

**Puget Sound Partnership,
Salmon Recovery Council Work Group,
and Recovery Implementation Technical Team (RITT)**

2012 Three Year Work Plan Review

for the

Nooksack Watershed

Puget Sound Partnership and Recovery Implementation Technical Team 2012 Three Year Work Plan Review Nooksack Watershed

Introduction

The 2012 Three-Year Work Plan Update is the seventh year of implementation since the Recovery Plan was submitted to NOAA/NMFS in 2005. The Puget Sound Partnership, as the regional organization for salmon recovery, along with the Salmon Recovery Council Work Group and the Recovery Implementation Technical Team (RITT), as the NOAA-appointed regional technical team for salmon recovery, perform an assessment of the development and review of these work Plan s in order to be as effective as possible in the coming years. These work plan s are intended to provide a road map for implementation of the salmon recovery plans and to help establish a recovery trajectory for three years of implementation.

The feedback below is intended to assist the watershed recovery plan implementation team as it continues to address actions and implementation of their salmon recovery plan. The feedback is also used by the Recovery Council Work Group, the Puget Sound Partnership and the RITT to inform the continued development and implementation of the regional work plan. This includes advancing on issues such as adaptive management, all H integration, and capacity within the watershed teams. The feedback will also stimulate further discussion of recovery objectives to determine what the best investments are for salmon recovery over the next three years.

Guidance for the 2012 work plan update reviews

Factors to be considered by the RITT in performing its technical review of the Update included:

- 1) *Consistency question*: Are the suites of actions and top priorities identified in the watershed's three-year work plan consistent with the hypotheses and strategies identified in the Recovery Plan (Volume I and II of the Recovery Plan, NOAA supplement)?
- 2) *Pace/Status question*: Is implementation of the salmon recovery plan on-track for achieving the 10-year goal(s)? If not, why and what are the key priorities to move forward?
- 3) *Sequence/Timing question*: Is the sequencing and timing of actions appropriate for the current stage of implementation?
- 4) *Next big challenge question*: Does the three-year work plan reflect any new challenges or adaptive management needs that have arisen over the past year?

Watersheds were also provided with the following four questions, answers to which the Recovery Council Work Group and the Partnership ecosystem recovery coordinators assessed in performing their policy review of the three-year work plan:

- 1) *Consistency question*: Are the suites of actions and top priorities identified in the watershed's three-year work plan consistent with the needs identified in the Recovery Chapter (Volume I and II of the Recovery Plan, NOAA supplement)? Are the suites of

actions and top priorities identified in the watershed's three-year work plan consistent with the Action Agenda?

- 2) *Pace/Status question*: Is implementation of salmon recovery on-track for achieving the 10-year goals?
- 3) *What is needed question*: What type of support is needed to help support this watershed in achieving its recovery chapter goals? Are there any changes needed in the suites of actions to achieve the watershed's recovery chapter goals?
- 4) *Next big challenge question*: Does the three-year work plan reflect any new challenges or adaptive management needs that have arisen over the past year either within the watershed or across the region?

Review

The following review consists of four components:

1. *a regional technical review that identifies and discusses technical topics of regional concern*
2. *a watershed-specific technical review focusing on the specific above-mentioned technical questions and the work being done in the watershed as reflected by the three year work plan*
3. *a regional policy review that identifies and discusses policy topics of regional concern*
4. *a watershed-specific policy review focusing on the specific above-mentioned policy questions and the work being done in the watershed as reflected by the three year work plan. These four components are the complete work plan review.*

I. Puget Sound Recovery Implementation Technical Team Review

The RITT reviewed each of the fourteen individual watershed chapter's salmon recovery three-year work plan updates in May-July 2012. The RITT evaluated each individual watershed according to the four questions provided above. In the review, the RITT identified a common set of regional review comments for technical feedback that are applicable to all fourteen watersheds, as well as watershed specific feedback using the four questions. The regional technical review, along with the watershed specific technical review comments, are included below.

Regional Technical Review: 2012 Three-Year Work Plans – Common Themes

Adaptive Management and Monitoring

One of the biggest challenges for implementing the Puget Sound Salmon Recovery Plan is developing and implementing a useful and applicable approach to adaptive management, both at the watershed level and for Puget Sound as a whole. The NOAA supplement to the recovery plan identified this as one critical missing piece of the plan as originally submitted. Since then, several watershed groups have made good progress towards developing adaptive management and monitoring plans. Meanwhile, the RITT has now completed a general framework for developing watershed adaptive management plans, with the goal of retaining the individual characteristics of each one while also providing a uniform way to evaluate each chapter's

progress in order to understand and adapt the progress of salmon recovery across the entire region.

While adaptive management rests on a solid technical basis associated with monitoring data, it will not be possible to implement without strong policy-level leadership, support, and participation. Later this year the RITT will begin working with all watershed groups on the first parts of deploying the framework that establishes the technical basis. We anticipate that this work will use, and not duplicate or repeat, the work that has already been underway in many watersheds to develop monitoring and adaptive management plans and to revise the recovery plans based on new information. We also anticipate that, assuming the necessary policy-level leadership, this work will lead to broader participation by all parties necessary for salmon recovery, such as fishery resource managers, land use regulators, and restoration project proponents. This broad participation will be necessary for the ultimate success of adaptive management, and we hope that all relevant parties will participate in the early technical stages as well as the later ones that will require policy-level commitments.

We also anticipate that the framework for monitoring will provide a place to include information that may currently be collected in isolation by diverse groups (for example, spawner abundance and hatchery versus wild composition surveys, juvenile abundance monitoring, land cover surveys, fish presence surveys, habitat quality and quantity surveys, etc.). In this way, all relevant monitoring information should become part of the knowledge base of all participants in watershed recovery plan implementation and the subsequent adaptive management of implementation.

H integration

The Puget Sound Salmon Recovery Plan states clearly that actions in Habitat, Hatchery, and Harvest management (the “Hs”) must be coordinated towards recovery of Puget Sound Chinook salmon. While actions are taking place in all these areas, the current three-year work plans do not yet reflect the coordination these actions that we have always felt is necessary. Most watershed groups have expressed frustration that all necessary participants are not working with them to effectively integrate the Hs. We agree, and we share this frustration. As we’ve stated numerous times in the past, it is not possible for the RITT to adequately evaluate these three-year work plans unless they include all significant actions in all the Hs.

We continue to urge the Recovery Council, whose members include all of the key parties in salmon recovery, to provide clear policy direction that all H’s must work together for salmon recovery to progress. We believe that both effectiveness and efficiency of management and recovery dollars will be increased if habitat restoration, habitat protection, harvest management, and hatchery management (including hatchery “reform”) are all part of the same salmon recovery plan .

Part of H-integration is assuring that all parties have a common understanding of the status of the salmon resource as well as what actions are needed to move that resource to recovered status. The understanding of what to do is embodied in the watershed recovery chapters. The understanding of the status and trends of the resource is comprised of the population VSP

information, such as time series of spawning escapement, juvenile outmigrant numbers, and recruits per spawner. Some the three-year work plans we reviewed included this information, and we recommend that it be included in all watershed three-year work plans. One benefit we see in this is that the process of gathering basic status and trends information often results in improving the lines of communication between watershed recovery groups and fishery resource managers.

We note that there is some ambiguity as to what kind of information and plans for harvest and hatchery management should be provided for watershed areas where there are no spawning areas for one of the 22 Puget Sound Chinook populations. In general, harvest management actions should be included in three-year work plans for those populations that spawn within a watershed. Therefore, there would be no harvest management discussion for watersheds with no spawning populations. Likewise, discussions of hatchery management actions will generally be included for plans that release fish or take eggs within a watershed. We do note, however, that all watersheds have some hatchery production, including releases into freshwater and/or netpen rearing. Hatchery fish are present in most suitable accessible freshwater and marine habitats in all watersheds and the hatchery actions for these plans should be discussed in the watershed where juvenile fish are released. Therefore, actions to assess the presence and impacts of hatchery fish should be considered and discussed in the watershed where the assessment and impacts are occurring. This means that all watershed plans potentially should be considering actions directed at hatchery fish as part of their discussion and three-year work plans.

Emerging Topics

Importance of nearshore marine and migration corridors to all PS Chinook populations

There is yet to be a consolidation of the local salmon recovery plans in a manner which extends protection and restoration to all populations which transit through nearshore marine and migratory corridor areas. The RITT considers this an emerging topic of concern on a region-wide basis.

Scientists have historically realized the importance of migration corridors to anadromous species during those life history stages when the species moves from one habitat to another. For Chinook salmon, such pathways exist in nearshore marine environments within Puget Sound, as well as in the San Juan Islands, and Georgia and Juan de Fuca straits. These pathways are known to be utilized/ followed by multiple (mixed) populations from natal basins into and through nearshore marine areas. These areas include critical habitats for juvenile feeding and rearing, where first summer growth is an important aspect of survival to adult, and also to returning adults. Recent research confirms the importance of these corridors (Fresh and Beamer 2012 draft¹; Morley et al 2012², Toft et al 2007³). In particular, researchers are beginning to document the specific changes and impacts that occur as a result of shoreline armoring and modifications (such as overwater structures), to the ecological structure and foodwebs at these sites.

Each watershed has some portion of nearshore marine habitat to contend with in their Salmon Recovery Plans, but they are managed in considerably different manners dependent on local

circumstances and resources. The local watersheds are not particularly knowledgeable regarding distant populations that may rear in their nearshore areas, nor the significance of protection of their nearshore habitats areas to fish populations that are non-natal. New genetic analyses have given us the ability to distinguish genetic makeup of populations in these zones of mixing. Prior insight about population aggregations in non-natal areas was limited to recovery of coded-wire tags from hatchery populations; this gave us a somewhat limited perspective and required that we consider hatchery fish migrate identically to wild populations. In some cases, the genetic analyses shed new light on transboundary population migrations as well.

Watersheds not on pace: slowing recovery, loss of option

Implementation of the plans continues to not be on pace with the needs of recovery. This slower pace of implementation will have a compounding impact on the ability to recover. Understanding the status of recovery in terms of what changes to the strategies and actions in the plans will be critical in reducing the level of uncertainty associated with recovery.

Formal update of the Recovery Plans

The RITT has completed six years of work-plan reviews based partly on a series of key questions and also with comparison to recovery plan chapters submitted by watershed that posit hypotheses about watershed functions and responses to treatment. Since implementation began in 2005 many of the watersheds have matured in their approaches and are pursuing directions and actions that are not consistent with their original plans and hypotheses. In many ways this is adaptive management in action. However, the RITT is increasingly less reliant on individual chapters and hypotheses therein and is turning to the history of work plan reviews and information gathered from PSP staff and direct, but infrequent, liaison with watershed groups and lead entities. Recovery plans are not regulatory decisions by NOAA but satisfy their obligation under the ESA §4(f) to identify conservation and survival actions for listed species. The RITT recognizes that the process of public comment on the 2005 draft PS Chinook Plan (Plan) and response (2007 Supplement) was lengthy and complex. We also observe that some chapters in the Plan likely do not require updates. However, many chapters should be updated and NOAA should consider provision of formal guidance for these updates. It may be possible, and preferable, that chapter updates can be handled as an informal process but it may also require a public comment process. Regardless, the current plan does not represent the activities and actions that were originally proposed for certain watersheds and does not allow the RITT to uniformly consider hypotheses in evaluations of Plan implementation.

Protection of Ecosystem Functions and Habitat

Protection of existing well-functioning intact habitat is an essential component of salmon recovery in Puget Sound. Adequate protection of salmon habitat in Puget Sound continues to be an issue in all watersheds and continued degradation is noted throughout the area. While habitat restoration is relatively easy to implement by watersheds, given funding, protection of existing habitat is reliant on local regulations and their enforcement. Several of the watersheds have documented the continued degradation and loss of forest cover and riparian buffers within the Urban Growth Boundary. These concerns have been documented by habitat change analyses that were completed in central Puget Sound (see as an example: Vanderhoof, J. (2011) WRIA 8

Technical Memorandum 2011-01 - Lake Washington/Cedar/Sammamish Watershed (WRIA8) Land Cover Change Analysis. King County Water and Land Resources Division, Department of Natural Resources, 84 pp.). One of the original premises of the Puget Sound Chinook Recovery plan approved by NOAA was that there would not be a continued degradation of habitat but that habitat conditions throughout Puget Sound would improve with the implementation of the Recovery Plans. Some watersheds have noted that the current rate of habitat loss may be offsetting any gains they are making through restoration projects.

The restoration of habitat can be implemented by a variety of funding sources available to the watershed groups. However, many local, state, and federal regulatory policies also impact salmon habitat, for example, the Shoreline Management Act (SMA), Growth Management Act (GMA), state Hydraulic Permit Approvals (HPA), NOAA's reviews of federal actions under Section 7 of the ESA, and the Army Corps of Engineers' revised levee vegetation management policy. These current regulations must be effective in the protection and maintenance of the current biological integrity of these areas or the implementation of projects may not be sufficient to recover Puget Sound Chinook.

The RITT and the Puget Sound Recovery Council has been briefed on the SMA, GMA, and HPA plan as well as other regulatory plans in order to better understand how practical implementation of habitat protection could be better incorporated into salmon recovery. While these plans all include some consideration of environmental protection needs, they also require regulators to balance a number of other societal benefits, such as economic development and access to the shoreline and navigable waters. Alone none of these acts are sufficiently integrated with the Puget Sound Salmon Recovery Plan for us to be able to provide specific guidance regarding how habitat protection should be implemented to support salmon recovery. Therefore, while some of our watershed-specific comments suggest ways that individual watershed groups could better integrate habitat protection into their recovery plan implementation, we also recognize that much of the solution to this problem lies in revising the underlying planning processes. We suggest that the Recovery Council, the watershed groups, and the RITT should work together to develop ways to provide the technical input for integrating, to a greater extent, actions that promote salmon recovery into these local and regional decisions and regulations affecting salmon habitat.

Climate Change and Ocean Acidification

Climate change and ocean acidification is expected to affect the environmental and ecological processes that, in turn, control the quality and quantity of habitats for Pacific salmon. This cascade of changes is the subject of global and regional research, modeling, and planning efforts. For the Recovery Council, RITT, Puget Sound Partnership, watershed groups, and other salmon recovery entities, climate change is likely to become an increasingly important issue when considering restoration actions. Specific watershed-scale planning regarding the effects of climate change and ocean acidification on salmon and their habitats will require additional study. However, current empirical data clearly demonstrate increased air temperatures in the Pacific Northwest during the 20th century, and regional climate models predict that this trend will continue. Increasing air temperatures will result in changes to watershed hydrology such as the magnitude and timing of peak and base flows. In addition to changes in watershed hydrology, it is anticipated that climate change will result in changes to ocean acidity, salinity, biodiversity,

temperature, currents and coastal circulation, as well as sea level. Salmon production is intimately linked with these variables.

As ecosystem processes and functions respond to climate change and ocean acidification, salmon recovery strategies will need to adapt to these changing environmental conditions. The Puget Sound Salmon Recovery Plan and accompanying NOAA Supplement both indicate that climate change impacts and the associated ocean acidification on salmon need to be considered in evaluating recovery. The NOAA Supplement identifies climate change as one of several “specific technical and policy issues for regional adaptive management and monitoring.” The RITT will work with the Puget Sound Partnership, and other stakeholders to incorporate considerations of climate change and ocean acidification into the adaptive management plans.

For a comprehensive listing of resources regarding climate change impacts, preparation, and adaptation, see the Washington Department of Ecology and Fish and Wildlife websites:

http://www.ecy.wa.gov/climatechange/ipa_resources.htm

http://wdfw.wa.gov/conservation/climate_change/

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Watershed Specific Technical Review: Nooksack Watershed

In general, salmon recovery in WRIA 1 is moving forward consistent with past three-year work plans and the recovery plan.

1. Are the suites of actions and top priorities identified in the watershed's three year work plan/program consistent with the hypotheses and strategies identified in the Recovery Plan (Volume I and II of the Recovery Plan, NOAA supplement)?

Yes, the WRIA 1 (Nooksack) work program is consistent with the hypotheses and strategy for their watershed. The WRIA 1 work program builds on and is organized around nine suites of actions identified as "WRIA 1 Near-Term Actions" in the three-year work plan. The work program also continues with actions for the South Fork population that the TRT (now the RITT) concluded in early reviews needed more emphasis.

The WRIA 1 work program gives highest priority to actions for early Chinook salmon that were expected to produce quick and significant improvements in the populations. These actions primarily fall into those that protect the early timed Chinook populations from immediate extinction - especially building and continuing the captive brood stock program for the critically low abundance South Fork population - and those that address major limiting factors in the freshwater within the spawning range of the early timed Chinook populations. The highest priority habitat restoration work focuses on restoration in the mainstems and tributaries of the South, Middle, North Forks of the Nooksack River.

Other Near-term Actions include restoration of lower river floodplains and tributaries; restoration of estuary and nearshore habitats; harvest and hatchery management; and integration of salmon recovery planning with other planning or regulatory programs. These actions are all consistent with strategies meant to address threats to the WRIA 1 hypothesized limiting factors for multiple salmonid populations, which may or may not include significant benefits to early timed Chinook salmon.

2. Is the implementation of the salmon recovery plan on-track for achieving the 10-year goal(s)? If not, why not and what are the key priorities to move forward?

The three-year work plan states that implementation is not on track to achieve 10-year goals. There are several reasons for this. First, WRIA 1's 10-year salmon recovery goals were aggressive, broad in scope, and focused on all the major ecosystem components associated with the factors limiting recovery of salmon. Consequently although actions addressing these factors remain in the three-year work plan, many are in planning stages or have not been implemented at the scale necessary to achieve the goals. Here, as in most other watersheds, lack of capacity and funding for scientific assessments and projects as well as the challenges of political relationships affect the pace of recovery. Consequently, pace varies per goal. Implementation of a key priority identified after the initial recovery plan was completed –the protection of the South Fork population through a captive brood program – and has been successful and is on-track.

The question of how to address the Middle Fork diversion dam is still unresolved. As a priority action in the Salmon Recovery Plan, work has been done to advance the options and design. However, it appears that further technical work is needed to determine the relative importance of the work. It would be important for the watershed group to place some priority on evaluating options in this area and acting soon, depending on the results of this evaluation.

The North Fork/ Middle Fork supplementation program is underway on schedule at the Kendall Creek hatchery, and on track. The South Fork rescue program is releasing progeny from captively bred adults in 2011 and 2012 per the planned schedule. Concurrently, habitat restoration in the South Fork, mainly through the construction of engineered log jams, is underway to support the production resulting from the supplementation.

The WRIA 1 salmon recovery team recently determined the habitat targets necessary to support the recovery goals. This is the first step in producing a monitoring and adaptive management plan for the watershed. The next step is to evaluate current progress towards achieving those targets as well as barriers to achieving them. The timing of this work will mesh well with the upcoming effort to develop a conceptual model and viability analysis for the watershed plan using the RITT's recently developed monitoring and adaptive management framework.

3. Is the sequencing and timing of actions appropriate for the current stage of implementation?

The sequencing of the work program appears to be appropriate. However, some modification to priorities may be merited given the status of the early timed populations. The three-year work plan states that “productivity remains well below replacement levels,” for the North Fork populations and that the South Fork populations “has reached critically low levels.” Given the tenuous level of the early timed populations, we wonder if there should be some rethinking of whether WRIA 1 has the luxury to not focus solely on actions that benefit early timed Chinook populations and whether now is the time to initiate the research/assessment necessary to update hypotheses in the original recovery plan. Thus, we raise the following issue/questions pertaining to specific sections of the 3 yr plan list:

Near Term Habitat Actions- Other: These work plan elements are for habitat restoration, riparian and water quality actions in lower Mainstem Nooksack and associated tributaries. In the spreadsheet there is \$3.2 million for the entire “other” category. Do early timed Chinook juvenile benefit from the actions within these habitats? If not, we have a concern that some of these efforts may be taking funding and capacity away from higher priority actions for the early timing Chinook populations. This may not be the case if funding and local capacity to implement these actions do not compete.

Estuary and Nearshore: These work plan elements include the Estuary/Nearshore Needs Assessment; restoration of natal estuary and small independent coastal streams. It is not clear what Chinook populations are expected to benefit from the \$8+ million of potential projects in this section of the work plan and, overall, only a couple of projects appear to be “active.” The work plan calls for completing an Estuarine and Marine Nearshore Needs Assessment and Prioritization. We encourage WRIA 1 to complete this assessment including revisiting the

original hypotheses of the recovery plan regarding the estuary and nearshore for early timed Chinook salmon life history types, or life stages that depend on these habitats, if new Chinook salmon biological information is available (or collected) since writing the original recovery plan.

Hatchery-Harvest: These work plan elements are for implementing North Fork/Middle Fork and South Fork Chinook recovery/rebuilding hatchery programs and implementing the harvest and hatchery management plans for this basin. Within the work plan documents, most hatchery projects listed are related to actions for early timed Chinook which makes sense. However, there is little mentioned on other hatchery programs which may, or may not, influence early timed Chinook populations. For example, is the fall Chinook hatchery program in support of or, at least neutral, to the actions that are meant to support the early timed Chinook populations?

The upcoming focus on monitoring and adaptive management may increase the level of h-integration in this plan.

Population Monitoring: The three-year work plan reports summarized results of Chinook salmon population monitoring for the adult life stage of the early timed populations and reports that there is monitoring of migrating juveniles at the lower river juvenile outmigrant trap (currently an aggregate of all natural origin juvenile Chinook and within-basin hatchery releases). The discussion makes a nice tie-in between the unexpected low productivity of the South Fork populations and the decision to focus on supplementation and habitat restoration for that population. This is a good example of adaptive management.

Monitoring should be expanded to potentially include the lifestages of Chinook salmon where recovery actions are being done, or are planned to be done. Monitoring could incorporate an origin component (e.g., micro-satellite DNA) to help unravel whether early timed populations are using habitats beyond the current focus areas (i.e., freshwater habitats within the spawning ranges of the early timed populations). The watershed MAMP and the adaptation of the RITT framework to this watershed may result in recommendations for changes to the current population monitoring.

4. Does the three-year work plan/program reflect any new challenges or adaptive management needs that have arisen over the past year?

A major need in this watershed has been to complete and implement a watershed monitoring and adaptive management plan (MAMP) that directly identifies key uncertainties and how to use existing and new knowledge to make effective decisions to recover salmon. This year's three-year work plan reports significant progress towards developing the MAMP, as described above. The timing of this work will fit well with the plan to apply the recently develop RITT monitoring and adaptive management framework to all Puget Sound watersheds

II. Policy Review Comments

The Recovery Council Work Group is an interdisciplinary policy team including members from each of the Council's caucus groups (tribal, federal, state, watershed, environmental, and agriculture/business). The team developed both general comments on common themes across

the region's watersheds, as well as significant improvements and issues needing advancement that are watershed specific. General and watershed specific policy comments follow below.

Regional Policy Review: 2012 Three-Year Work Plan – Common Themes

It has been thirteen years since the listing of Puget Sound Chinook. Although considerable advances are underway towards recovery, significant challenges remain. The following highlights some of these key challenges.

The region wants to again recognize the significant amount of thought, time, and energy that each of the watershed groups put into updating their specific three-year work plans – they continue to be more sophisticated and are critical to the work of implementing recovery. The region continues to look for ways to improve the structure of the work plans to support stronger consistency across the watershed groups and help them be more useful for the multiple purposes they fulfill.

The region is continuing efforts to advance a coordinated implementation of the recovery plans at the watershed and regional scales and recognizes the need for support within all watersheds to do this work. The finalization of a common framework for monitoring and adaptive management forms the structure for future improvements and adaptation of the Salmon Recovery Plan. In October 2012, the Puget Sound Salmon Recovery Council plans to hold a forum to discuss progress of the overall salmon recovery program. By hearing directly from each watershed on their specific issues and challenges, the Recovery Council hopes to enhance support for and coordination of recovery efforts across the region.

Focus on Salmon Recovery

Salmon recovery implementers continue to be pulled in many directions by other mandates. The Puget Sound Partnership and the Policy Work Group recognize that implementation of salmon recovery actions remains a high priority in the context of the broader Sound-wide recovery efforts. Maintaining a focus on the priorities in the salmon recovery plan, as described in each watershed chapter, will be increasingly challenging as salmon recovery efforts compete in funding and time with other environmental and social programs, and will require a continued investment of time, resources and support. Work to develop, and then implement, the monitoring and adaptive management plans in each of the fourteen watershed chapter areas is one critical priority for the next few years. Other critical priorities that require a focus on salmon recovery are the items described below: multi-level relationships and discussions, monitoring and adaptive management, capacity support, habitat protection, and consistent funding.

Continue to Support Multi-Level Relationships and Discussions

Decisions that affect salmon recovery are made at the federal, state, and regional scales and are often in need of reconciliation at the watershed level. The region remains committed to supporting difficult conversations that are relevant to salmon recovery in order to find common ground and common solutions. These types of decisions include issues around land use such as the agricultural buffers and critical areas ordinances, the management decisions around harvest, hatchery, habitat protection, and habitat restoration and the need to integrate these decisions, as

well as the scale of review of information on the status of recovery efforts across the Puget Sound such as in the Action Agenda and with the population allocation across the region.

Monitoring and Adaptive Management

The region recognizes the Skagit, San Juan, and Hood Canal watershed groups for their assistance in the development of a common framework for monitoring and adaptive management by being willing to use their recovery plans to advance the framework. The use of the common framework to develop monitoring and adaptive management plans in each of the fourteen watershed chapter areas will improve our collective ability to better understand, track, adapt, and respond to new information around the implementation of the recovery plan. The work to develop these monitoring and adaptive management plans, as well as to implement them, has taken longer than anticipated and will require a substantial additional investment of time and effort starting now from scientists and policy makers around the region. Success in this effort will depend on participation from all resource managers and decision makers in each of the watershed chapter areas related to salmon recovery and an integration of the management across harvest, hatchery, habitat protection, and habitat restoration. This includes the co-managers on harvest and hatchery issues, tribes, local governments, state and federal agencies, business and agricultural interests on habitat restoration and habitat protection issues, as well as the relevant non-profit implementers. It will be important for the region, alongside the watershed chapter areas, to enhance the participation of these entities in order to create viable structures that can hold the results of the monitoring and adaptive management effort. The region recognizes the capacity limitations and is committed to supporting this effort to build collaborations.

In addition to the critically needed structure discussed above, the region also recognizes the importance of finding funds to implement the monitoring information identified through the development of the plans. As a region, we already know that we will need to fund watershed-scale habitat status and trends monitoring on a consistent basis across the whole basin. Additional needs will be highlighted as the plans are completed.

Capacity for Implementation of the Recovery Plan

Salmon recovery must remain a priority and focus of the Puget Sound region and efforts around Puget Sound recovery. The salmon recovery community, and lead entities in particular, report increases in responsibilities and decreases in overall capacity to meet these responsibilities. Lead entity programs have been successful at leveraging in-kind support from citizens and from technical experts but more support is needed. While the level of funding and political support for salmon recovery varies widely by watershed, increased financial and political support is needed across all watersheds.

Lead entities represent one piece of the overall human infrastructure required for successful implementation of the Salmon Recovery Plan. Capacity and focus of work towards salmon recovery at the local, regional, state and federal levels, as well as other supporting groups (project sponsors, private resource managers, etc.), will have a significant impact on the ability to implement the Plan and the success of recovery efforts region-wide. The region recognizes the critical importance of building support at multiple levels in order to provide assurance that the actions associated with salmon recovery will be implemented and sustainable over time despite shifts in political will and funding.

Protecting Ecosystem Functions

Protecting habitat is recognized in the region as one of the most important near-term steps to protecting the health of Puget Sound. Despite some of the most protective laws in the nation, the assumption in the Salmon Recovery Plan that habitat will not be lost is clearly wrong. This is supported by the Implementation Status prepared by M. Judge for NMFS/NOAA (2011) and the Puget Sound Tribes Treaties Rights at Risk Paper (2011). Watershed groups will need to support the alignment and strengthening of regulations and policies directing land use, development, and water use in order to stop the continued loss of habitat. The Puget Sound Action Agenda strategic initiatives include a particular emphasis on habitat and should be oriented towards the needs around salmon recovery.

With numerous assessments and strategic conversations happening within the salmon recovery watershed entities, salmon recovery programs are often key contributors of technical information to land use policy processes such as Shoreline Master Program updates, floodplain management discussions, and Critical Areas Ordinances. In particular, watershed groups continue to be a clearinghouse of information and a center point of expertise on watershed ecosystem functions. Watershed groups, and in particular Lead Entities, engage to varying degrees in the land use policy decision-making process based on a variety of factors. The land use plans, policies, and regulations need to be implemented in a way that supports salmon recovery rather than undermines the effort. Incorporating salmon recovery is one element but it is more important to ensure consistency with salmon recovery needs. The opportunity to do this is now since decisions are being made on local shoreline master programs and in response to the FEMA BiOp which will set the stage for the next many years on what, where, and how habitat is protected. These opportunities need to be leveraged or will be lost.

At the same time, multiple interests must be balanced: boater safety in rivers, the continued use of productive agricultural lands, balance between wilderness and restoration areas, use of tidelands for shellfish production, protection of the public from flood waters, the need to accommodate growth, and the willingness of landowners to allow restoration activities on private property are all considerations that the watershed groups must face when implementing the Salmon Recovery Plan. Recent efforts such as the Snohomish Sustainable Lands Strategy and the King County Flood District's use of funds to support the local Conservation District and central Puget Sound watersheds' salmon projects and staff are examples of how these interests are being balanced towards salmon recovery.

Consistent, Stable Funding

Consistent, stable, funding sources for capital and programmatic actions related to salmon recovery continues to be absent. This lack of sufficient funding is compounded by the increase in complexity in actions needed to recover salmon. According to a report prepared for the Governor's Salmon Recovery Office (GSRO) by Evergreen Funding Consultants, habitat-related capital needs in Puget Sound total \$1.467 billion and non-capital programs needs are estimated at \$242 million (Canty, 2011). The Puget Sound region remains significantly below this amount.

Funding for salmon recovery comes from a variety of sources, although local, state (including Puget Sound Acquisition and Restoration funds), and federal funding represent a majority of

funding in Puget Sound. Funding is needed not only for capital actions but also for the critical work of education and outreach, land use management, hatchery and harvest, and monitoring of implementation efforts.

Certain emerging funding strategies show promise to help diversity sources, from mitigation programs to cooperative agreements. Examples include the Hood Canal In-Lieu Fee Program and the Watershed Investment District championed by some of the more urban watersheds.

Watershed Specific Policy Review: Nooksack Watershed

Significant Improvements:

- The Nooksack Watershed/WRIA 1 group continues to use a focused, prioritized approach to implementing the Recovery Plan. This approach, and attention to their nine priority goal categories, is a successful use of the Plan to guide their work.
- Significant progress has been made to identify alternative designs for the Middle Fork diversion dam project. This is currently listed as a high priority within the Recovery Plan and also holds importance for the City of Bellingham's water supply system. Work to advance this project and secure funding will be a continued important focus unless the WRIA 1 Joint Board decides that this is no longer a priority.
- The Nooksack Watershed/WRIA 1 group has continued to discuss challenging topics and issues within their watershed forum and to support a highly collaborative and devoted set of staff and relationships to sustain the long-term work of implementing salmon recovery.

Issues Needing Advancement:

- Despite very limited capacity, the Nooksack Watershed/WRIA 1 salmon recovery staff team has continued to work on a monitoring and adaptive management approach and a better understanding of the effectiveness of specific projects. This work to build an evaluation program is critically important in order to understand how the suites of actions being taken are impacting the recovery of salmon. It will be important to advance this effort in coordination with the Common Framework developed by the RITT.
- Although the Nooksack Watershed/WRIA 1 group has a strong structure, the work to strengthen the integration of activities managed and held by the member organizations of the WRIA 1 Joint Board continues to be of critical importance and a challenge. This includes work around floodplains, estuary/nearshore, and in-stream flows.
- The lack of clarity around regulations and policies from regional and federal entities related to the floodplain continue to challenge local implementers. This includes the NOAA/NMFS' Biological Opinion on FEMA's, the no rise standards, and the Corps evaluation of levees.
- There is a continued need for capacity support and funds to be allocated to advance on-going programmatic actions related to salmon recovery. This includes education/outreach efforts and monitoring and adaptive management work.