



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.

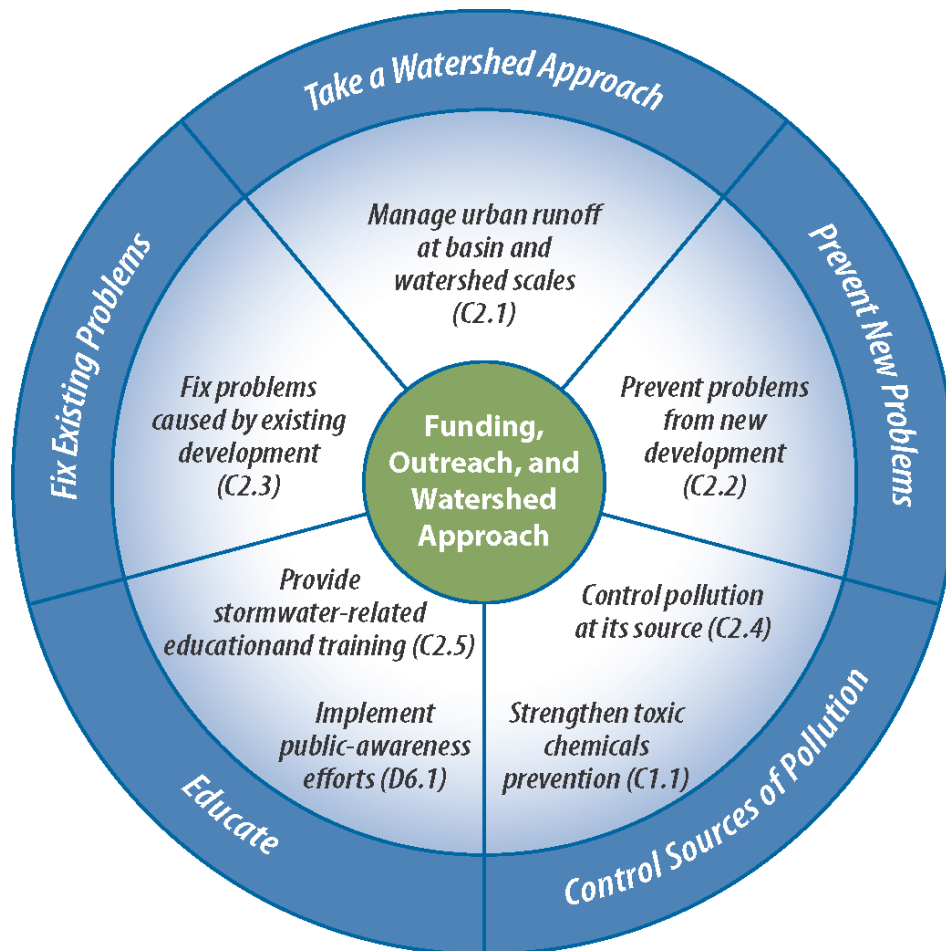
Take a watershed approach to management. Urban runoff cannot be fully managed at the site and parcel levels alone—it is necessary to manage runoff at the broader basin and watershed scales. Local land use decisions directly affect urban runoff quantity and quality within watersheds.

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

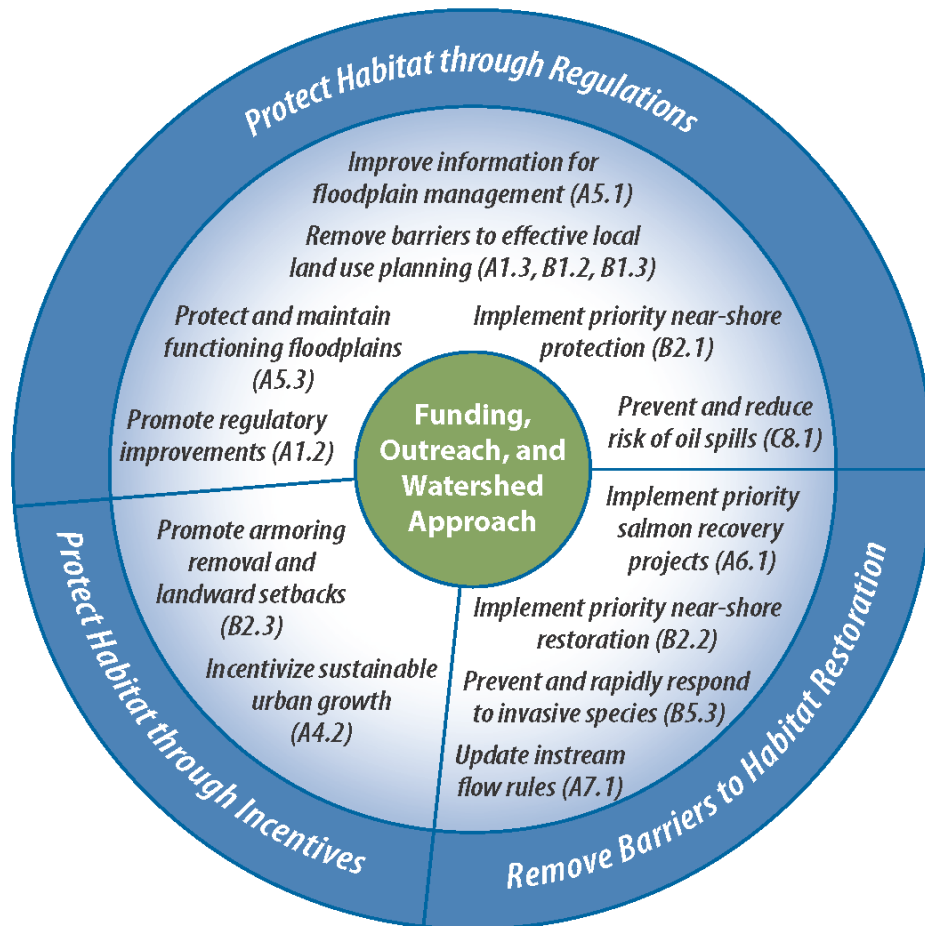
The strategies and actions for this strategic initiative are organized into three themes, described below: protect habitat through regulations, protect habitat through incentives (including acquisition), and remove barriers to restoration of habitat. The figure below presents the relevant sub-strategies 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.
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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.

