

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

In general, the major direction of the three-year work program has not changed over the last several years. The work plan continues to report on progress towards habitat restoration and protection. This year, however, the work program provides more complete description of the Nisqually Chinook Stock Management Action Plan including revised harvest and hatchery strategies that were beginning to be described in last year’s work 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 work program is consistent with the hypotheses and strategy for the watershed (however, see next paragraph). As noted in the work program description, the watershed has spent considerable effort developing watershed hypotheses and protection and restoration strategies based on modeling using the Ecosystem Diagnosis and Treatment model (EDT) and more recently the All H Analyzer (AHA model). The work program continues to use the conclusions of those modeling efforts to guide and prioritize watershed restoration and salmon recovery. The work program includes projects aimed at improving all four attributes of viable salmonid populations (abundance, productivity, diversity and spatial structure).

We were confused by the new spawner abundance number described in the three-year work plan, which identified a desired “terminal run” abundance of 2000 Chinook salmon. The recovery plan identified targets of 3600 natural spawners and 1200 natural origin recruits. It is not clear from either the three-year work plan or the Nisqually Chinook Stock Management Action Plan how the 2000 terminal run number relates to either of the previous numbers, or the numbers in Figure 1, and whether this is a change from the recovery plan goals. This needs better explanation.

We support the general hatchery and harvest strategy identified in the three-year work plan and the Nisqually Chinook Stock Management Action Plan. It is an improvement over the segregated hatchery strategy identified in the recovery plan and hatchery and genetic management plans (HGMPs) and responds to the Technical Review Team’s earlier comments about the difficulty of accomplishing a segregated strategy. However, we are skeptical of the projections presented in Figure 1 using the EDT model, especially when the authors note later that EDT does not account for loss of fitness. The methods used in EDT to arrive at these projects need to be explained.

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 implementation of habitat actions needed to meet 10-year goals appears to be on track. The watershed continues to emphasize habitat protect and restoration. With over 75% of the habitat in the watershed protected, the Nisqually is among the best protected watersheds in the Puget Sound. A useful analysis to judge progress would be to model this level of protection against the 10-year goal of “no further degradation.” Likewise, using EDT modeling as a gage of effectiveness, analyses suggest that the work plan restoration activities when completed will increase diversity from a current level of 80% to 93% of historical.

We note that the inability to implement a weir in the Nisqually River slowed progress on multiple objectives identified in the adaptive management plan in 2010. The 2011 three-year work plan does not explain why. Was this because of lack of capacity and funding? More information on this would help the RITT with our response to question #4 below. We also note that the Nisqually watershed group’s identification of the change to a stepping stone as the single biggest change in 2011 is not entirely accurate: this was identified in the 2010 work plan also.

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

The strategy for sequencing and timing of actions in the work program is appropriate. This has not changed much in the last few years. As noted earlier, the watershed has invested considerable effort in protection of key habitats and restoration of the estuary. Protecting existing habitat and restoring additional habitats are essential first steps in the sequence if subsequent changes in hatchery management or harvest are to succeed in rebuilding natural production. Beginning restoration activities early in the recovery sequence is important because it takes longer for habitat to recover to the point that it produces the desired responses in fish populations. Hatchery actions do not take as long to produce desired effects on some fish population characteristics, such as abundance and spatial distribution, and harvest can produce some of the quickest responses when adequate habitat is available.

Much of the initial work was focused on priority freshwater and estuarine habitat. As these actions are implemented, the watershed is also increasingly focused on protection and restoration of the Puget Sound shorelines, which although they are not necessarily within the geographical boundaries of individual watershed recovery planning areas are important for the growth, migration, and survival of Nisqually River Chinook. This sequencing and timing seems appropriate, especially as scientific frameworks for assessing and prioritizing nearshore habitat and projects have matured.

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

Yes. Capacity and funding remain challenges here as in all other watersheds. The continued development of the Nisqually Adaptive Management Framework, however, has highlighted a number of needs that will be important in continuing progress in this watershed. A major challenge identified in the work plan is the need to coordinate restoration and protection of the shoreline. This is both a scientific and policy challenge. A second challenge is getting better information on population responses. The watershed has been actively conducting monitoring in many areas but more monitoring or research will be needed. The proposed study of fish passage at the Centralia Diversion Dam is one example. The proposed change in hatchery management strategy from a segregated hatchery program to a “stepping stone integrated hatchery program” will also require additional monitoring and research to resolve key uncertainties if it is to work.

The Nisqually watershed group has been innovative in their use of EDT to model, predict, and monitor progress. One advantage of this approach is to summarize monitoring of multiple quantitative and qualitative variables and to translate complex ecological relationships into a simple index or statistic. The Nisqually watershed group continues to use this EDT to monitor progress. As we have noted in our in all our past reviews, we recommend that if EDT modeling is used to generate metrics to measure progress, the modeling and results must incorporate uncertainty. For example, point estimates of productivity of 3.7 (current) versus 5.3 (expected from work program) may appear to be significant progress, but after including the confidence intervals, the two estimates may not be detectably different. The Nisqually watershed group has yet to provide these analyses. We strongly recommend incorporating uncertainty into EDT

analyses if they are to be used to gauge effectiveness and progress. The RITT cannot continue to support this use of EDT if it is not done.

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 been 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: their development 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: Nisqually Watershed

Significant Advancements

- The Nisqually watershed is taking the lead in advancing H-integration, potentially as a model for watersheds across the Puget Sound. Significant resources and time have been applied to updating the stock management plan with the objective of managing hatchery and natural fish populations to allow the development of natural origin stock that is locally adapted to the Nisqually watershed. The Nisqually Tribe will be experimenting with selective gear during this summer's fishing season, which if successful will help reduce future harvest pressure on native fish. Finally, the construction and operation of a mainstem weir from July-October 2011 will advance H-integration as a foundational piece of a stepping-stone, integrated hatchery program, and by allowing the tribe to maintain harvesting at acceptable levels while ensuring that goals are met for hatchery and native origin stock on the spawning grounds.
- Continuing to advance adaptive management and monitoring planning, including evaluating the status and trends of Chinook in the watershed and in nearshore areas outside the watershed.
- Successfully identified and sequenced priority projects for habitat restoration and protection using current habitat conditions and EDT modeling for both Chinook salmon and steelhead to identify species interaction with habitat needs. This strategy advances recovery through the identification of habitat that is important for species abundance, capacity and life history diversity.

- Successfully completed major restoration work in the Nisqually Estuary that will significantly increase salmonid abundance. This work involved the coordination of multiple entities, funding resources, and technical expertise, and resulted in the return of 902 acres (140 of which were completed in 2010) to estuary habitat. Resources were also dedicated to the completion of major restoration and acquisition projects in the Ohop and Mashel subbasins that will contribute to life history diversity of Nisqually Chinook.

Issues Needing Advancement

- Continuing to retain the momentum and working to secure funds to advance H-integration will be important for meeting stock management objectives.
- Continuing to advance adaptive management and monitoring to achieve salmon recovery goals in the watershed will be important as a tool to understanding the status of recovery efforts. Integration of the existing Nisqually work with the regional approach under development through the Recovery Implementation Technical Team will help connect Nisqually information to the status of the ESU.
- Continuing to work to secure funds for high priority projects, identified and sequenced through the modeling and ranking process, is critical for recovery. Some of these efforts, such as a current project to improve stormwater and water use management in the town of Eatonville, do not necessarily have a clear source of funding from sources typically utilized for salmon recovery. In these cases, securing short- and long-term funding is a unique challenge.
- Working across watersheds, such as with the South Sound watersheds, to advance and secure resources for the protection and restoration of nearshore habitat is critical to achieving Nisqually Chinook recovery. New regulations developed through Shoreline Master Program updates in jurisdictions across South Puget Sound provide one potential avenue for reversing the loss of nearshore habitat across the basin, which would benefit Nisqually Chinook.