be identified in the future as restoration needs are completed in the current Focus Watersheds.	
USDA Forest Service	Prioritization of recreational river uses over restoration projects, Disconnection of aquatic and terrestrial ecosystems, Pollutant loading and temperature impairments due to lack of buffers, Lack of LWD recruitment, Lack of ecological functions in the riparian zone, Armoring of river banks, Loss of riparian forest cover, Sediment	NFMA	All USFS projects are designed to protect and restore habitat, and effects of projects are consistent with forest plans and applicable federal and state laws and regulations. Other projects (e.g., mining, energy developments) are mitigated as allowed by law and regulations.	USDA Forest Service implements and ensures consistency with the Northwest Forest Plan on all National Forest lands. The Forest Service works closely with regulatory agencies to	The Northwest Forest Plan has been in effect since 1994. The Forest Service has agreements in place with NMFS, USFWS, US Army corps of Engineers, and WDFW to meet consultation and permitting requirements for most projects. Other projects are consulted on a case-by-case basis	The Northwest Forest Plan contains land management objectives with specific requirements for aquatic protection and restoration. Consultation with all of the appropriate regulatory agencies insure actions meet all Federal and State laws and regulations	The Regional Forester and Forest Supervisors monitor implementation of the Northwest Forest Plan. Forest personnel and regulatory agencies monitor compliance of individual projects with consultation and permitting agreements and laws and regulations.	Ongoing	The Northwest Forest Plan applies to all National Forest System Lands within western Washington. Consultation/permitting agreements apply to all Forest Service lands and projects within the State of Washington.	

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	transport and riparian erosion, Changes to hydrology and runoff timing, Sediment aggregation altering hydrology and hydrography, Forest roads discharging sediment, and inducing erosion, Road failures are identified but not fully addressed, Channel scour affecting habitat, Stream buffers			complete necessary ESA consultation and acquire appropriate permits. Regulatory agencies include the NMFS, USFWS, US Army Corps of Engineers, Washington Dept. of Fish and Wildlife, and Washington Dept. of Ecology.						
USDA Forest Service	HPA permit streamlining degradation actions but not restoration, Problems resulting from streamlined permits, No monitoring and tracking of impacts	ESA, CWA, Fish NEPA, and Wildlife Coordination Act	Streamlining project approval process (e.g., categorical exclusions, ESA consultation) could accelerate aquatic restoration projects. USDA Forest Service restoration projects are streamlined through the Aquatic Restoration Biological Opinion (ARBO), the Hydraulics MOU with the State of Washington, ESA Consultation Streamlining (where needed), and through the NEPA process (where possible). The ARBO streamlines certain restoration actions through USFS, NOAA Fisheries, and USFWS consultation procedures for consistency with ESA. The Hydraulic MOU is an agreement between WDFW and USFS that supports the improvement of road/stream crossings. Where needed (not previously covered by ARBO), restoration projects are reviewed through a streamlining process with ESA regulatory agencies. Some projects can be categorically excluded from the preparation of EAs or EISs through the use of Decision Memos (a more abbreviated NEPA analysis) in the NEPA process. Effectiveness and BMP Monitoring occur.	The Forest Service works closely with regulatory agencies to streamline the permit process. Regulatory agencies include the NMFS, USFWS, US Army Corps of Engineers, Washington Dept. of Fish and Wildlife, and Washington Dept. of Ecology. Activities occur primarily at the Regional and Forest levels. The Washington Office is pursuing a new Categorical Exclusion category for road decommissioning to streamline the NEPA process for those projects.	The Forest Service has agreements in place with NMFS, USFWS, US Army Corps of Engineers, and WDFW to streamline permitting/ consultation for aquatic restoration projects. The Washington Office is pursuing a new Categorical Exclusion category for road decommissioning. The timeline is uncertain at this time.	Aquatic Restoration Biological Opinion (ARBO) streamlines ESA consultation for aquatic restoration projects. The agreement has been in place for 5 years and is in the process of being renegotiated. The US Army Corps of Engineers recently issued a Regional General Permit (RGP-8) for Forest Service Restoration projects in the State of Washington. WDFW recently signed a new MOU with the Forest Service that addresses Forest Service hydraulic projects within the State of Washington	Forest Service Regional Office personnel collaborate with regulatory agencies to prepare agreements and complete annual reporting. Forest personnel collaborate with local agency contacts to implement projects	Ongoing	Streamlining agreements cover Forest Service lands and projects within the State of Washington	

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USDA Forest Service	Decisions based on politics not science, No monitoring and tracking of impacts, Climate change exacerbates existing flow issues, Water quality standards, TMDLs, Lack of funding for natural resource programs	NFMA	Project-specific, Forest-wide, and Region-wide monitoring data are collected and shared with other agencies. Some data, such as temperature, are being incorporated into Regional-scale analyses (e.g., climate-stream temperature sensitivity). The effectiveness of the NW Forest Plan is being monitored through the AREMP program. Forest Plan and specific project level monitoring are also occurring. Best Management Practices continue to be monitored for implementation and effectiveness.	Data-sharing occurs between the following entities: USDA Forest Service, US National Park Service, USGS, WA Department of Ecology, WA Dept. of Fish and Wildlife, Tribes, County and City Governments, Universities.	Data sharing has been on-going and increases constantly since the advent of the internet. The Forest Service has implemented several National databases, and the processes to share these data with other agencies are either underway or still under development.	Share data with interested parties -> improve knowledge and understanding of resource conditions and effects -> reduce costs to execute effective Natural Resource Programs -> improve habitat conditions more cost-effectively	Data-sharing is encouraged at all levels of the agency. (It would cost more to track all data-sharing that is occurring, thus tracking this measure would be oppose the associated logic model to find more cost-effective ways of managing Natural Resource Programs and improving habitat conditions.)	Ongoing		
USDA Forest Service	Decisions based on politics not science, No monitoring and tracking of impacts, Water quality standards, TMDLs, Lack of funding for natural resource programs	NFMA	There are opportunities to increase interagency collaboration in data collection, storage, analysis, and use.	Collaborations currently exist between the USGS, USDA Forest Service, US National Park Service, Puget Sound LiDAR Consortium, WA DOE, WDFW, WA DNR, tribes, etc.	Federal agencies have begun to develop more collaborative processes for data collection, storage, analysis, and use. Many of these collaborations have historically happened at the local level between individual units, but some national and regional efforts are in development. Yet more collaboration efforts would contribute to cost-effective resource management and restoration.	Collaborate more on data collection, storage, analysis, and usage -> reduced cost on all aspects -> increased access to data, more accurate data, increased joint knowledge of data -> reduce costs to execute effective Natural Resource Programs -> improve habitat conditions more cost-effectively	New and existing data collaboration efforts established between PSFC agencies are often highlighted during their regular meetings. Closer monitoring of and increasing communication on the status of these collaborations would improve the likelihood of improving habitat conditions more cost-effectively.	New	The scope of many collaborative efforts are currently project-specific and watershed-specific within the Puget Sound and Ocean Coast area, such as the acquisition of LiDAR or the survey of fish habitat. Yet several regional and national efforts are currently underway, such as making updates to the National Hydrography Dataset maintained by the USGS. New efforts could be focused at any of these scales.	
USDA Forest Service	Lack of LWD recruitment, Armoring of river banks, Loss of riparian forest cover, Sediment transport and riparian erosion, Changes to hydrology and runoff timing, Sediment aggregation altering hydrology and hydrography, Forest roads discharging sediment, and inducing erosion, Removal, upgrade and repair of culverts is lagging, Channel scour affecting habitat,	Wyden Amendment	The USDA Forest Service works outside of National Forest System (NFS) Lands where projects benefit resources within watersheds on NFS lands. An example of Wyden Amendment implementation is the correction of fish barriers at private road stream crossings downstream of NFS Lands to facilitate migratory fish access to streams on the Forests.	The USDA Forest Service uses the Wyden Amendment to contribute funding and resources to restoration activities off of National Forest System Land that have a discernable benefit to National Forest land resources,	The Wyden Amendment was permanently enacted within the past few years and will continue to be used to perform restoration activities into the future to the extent that funds are available.	Species habitats extend beyond National Forest System Land -> Impediments to restoration activities may exist off National Forest System Land -> Several of these impediments will enable effective habitat or species restoration work on National Forest System Land	Active restoration activities are recorded and tracked annually by the Regional Office through the Aquatic Restoration Biological Opinion (ARBO).	Ongoing		

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	Water quality standards, TMDLs, Lack of funding for natural resource programs			such as fish habitat. Partner agencies and groups work collaboratively with the Forest Service to accomplish restoration goals. Such partners include WA DOT, Local Watershed Councils, Tribes, County and City Governments, and private land owners.						
USDA Forest Service	Funding for acquisition is limited, and is not eligible under many state and federal grant programs, Pollutant loading and temperature impairments due to lack of buffers, Lack of ecological functions in the riparian zone, Conversion of agricultural and forest land to development,	ESA, CWA, Fish NEPA, and Wildlife Coordination Act	S&PF grants Urban Forestry funds to Cascade Land Conservancy to purchase and conserve lands, protect natural landscapes, and remove invasive plants. The PNW Region of the Forest Service has an active land acquisition program that competes nationally for land acquisition funding. The PNW Streams Program specifically focuses in on land acquisition along priority rare aquatic species habitat.	USDA Forest Service provides grants that are used as match by partners, such as CLC, to purchase land. Local watershed councils also provide match funding to obtain grants from other sources. Partners in this arena include The Nature Conservancy, Trust for Public Lands, and the Western Rivers Conservancy.	These acquisitions were more prevalent in the past, but funding for acquisition for rare private parcels of land at risk of development with TES species through our national competitive Forest Legacy Program has diminished.	Land that is acquired by the Forest Service falls under the requirements of the Northwest Forest Plan and are therefore subject to the requirements of the Aquatic Conservation Strategy.	Land acquisitions take several years to develop and reprioritized every year once appropriations become available.	Ongoing		
USDA Forest Service	Conversion of agricultural and forest land to development, Pollutant loading and temperature impairments due to lack of buffers, Disconnection of aquatic and terrestrial ecosystems, Loss of riparian forest cover, Changes to	NFMA	The potential exists in Urban Areas and around cities to improve and manage local forests, and protect newly purchased forested lands from development. Opportunities for restoration may also exist under a new initiative the Community Forest and Open Space Program, which currently lacks funding.	The USDA Forest Service provides assistance to cities and other land owners to improve and manage their forest lands.	Ongoing program	The USDA Forest Service has tremendous knowledge and experience in managing forested lands -> provide other land owners with assistance on how to attain forest-related goals ->	Successful project completion with another land owner	Ongoing		

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	hydrology and runoff timing,					reduced cost to land owner to achieve their goals				
USDA Forest Service	Lack of LWD recruitment, Armoring of river banks, Loss of riparian forest cover, Sediment transport and riparian erosion, Changes to hydrology and runoff timing, Sediment aggregation altering hydrology and hydrography, Forest roads discharging sediment, and inducing erosion, Road failures are identified but not fully addressed, Removal, upgrade and repair of culverts is lagging, Channel scour affecting habitat, Water quality standards, TMDLs, Lack of funding for natural resource programs	NFMA	The Forests of the Puget Sound area have strong partnerships with Tribes that result in successful aquatic and riparian restoration.	The USDA Forest Service collaborates with tribes by providing funding, equipment, and staff resources to accomplish restoration work on and off National Forest System Lands.	These partnerships and collaboration activities are on-going.	Collaborating with tribes -> increased communication -> increased knowledge about resource values - > increased opportunities to obtain grant funding and increased restoration capacity -> habitat restoration is achieved more quickly	Active restoration activities are recorded and tracked annually by the Regional Office through the Aquatic Restoration Biological Opinion (ARBO).	Ongoing	Partnerships with tribes have been highly successful in the Sauk, Suiattle, SF Skokomish River watersheds, and others. Such partnerships exist basin-wide.	
USDA Forest Service	Prioritization of recreational river uses over restoration projects, Disconnection of aquatic and terrestrial ecosystems, Pollutant loading and temperature impairments due to lack of buffers, Lack of LWD recruitment, Lack of ecological functions in the riparian zone, Armoring of river banks, Loss of riparian forest cover, Sediment transport and riparian erosion, Changes to hydrology and runoff timing, Sediment aggregation altering hydrology and hydrography, Forest roads discharging sediment, and inducing erosion, Channel scour affecting habitat,	NFMA	For decades, PNW Research has been actively studying aquatic, riparian, and terrestrial ecosystems across the Pacific Northwest. They communicate research results to managers and the public. This research helps support local salmon recovery efforts.	The Land and Watershed Management Program is the PNW Research group associated with salmon habitat and watershed issues. The program manager is John Laurence.	Research in various topics is ongoing			Ongoing	Research is conducted and results are applicable throughout the Pacific Northwest.	

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	Stream buffers									
US Navy - Navy Region NW	*Note: Could not directly attribute this issue to a barrier.	Sikes Act and DoD Regulations for Military lands. Naval Air Station Whidbey Island's (NASWI) Integrated Natural Resource Management Plan (INRMP).	Crescent Harbor Salt Marsh Restoration Project (Oak Harbor, WA). Fish access and tidal flow at the Crescent Harbor Salt Marsh has been restored. Issues with erosion at the confluence of the bridge occurring.	Navy	Ongoing	Monitoring berm breach erosion => take action to slow bank erosion =>preserve berm opening into inner channels	Naval Facilities Command NW will monitor/report on erosion condition.	Ongoing	This project is complete. Only maintenance costs involved regarding bank erosion.	
US Navy - Navy Region NW	No monitoring and tracking of impacts	Sikes Act and DoD Regulations for Military lands. Naval Air Station Whidbey Island's (NASWI) Integrated Natural Resource Management Plan (INRMP).	Under the INRMP, WA Dept. of Fish & Wildlife (WDFW) performs annual forage fish spawning surveys at NASWI. b. Whidbey staff, WDFW, and NOAA(NMFS) will conduct a survey in both 2013 and 2016 for Puget Sound chinook salmon presence to compare change over time to assist in assessing the effectiveness of the plan	Navy - Primary. WDF&W & NOAA-NMFS support.	Annual for forage fish. 2013 & 2016 for salmon survey.	Completed surveys=> provide to agencies=>improve INRMPs as needed.	Naval Air Station Whidbey Island will measure/report to WDFW or NOAA-NMFS as appropriate	Ongoing		
US Navy - Navy Region NW	Mitigation Adequacy	ESA Section 7 consultation - habitat loss	Navy looking to use a new mitigation hierarchy, i.e., approved mitigation banks, approved in-lieu fee (ILF), permittee (i.e., Navy) responsible mitigation. Working with the Hood Canal Coordinating Council (HCCC) regarding the proposed ILF program in Hood Canal.	Corps primary to approve ILF. HCCC is ILF sponsor. Interagency Review Team (reviews the instrument and advises the Corps and Ecology in selection of projects) includes USFWS, NOAA/NMFS, EPA, and several state and local agencies, and tribes. Navy: option to use program as a "permittee" once established.	Program approval would be in June '12 at the earliest	ILF program established => Navy enters program => payment made into program =>restoration, creation, enhancement or preservation activity conducted		New program for HCCC and for Navy participation	Allows a concentration of effort on project sites and allows for better coordination to restore the health of the Hood Canal watershed.	
US Navy - Navy Region NW	Removal, upgrade and repair of culverts is lagging	Sikes Act	Complete Railroad Culvert Analysis for Navy-owned rail lines from Bremerton to Bangor.	Navy Primary. WA Dept. of Fish and Wildlife support.	Currently unfunded. Two year timeframe to complete when funding is obtained.	Locate/describe known and potential fish-passage culverts => assess fish passage	Navy Region NW will prepare report on findings and any recommended culvert corrections. Socialize report with WDFW and	New	This study is under CNO review for implementation in FY14. Currently not funded.	

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						ability => prepare report of findings w/recommendation of corrections including priority index scores	USFWS.			
US Navy - Navy Region NW	Bank hardening and over water structures associated with railroads	Sikes Act	The habitat conditions where Bangor-Bremerton-Shelton railroad intersects Chico Creek are generally poor due to the armored banks and creosote piles within the stream bed. Navy project would remove angular rock from the stream bed and improve access to upstream habitat.	Navy Primary	CY12 projected project start (during in-water construction window) to remove portion of foreign angular rock. Additional work to remove additional angular rock is dependent on future funding.	Implement project to improve Chico Creek => improve access to upstream habitat for Puget Sound steelhead and PS Chinook salmon.	Navy will report to Corps that project is completed and compliant to 404 permit.	New	Project has partial funding to start removal of angular rock. Additional portion of project to remove additional angular rock is under CNO review for implantation in FY14; currently not funded.	
US Navy - Navy Region NW	Removal, upgrade and repair of culverts is lagging	Sikes Act	Realign the tributary of Devils Hole Creek (Naval Base Kitsap). The project will restore access to approximately 5,500 linear feet of stream habitat to salmonid species.	Navy Primary.	Design is scheduled to be complete in CY12. Construction work not scheduled to commence until additional funding is in-place.	replace culverts => restore access to ~5,500 linear feet of stream habitat to salmonid species	Navy will report to Corps that project is completed and compliant to 404 permit.	New	Project design is scheduled to be funded and completed in CY12. Funding for construction to replace culverts is under CNO review for implantation in FY14; currently not funded.	
Joint Base Lewis-McChord	Development Rules; Variances Granted for Development	NEPA	All proposed project activities go through an Environmental Review process to ensure protection of the environment and adherence to federal laws, regulations, and mandates.	JBLM Public Works Environmental Division	Continuous	All proposals on JBLM receive environmental impact analysis		New and ongoing activities	DPW Environmental Division reviews over 400 project proposals each year. All forma reviews are archived.	
Joint Base Lewis-McChord	Lack of Funding for Natural Resource Programs	Sikes Act and Army Regulation 200-1	If possible and funding allows, restoration activities and habitat protection efforts are built into project development plans.	JBLM and Corps	Continuous	Initial Planning and Programming Documents include Natural Resource Components (including RFP's)	Annual review of the INRPM to compare accomplishments versus commitments	Ongoing		
Joint Base Lewis-McChord	Lack of Ecological Functions in the Riparian Zone; Lack of Riparian Forest Cover; Sediment Transport and Riparian Erosion; Removal, Upgrade and Repair of Culverts is Lagging; Stream Buffers	Clean Water Act, Army Regulation 200-1, JBLM Integrated Natural Resources Management Plan (INRMP) and JBLM Regulation 200-1	1. Approximately 170,000 plugs of native prairie plants planted each year to restore wild prairie vegetation. 2. JBLM has a 50 meter buffer along streams and around wetlands within which no ground disturbance is allowed. 3. JBLM annually plants approximately 500 riparian plants along streams. 4. Crossing of streams are only allowed at designated locations all of which are hardened to reduce sedimentation of	JBLM	Continuous	Natural Resource restoration projects programmed, funded and implemented. Deliverable is completed project.	Annual review of the INRPM to compare accomplishments versus commitments	Ongoing		

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			streams. 5. All round culverts in Muck Creek have been converted to three sided box culverts to improve fish passage. 6. Approximately 240 acres are treated annually to control non-native plant species within and adjacent to streams and wetlands. 7. In stream habitat enhancement work on the installation has included addition of coarse woody debris and spawning gravel.							
Joint Base Lewis-McChord	No Monitoring and Tracking of Impacts	NEPA and INRMP	Protection of habitat is inserted during project planning efforts in order to preserve previous efforts and to set the stage for additional protection and restoration activities.	JBLM	Continuous	Initial Planning and Programming Documents include Natural Resource Components (Including RFP's)	Deconfliction meetings, NEPA review and annual review of INRMP	New		
Joint Base Lewis-McChord	Lack of Funding for Natural Resource Programs; Conversion of Agricultural and Forest Land to Development	Sikes Act and DoD Regulations	1. Since 2003, JBLM is the only designated public land certified as a Well-Managed Forest in accordance with Forest Stewardship Council criteria. JBLM plants over 75,000 trees annually. 2. The JBLM ACUB program was approved in 2006 to promote recovery of the four candidate species on off-post lands. To date, the program has received \$2.79 million in DoD REPI/Army ACUB funding and more than \$6 million in partner matching, protecting 1,025 acres of land not formerly in conservation status and initiating conservation actions on 4,247 acres. At the end of FY2011, the Army provided an additional one-time funding for acquisition of \$2.5M. Conservation actions include habitat restoration, candidate species reintroductions, and planning, monitoring, and research to support the first two actions. Our ACUB partners are The Nature Conservancy, the Washington State Departments of Fish & Wildlife and Natural Resources, and Wolf Haven International.	JBLM	Continuous	Natural Resource restoration projects programmed, funded and implemented. Deliverable is completed project.	Annual budget requests compared to actual funding levels	Ongoing		

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			<p>3. Species recovery activities include:</p> <p>a. Translocation of JBLM Western bluebirds to San Juan Island. This effort has been ongoing for the last five years and has resulted in 88 young in addition to the translocated birds.</p> <p>b. Reintroduction of Taylor's checkerspot butterfly, Oregon spotted frog, and Western grey squirrel. Over 3500 Oregon spotted frogs have been released to date on JBLM in partnerships between JBLM, the Evergreen State College, Department of Corrections, the Nature Conservancy and local zoos, and evidence of their reproducing has been observed.</p> <p>c. Replantings use native prairie plants grown in the JBLM greenhouse. Over 230,000 plugs of native prairie species are planted each year. 70,000 of these were grown in the ITAM greenhouse from seeds collected on JBLM.</p> <p>d. JBLM and The Nature Conservancy work together to conduct ecological burns on about 1800 acres annually. These ecosystems provide habitat to threatened species. Reducing flammable fuel limits wildfire intensity, makes wildfire easier to suppress and protect people, resources, and structures.</p>							
Joint Base Lewis-McChord	Water Quality Standards; Low DO Problems in the Nearshore;	Clean Water Act/NPDES	<p>1. The existing JBLM Waste Water Treatment Plant (WWTP) that discharges into Puget Sound at Solo Point uses 1950–70's technology, relying primarily on trickling filters for wastewater treatment utilizing bacterial breakdown of biological organisms.</p> <p>2. They army has programmed in the FY2013 for the construction of a new, multimillion dollar WWTP to replace the once currently in operation at JBLM. The new plant will treat the wastewater to Class "A" reusable standards.</p> <p>3. Once it is operational in 2015, the water it produces will be available for</p>	JBLM	Continuous	Original 1391 Planning Document included restoration components, ensuring they will be continued through project design and construction		New		

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			beneficial reuse, with the ultimate goal of eliminating any discharge from the plant into the Puget Sound.							
Joint Base Lewis-McChord	Lack of Political Will to Protect Salmon;	National Historic Preservation Act; American Indian Religious Freedom Act; Archaeological Resource Protection Act; Executive Orders and Federal Regulations; Army Regulation 200-1	<p>1. Salmon. The Nisqually Tribe has operated the Clear Creek Hatchery on lands leased from JBLM since 1991. It is one of the largest in the state of Washington and supports a successful tribal and recreational Chinook salmon fishery. JBLM has also agreed to grant the Tribe a license to seasonally operate a fish weir across the Nisqually River on JBLM lands to separate wild from hatchery chinook. This successful partnership is one of the primary foundations for the positive and cooperative relations between the Tribe and JBLM. JBLM and the Tribe have worked cooperatively for almost 30 years to restore salmon habitat along Muck Creek on JBLM. Both parties benefit by pooling money, labor and expertise: these efforts ensure that JBLM Soldiers have high-quality, realistic training lands now and in the future, while at the same time benefiting the salmon that have sustained the Nisqually Tribe for thousands of years. The Garrison Commander participates alongside the Nisqually Tribal Chairman in a ceremony each January to welcome the annual return of the salmon (“Roy Salmon Homecoming”).</p> <p>2. Access and Govt. to Gov’t Relations. Continued access to JBLM is important to the Nisqually Tribe. Tribal members continue to visit their sacred sites, cemeteries and traditional places, as well as exercise their treaty rights to fish, hunt, and gather on lands now occupied by JBLM. Typical items gathered include cedar bark, roots of prairie plants, and other traditional and ceremonial items. Five large cedar trees were harvested for use during the Canoe Journey celebration in 2011.</p>	JBLM	Continuous	Natural Resource restoration projects programmed, funded and implemented. Deliverable is completed project.	Percent of projects annually funded by higher headquarters to conduct habitat enhancement for salmon	Ongoing		

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			Forestry Branch issues permits to gather firewood. Firewood permits are free for tribal elders and those with handicaps.							
Joint Base Lewis-McChord	Lack of Funding for Natural Resource Programs; Conversion of Agricultural and Forest Land to Development; Stream Buffers; Disconnect of Aquatic and Terrestrial Ecosystems	National Historic Preservation Act; American Indian Religious Freedom Act; Archaeological Resource Protection Act; Executive Orders and Federal Regulations;	Continuation and expansion of existing salmon habitat improvement projects along the Niqually and its tributaries. Both independently and in partnership with the Nisqually Tribe.	JBLM	Continuous	Natural Resource restoration projects programmed, funded and implemented. Deliverable is completed project.	Annual budget requests compared to actual funding levels; Annual review of INRMP to compare accomplishments versus commitments	New		
U.S. Geological Survey		NA	USGS conducts restoration project-specific monitoring and assessments to establish pre-project baselines, habitat (and other) responses to restoration, and other studies relevant to supporting restoration planning and adaptive management. The USGS also develops protocols for others to use for scientifically-defensible monitoring related to habitat protection and restoration, particularly relating to Department of the Interior trust resources.	USGS Science Centers lead projects and protocol development.	Project dependent. Not applicable to protocols.	NA	NA	Ongoing		
U.S. Geological Survey		NA	The USGS can commit to organizing a science planning meeting with tribal representatives, the USGS Northwest Area Puget Sound Leader Team (PSLT), and the USGS Coastal Habitats in Puget Sound (CHIPS) project leads. The purpose of the science planning workshop would be to: 1) for USGS to gain a better understanding of tribal concerns and needs relating to habitat and salmon recovery; 2) to promote mutual awareness and communication between tribes and USGS science leaders about science supporting salmon recovery and other important issues; 3) discuss USGS science capabilities for addressing these issues; 4) discuss and refine emerging science	The USGS Puget Sound Leader Team will organize.	The science planning meeting would occur based on the timing of new research funding for Puget Sound expected in FY13.	NA	NA	New		

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			plans for new USGS science projects contingent on potential new USGS appropriations; and 5) discuss how to involve and communicate with tribes in implementing these new projects.							
U.S. Geological Survey		NA	The USGS can also commit to building on current efforts to confer with tribes in the leadership of the new Northwest Climate Science Center. The Climate Science Center is tackling the many issues related to climate change impacts in the Northwest, including protection of species of interest, protection of tribal cultural resources, better understanding and predicting fish and wildlife responses to climate change, and anticipating changes in patterns of fish and wildlife disease. Establishing an on-going relationship with tribes in this capacity is of great interest to the USGS and we are happy to commit to this.	USGS and the NW CSC will organize.	This schedule would be negotiated between the CSC and interested tribes.	NA	NA	New		
Federal Highway Administration Washington Division Office		NEPA, CWA, CAA, NHPA, ESA, etc.	Project mitigation activities as required to complete the NEPA process or obtain permits from Federal, state and local regulatory agencies.	WSDOT or Local Agencies select projects. FHWA retains responsibility under NEPA and other laws as the Federal lead agency.	Projects are ongoing.	Transportation need identified -> alternative selected -> project evaluated for environmental impacts ->permits and approvals obtained including identification of mitigation ->environment protected or improved by mitigation	WSDOT/Local Agency chooses projects. FHWA approves alternative selection and environmental studies/Regulatory agencies determine permit requirements/FHWA/WSDOT/Local Agencies ensure that mitigation is carried out.	Ongoing		
Federal Highway Administration Washington Division Office			Research has been conducted on the effectiveness of stormwater treatment Best Management Practices, on design of culverts to improve fish passage, on reduction of impacts to endangered species, and on a variety of similar issues. Most of this was done through FHWA HQ. The Division Office does not control grant funds - all Federal-aid projects are selected by WSDOT in compliance with Federal planning requirements.	Research proposals selected by WSDOT, apply for FHWA funding from HQ.	Ongoing	Research question identified - research proposals selected - research funding requested - research conducted - findings implemented - environment improved by implementation of better techniques/ products.	Research projects selected by group evaluation. FHWA oversight of funds provided.	Ongoing		

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Federal Highway Administration Washington Division Office		NEPA, CWA, CAA, NHPA, ESA, etc.	Monitoring is sometimes required as part of our permits and in those cases is eligible for Federal-aid funding. The monitoring would be carried out by WSDOT or the local agency in accordance with the permit requirement.	WSDOT or Local Agencies select projects. FHWA retains responsibility under NEPA and other laws as the Federal lead agency.	Projects are ongoing.	Transportation need identified -> alternative selected -> project evaluated for environmental impacts ->permits and approvals obtained including identification of monitoring requirements->environment protected or improved by mitigation	WSDOT/Local Agency chooses projects. FHWA approves alternative selection and environmental studies/Regulatory agencies determine permit requirements/FHWA/WSDOT/Local Agencies ensure that mitigation is carried out.	Ongoing		
Federal Highway Administration Washington Division Office		N/A	Sustainability Partnership. Partnership between EPA, HUD, and DOT which encourages smart growth and land use choices such as compact growth within urban growth boundaries. Funds projects which preserve environmentally sensitive lands and safeguard rural landscapes by targeting development to locations that already have infrastructure and offer transportation choices.	HUD, EPA, FHWA and FTA staff.	Ongoing	Identifying ways to improve sustainability by integrating our programs and removing barriers to sustainable projects.	Pilot projects and information-sharing.	New		
Federal Transit Administration	Water quality	SAFETEA-LU	FTA-funded projects indirectly protect and restore Puget Sound habitat through reduction in air pollution.	FTA, transit agencies receiving funding in the PS area	Ongoing	FTA funded projects support alternative modes of transportation -> reduction in individual vehicle use -> reduction in emissions/air pollution -> improved water quality from reduced atmospheric deposition	Continue to support transit services through grants	Ongoing		
Federal Transit Administration		NEPA	Some FTA funded projects benefit habitat through mitigation related activities such as removing creosote-treated pilings, land banking, mitigation banking, wetland preservation, and improved water quality.	Mitigation determined through FTA and project proponent consultation with NOAA/NMFS, USFWS, and Department of Ecology	Mitigation measures are project specific and are determined during and after the NEPA process	FTA funded project implements water quality or habitat related mitigation -> Potential improvement in water quality or habitat (dependent on project)	Continued enforcement of environmental commitments.	Ongoing		
Federal Transit	Conversion of agricultural		Sustainable Partnership- Partnership	DOT, HUD, & EPA	Funding in PS basin	Coordination of funding	Continued coordination with EPA	Ongoing		

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Administration	and forest land to development		between EPA, HUD, and DOT which encourages smart growth and land use choices such as compact growth within urban growth boundaries. The Sustainable Partnership funds projects which preserve environmentally sensitive lands and safeguard rural landscapes by targeting development to locations that already have infrastructure and offer transportation choices.		dependent on competitive process.	and expertise between HUD, EPA & DOT -> reduced development in undeveloped areas-> protection of upland areas, wetlands, and other sensitive areas.	and HUD through the partnership			
Federal Transit Administration	Climate change		Climate Change Adaptations Research - FTA is funding research and educating grantees on how to prepare for climate change. This includes providing guidance/information to grantees which could help them better plan facilities.	FTA and local transit agencies	2012-2013	FTA provides climate change information to grantees -> grantees use information to better plan capital projects -> less facilities built in flood prone areas and retrofitting of existing facilities within flood areas reducing release of harmful materials; also more sustainable approaches when building in shoreline/riparian areas is unavoidable (e.g., less reliance on rip-rap).	FTA is currently funding a pilot program with Sound Transit, WSDOT and the UW Climate Impacts Group	Ongoing		
U.S. Coast Guard		Various	USCG does not do habitat restoration for salmon habitat but does have roles that support habitat protection such as coordination of vessel traffic to avoid sensitive areas (e.g., National Sanctuary) and carries regulatory and enforcement powers to enforce fishing vessel safety standards. Under CWA and CERCLA authorities, USCG has the ability to clean up contaminated sites in the coastal zone that present imminent threats to navigable waterways (or their tributaries).	USCG	Ongoing	Enforcing existing federal fishing vessel safety and vessel traffic management regulations -> safe waterway, less likely to introduce hazardous material into the water column -> maintained ecosystem health	Ongoing enforcement of existing regulations	Ongoing		
U.S. Coast Guard		Various	In the NW, the Coast Guard enforces protection of the U.S. Exclusive Economic Zone (EEZ) preventing foreign fishing vessels from fishing in the U.S. EEZ and ensuring an equitable playing	USCG	Ongoing	Fulfilling LMR Protection and MPS missions -> equitable playing field for species management bodies	Ongoing fulfillment of LMR and MPS missions	Ongoing		

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			field for US fisheries. The Coast Guard also has a Living Marine Resources (LMR) protection mission. The Coast Guard's primary LMR mission is to ensure compliance with Federal fishing regulations. Most fishing regulations are enacted by management bodies such as the International Pacific Halibut Commission or the Pacific Fishery Management Council with input and advice from industry, enforcement, scientists and environmental groups. A subset of the LMR mission, is the Marine Protected Species (MPS) mission. MPS includes enforcement of the Endangered Species Act, Marine Mammal Protection Act, and other laws. Many of the animals protected in the Pacific Northwest are iconic species such as Orca Whales and Chinook Salmon.			and user groups -> sustainable fisheries and protected marine species -> maintained ecosystem health				
US Army Corps of Engineers, Seattle District	Bulkheads/docks/overwater structures, Lack of properly functioning drift cells, Loss of forage fish and forage fish habitat, Disconnection of aquatic and terrestrial ecosystems, Bank hardening and over water structures associated with railroads	CWA §404 and Rivers and Harbors Act	Existing Mitigation Banks and In Lieu Fee programs to serve compensatory mitigation requirements (not purely restoration). Approved mitigation banks in the Puget Sound basin include Skagit; Skykomish; Nookachamps; Snohomish; Paine Field/Snohomish County Airport; WSDOT Springbrook Creek. Mitigation Banking and In-Lieu-Fee (ILF) Programs: The Seattle District will continue to encourage the use of mitigation banks and ILF programs that provide high quality compensatory mitigation for unavoidable impacts associated with permitted projects. Presently, mitigation banks totaling over 1,600 acres exist in Washington, with the majority of acreage in the Puget Sound basin, with another 1,500 acres and four proposed ILF programs in the basin. Among these are the first Tribal mitigation banks and ILF program, and the first marine ILF program. Further, the Seattle District continues to explore opportunities for joint mitigation-conservation banks and ILF	Corps/Ecology co-leads, local gov't, tribes, other fed agencies as necessary for individual banks	Ongoing; each bank has its own schedule which depends on negotiations	Negotiations with involved parties->creation of ILF programs and mitigation banks ->protects existing habitat	Sufficiently functioning Mitigation Banks; ILF acres protected; completion of ILF and MB	Ongoing	Issue is that mitigation banks don't always replicate lost functions	Basin or watershed based determination depending on service area developed for each bank

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			programs with the Federal Services.							
US Army Corps of Engineers, Seattle District	Bulkheads/docks/overwater structures, Lack of properly functioning drift cells, Loss of forage fish and forage fish habitat, Disconnection of aquatic and terrestrial ecosystems, Bank hardening and over water structures associated with railroads	CWA §404 and Rivers and Harbors Act	<p>Pending: several Banks/ILF in Puget Sound for compensatory mitigation purposes (Lummi Bank; King County ILF; Hood Canal Coordinating Council ILF; Quil Ceda Village ILF; Puget Sound Partnership/Pierce County ILF).</p> <ul style="list-style-type: none"> • Exploring other opportunities with the Services to develop Banks/ILF projects for both agencies mitigation needs • Continue to increase tribal coordination during permitting process, have drastically increased this over last several years. • Work with NMFS/USFWS to identify and develop/expand programmatic opportunities to encourage more environmentally friendly projects <p>Mitigation Banking and In-Lieu-Fee (ILF) Programs: The Seattle District will continue to encourage the use of mitigation banks and ILF programs that provide high quality compensatory mitigation for unavoidable impacts associated with permitted projects. Presently, mitigation banks totaling over 1,600 acres exist in Washington, with the majority of acreage in the Puget Sound basin, with another 1,500 acres and four proposed ILF programs in the basin. Among these are the first Tribal mitigation banks and ILF program, and the first marine ILF program. Further, the Seattle District continues to explore opportunities for joint mitigation-conservation banks and ILF programs with the Federal Services.</p>	Corps/Ecology co-leads, local gov't, tribes, other fed agencies as necessary for individual banks	Negotiations ongoing	Negotiations with involved parties->creation of ILF programs and mitigation banks ->protects existing habitat	Sufficiently functioning Mitigation Banks; ILF acres protected	New		Basin or watershed based determination depending on service area developed for each bank
US Army Corps of Engineers, Seattle District	Bulkheads/docks/overwater structures, Lack of properly functioning drift cells, Loss of forage fish and forage fish habitat, Disconnection of aquatic and terrestrial ecosystems, Bank hardening and over water	CWA §404 and Rivers and Harbors Act	Dependent on funding increase efforts on enforcement. Will need assistance from NOAA Fisheries to complete after the fact consultation in order to complete actions. Work with EPA on potential to lower the threshold for their involvement to increase effort. Regulatory Compliance and	Corps with assistance from NOAA, EPA	Ongoing; annual reporting on enforcement	Enforcement of permits and noncompliance with permit requirements->increased compliance with CWA 404 ->better protection of existing habitat and improved	Enforcement statistics	Ongoing		Area of jurisdiction and district boundaries

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	structures associated with railroads		Enforcement: The Seattle District will continue to maintain an appropriate balance among permit, compliance, and enforcement actions. Among the Corps Regulatory Program balanced scorecard metrics in Fiscal Year 2011, Seattle District exceeded its compliance inspection targets two-fold and meets enforcement targets. It seeks to continue to be responsive to reports of violations from Tribes, agencies, and the public.			mitigation measures				
US Army Corps of Engineers, Seattle District	Shoreline modifications, riparian management, mitigation adequacy, and lack of enforcement	CWA §404 and Rivers and Harbors Act	2012 Nationwide Permits (NWP), Regional General Conditions (RGC), and Regional Conditions (RC): The Seattle District developed RGCs and RCs for the NWPs published on February 21, 2012 which became effective March 19, 2012. Input from Tribes, state agencies, the public, and coordination with the regional NMFS office resulted in strengthened environmental protections, and increased rigor of analysis for projects with the potential to impact resources of concern in Puget Sound and statewide, relative to the 2007 versions. Initiatives championed by Tribes, while not fully enacted, formed the basis for specific actions related to: use of Standard Individual Permits rather than NWPs for new bank stabilization projects in certain areas of Puget Sound with high levels of cumulative impacts, impacts of a certain magnitude to intermittent or ephemeral streams, and moorage in Puget Sound under certain conditions; additional information requirements allowing a more rigorous review for all bank stabilization projects; culvert design methodology to consider maximized passage of flow and aquatic organisms including fish; and aquaculture. The Seattle District will wait for further guidance and direction from Corps Headquarters on the subject of implementing the February 15, 2012	Corps	Mar-12	use of IPs -> more rigorous reviews -> better protection of existing habitat and improved mitigation measures	publication of the NWP 2012	Ongoing		Area of jurisdiction and district boundaries

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			NMFS Biological Opinion (BiOp) regarding the NWP program.							
US Army Corps of Engineers, Seattle District	impediments to restoration projects, shoreline modification, riparian management, mitigation adequacy, and lack of enforcement	CWA §404 and Rivers and Harbors Act	Tribal Notification Procedures: The Seattle District has established notification procedures with 14 Tribes to solicit review and comment on proposed projects subject to its Regulatory program jurisdiction in areas where they possess Usual and Accustomed hunting and fishing Tribal Treaty rights. Notifications to Tribes increased by 80% (570 total) in Fiscal Year 2011 and Seattle District is working with additional Tribes to develop similar procedures.	Corps and Tribes	Ongoing	Coordination with Tribes -> more rigorous reviews -> better protection of existing habitat and improved mitigation measures	notification process with additional tribes	Ongoing		Basin or watershed based determination depending on service area developed for each bank
US Army Corps of Engineers, Seattle District	Shoreline modifications, riparian management, mitigation adequacy, and lack of enforcement	CWA §404 and Rivers and Harbors Act	NOAA and the Corps are promoting alternative materials and installation methods to reduce habitat impacts from bank armoring. NOAA will prepare a Biological Assessment for the Corps describing armoring designs that reduce impacts on fish habitat. The Corps will provide this information to permit Applicants for use in preparing permit applications and mitigation plans will. Two examples illustrate this. First, since soft armoring using alternative materials and installation methods is the preferred approach to reduce habitat impacts when bank stabilization in Puget Sound cannot be avoided, NMFS will provide the Corps typical fish friendly soft armoring designs for dissemination to permit applicants. Second, NMFS is completing ESA Section 7 consultation to reauthorize a Corps Regional General Permit (RGP) for residential piers, ramps, and floats in marine waters. NMFS will provide the Corps guidance for analyzing project impacts and calculating mitigation requirements that will both help applicants and potentially serve as a component of the crediting tool for mitigation banks and ILF programs that offset project impacts.	Corps with assistance from NMFS	Ongoing	implementation of best practices -> more rigorous reviews and improved process for determining mitigation requirements -> better use of ILF and MB	design completion and RGP reauthorization	Ongoing		Area of jurisdiction and district boundaries

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US Army Corps of Engineers, Seattle District	Lack of properly functioning drift cells, Loss of forage fish and forage fish habitat, Disconnection of aquatic and terrestrial ecosystems	Civil Works - Ecosystem Restoration	These authorities include: the Puget Sound and Adjacent Waters Restoration Authority (PSAW Section 544) including Seahurst Park and Qwuloolt; Continuing Authorities Program (CAP) authorities such as Restoration at Existing Corps Projects (Section 1135) and Small Restoration Projects (Section 206) including Union Slough, Lincoln Park, Goldsborough Dam Removal; General Investigation (GI) studies such as the Puget Sound Nearshore Restoration (PSNR) and Skokomish Basin Ecosystem Restoration studies; individual projects under the Green-Duwamish Ecosystem Restoration authority; and ESA compliance projects from Construction General (CG) and/or Operations and Maintenance (O&M) accounts at the Howard Hanson Dam, Mud Mountain Dam, and Lake Washington Ship Canal operating projects, and Levee Vegetation Initiative; Dredge material management and beneficial reuse activities; Planning Assistance to States (PAS)	Corps	Ongoing depending on funding and approvals	Ecosystem restoration work->project completion->improved habitat	Project construction completion	Ongoing	Puget Sound and Adjacent Waters program is not currently budgetable	Puget Sound-wide
US Army Corps of Engineers, Seattle District	Lack of properly functioning drift cells, Loss of forage fish and forage fish habitat, Disconnection of aquatic and terrestrial ecosystems	Civil Works - Ecosystem Restoration	<ul style="list-style-type: none"> • Skokomish Watershed (in addition to and potentially a result of the GI study): Working with PSFC and Tribes to implement ecosystem restoration projects thru maximizing all agencies programs (Corps, USFW, others) • CAP and PSAW: dependent on funding there are multiple projects sponsors have approached Corps to sponsor • Puget Sound Nearshore: Study has identified opportunities for restoration (working with USFW and non-federal sponsor) and will deliver a feasibility report to Congress in 2015. 	Corps, other fed, state, local agencies, tribes as appropriate	Ongoing	Ecosystem restoration work->project completion->improved habitat	Project construction completion	New	contingent on sponsor and Congressional funding (cost share program)	Skokomish watershed or other specific watershed
US Army Corps of Engineers, Seattle District	Lack of properly functioning drift cells, Loss of forage fish and forage fish habitat, Disconnection of aquatic	Civil Works - Flood Reduction	Multiple Programs to utilize for Puget Sound Recovery: 1. General Investigations (GI): Puyallup and Skagit River 2. Operations: Levee Rehab, Levee	Corps, other fed, state, local agencies, tribes as appropriate	Ongoing	Ecosystem restoration work->project completion->improved habitat	Project construction completion	Ongoing		Puget Sound-wide

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	and terrestrial ecosystems		Vegetation Initiative, LWSC, Mud Mountain Dam and Howard Hanson Dam 3. FPMS: numerous small scale studies/projects in PS 4. CAP 205 constructed projects Lower Dungeness River, Horseshoe Bend in Kent and Tukwila							
US Army Corps of Engineers, Seattle District	Loss of riparian forest cover, Corps use of emergency declarations	Civil Works - Flood Reduction	<ul style="list-style-type: none"> • Work with other federal/non federal partners on developing comprehensive plans that address flooding as well as incorporate environmental considerations. • Continue to increase partnership with Tribes on flood reduction projects 	Corps, FEMA other partners including	Ongoing	Comprehensive watershed plan on flooding->plan includes environmental considerations - > improved floodplain connectivity - >improved habitat	Plans that achieve balance between flood and habitat protection	New		Puget Sound-wide
US Army Corps of Engineers, Seattle District	Corps use of emergency declarations, floodplain management, a)Armoring of river banks, b)Lack of ecological functions in the riparian zone	PL 84-99, Flood Control and coastal Emergencies (FCCE)	<p>1) PL 84-99 Flood Control and Coastal Emergencies Programs: The Corps Seattle District continues to work collaboratively with levee owners, Tribes, the Federal Services (USFWS and NOAA Fisheries), and stakeholders to develop flood risk management solutions for the Public Law (P.L.) 84-99 Flood Control and Coastal Emergencies (FCCE) programs. These programs support levee integrity, ESA compliance, and fulfillment of Tribal Trust responsibilities. The Corps anticipates the ESA Section 7 consultation inherent in these efforts will yield endangered species/fish-friendly criteria for levee design, construction, maintenance, and repair and best practices guidance for Puget Sound and the region. The District will try to complete P.L. 84-99 consultations with the federal Services prior to doing the actual repairs where circumstances allow, taking into consideration issues such as funding, emergency circumstances and work windows.</p> <p>a) Levee Vegetation System Wide Improvement Framework (SWIF): The Seattle District will serve as the local federal lead for interagency efforts when the Corps' new SWIF approach is used by levee sponsors. The SWIF helps</p>	a)Corps b) Corps with NOAA, USFWS, EPA, and FEMA	Ongoing	a) Finalize Policy Guidance Memorandum-> develop new typical levee repair designs with Services and Tribes; share data and serve as technical resource for variance applicants -> implement team-generated decision process when emergency is declared - > project completion->no further loss of habitat along armored bank b) Implement regional guidance on levee setback and vegetation-> setback levees; maintain allowable vegetation where setback is not possible; share data and serve as technical resource for variance applicants ->avoidance of new impact on salmon habitat and water temp	a) Project completion b)Issuance of regional guidance on levees that is protective of the environment 1)completion of SWIF 2)Completion of PGL 3)pilot Products 4)emergency declaration process defined	Ongoing		Puget Sound-wide

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			<p>identify solutions that use resources efficiently, prioritize improvements and corrective actions based on risk, and better align programs and requirements.</p> <p>b) Levee Vegetation Variance Policy Guidance Letter (PGL): The Seattle District will serve as the local federal lead for interagency coordination efforts on variances from mandatory Corps vegetation-management standards. The District will work with levee sponsors (for non-federal levees) and seek their concurrence (for qualifying federal-constructed non-federal sponsor-maintained levees) to request variances under the new DRAFT Vegetation Variance policy. These variances will preserve, protect, and/or enhance natural resources and protect Tribal treaty rights, while ensuring levee function.</p> <p>c) Emergency Flood Response Activities: The Seattle District will seek to improve its method for determining whether local jurisdiction flood assistance requests (Advance Measures and Emergency Operations) will protect against significant threats to life, health, welfare, property, and infrastructure. Where emergency action is warranted, the Seattle District will coordinate as early possible with the Federal Services, EPA, and Tribes so that the action's scope and implementation avoid or minimize adverse habitat impacts, with appropriate after-the-fact mitigation when impacts do occur.</p> <p>d) Levee Rehabilitation: The Seattle District will continue to coordinate its post-damage levee repairs with interested federal, state, local, and Tribal entities. Where possible, based on federal and non-federal resources and other case-specific conditions, the Corps will consider implementing levee setbacks rather than levee</p>							

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			<p>rehabilitation in-place.</p> <p>This approach was recently utilized for the Yakima, WA Sportsman Park levee rehabilitation. The Seattle District has been successful at applying best practices such as the Habitat Capacity Mitigation tool developed with the Federal Services, Skagit Diking District sponsors, and Tribal Skagit River System Cooperative to calculate appropriate mitigation. This tool quantified benefits of re-vegetation, willow lift planting benches, and installation of large woody debris, for a series of levee rehabilitations performed in the Skagit Basin during 2011. Application of this tool is limited to the Skagit River but could be adapted for application to other rivers.</p>							
US Army Corps of Engineers, Seattle District	Bulkheads/docks/overwater structures, Lack of properly functioning drift cells, Loss of forage fish and forage fish habitat, Disconnection of aquatic and terrestrial ecosystems, Bank hardening and over water structures associated with railroads, Problems resulting from streamlined permits, Corps approved rip-rapping of river banks	Other Programs	IIS Program (EPA funded) Puget Sound Cumulative Impacts Study (PSCIS) - The scope is a section of Puget Sound from Brown's Point to Tulalip Point, that is expected to show significant resource decline (process, function, habitat) in support of federal regulatory decision making and potentially for state and local land use decisions.	Corps	Ongoing, completion expected end of 2012	PSCIS -> documentation of the cumulative impacts of development projects on Puget Sound -> prevent future incremental loss of habitat ->reduction in miles of Puget Sound shoreline modified.	Completion of Phase II	Ongoing		currently limited scope
US Army Corps of Engineers, Seattle District	Bulkheads/docks/overwater structures, Lack of properly functioning drift cells, Loss of forage fish and forage fish habitat, Disconnection of aquatic and terrestrial ecosystems, Bank hardening and over water structures associated with railroads, Problems resulting from streamlined permits, Corps approved rip-rapping of river banks	Other Programs	Further development of the information regarding cumulative effects in Puget Sound to inform federal agencies in decision making (USFW, NOAA, EPA, Corps)	Corps	2013	PSCIS -> documentation of the cumulative impacts of development projects on Puget Sound -> prevent future incremental loss of habitat ->reduction in miles of Puget Sound shoreline modified.	Completion of Phase III	New		TBD

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US Army Corps of Engineers, Seattle District	Bulkheads/docks/overwater structures, Lack of properly functioning drift cells, Loss of forage fish and forage fish habitat, Disconnection of aquatic and terrestrial ecosystems, Bank hardening and over water structures associated with railroads	Other Programs	<ul style="list-style-type: none"> Increase use of PAS and Section 203 Authority - Subject to availability of funding there is potential to cost-share in projects with Tribes for broad-based studies in Puget Sound. Continue increase coordination with the Tribes on current and future Civil Works and Regulatory projects. 	Corps, state, local agencies, tribes as appropriate	Ongoing	Ecosystem restoration studies-> development and funding of restoration projects ->improved habitat	Useful and relevant products of ecosystem restoration studies	New		TBD
National Park Service		N/A	Portions of watersheds within Mount Rainier, North Cascades and Olympic National Parks flow into Puget Sound. These major watersheds include the Skagit, Elwha, Dosewallips, Nisqually, Puyallup and White Rivers. Most of these major rivers have active watershed councils in which the NPS participates. Efforts to restore habitat, preserve native salmon runs and improve water quality are ALL important components of the NPS mission.	NPS	Ongoing	Participation in watershed councils -> improved habitat for salmon and shellfish -> improved salmon and shellfish health	Continued participation in local watershed councils	Ongoing		
National Park Service		N/A	The NPS North Cost and Columbia Cascade Network monitor several important Vital Signs within the 3 national parks that directly flow into Puget Sound. Vital signs are measurable, early warning signals that indicate changes that could impair the long-term health of natural systems. Early detection of potential problems allows managers to take steps to restore ecological health of park resources before serious damage can happen. Vital Sign protocols directly associates Puget Sound include: High Mountain Lakes, Water Quality, Glaciers, Intertidal (OLYM) and Climate.	NPS	Ongoing	Implementation of monitoring network -> tracking of vital signs -> improved decision making -> improved ecosystem health	Continued implementation of North Coast and Columbia Cascade Network	Ongoing		
National Park Service		N/A	The NPS mission is to maintain park resources unimpaired for the enjoyment of future generations. Five units of the National Park System (North Cascades, Mount Rainier, and Olympic National Parks; San Juan Island National Historical Park, and Ebey's	NPS	Ongoing	Participation in local salmon and habitat recovery efforts -> improved habitat for salmon and shellfish -> improved salmon and shellfish health	Continued interaction with local salmon and habitat recovery efforts	Ongoing		

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			Landing National Historical Reserve) protect and manage approximately 2,000,000 acres in the Puget Sound region. Much of the NPS acreage is upland watershed habitat, but three parks encompass significant coastal and tideland habitat as well (OLYM, SAJH, and EBLA). The NPS participates in watershed councils, notably for the Skagit River and Nisqually River, and collaborates with the Marine Resources Council in the San Juans and participated in the San Juan Initiative, a pilot project for the Puget Sound Partnership.							
National Park Service		N/A	The NPS Inventory and Monitoring program for the North Coast and Cascades network of parks includes protocols to monitor mountain lakes water quality, forests, tidelands, and a variety of other vital signs that serve as indicators of ecosystem health. The Inventory and Monitoring program contracted with the University of Washington to produce Coastal Watershed Assessments for the three Puget Sound parks with marine resources. Those assessments are being used by park managers to better protect water quality and coastal habitat.	NPS	Ongoing	Inventory and monitoring program -> increased understanding of ecosystem conditions -> improved protection of water quality and coastal habitat	Ongoing implementation of inventory and monitoring program	Ongoing		
National Park Service		N/A	The NPS collaborates with the Salmon Recovery Funding Board and other partners in salmon habitat restoration, for example with Seattle City Light to restore spawning habitat to coho and chum salmon. The NPS is leading the process to remove dams and restore salmon habitat on the Elwha River. The NPS partnered with the Northwest Straits Commission to remove creosoted wood from six miles of shoreline habitat in the San Juans.	NPS	Ongoing	Habitat restoration activities -> improved habitat for salmon -> improved salmon health	Participation in salmon habitat restoration activities	Ongoing		