

Puget Sound Partnership and Recovery Implementation Technical Team 2011 Three Year Work Program Review Nooksack Watershed

Introduction

The 2011 Three-Year Work Program Update is the sixth year of implementation since the Recovery Plan was finalized in 2005. The Puget Sound Partnership, as the regional organization for salmon recovery, along with 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 programs in order to be as effective as possible in the coming years. These work programs are intended to provide a road map for implementation of the salmon recovery plans and to help establish a recovery trajectory for the next 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 RITT, the Recovery Council, and the Puget Sound Partnership to inform the continued development and implementation of the regional work program. 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 2011 work program 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/program 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/program 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 program:

- 1) *Consistency question*: Are the suites of actions and top priorities identified in the watershed's three-year work plan/program 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/program 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 program 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. Regional technical review that identifies and discusses technical topics of regional concern
2. 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. Regional policy review that identifies and discusses policy topics of regional concern
4. 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 program updates in May and June 2011. 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 review, along with the watershed specific review comments, are included below.

Regional Technical Review: 2011 Three-Year Work Plans – Common Themes

H integration

In most watersheds the recognized group (lead entity) used by the Partnership as a point of contact for salmon recovery planning, implementation, and status assessment is charged with only a subset of the actions needed for salmon recovery. For example, the Skagit Watershed Council's purview only extends to voluntary habitat restoration and protection through acquisition. However, salmon recovery in every watershed requires significant action in all of the so-called H's: habitat restoration, habitat protection, harvest management, and hatchery management. Because most of the lead entities are limited in their scope, the three-year workplans we reviewed are not comprehensive across all Hs, and we are not able to adequately evaluate the integration of actions across all Hs.

There is a regional need to form more comprehensive watershed forums or groups, with the capability and commitment to implement and coordinate recovery plan actions for all Hs. This issue, and the obvious lack of intentional H integration, has hampered RITT review of 3 year work plans since their inception. We suggest that the Recovery Council work with the co-managers and others to take a strong role in forming functional watershed-level groups for implementing and coordinating actions for all Hs.

Monitoring - Status and Trends of Habitat

Most watersheds have no organized, systematic way of monitoring habitat status and trends. This is especially important for assessing the true progress of salmon recovery in Puget Sound, because most watersheds' recovery plans require that existing habitat be protected. For example, the Skagit plan stipulates that approximately 60% of the habitat burden (which includes habitat protection and habitat restoration) needed for achieving the Chinook recovery goals is based on protecting existing habitat, defined as the amount and quality of habitat in 2005. Thus, tracking whether the quantity and quality of existing habitat is changing is an important need for recovery plan implementation. Continued lack of this information is not necessarily neutral to salmon recovery because losses in habitat may not be reversible or economically feasible, thus limiting options to adaptively manage the issue in the future. Ignoring this necessary status and trends monitoring only serves to hide potential problems with habitat loss (out of sight, out of mind). Without status and trends information it is impossible to evaluate the success of recovery plan implementation to date.

A topic related to status and trends monitoring of habitat is the need for a "balance sheet" system to account for habitat related to mitigation projects. All Puget Sound Chinook recovery plans require a net gain in salmon habitat. Any use of mitigation strategies for damaged habitat needs to ensure that there is not any loss at the scale that Puget Sound Chinook populations operate. Monitoring the big picture for all mitigation programs in the context of individual Puget Sound Chinook salmon populations is critical because mitigation does not always occur on site within the same habitat type, nor does it consistently restore natural process (often engineered habitat). Some possible consequences of mitigating habitat damage using these procedures are:

- an influence to species or populations other than those damaged by the habitat action (different site, different habitat type)
- a lack of functioning and sustainable habitat (limitations in restoring natural processes that form and sustain habitat).

Without keeping a detailed "balance sheet" of changes in habitat quantity, quality, and location, it is possible that the mitigation process ultimately produces no net gain in habitat.

Protection of ecosystem functions and habitat

Protection of existing well-functioning habitat is an essential component of salmon recovery in Puget Sound. Most watershed groups continue to express concerns about ongoing degradation and loss of habitat. Their concerns are supported by habitat change analyses that document continued loss of key habitats in a number of Puget Sound watersheds, with little change in the rate of loss since the listing of Puget Sound Chinook in 1999. Some watersheds have noted that habitat loss may be offsetting any gains they are making through restoration projects.

While habitat restoration can be accomplished through the watershed groups, given adequate funding, protection of existing habitat is mainly reliant on local regulations and their enforcement. Many local, state, and federal policy drivers 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.

During 2010, the RITT was briefed on the SMA, GMA, and HPA in order to better understand how practical implementation of habitat protection could be better incorporated into salmon recovery. While these acts 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. We found that none of these acts is 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.

Funding for monitoring

Salmonids and the ecosystems on which they depend are naturally dynamic. For this reason, and because our understanding of both salmonids and their ecosystems is incomplete, adaptive management is necessary. Adaptive management, however, cannot proceed without monitoring, and monitoring requires stable funding.

A recent meta-analysis of >37,000 river restoration projects nationwide found that few included any form of monitoring, and most that did were not designed to monitor project effectiveness or to distribute monitoring results (Bernhardt et al. 2005). The authors concluded that opportunities to improve future practices by learning from successes and failures were being lost, particularly for small-sized projects whose cumulative cost and extent exceeded those of larger, better monitored projects.

The Puget Sound region, like the rest of the country, needs to elevate its prioritization of monitoring – not just effectiveness monitoring of restoration projects, but also other types of monitoring (e.g., status and trends monitoring) of the numerous ecological endpoints relevant to listed salmonids. A critical impediment to additional monitoring is adequate funding. Some funding sources explicitly exclude monitoring proposals; others simply give higher priority to habitat manipulation than to monitoring. We encourage all funding sources to recognize the need to allocate a portion of resources to monitoring.

Adaptive Management and Monitoring

One of the biggest challenges for implementing the Puget Sound Salmon Recovery Plan is the development of substantive but also realistic, useful, and applicable adaptive management plans

at the watershed level. The NOAA Supplement to the Puget Sound Recovery Plan identified these as the key tool for addressing the scientific uncertainties inherent in the Plan. A number of watersheds have made good progress on development of adaptive management and monitoring plans. Meanwhile, the RITT has embarked on development of a general approach that can be tailored to each watershed's plan while providing a means of evaluating progress across watersheds. While much progress was made in 2010 on both fronts, most watersheds' adaptive management plans remain incomplete.

The RITT has developed a draft framework for adaptive management and monitoring, both to support individual watershed's needs and to integrate the watersheds' work through a common terminology and template at the regional scale. The draft framework is in the process of being finalized with the intent of distribution later this year. The framework has been applied, with RITT support, in three "case study" watersheds – San Juan Islands, Skagit, and Hood Canal – using the Open Standards for Conservation planning approach, in order to:

- 1) identify needs,
- 2) provide a consistent template for planning and prioritizing monitoring,
- 3) develop a process for refining short-term objectives and 10-year goals, and
- 4) increase the technical capacity of the watersheds to complete these adaptive management and monitoring plans.

Expansion of RITT support to work with other watersheds has also begun and will continue in 2011 and 2012. Although RITT support is available to each watershed, the process of building the adaptive management and monitoring plans will still demand time, commitment, and resources from the watershed leads, planners and implementers of actions associated with the Recovery Plan.

Climate Change Adaptation

Climate change 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 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, 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 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 develop of adaptive management plans that consider climate change.

Those interested in “a place-based exchange of information about emerging climate, climate impacts, and climate adaptation science in the Pacific Northwest” should consider attending the second annual Pacific Northwest Climate Science Conference, scheduled September 13-14, 2011 in Seattle, Washington. Details on registration and abstract submission can be found at <http://ces.washington.edu/cig/outreach/pnwscienceconf2011/>.

The following online references synthesize various agencies’ efforts at understanding the potential impacts of climate change on natural resources in Washington State:

University of Washington Climate Impacts Group. 2009. The Washington climate change impacts assessment: Evaluating Washington's future in a changing climate.

<http://ces.washington.edu/cig/res/ia/waccia.shtml>

University of Washington Climate Impacts Group. 2010. Hydrologic climate change scenarios for the Pacific Northwest Columbia River basin and coastal drainages.

<http://www.hydro.washington.edu/2860/>

Lawler, J.J. and M. Mathias. 2007. Climate change and the future of biodiversity in Washington. Report prepared for the Washington Biodiversity Council.

<http://www.biodiversity.wa.gov/documents/WA-Climate-BiodiversityReport.pdf>

National Wildlife Federation. 2009. Setting the stage: Ideas for safeguarding Washington’s fish and wildlife in an era of climate change.

http://wdfw.wa.gov/wlm/cwcs/nwf_climatechange09.pdf

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/

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” which was included for this review. 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 nearly extinct South Fork population - and 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; 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. Thus, we have some concern that some of these efforts might be taking funding and local capacity away from the higher priority actions directed at the early timing Chinook populations. We elaborate on these concerns in our response to Question 3 (sequencing and timing).

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?*

This is difficult to answer conclusively, but most likely 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.

Restoring fish passage to upper reaches of the Middle Fork, which when it was modeled during development of the recovery plan contributed significantly to the 10-year goal, has not been on-track. However, completion of a feasibility study for modifying the barrier on the Middle Fork to restore passage and analysis and completion of restoration alternative strategies in 2010 may help improve the pace towards the 10-year goals. WRIA 1 reports in 2011 that progress has been made on selecting a design alternative and that the opportunity to complete this high priority project within this 3 year planning window is now possible.

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

The sequencing of the work program may be appropriate. However, some modification to priorities may be merited given the status of the early timed populations.

The WRIA 1 2011 work plan documents state that “Early Chinook population status is fairly stable, at low levels.” Later in the document, it states “wild abundances (of early Chinook) were lower in 2010, and North/Middle Fork natural origin recruits declined for the third consecutive year in 2010” and the “South Fork population estimate was also lower in 2010.” Given the tenuous level of the early timed population, 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 workplan 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 workplan 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 workplan and, overall, only a couple of projects appear to be “active.” The workplan 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 workplan 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 workplan 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? While little was mentioned in the 2011 workplan documents, the Co-managers report there is evidence to reject genetic diversity as a problem and that hatchery releases of Fall Chinook within the Bellingham/Samish Harvest Management Unit were dramatically reduced in recent years to offset the potential for adverse ecological interactions between the early timed populations and hatchery Fall Chinook. This workplan would benefit from better H integration in future year. The

“soon to be completed” monitoring and adaptive management plan (MAMP) may help solve this issue.

Population Monitoring: WRIA 1 reports Chinook salmon population monitoring is being done for the adult life stage of the early timed populations and migrating juveniles at the lower river smolt trap (currently an aggregate of all natural origin juvenile Chinook and within-basin hatchery releases). 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 “soon to be completed” MAMP may recommend 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 its MAMP that directly identifies key uncertainties and how to use existing and new knowledge to make effective decisions to recover salmon. This action was identified in the 2009 and 2010 3 year workplan reviews. WRIA 1 reports for 2011 significant progress in completing this action some time during 2011. The 2011 work plan and action descriptions include a suit of habitat and population assessment, monitoring, research, and modeling actions that would best be organized and prioritized under an adaptive management plan and framework.

II. Policy Review Comments

The Recovery Council Work Group is an interdisciplinary policy team of tribal, federal, state, and local agency policy staff. The team developed both general comments on common themes across the watersheds within the region, as well as significant advancements and issues needing advancement that are watershed specific. The general and watershed specific comments follow below.

Regional Policy Review: 2011 Three-Year Work Plan – Common Themes

It has been twelve years since the listing of Puget Sound Chinook. Although there has considerable advances towards recovery, significant difficult challenges remain. The following is our sense of some of these key challenges. We acknowledge the complexities and enormous efforts undertaken to advance recovery, and the Region remains steadfast in its support of the watershed approach to salmon recovery.

The Region wants to again highlight 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 in the work of implementing recovery. The work plan is becoming more refined, and ultimately is helping advance regional recovery through a strategic process that results in the most important projects being done.

We appreciate the efforts of the watersheds, and look forward to further refining this process and its utility in the future.

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 to find common ground and common solutions. This includes decisions around land use, how to sequence and identify regionally significant actions, and the functional relationships within the Action Agenda.

Focus on Salmon Recovery

The work to recover the Puget Sound ESU is complex, multi-faceted, and is being advanced in many different forums. This includes the effort to integrate decisions across the H's, adaptively manage the salmon recovery plan, refine the Action Agenda, participate in the development of LIOs, and support the integration of salmon recovery into shoreline master program updates. The salmon recovery community must engage in all these arenas, but it is also critically important to focus the time and resources in a way that leads to recovery of salmon. The Region recognizes that implementation of salmon recovery actions remains a high priority and is committed to continuing to strengthen and implement the salmon recovery plan to realize this goal.

Protecting Ecosystem Functions

The protection of existing habitat is essential to supporting healthy ecosystem functions. Improving our ability to protect habitat continues to be a high priority for the Region. There are several timely initiatives associated with our ability to protect habitat underway right now, including the Shoreline Master Program Updates and response to the Biological Opinion on FEMA's NFIP. Other tools necessary for this work include voluntary efforts, technical assistance, incentives, education and outreach work, and acquisition of property. The Region recognizes the importance of these tools and initiatives and supports continued work to refine and improve our use.

Adaptive Management and Monitoring

The development of a coordinated watershed/regional monitoring and adaptive management program remains a high priority for the region. This is key to strengthen recovery chapter implementation, adaptation, and overall assessment of recovery efforts. Many of the watersheds indicated the challenges of advancing this work, due in part to the limited regional and watershed capacity

The Region continues to be committed to advancing adaptive management in a way that describes the relationship between habitat, harvest, hatchery, and hydropower management decisions. The following describes several actions occurring at the regional scale to advance this effort:

- Compilation of VSP monitoring data throughout the Sound by NOAA and co-managers;
- Establishment of the Salmonid Work Group with PSP, NOAA, and USFWS to develop an assessment of ongoing VSP monitoring and how it relates to listed Chinook, steelhead, and summer chum.
- Framework to link together the hypotheses and monitoring information associated with each of the watershed chapters and the regional chapter information. This has been developed by the RITT and is now being tailored to the watersheds, starting with three (San Juan, Skagit, and Hood Canal)
- RITT/PSP commitment to work with all the watersheds to tailor the monitoring and adaptive management framework/template and support monitoring and adaptive management plan development.

To be successful in this work, a significant amount of resources are, and will continue to be, needed. In addition, the right people must be at the table, including the technical and policy experts in the hatchery, harvest, habitat protection, habitat restoration, and hydropower sectors.

Emerging Issues Affecting Salmon Recovery

There continues to be issues that emerge that can ultimately affect the trajectory of recovery. Local, state, tribal, and federal representatives in the salmon community should continue to engage and connect salmon recovery needs to such discussions and coordinate messages that offer the broadest level of support possible. Such initiatives include:

- Shoreline Master Program updates: Occurring across the Puget Sound and is critically important for maintaining and improving the ecosystem functions associated with the riparian habitat and freshwater and nearshore systems that support salmon.
- FEMA's National Flood Insurance Program: Local Jurisdictions are responding to a NOAA/NMFS Biological Opinion on the program that will impact how and where development occurs in the floodplains across the Sound.
- Corps of Engineers Levee Vegetation Management Policy: The Corps is working on an approach to vegetation management on levees along rivers and streams that contain salmon.
- Large Woody Debris Installation: Jurisdictions are balancing the need for sustainable, functional salmon habitat with boater safety and flood management.
- Hatchery Genetic Management Plans: WDFW is Ps and their connection to the Puget Sound Harvest Management Plan and watershed plans aimed at system recovery

Funding

The Salmon Recovery Plan identified a need for a \$120 million investment per year for the first ten years. This represents the need for both a sustained investment that is consistent and reliable for capital and non-capital actions, as well as a protection of the existing resources. We are falling short of this need to make salmon recovery successful and it is imperative that the Region and its partners continue to think broadly about diversified funding sources. Leveraging the efforts of others, and forging new relationships with non-traditional allies will only help increase efficiencies to advance recovery. The Region is committed to exploring creative ways to leverage and secure new funding for salmon and ecosystem recovery.

Watershed Specific Policy Review: Nooksack Watershed

Significant Improvements

- WRIA 1 continues to advance, in a concerted and thoughtful way, work in all the nine priority goal categories. This includes making progress as well as linking their work back to the goals.
- WRIA 1 is increasingly sophisticated on how they identify and describe actions.
- The WRIA 1 three-year work plan continues to get stronger in terms of holding the various moving parts of implementation of the salmon recovery program, including but not limited to the education/outreach, restoration, monitoring and adaptive management, hatchery, and elements associated with habitat protection.
- Significant progress has been made in the Middle Fork diversion dam assessments – this has been an important challenge that the City of Bellingham, along with the rest of the WRIA 1 team, has been advancing.
- WRIA 1 has continued to discuss challenges within their watershed forum as a way to develop coordinated approaches to addressing these challenges.

Issues to Advance

- Whatcom County is one of the first jurisdictions to update their SMPs and to do so with a significant contribution from the salmon recovery lens. However, the funding for implementation of this program within the County continues to lag behind the need. Support for implementation is critically important in order to support habitat protection.
- The lack of clarity around regulations and policies 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 advance on-going programmatic actions related to salmon recovery. This includes voluntary and incentive-based habitat protection programs, education/outreach efforts, and monitoring and adaptive management work.
- There is a continued challenge to sustain the various local interests. The WRIA 1 Consolidated Board structure provides opportunities for these varied interests to be a part of the decision-making.