



HOW DO WE RECOVER PUGET SOUND
TO HEALTH?

MARINE AND NEARSHORE

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. Historic 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.

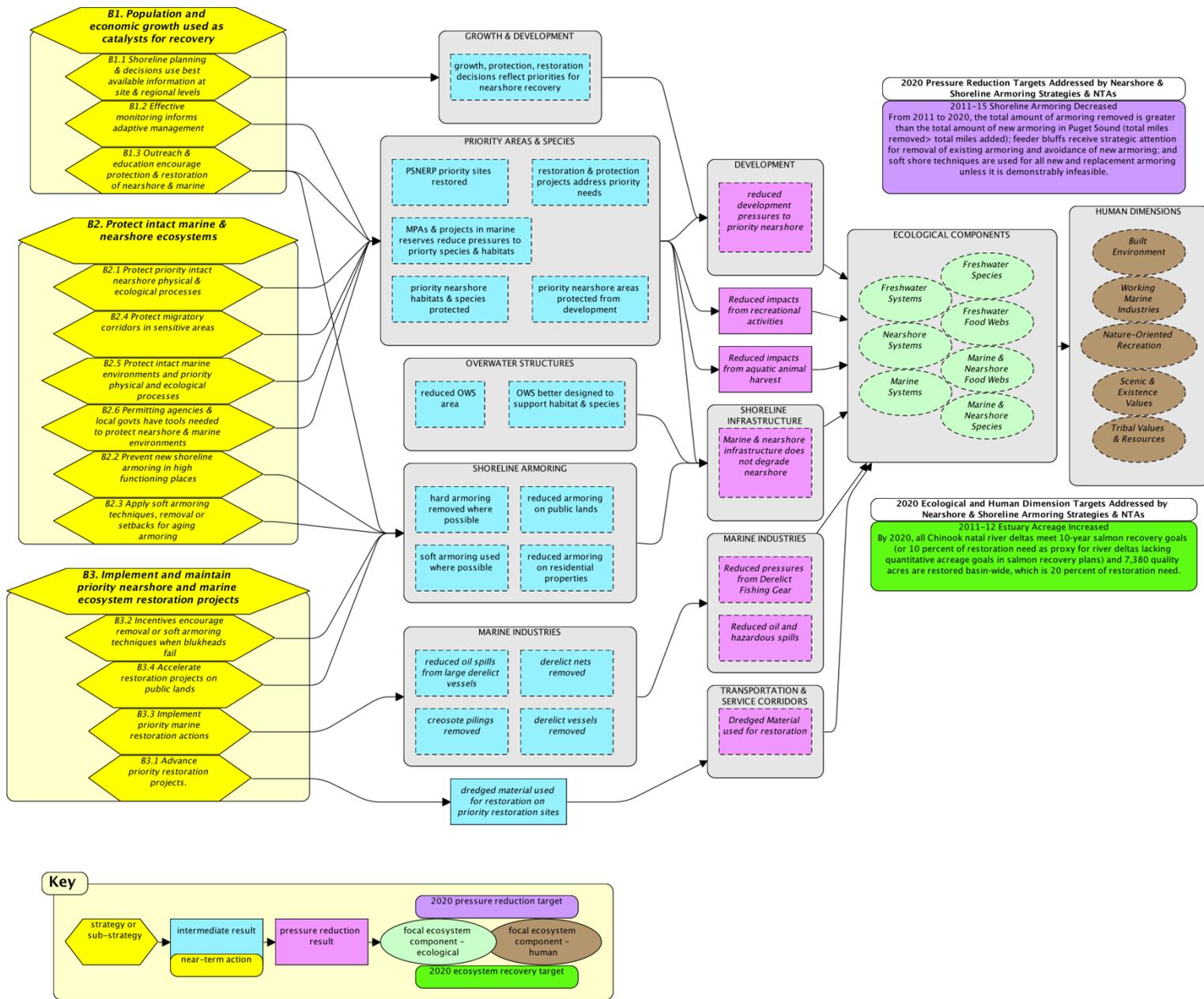
This chapter describes eight overarching strategies that are essential to the protection and restoration of upland and terrestrial systems:

- **B1** - Use anticipated population and economic growth as a catalyst for recovery by building on existing efforts to establish protection and restoration priorities;
- **B2** - Protect and conserve relatively intact ecosystems to maintain the health of Puget Sound;
- **B3** - Implement and maintain priority nearshore and marine ecosystem restoration projects;
- **B4** - Protect, support economic viability of working waterfronts to help maintain ecosystem function and sustain quality of life;
- **B5** - Improve public access to Puget Sound;
- **B6** – Implement a coordinated strategy to achieve the 2020 eelgrass recovery target;
- **B7** - Protect and recover marine and nearshore species;
- **B8** - Prevent and respond to the introduction of marine invasive species.

The 2020 ecosystem recovery targets most related to protection and restoration of marine and nearshore ecosystems are:

- Shoreline armoring;
- Estuaries;
- Eelgrass;
- Pacific Herring;
- Orcas.

These recovery targets also are described in this section.



Nearshore and Marine Protection and Restoration

B1. Use anticipated population and economic growth as a catalyst for recovery by building on existing efforts to establish protection and restoration priorities.

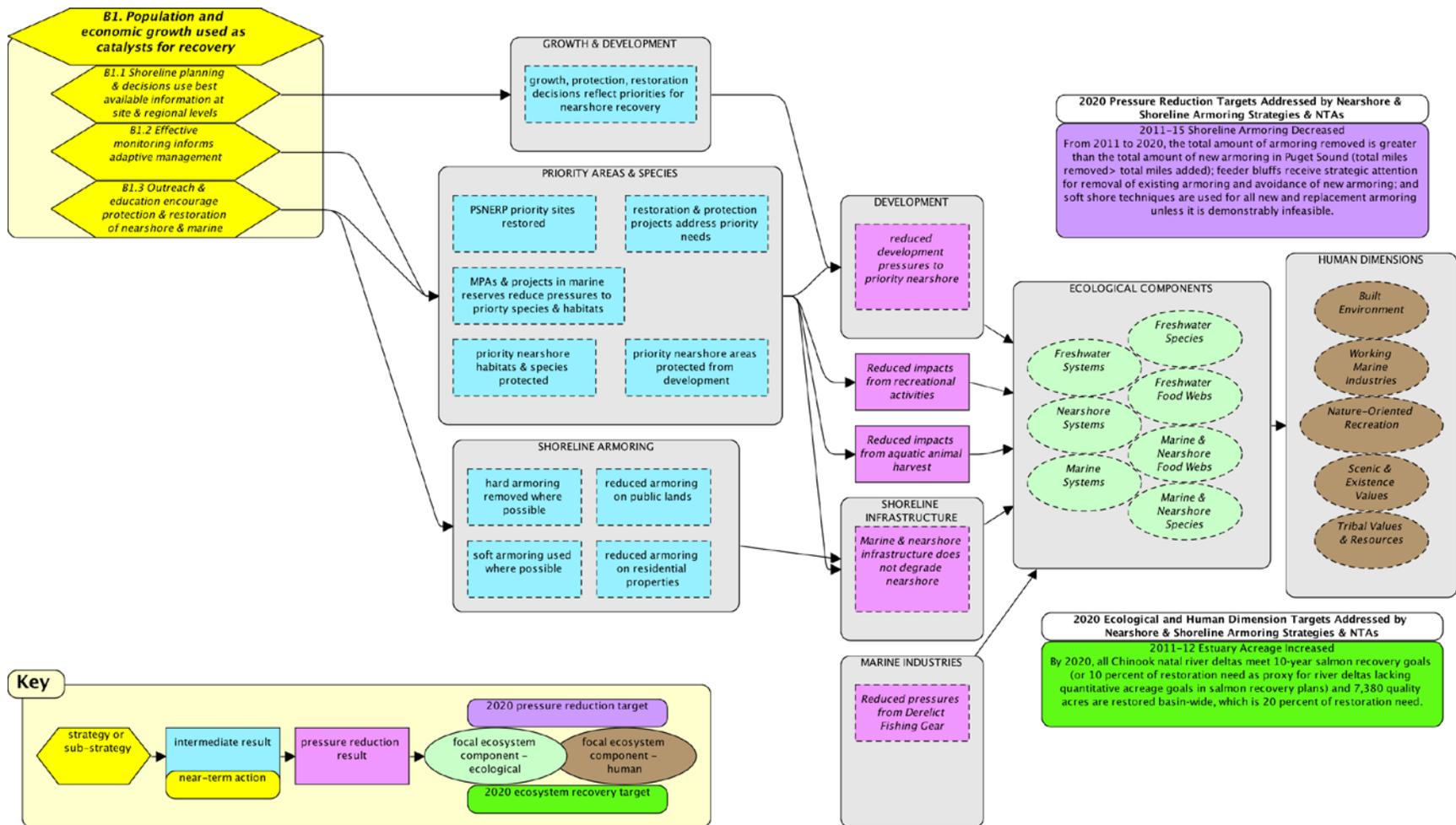
The Challenge

GMA and SMA direct local jurisdictions to plan for growth and development while ensuring no net loss of critical areas (wetlands, streams, slopes, etc.) 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 is needed that involves all levels of government and the private sector—because such coordinated work in planning and permitting has not typically been employed.

Relationship to Recovery Targets

Protection and restoration of nearshore and marine systems is most related to achieving recovery targets for estuaries, and shoreline armoring. The target for estuaries is that all Chinook natal river deltas meet 10-year salmon recovery goals (or 10 percent of restoration need as a proxy for river deltas lacking quantitative acreage goals in salmon recovery plans) and 7,380 quality acres are restored basin-wide by 2020. For shoreline armoring the recovery target is that from 2011 to 2020 the total amount of armoring removed is greater than the total amount of new armoring, with an emphasis on removing/preventing new armoring at feeder bluffs and use of soft shore techniques for all new and replacement armoring unless it is demonstrably infeasible.

Nearshore and marine protection and restoration also will contribute to a range of additional recovery targets including those for eelgrass recovery, floodplains, southern resident killer whales, herring, shellfish beds, and wild Chinook salmon.



B1.1 Ensure complete, accurate and recent information directly assists 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 (PSNERP), has outlined a comprehensive set of protection and restoration priorities to improve sediment supply and other critical ecosystem processes for the Sound (Cereghino, in progress); however, those priorities have not yet been reconciled with potentially complementary analyses/efforts by the Salmon Recovery Council, local conservation inventories, and other natural resource-specific rankings. This 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 evaluate where to best apply protective measures and where to direct development.

Local Strategies

Local areas agree with the need to focus on this area as indicated in the priority Strait local strategy to promote consistency, coordinate updates, and implementation of Shoreline Master Plans among local jurisdictions and potential Hood Canal priority strategy to align comprehensive and shoreline plans with watershed plans.*

* See Local Areas Chapters for more detail on local areas that are in the process of completing strategy and action identification and prioritization.

Ongoing Programs

Main related ongoing programs: Local-state: Hydraulic Code, SMA, GMA, SEPA; at Federal level CWA, ESA, Rivers and Harbors, CZMA, if any, their performance objectives. The goal is to clearly describe what ongoing programs are already in place and what they are already doing to help protect/recover Puget Sound to put the NTAs in context.

Near-Term Actions

B1.1 NTA 1: PSP will develop workplan for implementing a network of marine protected areas in Puget Sound.

Performance measure: Puget Sound Partnership’s Hershman Fellow creates detailed workplan by September 30, 2012

B1.1 NTA 2: Identify human use patterns for marine areas in Puget Sound by 2013, to support marine spatial planning and the development of a network of marine protected areas.

*Performance measure: Analysis done or not; NOAA applies its mapping methodology to Puget Sound and/or UW studies prerequisites for social acceptance and success.
Number of workshops held or surveys conducted*

In addition, strategies and actions in Section A1 related to watershed characterization 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 outcome of this effort will be agreed upon maps or other documents showing the science-based priorities for protection, restoration, enhancement, and managed growth at a drift cell (or below) scale.

B1.2 Monitor projects to effectively evaluate results and implement adaptive management.

Monitoring and incorporating the results into an adaptive management program is a key tenet of successful resource management where immediate action is required, but uncertainty and risk are present. Project-specific monitoring is critical to understanding how implemented projects are performing and for determining how they should be modified. Adaptive management uses monitoring and research to identify course corrections and to inform future actions.

Ongoing Programs

DFW 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 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.

Key Ongoing Program Activity

- DNR will develop and implement 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.

Near-Term Actions

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

B1.3 Use outreach and education to encourage actions to protect and restore nearshore and marine habitats.

Outreach and education programs play a critical role in connecting protection and restoration actions to the behavior of individuals. People knowingly and unknowingly impact nearshore and marine habitats through their actions and behaviors. People make choices about where to build their homes, which vegetation species to plant or remove, how to care for their lawns and gardens, and whether to install bulkheads based on a variety of factors including cost, aesthetics, functionality, convenience, regulatory requirements, and ecological considerations.

Local Strategies

The North Central area has identified two supportive local strategies for consideration.*

** See Local Areas Chapters for more detail on local areas that are in the process of completing strategy and action identification and prioritization.*

One purpose of public education and involvement is to inform citizens, law and policy makers, and resource agency staff (among others) about the ecological consequences of actions and the need to protect or restore nearshore and marine habitats. With an understanding of the cause and effect relationships of their actions, people may be more likely to choose ecologically-sustainable options for developing and managing their property. People who become educated or involved in restoration efforts are more likely to volunteer time, donate money, and support legislation/regulations aimed at ecosystem recovery compared to people who are unaware of the benefits of recovery actions.

Ongoing Programs

Public education and involvement concerning Puget Sound protection and restoration occur through a wide range of existing programs carried out by state resource agencies, Marine Recovery Councils, Washington Sea Grant Program and Washington State University Extension, and NGOs. A survey of programs was conducted in 2008 by the Environmental Education Association of Washington called the *Puget Sound Education and Outreach Survey Report* (EEAW 2008). Examples include, but are not limited to:

- **Washington Sea Grant Program and Washington State University Extension** water quality field agents work with residents in five Puget Sound counties; marine specialists work with shoreline property owners.
- **Washington Sea Grant Program and State Parks** educates boaters about clean boating practices and work with marinas and others to prevent small oil spills.
- **Department of Ecology** involves hundreds of residents through water cleanup plans, watershed planning, and nonpoint pollution, stormwater, and shoreline programs.
- **Department of Fish and Wildlife and the Recreation and Conservation Office** supports numerous volunteer habitat restoration projects.
- **Department of Health** educates the public on shellfish protection and onsite sewage system maintenance.
- **Department of Natural Resources** involves the public in processes to designate and manage aquatic reserves throughout the Sound.
- **Department of Agriculture** educates and assists property owners in managing pesticides and reducing invasive species to protect habitat and water quality.
- **Conservation Districts** work with rural residents to improve land management and habitat.
- **Department of Commerce** holds workshops and develops resource materials for local citizens, elected officials, and local planners.
- **Puget Sound Partnership's Education, Communication & Outreach Network (ECO Net)** facilitates coordination between education and outreach providers in Puget Sound.
- **People for Puget Sound** educates the public on Puget Sound science and values, conducts restoration activities with community involvement.

Near-Term Actions

B1.3 LNTA 1: San Juan County Community Development and Planning Department (CDPD) and the Town of Friday Harbor will make ongoing technical assistance (best management practices) available on-site to 100% of permit applicants, with a goal of 75% of customers avoiding hard armoring or otherwise implementing soft armoring techniques by 2014. This work will leverage the effort underway via EPA grant funding

and shoreline workshops coordinated by Friends of the San Juans, San Juan Islands Conservation District, and Washington Sea Grant.¹⁶

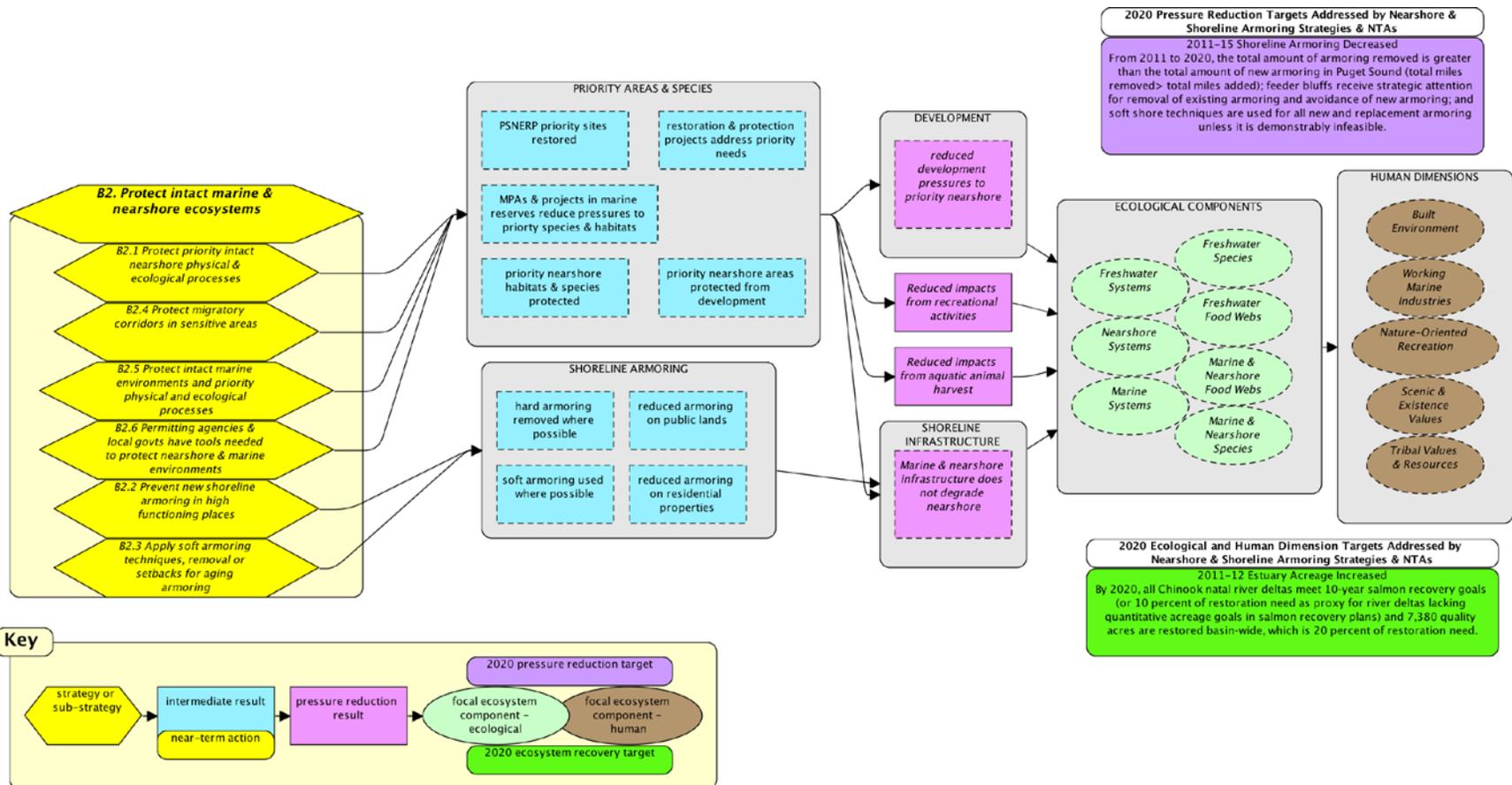
Performance measure: To be determined

B2. Protect and conserve relatively intact ecosystems to maintain the health of Puget Sound.

Conservation of existing, high function areas within Puget Sound is the most efficient and effective method to maintain existing levels of ecosystem health and resilience. Protecting specific areas prevents their eventual loss or degradation so they are available for future generations. Protecting high-quality functioning habitat now is far less expensive than restoring degraded habitats in the future. Protection is also more certain than trying to restore or recreate ecosystem processes after they have been damaged or lost.

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 are better able to 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.

¹⁶ San Juan priority strategies were approved in general by the San Juan Action Agenda Oversight Group. Specific near-term action language regarding entities responsible, goals, and timeline were proposed by the Local Implementation Committee. Ultimate approval will rest with the San Juan County Council and Tribes represented on the San Juan Accountability Oversight Committee with consideration of available funding, opportunity costs, and public comment.



B2.1 Take actions that protect priority nearshore physical and ecological processes consistent with the Soundwide restoration priorities identified in B1.1.

Specific locations identified by the analysis of Soundwide restoration priorities identified in 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 B1.1 are recognized and incorporated into local comprehensive plans and zoning ordinances, the prioritization can help planners, restoration practitioners, and other decision-makers direct growth away from existing areas of high ecological value and towards areas where resource conservation is not the primary objective.

Local Strategies

An example of how this strategy has been tailored to the local level is the San Juan Islands priority strategy to identify and implement shoreline protection tools such as land preservation via acquisition, conservation easements, restoration, and protection of marine areas consistent with treaty rights.

SALMON RECOVERY

Protecting and Restoring Nearshore and Marine Habitat – A Salmon Recovery Plan Priority: 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) calls out 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 there is more of a focus on the PSNERP information for selecting areas of focus rather than the Recovery Plan. These two approaches are already well connected but continued effort is needed to maintain the connection and strengths of each. *In addition, the work of the Salmon Recovery Council on habitat protection will likely provide additional information around the protection elements of this section.*

Ongoing Programs

There are a variety of mechanisms that protect and conserve nearshore habitats in Puget Sound. The Puget Sound Salmon Recovery Plan (Shared Strategy 2007) includes 14 salmon recovery planning areas that conduct watershed analyses to assist with habitat protection objectives. Across all 14 planning areas, the majority of habitat protection activities involve acquisition for protection as identified by local conservation programs. 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 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.

Acquiring property and development rights is a central mission for land trusts such as the Trust for Public Lands, Cascade Land Conservancy, Jefferson Land Trust, and others. Land trusts typically identify potential lands for acquisition through a systematic process while using a variety of tools and approaches (e.g., purchase, easements, transfer of development rights, mitigation banking). Land trusts and some private conservation organizations often work to facilitate public agencies' (e.g., DFW) efforts to acquire lands at a fair market value. They can serve as intermediaries during negotiations and assume risks associated with buying and owning property, although their long-term goal may be to transfer ownership and management responsibility to a public agency.

SHORELINE MASTER PROGRAM

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.
- Give our 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 the Shoreline Master Program and provides technical assistance and other support for SMP updates. The Agency also tracks the update process and provides information to help residents participate in updates in their community. Please see Ecology’s webpage for more information.

Near-Term Actions

B2.1 NTA 1: [WHO] will use acquisition and regulatory protections to permanently protect at least 10% of bluff-backed beaches with high sediment supply potential facing shoreline development pressure.

Performance measures: PSNERP Strategies document (and targeted analysis by Cereghino) points to added protection of 2 of 18 such beaches to satisfy benchmark; consistency with Soundwide restoration priorities identified in B1.1.

B2.1 NTA 2: Ecology will provide funding and 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 SMPs in a manner that validates achievement of no net loss of ecological function.

Performance measure: to be determined

B2.1 LNTA 3: Shoreline Master Program Updates, Implementation, and Intergovernmental Coordination (Jefferson County, Clallam County and cities of Port Townsend, Sequim, and Port Angeles)

- › City of Port Townsend SMP – stormwater education
- › City of Port Townsend SMP – bulkhead removal
- › City of Port Townsend SMP – restore native marine riparian vegetation
- › City of Port Angeles SMP Update
- › City of Sequim SPM Update
- › Jefferson County SMP – Annual Restoration Planning Summit
- › Jefferson County SMP – Assess shoreline restoration progress
- › Jefferson County SMP – Identify and implement shoreline armoring, riparian enhancement, fill removal and culvert replacement projects
- › Jefferson County SMP update
- › Clallam County SMP implementation
- › Clallam County SMP adaptive management
- › Clallam County SMP update
- › Ecosystem valuation
- › Enhanced shoreline protection
- › Finfish aquaculture speaker forum

Performance measure Develop the economic baseline (Ecosystem Valuation) for the ecosystem functions that will be monitored by the No Net Loss indicators for all 5 local jurisdictions within the Strait Action Area; Alternative Option: Initiate or complete 30% of the new Priority Actions identified by the Strait ERN for the Strait Action Area

In addition, strategies and actions in Section A1 related to watershed characterization will Ensure all Partners have access to and are using the science-based Soundwide restoration priorities identified in B1.1 (maps or materials) to inform the locations of specific nearshore protection actions and projects.

B2.2 Prevent new shoreline armoring except where it is required to protect existing infrastructure from imminent risk.

The Hydraulic Code administered by DFW and the Shoreline Management Act (SMA) administered by Ecology are the two principal regulatory authorities for shoreline armoring in Washington State. Recent data based on Hydraulic Project Approvals (HPAs) issued by DFW indicate that construction of bulkheads (i.e., shoreline armoring) in Puget Sound is occurring at a brisk pace. These data indicate that 233 new bulkheads were constructed on Puget Sound shorelines between January 2005 and December 2007. Assuming a hypothetical average length of 100 feet, this equates to slightly less than 1.5 miles per year. During this same timeframe, a total of 389 existing bulkheads were replaced on Puget Sound shorelines due primarily to deterioration of the structures. On the plus side of the equation, 11 bulkheads were removed over the three years, primarily as components of shoreline restoration projects incorporating beach contour and riparian vegetation rehabilitation. Habitat losses and/or 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.

Local Strategies

Changing the Shoreline Management Act statutes and regulations to limit residential shoreline armoring and overwater coverage and promote “green” shoreline replacements is a priority in the South Central.

Ongoing Programs

A number of issues continue to limit the effectiveness of the HPA 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 (typically five years). Under the current regulations, protection of personal property will continue to supersede protection of shoreline processes and function along marine shorelines.

Comprehensive updates of local Shoreline Master Programs (SMPs) are required of all Puget Sound jurisdictions by 2012. New shoreline rules based on the SMA and as 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

B2.2 NTA 1: WDFW will use best available science to revise Hydraulic Code Rules (chapter 220-110 WAC) and clarify conditions under which hydraulic projects must be conducted to prevent or mitigate the impacts to fish life and habitat.

Performance measure: Rulemaking complete or not

B2.3 Where armoring is aging or non-protective, seek opportunities for permanent removal or the use of soft armoring replacement or landward setback techniques.

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 one 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.

Sea level is expected to rise dramatically in Puget Sound over the next century due to climate change. Models suggest that a sea level rise (SLR) of more than one foot is probable by 2100, which is likely to mean that shoreline properties will face greater risks of losing structures or land due to encroaching waters—exacerbating the current state of affairs. 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 (that anticipate SLR) like the landward setback of homes and other structures may have greater long-term benefits for shoreline properties and ecosystems.

Ongoing Programs

As described above, the new provisions of the SMA 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.

City and county municipalities 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, U.S. EPA, under the Puget Sound Watershed Management Assistance Program, awarded the City of Seattle a four-year grant of over \$500,000 to research incentives for removing bulkheads and improving the ecological function of residential shorelines along Lake Washington. The City proposes to pilot Green Shores for Homes credits and locally-developed

incentives on Lake Washington. San Juan County will participate as a project partner and will pilot Green Shores for Homes in marine coastal locations. The Islands Trust, a federation of local governments within the British Columbia Gulf Islands, has also joined this initiative as a transboundary partner and Washington Sea Grant also is a partner and coordinates this effort. The goal of implementing Green Shores for Homes simultaneously in British Columbia and Washington, as well as in urban freshwater and rural marine shorelines, is to provide models for other jurisdictions within the Salish Sea to protect shoreline ecological function from future impacts of growth.

Near-Term Actions

Near-term actions associated with soft armoring and green shorelines are described in B3.2.

B2.4 Take actions to protect migratory corridors and vegetation particularly in sensitive areas such as eelgrass beds.

Residential and commercial development along shorelines often includes overwater structures such as docks, fixed piers, bridges, floating breakwaters, moored vessels, and pilings. One of the key impacts of overwater structures is shading of nearshore habitats. Shading affects the growth of eelgrass and other nearshore plants which provide foraging areas and shelter for marine birds, juvenile salmon, forage fish, and shellfish. Shading therefore can 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 lead to toxics such as polycyclic aromatic hydrocarbons and copper arsenate compounds.

Ongoing Programs

As described above, the new provisions of the SMA 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.

Key Ongoing Program Activity

- 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.

Near-Term Actions

B2.4 NTA 1: Through revision of WAC 220-110, WDFW will limit construction of new overwater structures in ecologically sensitive areas and improve the design of new structures (for example, dock grating to allow light penetration).

Performance measure: Done or not

B2.4 NTA 2: For state-owned aquatic lands, DNR, in consultation with WDFW and Ecology, will identify potential permit, economic, and social incentives for community use docks.

Performance measures: Done or not; number of community use docks (increase).

B2.4 NTA 3: DNR, in consultation with WDFW, Ecology, RCO, and State Parks will publish design guidance on construction, repair and rebuilding of overwater structures to increase light by 2012.

Performance measure: Done or not

B2.5 Take actions that protect intact marine environments and priority marine physical and ecological processes consistent with the Soundwide restoration priorities identified in B1.1.

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 urgent need. 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 an effective tool 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) with ranging degrees of protection established for diverse purposes. Almost all of the MPAs restrict fishing and shellfish harvest to some degree. Three-quarters of MPAs restrict non-harvest activities to some degree such as vessel anchoring or recreational access.

In 2008, to further a Puget Sound Action Agenda near-term action, the Washington State Legislature convened a 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 NGOs 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

B2.5 NTA 1: TNC, PSP, WDFW, and DNR will evaluate the effectiveness of Puget Sound MPAs to increase protections for rockfish, forage fish habitat and/or species in existing

Performance measure: Gap analysis by TNC by Spring 2012; PSP, DNR, and WDFW / identify protection gaps provided by current MPAs by September 2012

B2.5 LNTA 2: San Juan County Lead Entity for Salmon Recovery will target funding to highest Tier I salmon recovery projects between 2012-2014, as listed in the San Juan Salmon Recovery three-year work plan for WRIA 2. Projects include acquisition and conservation easements, protection and restoration actions.¹³

Performance measure: To be determined

B2.5 LNTA 3: San Juan County Lead Entity for Salmon Recovery will identify priority habitats for acquisition by 2013 in updates to the Salmon Recovery strategy, and will lead acquisition of, or establishment of conversation easements for 25% of priority habitat acreage with willing sellers/owners by 2014.¹³

Performance measure: To be determined

In addition strategies and actions in Section A1 related to watershed characterization will ensure all Partners have access to and are using science-based Soundwide restoration priorities to inform the locations of specific marine protection actions and projects.

B2.6 Give permitting agencies and local governments the tools and resources they need to ensure protection of nearshore and marine environments.

Federal and state resource management agencies and local governments need up-to-date 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, NGOs, or collaborative partnerships to provide handbooks and model ordinances.

Local Strategies

Improving shoreline development compliance and enforcement capacity is a priority strategy in the San Juan Islands.

Ongoing Programs

Ecology is producing the Shoreline Master Program Handbook, which is designed to assist local government planners in meeting the requirements of the SMA (RCW 90.58) and revised SMP guidelines (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 DFW 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 GMA and SMA planning programs to protect salmonids and prevent further loss or degradation of habitat. The objective of the guidebook is 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 white paper by Washington Sea Grant *Protection of Marine Riparian Functions in Puget Sound, Washington* (Brennan et al., 2008). The paper 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, DFW, 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* (EnviroVision et al. 2010), 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. 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.

Near-Term Actions

B2.6 NTA 1: [Who], in coordination with DNR, will create a coordinated permit review and decision making process for shoreline substantial development permits [other types of permits?] to provide additional efficiency and predictability for applicants and promote permitting agencies working together to ensure nearshore protection.

Performance measures: Done or not; how coordinated instead of sequential permits are and/or how quickly permit decisions are made

B2.6 LNTA 2: San Juan Community Development and Planning Department (CDPD) and the Town of Friday Harbor will provide capacity for technical assistance related to compliance with environmental regulations by 2013.¹³

Performance measure: To be determined

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.

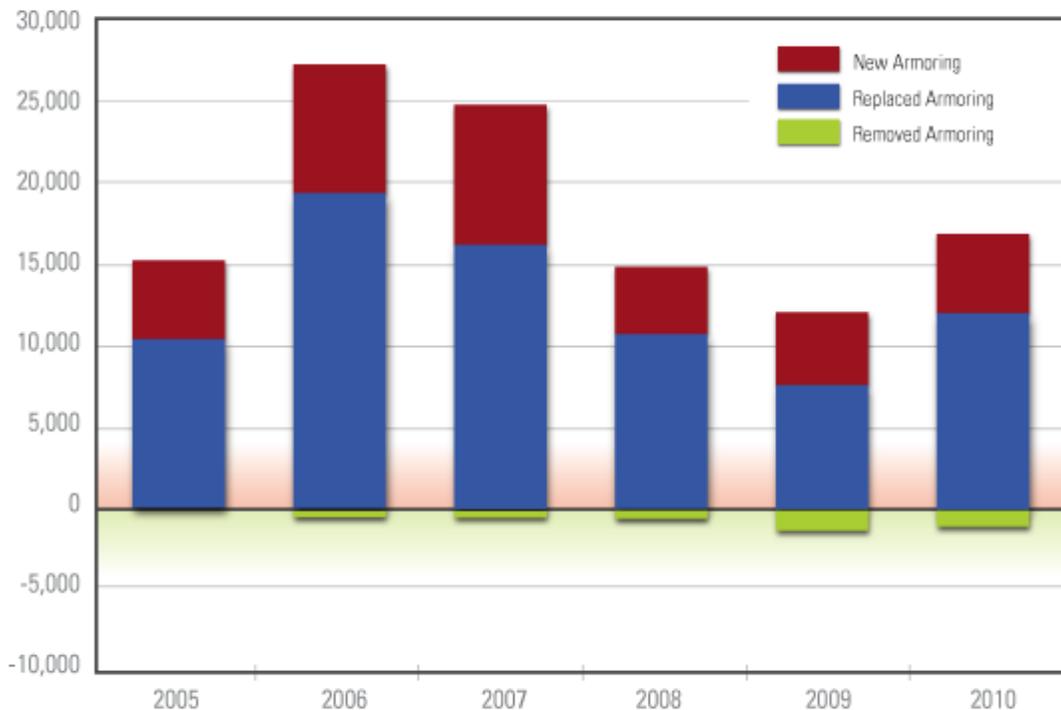
The 2020 target for shoreline armoring has three parts:

- the amount of armoring removed is greater than the amount of new armoring added, for a net decrease in total armored shoreline;
- efforts should be focused on feeder bluffs (highly erodible bluffs that supply sediment to beaches), and;
- jurisdictions should require the use of "soft shore" techniques for all new and replacement armoring wherever feasible.

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

Puget Sound Shoreline Armoring Summary

in feet, 2005-2010



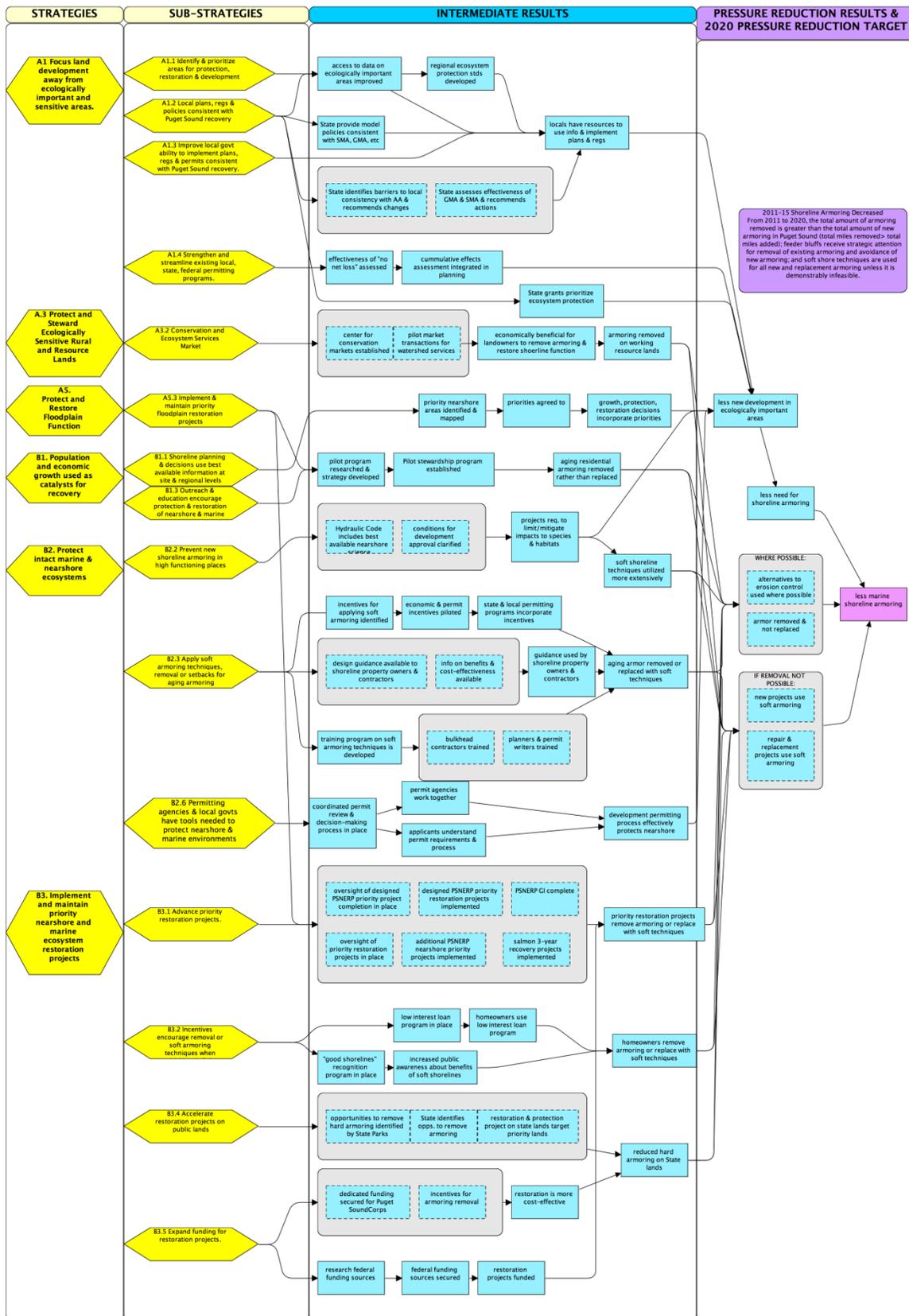
Source: Randy Carman, Washington Dept of Fish and Wildlife

There are several Action Agenda strategies related to the shoreline armoring target:

- Focus land development away from ecologically important and sensitive areas (A1)
- Create a Comprehensive Conservation and Ecosystem Services Market focused on resource lands for the Puget Sound region (A3.2)
- Implement and maintain priority floodplain restoration projects (A5.3)
- Use anticipated population and economic growth as a catalyst for recovery by building on existing efforts to establish protection and restoration priorities (B1)
- Protect and conserve relatively intact ecosystems to maintain the health of Puget Sound (B2)
- Implement and maintain priority nearshore and marine ecosystem restoration projects (B3)

In the following results chain, or logic model, yellow polygons identify strategies and actions from the Action Agenda that we believe will contribute significantly towards meeting the target. Arrows to the blue boxes describe the intermediate results the strategies and actions 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, and the dark green square shows the recovery targets.

Puget Sound Recovery -- Shoreline Armoring Target View
v. Nov 21, 2011



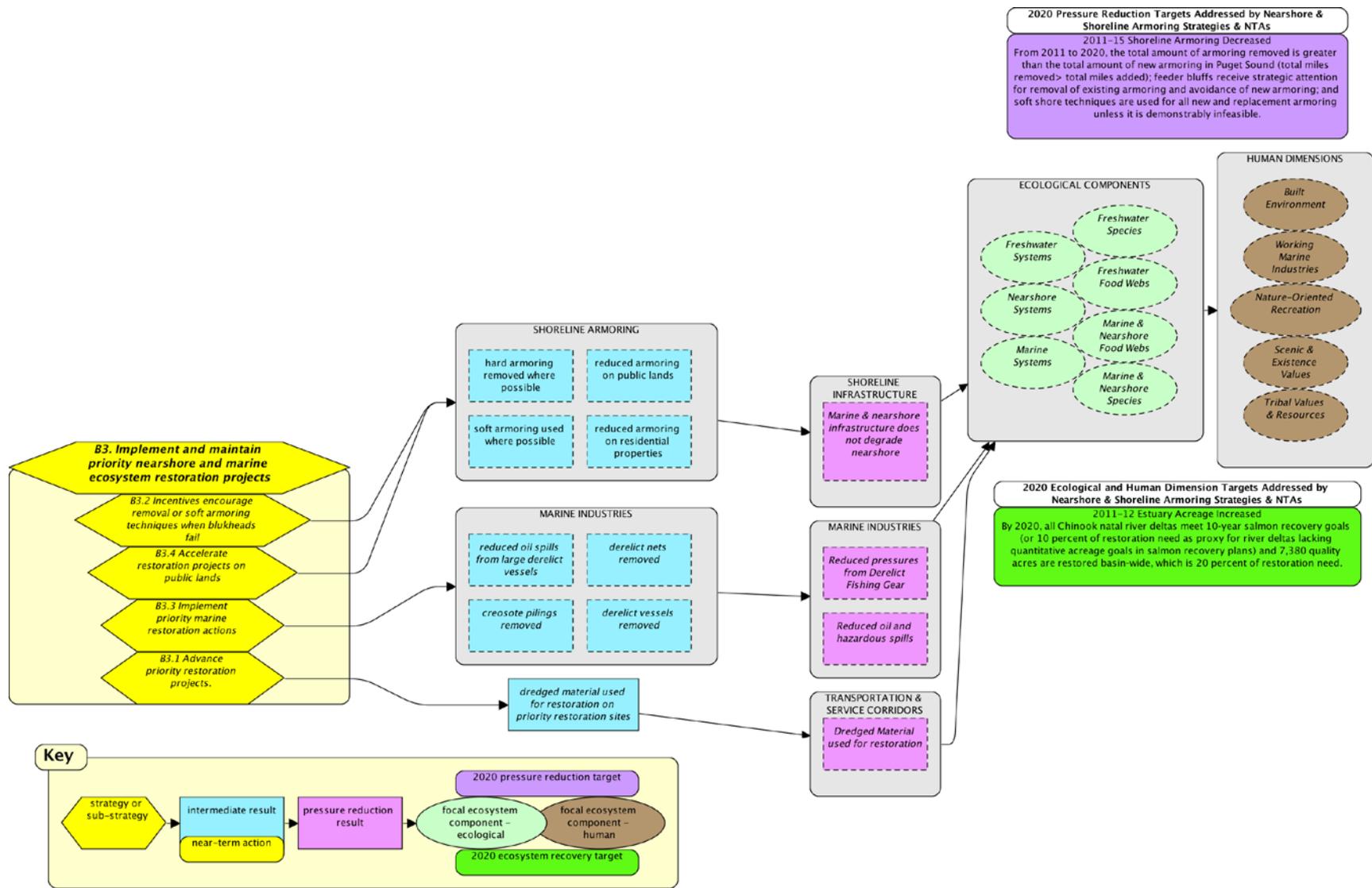
B3. Implement and maintain priority nearshore and marine ecosystem restoration projects.

Recent research and analyses of Puget Sound marine and nearshore environments such as the *Puget Sound Science Update* have pointed to particular stressors or pressures that need to be addressed in order to recover ecosystem health. Similarly, efforts to identify priority protection and restoration areas have been conducted such as PSNERP's *Strategies for Nearshore Protection and Restoration in Puget Sound* (Cereghino, in progress). Although these types of analyses tell us what the problems are and where we can best address them, implementation is critical. This strategy seeks to accelerate the implementation of priority projects that address problems identified for Puget Sound nearshore (e.g., shoreline armoring) and marine (e.g., derelict gear) environments and move restoration efforts forward. The sub-strategies address mechanistic pathways, incentives, and funding.

Restoration projects for marine and nearshore environments are occurring through a wide variety of programs and entities including:

- City and county governments
- Tribal organizations
- State resource agencies (e.g., DNR's Aquatic Restoration Program, DFW's Estuary and Salmon Restoration Program)
- Federal agencies (e.g., EPA, NOAA, USACE)
- Congressional appropriations or authorizations (e.g., America Reinvestment and Recovery Act, Northwest Straits Marine Conservation Initiative)
- Non-governmental organizations (e.g., People for Puget Sound, Puget Sound Restoration Fund)

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 US Army Corps of Engineers authorities.



B3.1 Use a variety of mechanisms to advance priority restoration projects.

Prioritization of restoration projects in Puget Sound has occurred at multiple levels. At the Puget Sound scale, PSNERP analyzed available data to determine specific locations in the Sound where PSNERP’s objectives could best be achieved, as discussed in the *Strategies for Nearshore Protection and Restoration in Puget Sound* (Cereghino, in progress). The document is broadly intended to guide the scope and focus of capital investment for protection and restoration of ecosystem processes in the Puget Sound nearshore. On smaller scales, city and county jurisdictions are developing restoration plans as part of SMP updates, which identify priority areas for restoration. Also at the local level, basin or watershed planning efforts are being conducted to determine where to protect and restore.

Local Strategies

Island, North Central, and Stillaguamish and Snohomish are considering a number of strategies in this area.*

** See Local Areas Chapters for more detail on local areas that are in the process of completing strategy and action identification and prioritization.*

With the priority areas identified, implementation of protection and restoration at these locations should occur via multiple pathways. Pathways include existing restoration programs, dredge re-use programs, in-lieu fee program sites and other restoration activities.

SALMON RECOVERY

Marine and Nearshore Habitat Restoration – A Salmon Recovery Plan Priority: 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 and then further fleshed out in each of the annual three-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: This section of the Action Agenda includes restoration of riparian habitat not covered by the floodplain section, fish passage and other upland actions. Habitat restoration related to estuaries and the nearshore are in Section B. The Action Agenda strategies incorporate the actions in the three-year work plan as part of what is needed to recover the Puget Sound. Additionally, specific restoration projects are part of priorities of the Local Integrating Organizations. From a salmon recovery perspective, derelict vessel and creosote log removal are lower priorities and should be sequenced as later actions.

Ongoing Programs

As a large-scale initiative, PSNERP is a partnership between the U.S. Army Corps of Engineers (USACE), 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 Estuary and Salmon Restoration Program (ESRP) 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 PSNERP to move from opportunistic project funding to strategic ecosystem restoration.

DNR operates a state-wide Aquatic Restoration Program that funds restoration and enhancement projects in freshwater, saltwater, and estuarine aquatic systems. 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.

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).

Near-Term Actions

B3.1 NTA 1: [Who] will ensure implementation of restoration projects identified in the Puget Sound Nearshore Ecosystem Restoration Project (PSNERP) Strategic Restoration Conceptual Engineering – Final Design Report with an emphasis on projects for which 10% design exists by [date]. [Add increment of progress on this anticipated by 2013.]

Performance measures: Number of projects funded; number implemented; amount of various nearshore habitats restored

B3.1 NTA 2: DNR will increase the beneficial re-use of clean dredged material, by creating a regional system that can link material supply to demand before dredging occurs.

Performance measure: Increase in the amount of clean dredged material reused

B3.1 NTA 3: DNR, in collaboration with Tribal Governments, Ecology, DFW, and DOH, will develop and implement a strategy to reduce impacts from outfalls on state-owned aquatic lands in Puget Sound. Strategy development, including an implementation work plan, will be complete by 4Q 2013.

Performance measure: Strategy complete or not; impact reduction.

B3.2 Provide incentives to encourage removal of armoring and associated fill and use of soft armoring techniques when bulkheads fail, need repair, and during redevelopment.

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.

Ongoing Programs

The Green Shores for Homes program (described in B2.3) for the City of Seattle and San Juan County includes funding for the development of incentives. The goal is to invite those homeowners in the areas classified as amendable to the Green Shores for Homes approach and encourage them to participate.

As mentioned in B2.3, 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.

Near-Term Actions

B3.2 NTA 1: [Who] will capitalize a low interest loan program to help homeowners remove armoring and restore nearshore processes and to replace hard armoring with soft shore or similar techniques [by when].

Performance measures: Number of loans; miles of bulkhead replaced with soft armoring

Local Actions

The South Central area identified local jurisdictions and NGOs implementing “green” shoreline replacements, promoting green shoreline BMPs and incentives, and funding and implementing shoreline restoration plans as a high-priority action.

B3.2 NTA 2: [Who] will create a recognition program to highlight retrofits, redevelopments, bulkhead removals, and soft shoreline projects that demonstrate key techniques and restore nearshore processes by [when].

Performance measures: Program in place or not; number of awards

B3.3 Implement priority marine restoration actions consistent with the Soundwide restoration priorities identified in B1.1.

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. Creosote-treated wood is associated with existing or abandoned overwater structures (i.e., pilings or decks) and is known to lead to toxics such as polycyclic aromatic hydrocarbons and copper arsenate compounds. Removal of this type of marine debris is important for recovery of marine ecosystems across Puget Sound.

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 (ARRA) and NOAA to work full-time to essentially rid Puget Sound of most of the derelict commercial fishing nets that had been accumulating for decades. As of September 30, 2011, the Northwest Straits Initiative has removed 4,088 derelict fishing nets and 2,886 crab pots from Puget Sound, restoring 566 acres of critical 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.

DNR manages a Derelict Vessel Removal Program (DVRP) 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 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.

DNR also manages a Creosote Removal Program to remove creosote-treated debris from marine and nearshore waters. The program started in 2004 and funding has come from a variety of sources. Volunteers from Marine Resources Committees, WSU BeachWatchers, People for Puget Sound and local parks staff have inventoried and removed creosote-treated material from Puget Sound beaches and overwater structures.

Key Ongoing Program Activities

- DNR will complete derelict creosote piling inventory of Puget Sound and remove 15,000 pilings by 2014.
- DNR will meet GMAP performance expectations for derelict vessel removals annually and will apply USCG Large Derelict Vessel Task Force recommendations to Puget Sound within one year of recommendations being issued.
- WDFW will work with DNR, tribes, the Northwest Straits Commission, fishers and others to remove remaining derelict nets near shore in Puget Sound by December 2012, resulting in complete removal of approximately 500 known legacy nets.

Near-Term Actions

B3.3 NTA 1: The Northwest Straits Commission will complete development of new methodology for deep-water net removal.

Performance measure: Done or not

B3.4 Accelerate restoration projects on public lands where government can lead by example.

Some of the Soundwide restoration priority areas identified under B1.1 occur within state or federal jurisdiction. These public lands provide opportunities for restoration without economic investment for acquisition, landowner negotiation, or access permission. Such projects can often be implemented more quickly than similar projects on private lands and should be the focus of governments across the Sound. As governments implement high-visibility restoration projects in publicly used spaces, they provide models for future restoration efforts on public or private lands.

Ongoing Programs

DNR's Aquatic Restoration Program (described previously under B3.1) funds restoration projects that are on, adjacent to, or have a direct benefit to state-owned aquatic land. DFW 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.

Key Ongoing Program Activity

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

Near-Term Actions

B3.4 NTA 1: State Parks will identify opportunities to provide nearshore restoration including removing hard armoring at Parks and will implement at least [number] feet of nearshore restoration including armoring removal by [date].

Performance measures: Done or not; miles removed

B3.4 NTA 2: DNR will convene appropriate state agencies such as WDFW and State Parks to prioritize restoration projects within protected landscapes such as Aquatic Reserves and State parks to ensure maximum long-term benefit from habitat restoration.

Performance measure: Done or not

Emerging Issues and Future Opportunities

In addition to the specific ongoing program activities and near-term actions described above, there are a number of ideas for future work that 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, and/or may become near-term actions in future Action Agenda cycles. They include:

- Whether we have the right statutory and regulatory tools in place to meet the shoreline armoring 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 we have the right set of tools in place to ensure that permittees 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 permittees 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.
- There may be opportunities 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.

B4. Protect, Support Economic Viability of Working Waterfronts to Help Maintain Ecosystem Function and Sustain Quality of Life

Background

The purpose of this strategy is to identify ways in which the economic vitality of working waterfronts can be promoted, advanced and fostered while simultaneously achieving environmental benefits.

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. This being the case, 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.

Relationship to Recovery Targets

The targets to which this strategy primarily relates are: toxins in fish, marine sediment quality, and shoreline armoring. For toxins in fish, the 2020 recovery target states that bioaccumulative toxins and polynuclear aromatic hydrocarbons (PAHs) meet threshold levels. Marine sediment quality targets state that by 2020 all Puget Sound regions and bays shall achieve specific chemistry measures set in the Washington State sediment management standards. For shoreline armoring, the target states that from 2011 to 2020, the total amount of armoring removed is greater than the total amount of new armoring in Puget Sound and feeder bluffs receive strategic attention for removal of existing armoring and avoidance of new armoring. The target also states that soft shore techniques are used for all new and replacement armoring unless it is demonstrably infeasible; it is important to note that for industrial areas such as the Duwamish River, Elliott Bay, and the Ship Canal, it is more likely that armoring will be redesigned or modified (rather than removed) to reduce ecological impacts and provide environmental benefits over time.

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.

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 CSOs and stormwater runoff. Many ports take on these types of cleanup projects through the Model Toxics Control Account (MTCA) 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 (DMMP), 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 CWA 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 Department of Defense (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 (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 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.

Performance metric: Performance metrics for the Bellingham Bay Demonstration Pilot Project vary by individual project components. For example, progress on milestones for cleanup of contaminated sites in Bellingham Bay are viewable at Ecology’s website:

http://www.ecy.wa.gov/programs/tcp/sites_brochure/blhm_bay/sites/bel_bay_sites.html.

- *Elliott Bay/Lower Duwamish cleanup: US EPA is scheduled to release its feasibility study for the Lower Duwamish cleanup in early 2012. A fact sheet with various cleanup alternatives and their associated expected time frames for completion is available here:*
http://www.epa.gov/region10/pdf/sites/ldw/factsheet_oct2010rev.pdf
- *Port Angeles Harbor Cleanup: 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. Further information is available here:*
http://www.ecy.wa.gov/programs/tcp/sites_brochure/psi/portAngeles/psi_portAngeles_bay.html
- 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 NPDES Industrial Stormwater permit will comply with the permit’s benchmarks and SWPPP requirements.
- Washington Sea Grant will coordinate and host the third national Working Waterfronts conference in March 2013 in Tacoma.

Near-Term Actions

B4.1 NTA 1: [Who] will explore options for expanding the phase-out of copper bottom paint to include ships over 65 feet in length and/or commercial vessels of various sizes.

Performance measure: Working group formation and development of recommendations toward reaching the goal of expanded copper bottom paint phase-out

Emerging Issues and Future Opportunities

Emerging issues and future opportunities related to working waterfronts include:

- Fund research and innovation in lower impact methods of shoreline armoring in an urban industrial context.
- Support the recommendations contained in [Marine Spatial Planning in Washington: Final Report and Recommendations of the State Ocean Caucus to the Washington State Legislature](#), 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
- Explore opportunities for stormwater treatment pilot projects and development of innovative treatment methods at public ports. Support expansion of innovative and effective stormwater treatment projects currently in use.
- Adapt low impact development techniques to maximize effectiveness in the context of working waterfronts.