

A5. Protect and Restore Floodplain Function (Draft, September 29, 2011)

The Challenge

Floodplains play a vital, often unrecognized role in the health of the Puget Sound ecosystems and watersheds. Floodplains support a variety of key ecological functions: they slow and store flood waters, filter our water, generate economically and culturally valuable fisheries, produce fertile soils for farming, recharge our aquifers, create a variety of recreational opportunities, and provide critical habitat and sustenance for a diverse array of terrestrial and aquatic life.

For decades, increased floodplain development and encroachment around the Puget Sound basin have contributed to declining fish and wildlife populations, reducing water quality, and exposing people and property to costly flood disasters throughout the region. Despite the tens of millions of dollars spent on ecosystem recovery and flood risk reduction, habitat remains in decline and flood risks continue to mount.

In an effort to protect and restore floodplains in Puget Sound, the Puget Sound Partnership (PSP) and other organizations have developed a series of four overarching strategies. The first set of strategies aim to protection intact floodplains. The second set of strategies address the stewardship of floodplains located in agricultural lands. The third set deals with restoration strategies in the region. The fourth group of strategies addresses impacts from climate change and floodplain management. Throughout these strategies, two predominant themes are 1) floodplains provide myriad functions and services that both benefit and create risks to society and 2) only through recognizing these services and risks and managing them in a holistic, coordinated fashion will we break through the status quo and put the region on a path to making people safer and the Puget Sound ecosystem healthier (i.e. achieving both the ecosystem and human well being targets that must be part Puget Sound Recovery).

The four sets of strategies are organized into more specific sub-strategies with corresponding near term actions (NTAs). Sub-strategies and NTAs provide specific, actionable directives for federal, state, local agencies and other organizations to protect and restore floodplain function in watersheds throughout Puget Sound.

Relationship to Recovery Targets

The Partnership defines a functioning, resilient ecosystem to include freshwater floodplains that support natural processes and deliver ecological services to keep people and property safe during flood flows, support fisheries production, and provide water filtration and ground water recharge.¹ Given their vital role in maintaining the health and functioning of the Puget Sound, it is important that intact floodplains be protected and that floodplain areas that have been developed are restored or are managed in a way to recapture as much of the affected functions as possible. The Partnership's Leadership Council set two recovery targets for floodplains in the Puget Sound that it aims to achieve by 2020. They are:

- 15 percent of degraded floodplain areas are restored or floodplain projects to achieve that outcome are underway across Puget Sound; and
- No additional loss of floodplain function in any Puget Sound watershed relative to a 2011 baseline.

A5.1 Protect and maintain intact and functional floodplain functions (i.e., flood storage, channel migration, and habitat forming processes) by focusing growth away from functional floodplains, creating stronger regulations, and accelerating acquisition programs.

Floodplain lands provide a complex, dynamic physical and biological system that disperses and stores flood and storm water runoff and sequesters nutrients and sediments to improve water quality. When portions of floodplains are preserved or restored to their natural state, they provide many benefits to both human and natural systems. Currently, 71 percent of Washington's floodplains are poorly functioning and very little – just under 10 percent – of the floodplains and wetlands associated with lowland alluvial rivers remain.² In Puget Sound, protection of the remaining intact habitat functions of floodplains and restoration of lost functions is noted as a high priority in many listed species recovery plans and the Action Agenda calls for several near-term actions supporting these outcomes.

A5.1.1 Identify, assess and revise regulatory policies (e.g., exemptions and variances) allowing development in floodplains, including areas behind levees, areas protected with bank stabilization, and unprotected areas. Ensure regulatory policies and their implementation fully protects floodplain functions.

Preliminary work has already been completed identifying federal, state, and local programs that impact floodplains in the Puget Sound. Near term work will seek to identify and prioritize where policies could be modified to support floodplain recovery in Puget Sound and work towards achieving the recovery target.

¹ Leadership Council Resolution 2011-13, "Adopting a 2020 ecosystem recovery target for floodplains" Available at: http://www.psp.wa.gov/downloads/LC_Resolutions/Resolution_2011-13.pdf

² Puget Sound Partnership. July 2010. Floodplain Management: A Synthesis of Issues Affecting Recovery in Puget Sound. Available at: http://www.psp.wa.gov/downloads/LC2010/072010/03b_Floodplain_Management_Report%20Judge%20Final-July%202010.pdf

Near Term Actions

A5.1.1 NTA 1: By the fourth quarter of 2012, synthesizing the results in the July 2010 "Floodplain Management: A Synthesis of Issues Affecting Recovery of Puget Sound" report and other relevant and timely information, the PSP will identify and draft an action plan to address, the programs and target programmatic recommendations for legislative change, rule amendments, and administrative changes, needed to achieve the floodplains pressure reduction target.

Performance Metric: (status of action plan development) By 4Q 2012, an action plan addressing programmatic, legislative, administrative, and regulatory changes needed to achieve the floodplain recovery target is drafted.

A5.1.2 Use floodplain characterizations and prioritizations, watershed assessments and plans, and other information to define areas that should be protected.

Complete and up-to-date information is foundational to achieving floodplain recovery. The strategies, sub-strategies and NTAs associated with floodplain protection and recovery assume that decision makers will have access to reliable data on floodplain locations, conditions, and recovery priorities. This sub-strategy and NTA and the corresponding strategies and NTA's from sections 5.2 and 5.3 are the immediate-term floodplain action for the Action Agenda. Prior to the A5.1.2 NTA 1, the Puget Sound Institute (PSI) will convene a group comprised of representatives from TNC, NWIFC, PSP, FEMA, DOE, NOAA, USGS, EPA, and UW ESP to establish a working definition of floodplain, floodplain functions, and frequently flooded areas.

Near Term Actions

A5.1.2 NTA 1: The PSP will convene a group to identify floodplain areas and then prioritize most important for protection, restoration, farmland preservation or other compatible and non-compatible uses by 2013. The outputs from this effort will include the identification of currently functioning floodplain areas that must be protected to meet the 2020 floodplain recovery target.

Performance Metric: (status of floodplain mapping) By 2013, functioning and non-functioning floodplain areas have been mapped, identified and prioritized as appropriate for protection, restoration, compatible and non-compatible uses.

A5.1.3 Align agency plans, programs, regulations and policies to better protect and restore floodplain functions.

Following the completion of the characterization work described in sub-strategy 5.1.2, specific implementation actions will be identified for agency plans, programs, regulations and policies to support protection of prioritized floodplains.

Near Term Actions

A5.1.3 NTA 1: The PSP will convene a multi-agency group to bring the results of the prioritization work to identify the implementation steps needed to protect functioning floodplain areas by 2013.

Performance Metric: (status of list of implementation steps) By 2013, implementation steps needed to protect functioning floodplain areas have been identified.

A5.1.4 Provide assistance to local jurisdictions with implementation and enforcement of floodplain protection and restoration policies and regulations.

The Federal Emergency Management Agency (FEMA) implements the National Flood Insurance Program (NFIP). NFIP issues flood insurance to homeowners and greatly influences the type and extent of development in floodplains. In late 2008, the National Marine Fisheries Service (NMFS) issued a Biological Opinion (BiOp) finding that the NFIP jeopardizes the existence of several Puget Sound species listed under the Endangered Species Act (ESA). NMFS has identified seven actions for FEMA that would bring the NFIP into compliance with the ESA, the third of which calls for FEMA to modify its implementation of the NFIP minimum criteria to prevent and/or minimize the degradation of channel and floodplain habitat. NMFS set a deadline of September 22, 2011 for work by FEMA and 122 communities in Puget Sound to implement this action.³ The BiOp and the work it outlines for FEMA and Puget Sound communities has critical implications for the floodplain recovery target.

Ongoing Programs

A5.1.4 Ongoing Program 1: FEMA and NOAA technical assistance team will work with other local, State and Federal governments to implement the BiOp and provide tools and mechanisms to promote consistency with other regulations by 1Q 2012, and on an ongoing basis as needed.

Performance Metric: Number of NFIP communities with BiOp compliance packages approved by FEMA

Near Term Actions

A5.1.4 NTA 1: By 2012, FEMA completes augmented annual reporting requirements relative to the obligations of the 122 communities in Puget Sound to abide by the NMFS NFIP BiOp.

Performance Metric: (status of FEMA reporting requirements) By 2012, FEMA reporting requirements are complete.

³ http://www.psp.wa.gov/downloads/LC2010/111910/05e_FEMA_BiOP_Memo.pdf

A5.1.5 Ensure that a modern scientific understanding is applied to local floodplain management, through the update of Frequently Flooded Areas and State engagement in GMA-required Frequently Flooded Area regulations and SMP updates.

Ongoing Programs

The Growth Management Act (GMA) mandates that local jurisdictions complete, update, or revise Comprehensive Plans, Shoreline Management Plans (SMPs), Critical Areas Ordinances and other development regulations and functional plans to manage growth, protect rural character and the environment. The GMA requires that counties and cities to include the best available science in developing policies and development regulations to protect the functions and values of critical areas, including floodplains.⁴ Cities and counties with "shoreslines of the state" must prepare and adopt a SMP. SMPs are based on state laws and rules but are also tailored to the specific geographic, economic and environmental needs of the community. Many counties and cities in the Puget Sound are in the process of revising their Comprehensive Plans and SMPs.

Floodplains are also referred to as "frequently flooded areas". Frequently flooded areas are lands in the floodplain subject to a 1 percent or greater chance of flooding in any given year, including, but not limited to, streams, rivers, lakes, coastal areas, and wetlands.⁵

Near Term Actions

A5.1.5 NTA 1: Ecology leads State engagement with local government representatives about how they manage Frequently Flooded Areas (CAO update), including advocating for the use of Frequently Flooded Areas and providing technical support and oversight of local government use of updated flood information by 2013.

Performance Metric: (status of FFA information in CAO updates?) By 2013, Ecology and other State agencies oversee incorporation of FFA information in CAO updates in all local jurisdictions.

A5.1.6 Improve and increase outreach and education regarding the values healthy floodplains provide (e.g. reducing flood hazards and securing clean water supplies) and real costs to society of incompatible floodplain management and development practices (e.g. flood risks, economic costs of infrastructure maintenance and flood relief, etc.).

Near Term Actions

A5.1.6 NTA 1: The PSP will include the risks and costs of developing in floodplains and the economic and social benefits/services of preserving and restoring floodplain functions as a top messaging priority in its outreach efforts by 2012.

⁴ <http://www.commerce.wa.gov/site/418/default.aspx>

⁵ <http://www.commerce.wa.gov/DesktopModules/CTEDPublications/CTEDPublicationsView.aspx?tabID=0&alias=CTED&lang=en&ItemID=976&MIId=944&wversion=Staging>

Performance Metric: (status of inclusion of floodplain risks, services and benefits in SP outreach materials) By 2012, all PSP outreach materials related to development includes messaging about floodplain risks and benefits and services of intact, functional floodplains.

A5.2 Support long-term protection and stewardship of agricultural lands, working farms, and forests to help maintain existing ecosystem function, sustain quality of life, improve the viability of rural communities, and maintain long-term restoration and flood protection options.

The production of arable soils is one of the most valuable ecosystem services society gets from floodplains. The result is that the majority of farmland in Puget Sound is located in floodplains because of the rich, fertile soil. However, agricultural land use can significantly alter the functionality of floodplains. In their rating of existing floodplain function in Puget Sound, the NMFS found that agriculture-dominated water resource inventory areas (25 percent or greater agricultural use) had “poor” or “poor-fair” conditions.⁶ Farmers also experience the direct social and economic costs of floods when they occur. In the wake of flooding in 1990, over 600 cattle died in Snohomish and King Counties and 1,200 dairy cattle had to be evacuated from Fir Island in Skagit County. In 2003, over 300 farm animals died in flooding.⁷

Nevertheless, agriculture is generally more compatible with floodplain functions than residential or commercial development. Further as we look to the future there is an opportunity to change agricultural management practices to make it more compatible with recovering floodplain functions.

The GMA requires counties to designate agricultural lands of long-term commercial significance, depending on soils and other considerations. Many of these lands are located in floodplains. Once designated, the law requires that the land is used for farming and not other uses, making floodplain protection or conservation in agricultural lands difficult. However, a more holistic approach to floodplain management, better data on location and function of floodplains and the use of tools like financial incentives can all help maintain stewardship of agricultural lands while also protecting floodplains.

A5.2.1 Use, coordinate, expand and promote financial incentives, including flood/riparian easements, that allow working farm and forest lands to stay viable, reduce land development and support floodplain functions.

Continued farming in floodplains is essential to ensure the economic viability of the Puget Sound agricultural industry and to ensure the availability of local food sources. This sub-strategy is focused on looking for win-win opportunities for farmers and for protection of floodplains.

⁶ Smith, C.J. 2005. Salmon Habitat Limiting Factors in Washington State. Prepared for the Washington State Conservation Commission, Olympia, Washington. In http://www.psp.wa.gov/downloads/LC2010/072010/03b_Floodplain_Management_Report%20Judge%20Final-July%202010.pdf

⁷ http://www.psp.wa.gov/downloads/LC2010/072010/03b_Floodplain_Management_Report%20Judge%20Final-July%202010.pdf

Ongoing Programs

The Family Forest Fish Passage Program (FFPP) is a cost-share program that helps small forest landowners renovate barriers on their land to fish passage in small waterways. Artificial barriers in streams can prevent many fish from reaching miles of upstream habitat, and can be devastating to species such as salmon. As a public resource, fish are protected by state Forest Practice Rules which require landowners to restructure fish barriers by 2016 in a way that allows unobstructed fish passage. The program provides 75-100 percent of the cost of constructing the barrier, with the funding provided varying based on the quality of the habitat, number of salmon and trout species benefiting from the correction, and project cost. This program allows working forest lands to remain viable while supporting ecosystem function.

Estuary and Salmon Restoration Program (ESRP) provides grants to protect and restore the Puget Sound near-shore. Typical projects include near-shore restoration and protection activities that restore natural ecosystem processes and functions, such as removing dikes and bulkheads, and restoration of salmon habitat and estuaries. Funded by the State Building Construction Fund, these grants are available to local agencies, state agencies, federal agencies, Native American Tribes, academic institutions, private institutions, and nonprofit institutions.

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

The Riparian Open Space Program (ROSP) provides benefits for owners of forest lands that fall within unconfined sections of river channel migration zones (CMZs). Landowners who qualify for this program, which is funded by the Washington state legislature, may donate or sell a permanent easement on their land and/or their timber in designated forest land that exists along migrating stream channels. These landowners are prohibited from harvesting timber on riparian land isolated by river channels that have migrated over time; this program provides compensation to landowners affected by these restrictions. Open to both owners of both small and large forested land areas, ROSP provides financial benefits to rural communities, helping landowners to remain viable while supporting the ecological restoration of valuable floodplain areas.

Washington Wildlife Recreation Program (WWRP) provides funding for a habitat conservation and farmland preservation, in addition to recreational facilities. The goal of the program is to prevent valuable habitat lands from being converted to development. Typical projects include protecting wildlife habitat, building and renovating community parks, building waterfront parks, restoring state lands, and protecting farmland from development. Funded by the sale of general obligation bonds, these grants are available to local agencies, special purpose districts, state agencies, Native American Tribes, salmon recovery lead entities, and nonprofit organizations.

Near Term Actions

A5.2.1 NTA 1: DNR, WDFW and other state agencies, tribes, local governments, and non-governmental entities will use applicable federal and state grants, local government funds, and private funds to purchase development rights from working forest and farm landowners for lands at risk of conversion in Key Puget Sound watersheds.

Performance Metric:

A5.2.1 NTA 2: Secure increased WWRP funding for purchasing development rights, ensuring easement language doesn't preclude future restoration and prioritizing those places without levees or hardened banks.

Performance Metric: (amount and focus of WWRP funding) By 2013, WWRP funding is increased and directed toward protecting and restoring floodplains.

A5.2.1 NTA 3: The Ruckelshaus Center, NRCS, and PSP will work to secure NRCS funding for Puget Sound flood easements in the next farm bill and identify/design a pilot by 2013. Compensation rates should be based on the level of floodplain function that is protected (i.e. different rates for those behind levees (no flooding), those behind riprap (no channel migration), and those that are fully connected).

Performance Metric: (NRCS funding in farm bill and status of pilot project) By 2013, the farm bill includes NCS funding for flood easements and a project piloting variable compensation rates for easements is in place.

A5.2.1 NTA 4: By 2013, Conservation Districts and Watershed Groups implement 3 pilot projects that demonstrate ecosystem services markets associated with flood hazard prevention and agricultural lands in floodplains.

Performance Metric: (status of 3 pilot projects) By 2013, 3 pilot projects demonstrating ecosystem service markets for floodplains are in place.

A5.2.1 NTA 5: By 2012, the Local Integrating Organizations will convene a multi-disciplinary team including conservation districts, NRCS, NOAA, lead entities for the WRIAs, and use the definition of floodplain function to identify priority opportunities for floodplain compatible agricultural practices. The Ruckelshaus process will be used to create incentive programs in incentivize these practices.

Performance Metric: (status of list of priority areas and status of incentive programs) By 2012, priority opportunities for floodplain compatible agriculture have been identified and programs supporting these activities have been incentivized.

A5.2.2 Develop and promote (CREP and EQUIP) economic and regulatory incentives to promote multi-benefit ecosystem function of agricultural lands.

Near Term Actions

A5.2.2 NTA 1: [Who] will assess the disincentives for reestablishing habitat land on agricultural lands by 2013.

Performance Metric: (status of understanding/documenting disincentives) By 2013, disincentives for reestablishing habitat on agricultural lands have been documented.

A5.3 Implement and maintain priority ecosystem restoration projects for floodplains, tidal and non-tidal.

Floodplains are one of the most productive ecosystems in Puget Sound. Yet they are also the most degraded portion of the Puget Sound ecosystem and these impacts have significant consequences for people and nature. Salmon productivity is significantly decreased due to the loss of habitat and habitat complexity. Water quality is impaired through the loss of wetlands. Groundwater recharge is reduced, exacerbating low flow events that put water supplies at risk. Incompatible development and the loss of natural flood storage have put thousands of people and businesses at risk of catastrophic flooding. Several factors have impeded floodplain recovery (and related salmon recovery and water quality goals) to date. These factors include a lack of public support, high costs associated with restoration, and the existence of divergent and uncoordinated agency goals.

A variety of local, State and Federal agencies employ a variety of programs to address floodplain management issues – sometimes in contradictory ways. On one hand, significant funding is spent on mitigating flood impacts to developments in hazardous areas: installing riprap and levees, flood fighting and emergency response, repairing and rebuilding homes damaged by floods, the maintenance and repair of riprap, levees and roads impacted by floods. On the other hand, significant funding is spent to protect and restore the natural beneficial functions of floodplains: fish and wildlife habitat, open space, water filtration, flood storage. Floodplain property is acquired and restored, riprap is removed, and riparian forests are replanted. But while floodplain managers are installing and repairing riprap in one place, habitat restoration dollars are being spent to remove it in another. While one government program is financing the rebuilding of homes in floodplains; another program is financing property acquisition so that it doesn't get developed. That these activities occur in an uncoordinated, sometimes contradictory manner is an inefficient – at best.

What's more, many of these projects are fraught with controversy because they are pursued in independent fashion. Flood risk reduction projects developed in ways that don't take fish and wildlife needs into account get caught up in ESA conflicts that prevent or delay construction and add mitigation costs. Habitat restoration projects developed as single purpose projects are opposed by communities concerned with maintaining farmland or water management infrastructure. Progress on both sides has been too slow and arguably outweighed by the increased costs associated with continued development. The net result has been a continued decline of ecosystem functions and increase in human flood risks.

Yet divergent floodplain management goals – flood control, clean water, salmon – are not inherently at odds with one another. Those portions of the river corridor that present the greatest risks to people (i.e. incur the most flooding and erosion) are often the same areas where salmon habitat, water filtering wetlands, groundwater recharge and flood storage are most likely to occur. Provided it doesn't restrict core ecological processes, farming can be compatible with these natural floodplain functions.

The target identified for Puget Sound recovery calls for a 15 percent restoration of floodplains. This is an ambitious goal but, because of the importance of floodplains to overall Puget Sound recovery, an absolutely critical one. Achieving it will require overcoming key barriers in order to deliver the necessary 1) public support, 2) funding, and 3) interagency coordination. It will take significant commitment and collaboration from agencies and a new approach that aligns flood risk reduction efforts and programs so that the necessary support and funding is garnered to accelerate recovery actions. This strategy identifies the information, tools, projects, and program and policy changes that need to occur over the next two years to realize the recovery target by 2020.

A5.3.1 Use floodplain characterizations and prioritizations, watershed assessments and plans, and other information to identify areas that should be restored.

Complete and up-to-date information is foundational to achieving floodplain recovery. The strategies, sub-strategies and NTAs associated with floodplain recovery assume that decision makers will have access to reliable data on floodplain locations, conditions, and recovery priorities. This sub-strategy and NTA and the corresponding strategies and NTA's from sections 5.1 and 5.2 are the highest priority floodplain action for the Action Agenda. Prior to the near term action, PSP will convene a group comprised of representatives from TNC, NWIFC, PSP, FEMA, DOE, NOAA, USGS, EPA, and UW ESP to define floodplain and floodplain function, and frequently flooded areas. The results from 5.1.2 NTA 1 will be also used to identify priority restoration targets.

A5.3.2 Restore and increase floodplain function on agricultural lands through collaborative approaches that increase agricultural productivity and minimize impacts to farming.

Near Term Actions

A5.3.2 NTA 1: The conservation districts, agricultural community, watershed planning groups, and local jurisdictions will use the outputs from the characterization work to identify potential land swaps (i.e., county land use and conservation districts) and identify candidate areas available to expand for agriculture outside of priority floodplain areas by 2012.

Performance Metric: (Status of list) By 2012, potential land swaps and candidate areas available to expand for agriculture are identified.

A5.3.2 NTA 2: PSP, DFW, NOAA, NRCS and others will work with farming communities to implement the Skagit Tidegate Fish Initiative, the Snohomish Sustainable Lands Strategy and other win-win approaches that enable agricultural infrastructure improvements and/or provide regulatory certainty in exchange for restoration actions.

Performance Metric: Acres of restoration projects for which there is farm community support.

A5.3.3 Develop and implement a multiple benefit floodplain restoration pilot project program that builds support and capacity for floodplain restoration.

One of the principal obstacles to floodplain restoration is the lack of public support. Most projects to date have been developed and/or framed as “salmon” recovery projects. However, floodplain restoration projects can be identified and designed in ways to maximize the multiple natural benefits floodplains provide to people or to improve the way related infrastructure services neighboring communities or landowners. Focusing on, building capacity for and demonstrating the value of these multiple benefit projects will reduce conflict and increase public support for floodplain recovery.

Near Term Actions

A5.3.3 NTA 1: PSP will work with commerce, the agricultural community, local jurisdictions, federal agencies (FEMA, NOAA, NMFS, USGS), and the Nature Conservancy to develop three case studies, as part of a broader pilot program, that are illustrative of the benefits of a multi-objective approach to floodplain restoration and use them as tools to promote and educate by 2013.

Performance Metric: (status of case study development) By 2013, 5 case studies illustrating benefits of multi-objective approach to floodplain restoration are in place *and* included in outreach and education efforts (latter is really a second objective or measure)

A5.3.3 NTA 2: [Who leads? Participants should include PSP, the Federal Caucus, State Agencies and others], will identify Federal, State, Local, and private funding to develop a pilot program to build local capacity and fund projects that leverage the work and lessons learned from the case studies and the NTA 1.2 prioritization work by the fourth quarter of 2013.

Performance Metric: (status of availability of pilot program) By 2013, pilot program focused on multi-objective floodplain restoration is in place and funding projects.

A5.3.4 Identify programmatic changes to facilitate sustainable, multi-objective floodplain management including non structural measures such as floodplain protection and restoration.

The existence of disparate and, at times, conflicting agency programs is one of the principle obstacles to accelerating floodplain recovery. Flood risk reduction and ecosystem recovery are not mutually exclusive goals yet have been historically pursued independent of one another. There are non-structural ways of enhancing flood protection, e.g., levee setback and preserving forest cover, that also have other ancillary benefits to the ecosystem. The purpose of this sub strategy is to identify pathways and create incentive structures to coordinate flood risk reduction and ecosystem restoration programs so that multiple agency goals are achieved more efficiently.

Near Term Actions

A5.3.4 NTA 1: PSP, FEMA, USACE, EPA, NOAA, NRCS and Ecology will collaborate to develop and implement a coordinated funding approach, including cost-share mechanisms, for floodplain-friendly modifications to flood protection infrastructure by 2012.

Performance Metric: (Status of coordinated funding approach) By 2012, a coordinated funding approach is delineated.

A5.3.4 NTA 2: PSP and Ecology will convene FEMA, NOAA, EPA, USACE, and Local Governments to identify the policy and program changes of federal, state and local flood risk reduction, flood mitigation and ecosystem protection and restoration programs to foster multi-objective floodplain management and implement non-structural, ecosystem based approaches to protecting local communities through coordinated project identification and investment by 2012.

Performance Metric:

A5.3.4 NTA 3: PSP will identify an indicator champion to measure recovery progress relative to the 2011 baseline and share data regarding floodplain functions and services.

Performance Metric: Identification of an indicator champion

A5.3.4 NTA 4: In 2012, PSP will convene the USACE, Ecology, DFW, and flood districts/watershed groups, as appropriate, to identify incentive mechanisms to participate and implement non-structural alternatives to flood hazard reduction.

Performance Metric:

A5.3.5 Revise federal policies (USACE and FEMA) to develop regionally-specific Puget Sound policies.

Floodplain management policies have been developed over many decades in response to evolving information and diverse societal goals. Some of these policies are in direct conflict with Puget Sound recovery goals, and present particular obstacles to achieving the floodplain restoration target. This strategy is focused on addressing those federal policies which create the greatest roadblocks to recovery.

Near Term Actions

A5.3.5 NTA 1: [Who] will convene the USACE, FEMA, NOAA, Ecology, DFW, local government and local levee owners to identify the barriers to implementing levee setbacks and habitat friendly levee management practices and work with key parties to address barriers by the fourth quarter of 2012.

Performance Metric: By 4Q 2012, complete identification of barriers and strategies to eliminate barriers.

A5.3.5 NTA 2: PSP will lead and participate in the development of new regional-based levee based vegetation standards by 2012.

Performance Metric: (Status of the standard development) Completion of standards by 2012

A5.3.6 Develop new approach to cost-benefit analysis that includes ecosystem services and longer term/larger scope analysis and that can be used to prioritize projects and coordinate investments across flood mitigation (e.g. FEMA, USACE) and ecosystem recovery (EPA, NOAA) funding sources.

One of the principle challenges to achieving the 15% restoration goal is the sheer cost involved floodplain restoration projects, most of which will involve expensive infrastructure works. Asking agencies to coordinate their programs to pool funding and achieve greater efficiencies is easy to say, however agencies are required to use cost-benefit analyses focused specifically on their programmatic mandate when making decisions about which projects or activities to fund. Developing a more holistic approach to cost-benefit analysis that speaks to multiple agency goals will be critical to enabling a coordinated, multi-agency approach to funding floodplain projects that will make people safer and our ecosystem healthier. Creating a decision making framework that enables agencies to identify projects that meet multiple program goals is a critical step toward being able to coordinate floodplain investments and finance floodplain recovery projects.

Near Term Actions

A5.3.6 NTA 1: [Who] will work with PSP, TNC, NOAA, FEMA, USGS, EPA, USACE and Ecology to develop a decision making framework that enables agencies to identify cross-agency floodplain project priorities based on their ability to meet multiple goals in a cost-effective manner.

Performance Metric: (Status of decision-making framework) Completion of decision-making framework

A5.3.7 Locate new and replacement public infrastructure (e.g., bridges, roads, rails, treatment plants) outside of floodplains or ensure that design of new or replacement infrastructure allows and enhances floodplain function. Repairs to infrastructure that cannot be relocated should incorporate the repair possible as well as mitigation for lost connectivity and that is the least disruptive of floodplain function as possible.

Near Term Actions

A5.3.7 NTA 1: By 2013, PSP will work with WSDOT to identify the top road and bridge retrofit projects by identifying those that both have the biggest impacts and floodplain connectivity and those in most need of repair or replacement in the next 10-20 years.

Performance Metric: (Status of project list) Completion identification of priority projects.

A5.4 Incorporate climate change forecasts into floodplain protection and restoration strategies.

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

A5.4.1 Work with Federal, State, and Local governments to integrate climate change risk factors in planning processes.

Ongoing Programs

The Skagit Climate Science Consortium (SC2) is a multidisciplinary group of research scientists from federal, state, municipal, tribal, and university and non-governmental organizations working in the Skagit basin. SC2 members seek to understand how the landscape, plants, animals and people may be affected by changes in the patterns of rain, snow, temperature, storms and tides. The Skagit Climate Science Consortium is working to understand the climate-related changes occurring in the Skagit basin, the range of changes possible in the future, and how predicted changes relate to the health and well-being of the Skagit community and ecosystem. The Consortium members collaborate with other climate scientists and work in partnership with the Skagit community to both ensure their climate research is integrated closely with the concerns and needs of the community and that their research is available and relevant for use by public and private decision-makers.

Near Term Actions

A5.4.1 NTA 1: By 2012, a representative from Climate Impacts Group will be a member of the Puget Sound Partnership Science Panel.

Performance Metric: (Status of appointment of representative) By 2012, a member of the Climate Impacts Group serves on the science panel

A5.4.2 Use findings from research studies on climate change impacts on floodplains in the Puget Sound to extrapolate risk factors pertinent to floodplains.

Near Term Actions

A5.4.2 NTA 2: EPA with collaboration from the PSP will work with research study authors, floodplain managers, and other affected parties to distill the current state of knowledge of climate change impacts pertinent to floodplains; identify, assess and prioritize risk factors, and develop adaptations strategies by 2013. Findings will be documented in a published report.

Performance Metric: (Status of published report) By 2013, findings are documented in published report.

A5.4.3 Incorporate climate change forecasts into cost benefit analysis for structural versus nonstructural protection and restoration strategies.

Near Term Actions

A5.4.3 NTA 1 PSP and Ecology will work with EMD to change State comprehensive flood management planning and project funding policies to ensure that plans and projects supported with state funding fully incorporate projected changes to sea level rise, flood frequency and volumes, sediment regimes and other issues that could be a major threat to human safety and floodplain ecosystem health.

Performance Metric: