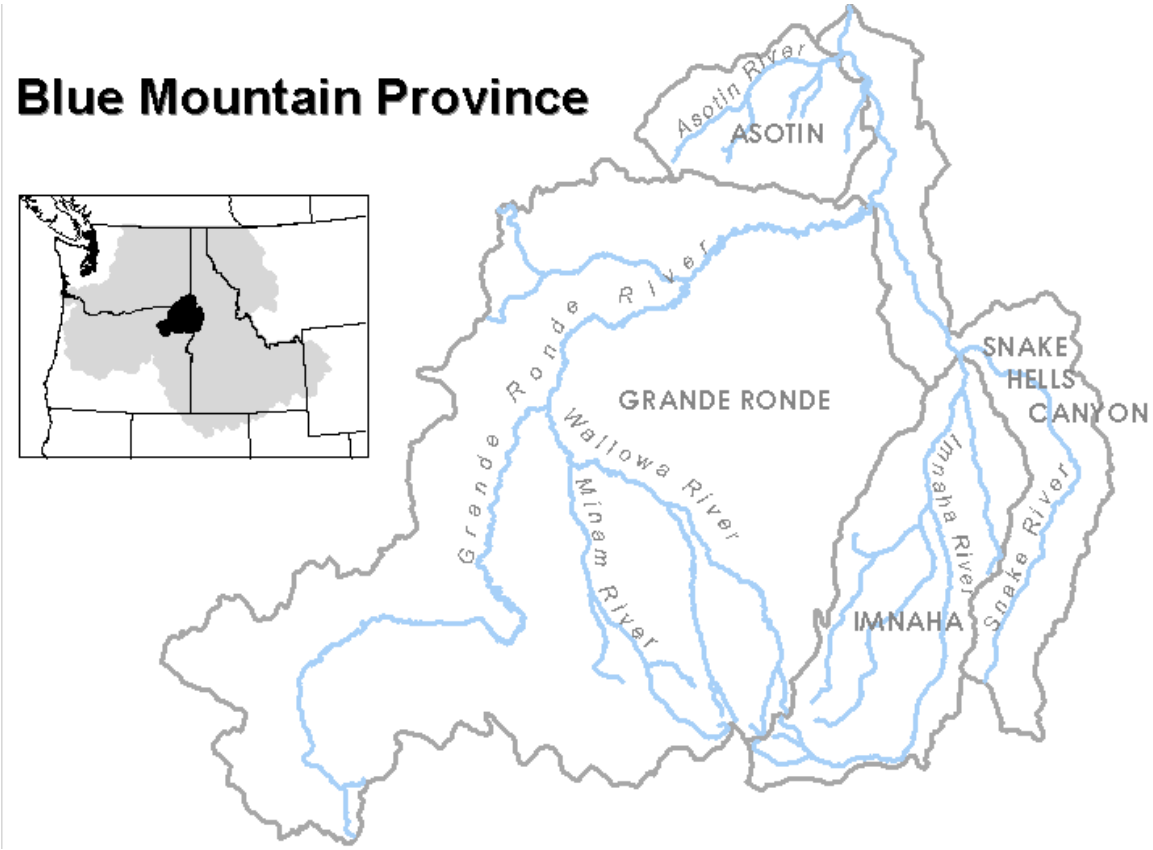
Draft FY 2002-2004 Blue Mountain Province Work Plan



Prepared for the
Northwest Power Planning Council

by the
Columbia Basin Fish and Wildlife Authority

November 30, 2001

Draft FY 2002-2004 Blue Mountain Province Work Plan

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Introduction

The "rolling" provincial review process was developed by the Northwest Power Planning Council (NWPPC) in February 2000 in response to recommendations by the Independent Scientific Review Panel (ISRP) and the Columbia Basin Fish and Wildlife Authority (CBFWA). Under this new province based process each individual project proposal within a province will be reviewed for technical merit and management relevance every three years. Under the previous process all project proposals for Bonneville Power Administration (BPA) funding under the Fish and Wildlife Program were reviewed annually. The purpose of the NWPPC's new multi-year process is to reduce the burden of reviewing large numbers of proposals, most of which had been reviewed just one year before, and to provide for a more thorough review of the project proposals in the context of a subbasin summary. Additionally, the process is intended to provide the opportunity for site visits by reviewers, project presentations with a question and answer period, and provide reviewers with more detailed background and planning documents which will reduce the reviewer's reliance strictly on the proposal form.

The subbasin summaries developed under this process are intended to be interim and will be replaced by subbasin plans developed to meet requirements of the recently amended Fish and Wildlife Program. The Blue Mountain Province was the sixth province to be reviewed under this new process. The results of this review are summarized here.

This document was developed collaboratively by the NWPPC staff, ISRP, fish and wildlife managers, other stakeholders, and CBFWA staff, culminating in project and budget recommendations for FY 2002-2004. The subbasin summaries are provided only as context for the project recommendations.

The CBFWA process for providing these recommendations utilized the ISRP preliminary findings and integrated manager evaluations of the technical and management merits of the project proposals relative to anadromous fish, resident fish and wildlife management needs, and the goals and objectives identified in the subbasin summaries. A total of 47 project proposals were submitted and reviewed with 3 proposals (i.e., 27004, 27005, and 27006) receiving a "Do Not Fund" recommendation. The recommended projects address needs identified in the subbasin summaries and include 21 new and 23 ongoing projects totaling $26.8 million

This draft work plan includes the subbasin summaries, which describe the physical and biological characteristics of each subbasin within the Blue Mountain Province. The summaries also identify past accomplishments, limiting factors, management objectives and strategies, current needs and recommended budgets for project implementation.

Geographic Description

The Blue Mountain Province (Figure 1) is located in southeastern Washington and northeastern Oregon.

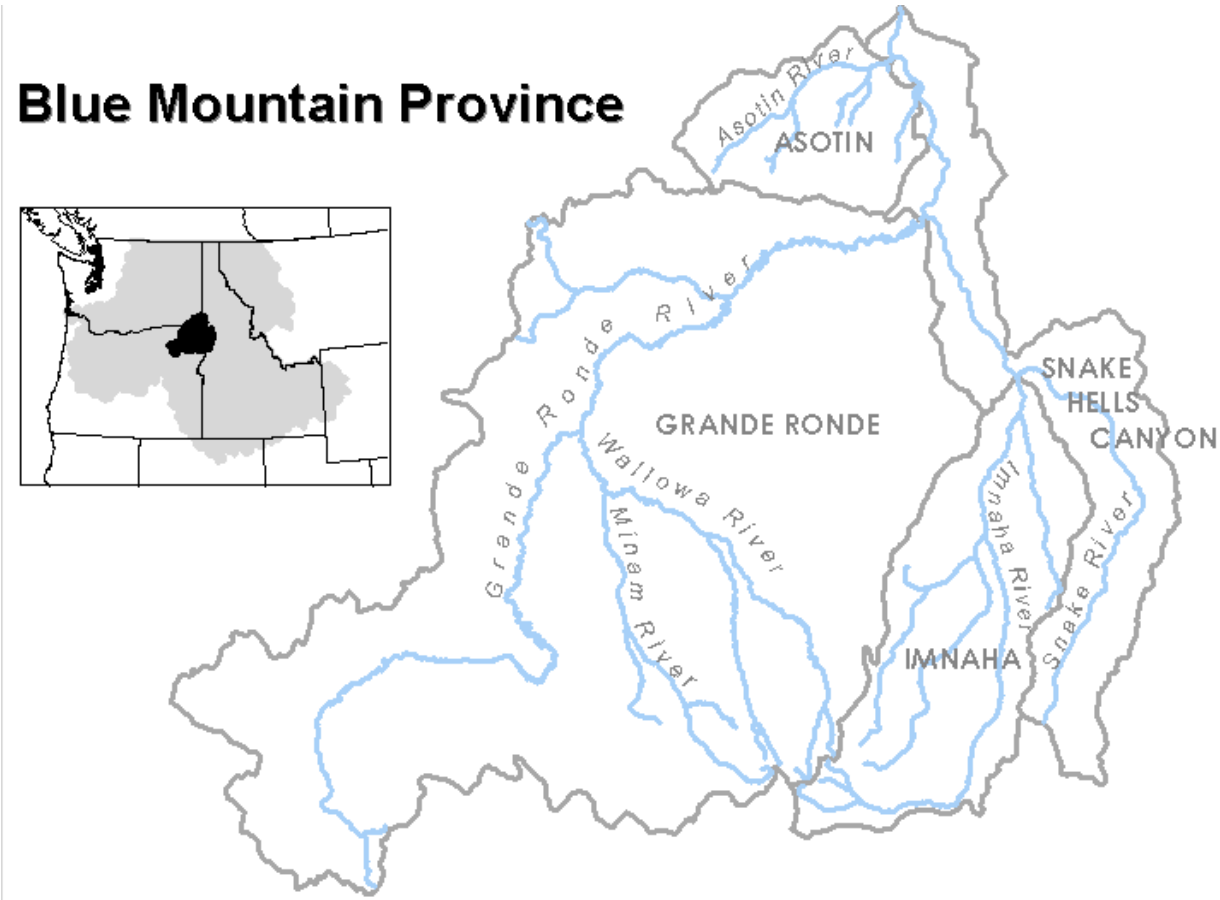

Figure 1. Blue Mountain Province

Project Review Process

Subbasin Summaries

The Blue Mountain Province Review was initiated at a March 27, 2001, meeting in LaGrande, Oregon. An invitation was sent to an extensive distribution list to encourage all interested parties (i.e. land and water managers, representatives of watershed councils, etc.) to attend and provide input. The purpose of this first meeting was to provide all interested parties with the opportunity to identify sources of information necessary for the development of subbasin summaries for this province (i.e. monitoring data, habitat restoration results, existing assessments, etc.). The intent was to ensure BPA expenditures for fish and wildlife projects compliment and enhance existing efforts and ensure that priority needs are addressed. Subsequent meetings were held to review draft summaries and identify goals and objectives.

Previously, ecosystem summaries for each subbasin were developed as a means of providing context for project proposals. Under the new process, a more formal structure with subbasin teams was formed to develop the more comprehensive subbasin summaries of the newly identified provinces. Other local interested parties also provided input to and participated on the subbasin teams (i.e. other land and water managers, representatives from watershed councils, etc.).

Subbasin summaries for the Blue Mountain Province were completed in June 2001. The BPA issued the solicitation for project proposals for the Blue Mountain Province on June 8, 2001, with project proposals due July 20, 2001. The project sponsors were asked to show a direct tie between their projects and the needs identified in the subbasin summaries.

Review by the ISRP

The ISRP reviewed 47 project proposals for the Blue Mountain Province. At least three ISRP/Peer Review Group members reviewed each proposal. To ensure a consistent and fair evaluation, standard formats and criteria were applied to all proposals to generate comments and scores prior to the proposal review workshop. These scores and comments were not made available to the project sponsors at the workshop, but were used by the ISRP to develop questions for the site visits and workshop presentations. The workshops consisted of site visits and project presentations.

Site Visits (September 10-11, 2001)

The ISRP, subbasin teams, fish and wildlife managers, the CBFWA province review team and other stakeholders toured the province to gain a better understanding of the existing ecological conditions and limiting factors as well as view some ongoing projects in each subbasin. During the tour, managers provided oral presentations for areas/projects within the province that the group was unable to visit.

Project Presentation (September 12-14, 2001)

Prior to the presentation of individual project proposals, subbasin team leaders provided a general overview for their respective summaries. Following each subbasin summary presentation, project proposals relative to that subbasin were presented to the ISRP, CBFWA province review team, fish and wildlife managers, NWPPC staff, CBFWA staff and other stakeholders. All project sponsors were provided 15 minutes to present their proposal and answer questions. During this review, the CBFWA province review team applied Subbasin Project Review Criteria (Table 1) to each project. Every effort was made to be consistent among all project proposals reviewed.

Table 1. The CBFWA subbasin project review criteria.

Technical Criteria	
1. Does the proposal demonstrate that the project uses appropriate scientifically valid strategies or techniques and sound principles (best available science)?	**Y or N**
2. Are the objectives clearly defined with measurable outcomes and tasks that contribute toward accomplishment of the objectives?	**Y or N**
3. Are the resources proposed (staff, equipment, materials) appropriate to achieve the objectives and time frame milestones?	**Y or N**
4. Does the proposal include monitoring and evaluation to determine whether objectives are being achieved (including performance measures/methods) at the project level?	**Y or N**
5. Will the proposed project significantly benefit the target species/ indicator populations?	**Y or N**
6. Does the proposal demonstrate that project benefits are likely to persist over the long term and will not be compromised by other activities in the basin?	**Y or N**
7. Does the proposal demonstrate that all reasonable precautions have been taken, to not adversely affect habitat/populations of wildlife, native resident and anadromous fish?	**Y or N**
8. Are there explicit plans for how the information, technology etc. from this project will be disseminated or used?	**Y or N**
Management Criteria	
1. Does the proposed project address fish and wildlife related objectives, strategies, needs and actions as identified in the subbasin summaries?	**Y or N**
2. Does the project address an urgent requirement or threat to population maintenance and/or habitat protection (i.e., threatened, endangered or sensitive species)?	**Y or N**
3. Does the project promote/maintain sustainable and /or ecosystem processes or maintain desirable community diversity?	**Y or N**
4. Is there cost share for the construction/implementation and/or monitoring and evaluation of the project?	**Y or N**
5. Will the project complement management actions on private, public and tribal lands and does the project have demonstrable support from affected agencies, tribes and public?	**Y or N**
6. Will the project provide data critical for in season, annual and/or longer term management decisions?	**Y or N**
7. Will this project provide or protect riparian or other habitat that may benefit both fish and wildlife?	**Y or N**

Preliminary ISRP Report

On September 28, 2001, the ISRP released a Preliminary Review of Fiscal Year 2002 Project Proposals for the Blue Mountain Province (ISRP 2001-9 at NWPPC). This report summarized the ISRP's preliminary review of each project proposal and identified areas of concern where they had requested a written response to questions. The due date for written responses to this report was October 12, 2001.

CBFWA Province Review Group

During October 30-31, 2001, the CBFWA Province Review Group reviewed all project proposals within the province using criteria listed in Table 1 which resulted in a consensus Yes or No. Subbasin team members also participated in the review of the project proposals. The following elements were considered during the review:

- How well does the project relate to the criteria (Table 1)
- Validation of existing work- is the current funding level appropriate (Section 6 O&M and Section 7 M&E of existing projects)? Is it appropriate to continue implementation of existing work (Section 4 P&D and Section 5 C&I of existing projects)?
- Evaluation of proposed new work- does a new project proposal demonstrate a priority need over implementation strategies within existing projects (Sections 4 and 5 of existing projects)?

Project proposals were grouped by subbasin during their review. The preliminary ISRP technical review of all proposals was utilized while discussing the technical merits of each project. Following the technical and management review, the project proposals were prioritized within each subbasin according to the fish and wildlife needs within that subbasin. The following definitions were used for the subbasin prioritization:

- Urgent - These projects or tasks within a project are of urgent need. They will either have a direct impact on survival or protection of a key species or will protect investments made in this subbasin. These projects should be able to demonstrate an immediate cost if not funded (loss of habitat, impact on a population, etc.). An example might also include ongoing O&M costs.
- High Priority - These projects or tasks within a project are high priority within the subbasin. The project addresses a specific need within the subbasin summaries.
- Recommended Actions - These are good projects that cannot demonstrate a significant loss by not funding this year. These projects should be funded, but under a limited budget could be delayed temporarily without significant loss.
- Do not fund - These projects are either technically inadequate or do not address a need within the subbasin summaries. These projects may be inappropriate for BPA funding.

CBFWA Review and Approval of Project Recommendations and Subbasin Summaries

The final step in the project proposal review process was the consensus approval of the project recommendations by CBFWA Members. The CBFWA Members Review and the recommendations in the subbasin summaries and province work plan demonstrate regional support by the fish and wildlife managers.

On November 13, 14, and 15-16, 2001, the province recommendations and subbasin summaries were discussed in the CBFWA Wildlife, Resident Fish, and Anadromous Fish committees, respectively. The committees made some modifications to the province recommendations based on technical or regional management concerns. It was decided to group the Urgent and High Priority projects for the final recommendation to NWPPC since all of these projects should be funded in FY 2002.

Proposal Review Results

A total of 47 project proposals were reviewed in the Blue Mountain Province (23 ongoing projects and 21 new proposals, (Appendix A)). Three proposals were categorized as "Do Not Fund". Proposals that received a Do Not Fund recommendation are:

Project Proposal Number 27004, *Grande Ronde and Imnaha Stream Channel Complexity and Fish Passage Barrier Inventory, Prioritization, and Remediation,* is a proposal that, despite presenting a potentially good concept, was incomplete and as a result the reviewers could not evaluate the technical and management merits. The reviewers identified a need for coordination between this proposal and Proposal 27002 and suggested that a funding decision should be deferred until the completion of subbasin planning. In addition, the reviewers indicated that the inventory of fish passage barriers is not warranted since barriers to fish passage have already been identified. The managers indicated that there has been a lack of coordination with the management agencies.

Project Proposal Number 27005, *Increase CREP Enrollment and Enhance Riparian Protections in the Grande Ronde and Imnaha Basins,* is a proposal that, despite presenting a potentially good concept, was incomplete and as a result the reviewers could not evaluate the technical and management merits. The reviewers suggest the proposed work needs to be implemented consistent with limiting factors and problem locations identified in subbasin summaries and eventually subbasin planning to ensure fisheries benefits to target species.

Project Number 27006, *Establishing Baseline Key Ecological Functions of Fish and Wildlife for Subbasin Planning,* proposed work that the reviewers expressed concern regarding whether the information that would be collected could be used for management purposes. In addition, the managers expressed a concern about the lack of coordination. The reviewers suggested that it may be appropriate for Regional Assessment Advisory Committee to review this proposal.

Three-year Budget Recommendation

Appendix B provides a three-year funding recommendation for the Blue Mountain Province that strives to meet the goals, objectives and needs of the Province. A total of 44 projects that address needs identified in the subbasin summaries are recommended for funding and include new and ongoing projects totaling $26.8 million for Fiscal Year 2002. All of the projects recommended here should be initiated within the next three years.

Asotin Creek Subbasin

One existing project is recommended for continued funding in the Asotin Creek Subbasin (Table 2). Project Number 199401805, *Continued Coordination and Implementation of Asotin Creek Watershed Projects*, will continue to coordinate, assess, protect, restore and monitor holistically based fish habitat cost-share programs in Asotin Creek watershed as well as continue "grass-root" public and agency cooperation and collaboration for identified priority projects benefiting ESA species

Five new project proposals are recommended for funding in this subbasin (Table 3). Project Proposal Number 27001, *Asotin County Riparian Buffer and Couse and Tenmile Creeks Protection and Implementation Project*, will implement BMP's to protect and enhance watersheds in Asotin County with ESA listed steelhead and chinook. As ell as utilize cost-shares from USDA, WCC and SFRB as match to BPA Funds to implement riparian buffers under the CREP Program. Project Proposal Number 27002, *Assess Salmonids in the Asotin Creek Watershed*, will evaluate the current productivity and survival rates of anadromous and resident salmonids in Asotin Creek and develop a habitat based spring chinook reintroduction plan and determine if supplementation is required to sustain a wild steelhead population. Project Number 27009, *SSHIAP – Blue Mountain Province*, will provide routed & segmented hydrolayer, and collate and synthesize data on 19 aquatic habitat variables over an estimated 10,000 mi of streams in 2 salmonid-bearing subbasins in the WA portion of this province. Project Number 27014, *Protect and Restore the Asotin Creek Watershed*, will contribute to an on-going watershed restoration effort by working in collaboration with private and federal entities to address sedimentation into stream and tributaries from road related sources on forested ground within the watershed. Project Number 27025, *Acquire South Fork Asotin Creek Property*, will acquire and protect the 8,500-acre Schlee property in southeastern Washington. This shrub-steppe habitat harbors elk and mule deer, while its streams provide a critical link in the Asotin Creek watershed for federally endangered anadromous fish.

Table 2. Projects recommended for funding in the Asotin Creek Subbasin

ProjectID	Title	Sponsor
199401805	Continued Coordination and Implementation of Asotin Creek Watershed Projects	ACCD
27001	Asotin County Riparian Buffer and Couse and Tenmile Creeks Protection and Implementation Project	ACCD
27002	Assess Salmonids in the Asotin Creek Watershed	WDFW
27009	SSHIAP – Blue Mountain Province	WDFW

ProjectID	Title	Sponsor
27014	Protect and Restore the Asotin Creek Watershed	NPT
27025	Acquire South Fork Asotin Creek Property	RMEF

The suite of recommended project proposals addresses the key needs identified in the Asotin Creek Subbasin Summary including:

- Develop and implement BMPs on agricultural, mining, grazing, logging, and development activities to protect, enhance, and/or restore fish and wildlife habitat, streambank stability, watershed hydrology, and floodplain function.
- Develop and implement comprehensive and consistent subbasin databases related to both aquatic and terrestrial resources and establish a centralized data repository to promote more effective resource management.
- Coordinate monitoring and evaluation efforts at the subbasin and provincial level to maximize effectiveness and minimize redundancy.
- Continue ongoing, and establish new monitoring and evaluation programs for fish supplementation, habitat restoration and improvement, habitat baseline conditions, water quality and water quantity improvements, conditions, and trends.
- Complete road inventories and assess impacts to aquatic and terrestrial resources. Use information to facilitate transportation planning and to reduce road densities. Support planned road closures on public land, and encourage closure of other roads.
- Expand the cooperative/shared approach to research, monitoring, and evaluation between tribal, federal, state, local, and private entities to facilitate restoration and enhancement measures.
- Use appropriate measures (e.g., land purchases, conservation easements, landowner cooperative agreements, exchanges) to acquire lands when opportunities arise for improved habitat protection, restoration, connectivity, and for mitigation of lost fish and wildlife habitat).
- Protect pristine and significant fish and wildlife habitats directly threatened by subdivision, recreation, or extractive resource uses.
- Support timely updates and resource inventories related to local land use plans to further prevent degradation of floodplains, wetlands, riparian, and other sensitive areas.
- Continue to develop watershed assessments at multiple scales to facilitate integrated resource management and planning efforts.
- Reduce stream temperature, sediment, and embeddedness to levels that meet appropriate standards for supporting self-sustaining populations of aquatic species.
- Reduce impacts from agricultural sediment, fertilizer, pesticide loading, confined animals operations, stormwater and road runoff, wastewater effluent, mining, and logging.
- Protect and restore riparian and instream habitat structure, form, and function to provide suitable holding, spawning, and rearing areas for anadromous and resident fish.
- Protect, restore, and create riparian, wetland, and floodplain areas within the subbasin and establish connectivity.

- Inventory and evaluate natural and artificial passage barriers within the subbasin investigating their connectivity between populations, their role in population isolation, and associated passage and flow issues. Remove or modify where aquatic considerations have been met.
- Improve or re-establish well developed, mature riparian buffers, increased channel stability and sinuosity, and floodplain connectivity throughout the subbasin.
- Decrease water temperatures and sediment delivery to Asotin Creek.
- Identify, protect, or purchase critical watershed areas or water rights for the protection of native species and their habitats.
- Improve instream fish habitat quality and quantity.
- Improve fluvial geomorphic conditions for attainment of self-sustainable fish populations and reduction of sediment delivery due to streambank erosion.
- Reduce water temperatures.
- Reduce upland erosion and sedimentation delivery rates to decrease the percentage of fines in spawning gravels.
- Continue to implement the *Asotin Creek Model Watershed Plan* to restore, maintain, or enhance spawning and rearing habitat.
- Characterize the current productive capacity of the subbasin for salmonid production and recommend minimum and desired annual escapements by species.
- Better educate the public on issues and policies important to natural resource restoration, protection, and enhancement to encourage meaningful public participation.
- Assess factors limiting the production of spring chinook salmon and the potential for spring chinook reintroduction.
- Assess factors limiting the production of steelhead.
- Assess factors limiting the production and sustainability of bull trout.
- Develop spawner/recruit databases from information collected to determine full seeding levels of spring chinook and steelhead for the subbasin.
- Conduct on-the-ground assessment of previous actions, current habitat conditions, water quality, and usage.
- Conduct data collection efforts to determine quantitative habitat conditions.
- Increase native stock steelhead and spring chinook to sustainable levels
- Initiate a cooperative project to address juvenile and adult passage problems in the subbasin (screens, culverts, diversions).
- Assess the efficacy of habitat improvement projects within the subbasin to alleviate factors limiting the production of native salmonids.
- Increase wild steelhead and spring chinook to sustainable levels.
- Determine escapement and harvest management goals for naturally produced salmonids.
- Enhance forage base for elk on Asotin Wildlife Area and National Forest lands.
- Control the spread of noxious weeds on the Asotin Wildlife Area and within the subbasin.
- Improve and diversify the vegetative composition of CRP in order to provide better habitat for existing wildlife populations.

- Improve road closure programs on National Forest lands.
- Reduce ORV use on National Forest lands.
- Use controlled burns to improve habitat in the timbered uplands.
- Acquire important areas of wildlife habitat as they become available.

Grande Ronde River Subbasin

Seventeen existing projects are recommended for continued funding in the Crab Creek Subbasin (Table 3). Project Number 198402500, *Grande Ronde Basin Fish Habitat Enhancement Project,* will continue to protect and enhance fish habitat in selected streams on private lands in the Grande Ronde Basin to improve instream and riparian habitat diversity, and increase natural production of wild salmonids. Project Number 198805301, *Northeast Oregon Hatchery Master Plan,* will continue to plan and develop conservation production facilities in the Imnaha and Grande Ronde rivers necessary to implement salmon recovery programs for native, ESA listed, spring chinook and steelhead, and reintroduction of coho and sockeye salmon. Project Number 198805305, *Northeast Oregon Hatcheries Planning (ODFW),* will continue to work with co-managers and participate in planning for additional anadromous salmonid enhancement programs in the Grande Ronde, Imnaha, and Walla Walla basins. Project Number 199202601, *Implement the Grande Ronde Model Watershed Program Administration and habitat Restoration Projects,* will continue to develop and oversee coordinated, sustainable resource management in the Grande Ronde Subbasin. Plan, design and implement salmonid habitat restoration projects. Project Number 199202604, *Investigate Life History of Spring Chinook Salmon and Summer Steelhead in the Grande Ronde River Basin and Monitor Salmonid Populations and Habitat,* will continue to Investigate the abundance, migration patterns, survival, and life history strategies of spring chinook salmon and summer steelhead from distinct populations and implement fish population and habitat monitoring in the Grande Ronde and Imnaha River basins. Project Number 199403900, *Watershed Restoration Planner,* will continue to provide for a liaison between the Nez Perce Tribe and Wallowa County as well as coordinate watershed restoration efforts in Wallowa County between the Tribe, County, Grande Ronde Model Watershed Program, local landowners, and state and federal agencies. Project Number 199405400, *Characterize the Migratory Patterns, Population Structure, Food Habits, Abundance of Bull Trout from Subbasins in the Blue Mountain Province,* will continue aid in conservation efforts for bull trout, describe their piscivorous nature, assess their population and age structure, explore methods to monitor their abundance, describe their migratory patterns, and monitor the status of populations.
Project Number 199608000, *NE Oregon Wildlife Mitigation Project – "Precious Lands,"* will continue to operate the NE Oregon Wildlife Mitigation Project -- "Precious Lands" to protect, restore, and enhance canyon grassland habitats and associated riparian and forest communities to benefit fish and wildlife. Project Number 199608300, *CTUIR*

Grande Ronde Subbasin Restoration, will continue to protect, enhance, and restore riparian, floodplain, and instream habitat to benefit anadromous fish. Project Number 199702500, *Implement the Wallowa County/Nez Perce Tribe Salmon Habitat Recovery Plan*, will continue to provide the maintenance and/or restoration of salmon habitat through cooperative and voluntary methods is a stated goal in the Wallowa County/Nez Perce Tribe Salmon Habitat Recovery Plan. Funding of this project will help to implement the Plan. Project Number 199800702, *Grande Ronde Supplementation: Lostine River O&M and M&E*, will continue to allow for the operation of adult trapping and juvenile acclimation facilities and conduct monitoring and evaluation in the Lostine River to implement the Lostine component of the Grande Ronde Basin Endemic Spring Chinook Supplementation Program (GRESP). Project Number 199800703, *Facility O&M and Program M&E for Grande Ronde Spring Chinook Salmon and Summer Steelhead*, will continue to develop, implement, and evaluate integrated conventional and captive brood hatchery projects to prevent extinction and stabilize populations of threatened spring chinook salmon and summer steelhead populations in the Grande Ronde River. Project Number 199800704, *Northeast Oregon Hatcheries Implementation (ODFW)*, will continue to work with co-managers to implement the Grande Ronde Endemic Spring Chinook Supplementation Program (GRESCSP). Project Number 199801001, *Grande Ronde Basin Spring Chinook Captive Broodstock Program*, will continue to Rapidly increase numbers of chinook salmon in the Grande Ronde Basin while protecting genetic diversity, and develop and evaluate methodologies for captive broodstock programs. Project Number 199801006, *Captive Broodstock Artificial Propagation*, will continue to implement and evaluate the captive broodstock project through the collection of juvenile salmon from the wild and maintaining them in captivity. Project Number 200002100, *Securing Wildlife Mitigation Sites – Oregon, Ladd Marsh WMA Additions*, will continue to protect and restore wetland and riparian habitats on parcels acquired and added to the Ladd Marsh Wildlife Area.

Eleven new project proposals are recommended for funding in the Grande Ronde River Subbasin (Table 3). Project Number 27003, *Characterize and Assess Wildlife-Habitat Types and structural Conditions for Subbasins within the Blue Mountain Province*, will allow for the development of a fine-scale wildlife habitat assessment for the Blue Mountain Province that will provide critical baseline data for planning and monitoring efforts that is consistent with the NWPPC 's Subbasin Planning process. Project Number 27008, *Fine-scale Wildlife Habitat Assessment for the Blue Mountain Province*, will provide critical baseline data for planning and monitoring efforts that is consistent with the NWPPC 's Subbasin Planning process. Project Number 27008 *Grande Ronde River Riparian Restoration*, will enhance and restore riparian and native vegetation along the Wallowa and Grande Ronde Rivers to reduce sedimentation and improve riparian and instream habitat. Project Number 27011, *Lookingglass Creek Land Purchase for Watershed Protection (spawning and rearing habitat continuity and water quality at Lookingglass Hatchery)*, will protect 2.5 miles of stream and riparian areas in Lookingglass Creek to improve water quality and provide continuity of spawning and rearing areas for spring chinook, summer steelhead, and bulltrout. Project Number 27012, *Restore and Enhance Grande Ronde Valley Deciduous Riparian Habitat*, will protect, restore and enhance deciduous riparian habitat adjacent to the Grande Ronde

River and its tributaries in the Grande Ronde Valley. Project Number 27013, *Grande Ronde River Stream Restoration –LaGrande, Oregon,* will improve fish passage and habitat through the replacement of the headgate structure, establish rock cross vane structures, rock weirs, fill and stabalize scour pool improving habitat, stream bank stabilization and large woody debris placement. Project Number 27018, *Oregon Plan Blue Mountain Province Fish Screening/Fish Passage*, will protect all species of fish by replacing 6 screening systems that do not meet the NMFS design criteria. Project Number 27019, *Adult Salmon Abundance Monitoring*, will implement state-of-the-art technologies to accurately quantify chinook salmon spawner abundance in the Minam River. Adult abundance data would allow a measure of recovery threshold abundance of a listed species (NMFS 2000). Project Number 27020, *Grande Ronde Subbasin Water Right Acquisition Program,* will acquire 3 cfs of existing Grande Ronde Subbasin water rights on a voluntary basis and transfer to instream water rights under Oregon state law; target acquisitions to maximize fulfillment of habitat objectives for instream flows. Project Number 27022, *Wallowa County Culvert Inventory,* will Prioritize on county, state, federal, and private land, culverts that either need maintenance or replacement to meet resource needs. Project Number 27023, *Precious Lands Wildlife Habitat Expansion*, will allow for the expand the operation of the NE Oregon Wildlife Mitigation Project -- "Precious Lands" to protect, restore, and enhance up to 16,500 acres of additional grassland, riparian and ponderosa pine habitat to benefit fish and wildlife. Project Number 27024, *Life History Strategies on Oncorhynchus mykiss; Interactions between Anadromous and Resident Forms,* will aid in conservation efforts for O. mykiss and alternative approaches within hatchery programs, evaluate the relationship between anadromous and resident forms. Project Number 27026, *Investigate Life History of Spring Chinook Salmon and Summer Steelhead in the Grande Ronde River Basin and Monitor Salmonid Populations and Habitat,* is a new project that was originally submitted as an objective under Project Number 199202604. This project will aid in the management and conservation of native fishes, specifically for the *Oncorhynchus nerka* population and its related fishery.

Table 3. Projects recommended for funding in the Grande Ronde River Subbasin.

ProjectID	Title	Sponsor
198402500	Grande Ronde Basin Fish Habitat Enhancement Project	ODFW
198805301	Northeast Oregon Hatchery Master Plan	NPT
198805305	Northeast Oregon Hatcheries Planning (ODFW)	ODFW
199202601	Implement the Grande Ronde Model Watershed Program Administration and habitat Restoration Projects	GPMWP
199202604	Investigate Life History of Spring Chinook Salmon and Summer Steelhead in the Grande Ronde River Basin and Monitor Salmonid Populations and Habitat	ODFW
199403900	Watershed Restoration Planner	NPT
199405400	Characterize the Migratory Patterns, Population Structure, Food Habits, Abundance of Bull Trout from Subbasins in the Blue Mountain Province	ODFW
199608000	NE Oregon Wildlife Mitigation Project – “Precious Lands”	NPT
199608300	CTUIR Grande Ronde Subbasin Restoration	CTUIR
199702500	Implement the Wallowa County/Nez Perce Tribe Salmon Habitat Recovery Plan	NPT
199800702	Grande Ronde Supplementation: Lostine River O&M and M&E,	NPT
199800703	Characterize and Assess Wildlife-Habitat Types and structural Conditions for Subbasins within the Blue Mountain Province	CTUIR

ProjectID	Title	Sponsor
199800704	Northeast Oregon Hatcheries Implementation (ODFW)	ODFW
199801001	Grande Ronde Basin Spring Chinook Captive Broodstock Program	ODFW
199801006	Captive Broodstock Artificial Propagation	NPT
200002100	Securing Wildlife Mitigation Sites – Oregon, Ladd Marsh WMA Additions,	ODFW
27003	Characterize and Assess Wildlife-Habitat Types and structural Conditions for Subbasins within the Blue Mountain Province	NHI
27008	Fine-scale Wildlife Habitat Assessment for the Blue Mountain Province	BLM
27011	Lookingglass Creek Land Purchase for Watershed Protection (spawning and rearing habitat continuity and water quality at Lookingglass Hatchery	CTUIR
27012	Restore and Enhance Grande Ronde Valley Deciduous Riparian Habitat	ODFW
27013	Grande Ronde River Stream Restoration –LaGrande, Oregon	UCSWCD
27018	Oregon Plan Blue Mountain Province Fish Screening/Fish Passage	ODFW
27019	Adult Salmon Abundance Monitoring,	NPT/PNNL
27020	Grande Ronde Subbasin Water Right Acquisition Program	OWT
27022	Wallowa County Culvert Inventory	NPT
27023	Precious lands Wildlife Habitat Expansion	NPT
27024	Life History Strategies on Oncorhynchus mykiss; Interactions between Anadromous and Resident Forms	ODFW
27026	Investigate Life History of Spring Chinook Salmon and Summer Steelhead in the Grande Ronde River Basin and Monitor Salmonid Populations and Habitat	ODFW

The suite of recommended project proposals addresses the key needs identified in the Grande Ronde River Subbasin Summary including:

- Replace culverts that present passage barriers and sediment sources based on a prioritized assessment of existing installations.
- Implement restoration efforts designed to achieve the site potential shade and other temperature surrogates identified in the appropriate TMDLs for the subbasin.
- Reduce nutrient pollution to achieve the percent reduction targets identified in the appropriate TMDLs for the subbasin.
- Using existing assessments, seek out opportunities for cooperative habitat restoration and enhancement projects on public and private land.
- Restore, protect, and create riparian, wetland, and floodplain areas within the subbasin and establish connectivity.
- Restore in-stream habitat to natural conditions and protect as much as possible to provide suitable holding, spawning, and rearing areas for anadromous and resident fish.
- Reduce stream temperature, sediment and embeddedness levels to levels meeting appropriate state standards.
- Restore and augment streamflows at critical times using (but not limited to) water right leases, transfers, or purchases, and improved irrigation efficiency.
- Reduce stream temperatures where appropriate and when feasible.
- Consider additional gauging stations to monitor improvement in flows and temperatures as habitat improvement projects are completed.
- Upgrade existing gauging stations to improve access to real-time streamflow and water temperature data.
- Reduce sediment, fertilizer and pesticide loading from agricultural practices.

- Reduce the impacts of confined animals with regard to waste and sediment production.
- Reduce stormwater, road, and urban/suburban sewage impacts to aquatic resources.
- Address streambank instability issues where they are defined or can be shown to be a potential problem.
- Acquire water rights when opportunities arise to help restore more natural flows to streams within the subbasin.
- Reduce road densities and their associated impacts to watershed functions by supporting planned road closures on public land and encouraging closure of other roads.
- Implement management plans designed to meet established TMDLs and achieve water quality standards.
- Continue long-term water temperature monitoring throughout the subbasin.
- Continue compliance and effectiveness monitoring on federal and private land use activities (e.g., mining, grazing, logging, and pollution sources).
- Improve understanding of the interaction between ground and surface water sources, especially as it pertains to switching irrigation from surface water to wells.
- Need to characterize rearing and spawning habitats and monitor changes in amount and distribution.
- Need to evaluate the improvements to adult and juvenile habitat capacity to evaluate success of fish habitat projects
- Continue to develop and update watershed assessments at multiple scales (i.e. transect, reach, watershed) to facilitate integrated resource management and planning efforts. Ensure that databases used for the development of assessments are sufficiently maintained and available to relevant entities.

Summer Steelhead

Hatchery

- Complete genetic profiling within the subbasin to determine population structure, gene flow and genetic similarity to support integration of hatchery recovery/conservation and harvest augmentation goals.
- Continue gene conservation efforts (cryopreservation) for steelhead to preserve genetic diversity within the subbasin.
- Redevelop hatchery broodstocks (using existing or endemic stocks) and programs as necessary to meet conservation, natural production and harvest augmentation goals.
- Need to develop new methods to minimize the impact of hatchery production activities on endemic stocks.
- Need to evaluate hatchery production programs to assure that they meet LSRCP compensation goals.
- Need to develop Annual Operating Plans and write annual reports for all projects.

Monitoring & Evaluation

- Continue and expand efforts to quantify juvenile abundance and smolt-to-adult return rates (SAR) of wild/natural and hatchery reared steelhead.

- Continue and expand monitoring of hatchery supplementation and interactions with natural fish.
- Need to determine genetic population structure to define steelhead sub-populations within the subbasin.
- Use improved statistical sampling techniques to ensure current spawning ground surveys are an appropriate measure of productivity. Using these techniques, reassess escapement and spawner/recruitment goals.
- Need to calculate returns per spawner from index surveys to determine if this relationship is improving as smolt passage facilities are modified at Columbia and Snake River dams. Consider alternative approaches to assess population status.
- Need to determine life history and movement patterns of steelhead including assessment of adult holding areas, juvenile rearing areas, and juvenile migration patterns.
- Need to determine smolt-to-adult survival and survival factors throughout the entire life cycle of summer steelhead, including separating freshwater from ocean survival.
- Need to determine extent of hatchery straying within the subbasin to control potentially adverse genetic effects on the endemic population(s).
- Need to monitor harvest of steelhead stocks.
- Need to determine extent of summer steelhead distribution within the subbasin at various life history stages.
- Need to monitor summer steelhead by examining drainage escapements and population trends.
- Need to determine life history composition of *Oncorhynchus mykiss* including the role of resident and anadromous forms to basin-wide production.
- Need to evaluate the success of artificial production programs for restoring fisheries and increasing natural spawning populations.

Chinook Salmon (Includes all races unless specifically noted)

Hatchery

- Periodically conduct genetic profiling (i.e., population structure, gene flow and genetic similarity) to monitor influence of hatchery stocks on recovery/conservation of natural populations.
- Continue gene conservation efforts (e.g., Captive Broodstock Program and cryopreservation) for spring and summer chinook salmon in the subbasin.
- Develop and implement a plan to reintroduce naturally spawning spring chinook salmon to Lookingglass Creek. Initial step must include addition of water treatment capabilities at Lookingglass Hatchery. Co-managers will work together to develop a management plan to fulfill this need.
- Need to continue implementation of Grande Ronde Conventional and Captive Broodstock Hatchery Programs. To support this effort, complete NEOH planning and implementation of facility and program needs in the Grande Ronde subbasin to meet production changes resulting from ESA listings and to meet basin goals.

- Continue evaluation of feasibility and desirability of hatchery supplementation releases of fall chinook salmon in the lower Grande Ronde River.
- Develop and implement, if appropriate, a plan to supplement fall chinook populations in the lower Grande Ronde River and reintroduce fall chinook into historic habitat.
- Need to continue to participate in planning, consultation and ESA permitting activities pertaining to Grande Ronde Basin chinook salmon populations.
- Need to collect sufficient numbers of parr and adults for the Grande Ronde Captive and Conventional Broodstock Programs, respectively.
- Need to monitor health of chinook salmon in captivity and develop new treatments and preventative measures for bacterial kidney disease.
- Need to develop Annual Operating Plans and write annual reports for all projects.
- Need to develop adult collection weirs on the Lostine, upper Grande Ronde rivers and Catherine Creek that are effective across the entire potential hydrograph.
- Need to improve existing acclimation facilities to meet program goals.
- Need to modify existing and/or construct additional hatchery facilities to remove current facility limitations to meeting Grande Ronde hatchery production goals.

Monitoring & Evaluation

- Continue and expand efforts to monitor the effectiveness of the chinook salmon captive broodstock and LSRCP and NEOH artificial production programs.
- Quantify mortality rates and straying of adult chinook salmon from Lower Granite Dam to natural production areas.
- Need to determine smolt-to-adult survival, survival factors, spawning escapement and life history characteristics of natural and hatchery origin spawning populations.
- Need to monitor smolt and adult survival and migration characteristics and calculate number of returns per spawner to determine if productivity of natural and hatchery populations is affected by modifications of dams on Columbia and Snake rivers.
- Need to monitor spring chinook salmon status by examining population trends and develop modeling and monitoring “tools” to determine stray rates and impacts of hatchery-produced chinook salmon to chinook salmon populations in Minam and Wenaha rivers.
- Need to determine life history and movement patterns of spring chinook salmon within the Grande Ronde Subbasin, including assessment of adult holding areas, juvenile rearing areas, and juvenile migration patterns.
- Need to evaluate effectiveness of experimental hatchery rearing and release treatments.
- Need to evaluate the success of Captive and Conventional broodstock programs for restoring fisheries and increasing endemic stocks of spring chinook salmon in Catherine Creek, Lostine River and upper Grande Ronde River. Use continued spawning ground surveys, life history monitoring, fisheries monitoring and other techniques.
- Need to monitor and determine success of restoring recreational and tribal fisheries in Grande Ronde Basin.
- Need to determine relative reproductive success of hatchery fish spawning in nature.
- Need to monitor spawning distribution and recolonization of vacant habitat.

- Need to investigate the development of run size estimate models for harvest allocation decisions.
- Need to continue to participate in planning, consultation and ESA permitting activities pertaining to Grande Ronde Basin chinook salmon populations.
- Need to determine seasonal and reach specific survival of smolts in the subbasin.
- Gather improved population status information for chinook salmon including adult spawner abundance, spawner to spawner ratios, spawner distribution and timing.
- Monitor and compare life histories of hatchery and wild spring chinook salmon and their interactions (e.g., feeding, spawning).
- Determine catch distribution and contribution of Grande Ronde subbasin spring chinook salmon to ocean and freshwater fisheries.

Sockeye Salmon

- Develop and implement, if appropriate, a plan to reintroduce sockeye salmon to the Grande Ronde River subbasin.

Bull Trout

- Collect life history, distribution, and homing behavior information of bull trout within the subbasin and in relevant core areas.
- Evaluate connectivity, the degree of interchange and gene flow between populations throughout the subbasin.
- Monitor core populations to establish trends and measure population response to recovery and restoration activities.
- Determine the extent, magnitude and nature of nonnative species interactions and hybridization to better define treatment options.
- Continue presence/absence surveys to locate bull trout populations throughout the subbasin.
- Assess the relationship between resident and migratory life history forms.
- Evaluate ecological interactions between bull trout and anadromous salmonids.
- Determine survival rates of bull trout between life stages and assess productivity
- Determine water temperature associations of migratory bull trout.

Wildlife / Terrestrial Needs

Habitat Diversity

- Acquire lands with high priority habitat components (e.g., aspen stands) when opportunities arise for improved habitat protection, restoration, and connectivity and for mitigation of lost wildlife habitat (land purchases, land trusts, conservation easements, landowner cooperative agreements, exchanges).
- Implement and (where applicable) continue Integrated Pest Management programs to limit the spread of noxious weeds.
- Assist landowners with management of land holdings and easements for restoration and enhancement of wildlife habitat.

- Mitigate hydropower impacts on loss of wildlife and wildlife habitat and indirect impacts within the subbasin, based on species-specific habitat units.
- Conduct inventories of rare plant communities in the subbasin.
- Participate in threatened, endangered, and sensitive species recovery or conservation strategy efforts in the subbasin.

Riparian Communities

- Acquire lands when opportunities arise for improved habitat protection, restoration, and connectivity for riparian communities and for mitigation of lost wildlife habitat for riparian associated species (land purchases, land trusts, conservation easements, landowner cooperative agreements, exchanges).
- Protect, restore, and create wetland and riparian habitat, especially in lower elevation riparian areas.
- Participate in cooperative stewardship programs to foster riparian community protection.
- Strive to achieve site potential shade targets identified in TMDLs.

Ponderosa Pine Communities

- Acquire lands when opportunities arise for improved habitat protection, restoration, and connectivity for ponderosa pine communities and for mitigation of lost wildlife habitat for ponderosa pine associated species (land purchases, land trusts, conservation easements, landowner cooperative agreements, exchanges).
- Work with landowners and managers to restore ponderosa pine communities.
- Create and maintain large diameter snags in ponderosa pine communities.
- Participate in cooperative stewardship programs to foster protection of ponderosa pine communities.

Native Prairie Habitats

- Acquire lands when opportunities arise for improved habitat protection, restoration, and connectivity for native prairie habitats and for mitigation of lost wildlife habitat for native prairie associated species (land purchases, land trusts, conservation easements, landowner cooperative agreements, exchanges).
- Work with landowners and managers to restore native prairie grasslands.
- Support development of native plant nurseries for propagation and restoration.
- Support efforts to seed-bank native prairie species.
- Support continued restoration of native prairie fauna and flora such as sharp-tailed grouse and Spalding's catchfly.
- Develop conservation plans for federally listed plant species.

Imnaha River Subbasin

One existing projects is recommended for continued funding in the Imnaha River Subbasin (Table 4). Project Number 199701501, *Imnaha Smolt Survival and smolt to Adult Return Rate Quantification*, will quantify juvenile emigrant abundance, determine smolt survival from the Imnaha River to Lower Granite and McNary dams, and quantify

smolt-to-adult return rate (SAR) of wild/natural chinook salmon at Lower Granite Dam and back to the Imnaha River

Two new project proposals are recommended for funding in the Imnaha River Subbasin (Table 4). Project Number 27017, *Bull trout Population Assessment and Life History Characteristics in Association with Habitat Quality and Land Use: Template for Recovery,* will assess bull trout population density, abundance and life history charateristics for core areas of the Imnaha Subbasin and evaluate relationships to habitat quality and land use based on field evalautions and mark/recapture techniques. Project Number 27021, *Adult Steelhead Status Monitoring-Imnaha River Subbasin*, will quantify adult steelhead abundance, population growth rate, spatial distribution, and genetic stock structure in all tributaries of the Imnaha River subbasin through the operation of adult spawner escapement monitoring facilities

Table 4. Projects recommended for funding in the Imnaha River Subbasin.

ProjectID	Title	Sponsor
199701501	Imnaha Smolt Survival and smolt to Adult Return Rate Quantification	NPT
27017	Bull trout Population Assessment and Life History Characteristics in Association with Habitat Quality and Land Use: Template for Recovery	USGS
27021	Adult Steelhead Status Monitoring-Imnaha River Subbasin	NPT

The suite of recommended project proposals addresses the key needs identified in the Imnaha River Subbasin Summary including:

Summer Steelhead

Hatchery

- Complete genetic profiling within the subbasin to determine population structure, gene flow and genetic diversity within the subbasin.
- Continue gene conservation efforts (cryopreservation) for steelhead to preserve genetic diversity within the subbasin.
- Redevelop hatchery broodstocks as necessary to meet conservation and harvest augmentation goals.
- Need to develop new methods to minimize the impact of hatchery production activities on endemic stocks.
- Need to evaluate hatchery production programs to assure that they meet LSRCP compensation goals.
- Need to develop Annual Operating Plans and write annual reports for all projects.

Monitoring & Evaluation

- Continue and expand efforts to quantify juvenile abundance and smolt-to-adult return rates (SAR) of wild/natural and hatchery reared steelhead.
- Continue and expand monitoring of hatchery supplementation and interactions with natural fish.
- Need to determine genetic population structure to define steelhead sub-populations within the subbasin.

- Use improved statistical sampling techniques to ensure current spawning ground surveys are an appropriate measure of productivity. Using these techniques, reassess escapement and spawner/recruitment goals.
- Need to calculate returns per spawner from index surveys to determine if this relationship is improving as smolt passage facilities are modified at Columbia and Snake River dams. Consider alternative approaches to assess population status.
- Need to determine life history and movement patterns of steelhead including assessment of adult holding areas, juvenile rearing areas, and juvenile migration patterns.
- Need to determine smolt-to-adult survival and survival factors throughout the entire life cycle of summer steelhead, including separating freshwater from ocean survival.
- Need to determine extent of hatchery straying within the subbasin to control potentially adverse genetic effects on the endemic population(s).
- Need to monitor harvest of steelhead stocks.
- Need to determine extent of summer steelhead distribution within the subbasin at various life history stages.
- Need to monitor summer steelhead by examining drainage escapements and population trends.
- Need to determine life history composition of *Oncorhynchus mykiss* including the role of resident and anadromous forms to basin-wide production.
- Need to evaluate the success of artificial production programs for restoring fisheries and increasing natural spawning populations.

Chinook Salmon (Includes all races unless specifically noted)

Hatchery

- Periodically conduct genetic profiling (i.e., population structure, gene flow and genetic similarity) to monitor influence of hatchery stocks on recovery/conservation of natural populations.
- Continue gene conservation efforts (cryopreservation) for spring and summer chinook salmon in the subbasin.
- Complete NEOH planning and implementation of facility needs in Imnaha subbasin to meet production changes resulting from ESA listings and to meet basin goals.
- Develop and implement, if appropriate, a plan to supplement fall chinook populations in the lower Imnaha River and reintroduce fall chinook into historic habitat.
- Need to finalize and implement Conventional Broodstock and Captive Broodstock program sliding scales for the management of these programs.
- Need to continue to participate in planning, consultation and ESA permitting activities pertaining to Imnaha Basin chinook salmon populations.
- Need to collect sufficient numbers of parr and adults for the Imnaha Captive and Conventional Broodstock Programs, respectively.
- Need to monitor health of chinook salmon in captivity and develop new treatments and preventative measures for bacterial kidney disease.
- Need to develop Annual Operating Plans and write annual reports for all projects.

- Need to improve existing acclimation facilities to meet program goals.
- Need to modify existing and/or construct additional hatchery facilities to remove current facility limitations to meeting Imnaha hatchery production goals.

Monitoring & Evaluation

- Continue and expand efforts to monitor the effectiveness of the chinook salmon captive broodstock and LSRCP and NEOH artificial production programs.
- Quantify mortality rates and straying of adult chinook salmon from Lower Granite Dam to natural production areas.
- Need to determine smolt-to-adult survival, survival factors, spawning escapement and life history characteristics of natural and hatchery origin spawning populations.
- Need to monitor smolt and adult survival and migration characteristics and calculate number of returns per spawner to determine if productivity of natural and hatchery populations is affected by modifications of dams on Columbia and Snake rivers.
- Need to monitor spring chinook salmon status by examining population trends and develop modeling and monitoring "tools" to determine stray rates and impacts of hatchery-produced chinook salmon to chinook salmon populations in the Imnaha River.
- Need to determine life history and movement patterns of spring chinook salmon within the Imnaha Subbasin, including assessment of adult holding areas, juvenile rearing areas, and juvenile migration patterns.
- Need to evaluate effectiveness of experimental hatchery rearing and release treatments.
- Need to evaluate the success of Captive and Conventional broodstock programs for restoring fisheries and increasing endemic stocks of spring chinook salmon in Big Sheep and the mainstem Imnaha River. Use continued spawning ground surveys, life history monitoring, fisheries monitoring and other techniques.
- Need to monitor and determine success of restoring recreational and tribal fisheries in Imnaha Basin.
- Need to determine relative reproductive success of hatchery fish spawning in nature.
- Need to monitor spawning distribution and recolonization of vacant habitat.
- Need to investigate the development of run size estimate models for harvest allocation decisions.
- Need to continue to participate in planning, consultation and ESA permitting activities pertaining to Imnaha Basin chinook salmon populations.
- Need to determine seasonal and reach specific survival of smolts in the subbasin.

Bull Trout

- Collect life history, distribution, and homing behavior information of bull trout within the subbasin and in relevant core areas.
- Evaluate connectivity and the degree of interchange between populations throughout the subbasin. Reestablish connectivity of populations affected by water diversions if feasible.

- Monitor core populations to establish trends and measure population response to recovery and restoration activities.
- Determine the extent and magnitude of nonnative species interaction and hybridization to better define treatment options.
- Continue presence/absence surveys to locate bull trout populations throughout the subbasin.
- Assess the relationship between resident and migratory life history forms.
- Evaluate ecological interactions between bull trout and anadromous salmonids.
- Determine survival rates of bull trout between life stages and assess productivity.
- Determine water temperature associations of migratory bull trout.

Snake River–Hells Canyon Subbasin

Four existing projects are recommended for continued funding in the Snake River-Hells Canyon Subbasin (Table 5). Project Number 199700900, *Evaluate Potential Means of Rebuilding Sturgeon Populations in the Snake River between Lower Granite and Hells Canyon Dams*, will continue to evaluate the need for and identify potential measures to protect and restore white sturgeon between Hells Canyon and Lower Granite dams to obtain a sustainable annual harvest. Project Number 199801003, *Spawning Distribution of Snake River Chinook Salmon*, will continue to monitor the status and distribution of Snake River fall chinook salmon, determine if yearling-released supplemented hatchery fish spawn where intended, and gather information on the spawning distribution of fish released as subyearlings and natural fish. Project Number 199801004, *Monitor and Evaluate Yearling Snake River Fall Chinook Released Upstream of Lower Granite Dam*, will continue to monitor and evaluate survival and performance of yearling fall chinook from Pittsburg Landing, Big Canyon, and Captain John acclimation facilities (Project 199801005) to maximize success of the fall chinook supplementation program above Lower Granite Dam. Project Number 199801005, *Pittsburg Landing (199801007), Big canyon (199801008) Fall Chinook Acclimation Facilities*, will continue to supplement natural production of Snake River fall chinook above Lower Granite Dam through acclimation and final rearing of Lyons Ferry yearling and subyearlings at two sites on the Snake River and one site on the Clearwater River.

Three new project proposals are recommended for funding in the Snake River-Hells Canyon Subbasin (Table 5). Project Number 27010, *Snake River Hells Canyon Tributary Enhancements*, will protect and enhance important aquatic and terrestrial habitats in Snake River tributaries in the Idaho portion of the Snake Hells Canyon subbasin. Project Number 27015, *Develop Long-term Management Plan for Snake River (Hells Canyon Reach) White Sturgeon*, will cooperate with the Idaho Power Company and the Nez Perce Tribe to develop a long-term management plan for white sturgeon in the Hells Canyon reach of the Snake River. Project Number 27016, *Evaluate the Effects of Hyporheic Discharge on Egg Pocket Water Temperature in Snake River Fall Chinook Salmon Spawning Areas*, will evaluate the relationships among river discharge, hyporheic zone characteristics, and egg pocket water temperature in Snake River fall chinook

salmon spawning areas as well as evaluate the potential for improving Snake River fall chinook salmon smolt survival

Table 5 – Projects recommended for funding in the Snake River-Hells Canyon Subbasin.

ProjectID	Title	Sponsor
199700900	Evaluate Potential Means of Rebuilding Sturgeon Populations in the Snake River between Lower Granite and Hells Canyon Dams	NPT
199801003	Spawning Distribution of Snake River Chinook Salmon	USFWS
199801004	Monitor and Evaluate Yearling Snake River Fall Chinook Released Upstream of Lower Granite Dam	NPT
199801005	Pittsburg Landing (199801007), Big canyon (199801008) Fall Chinook Acclimation Facilities	NPT
27010	Snake River Hells Canyon Tributary Enhancements	IDFG
27015	Develop Long-term Management Plan for Snake River (Hells Canyon Reach) White Sturgeon	IDFG
27016	Evaluate the Effects of Hyporheic Discharge on Egg Pocket Water Temperature in Snake River Fall Chinook Salmon Spawning Area	PNNL

The suite of recommended project proposals addresses the key needs identified in the Snake River-Hells Canyon Subbasin Summary including:

- Ensure natural river strategy alternative is implemented as required for recovery of listed anadromous species.
- Improve and maintain quality control of fish marking programs.
- Continue coordinated temperature monitoring throughout the subbasin. Identify spatial and temporal gaps, establish additional flow and temperature gauging stations and upgrade existing ones to provide real-time data, and expand longitudinal profiles. Fish distribution and habitat quality are highly influenced by water temperature. This parameter most be monitored in both wilderness and managed watersheds to provide baselines to evaluate population recovery and watershed restoration activities.
- Reduce stream temperature, sediment and embeddedness to levels meeting appropriate standards for supporting self-sustaining populations of aquatic species. This is the core of the objectives of the TMDL process.
- Restore and augment streamflows at critical times using (but not limited to) water right leases, transfers, or purchases, and improved irrigation efficiency.
- Reduce impacts from agriculatural sediment, fertilizer, pesticide loading, confined animal operations, stormwater and road runoff and wastewater effluent.
- Protect and restore riparian and instream habitat structure, form and function to provide suitable holding, spawning and rearing areas for anadromous and resident fish.
- Protect, restore and create riparian, wetland, and floodplain areas within the subbasin and establish connectivity.
- Investigate connectivity between populations and the role of natural and artificial barriers in population isolation.
- Replace or remove culverts based on past or ongoing assessments.
- Appropriate target areas and actions should include those which will
- Restore, protect, and create riparian, wetland and floodplain areas within the subbasin

- Restore in-stream habitat to conditions that provide suitable holding, spawning, and rearing areas for anadromous and resident fish
- Reduce stream temperature, sediment and embeddedness levels to levels meeting appropriate state standards
- Reduce stream temperatures where appropriate and when feasible
- Reduce sediment, fertilizer and pesticide loading from agricultural practices
- Address streambank instability issues where they are defined or can be shown to be a potential problem
- Continue gene conservation efforts (cryopreservation) for fall chinook salmon and steelhead in the subbasin.
- Continue and expand investigations of interactions between hatchery and wild chinook, steelhead, and resident fish.
- Quantify the types and extent (amount) of straying by chinook and steelhead occurring within subbasins, within the Blue Mountain Province, and within designated ESU's.
- Complete a province-wide chinook salmon genetic assessment which will provide a baseline for monitoring hactchery introgression into wild populations.
- Continue and expand genetic profiling to define steelhead sub-populations within the subbasin to determine geographic structure, gene flow, genetic similarity and hatchery introgression into wild populations.

Chinook Salmon (Includes all races unless specifically noted)

- Gather improved population status information for wild, natural and hatchery chinook salmon including life history characteristics, juvenile and adult migration patterns, juvenile rearing areas, adult holding areas, survival factors, smolt-to-adult survival, adult spawner abundance, distribution, timing and parentage, spawning success, and spawner to spawner ratios. Improvements should include maximizing the use of spatial technology (GIS) in data collection. A mechanism is through continued and expanded Idaho Supplementation Studies and Idaho Natural Production Monitoring Program within Idaho.
- Calculate returns per spawner from index surveys to determine if this relationship is improving as smolt passage facilities are modified at Columbia River dams.
- Monitor spring chinook by examining population trends and develop modeling and monitoring tools to determine out-of-basin impacts to Middle Snake chinook
- Continue evaluating reintroduction efforts for fall chinook salmon.
- Complete genetic profiling within the subbasin to determine population structure, gene flow and genetic similarity to support integration of hatchery recovery/conservation and harvest augmentation goals.
- Continue natural production monitoring (i.e. returns per spawner) in order to gauge improvements resulting from hatchery programs, habitat improvements, and smolt passage facilities at Columbia River dams. Look for ways to better integrate existing chinook monitoring with basin research projects.

- Continue LSRCP hatchery monitoring and evaluation to determine hatchery reared chinook performance and spawning ground surveys and provide for applied adaptive management.
- Continue and enhance gene conservation efforts through expansion of the germplasm repository.
- Continue gene conservation efforts (cryopreservation) for spring and summer chinook salmon in the subbasin.
- Quantify mortality rates and straying of adult chinook salmon from Lower Granite Dam to natural production areas.
- Complete NEOH planning and implementation of facility needs in the Snake Hells Canyon subbasin to meet production changes resulting from ESA listings and to meet subbasin goals.
- Externally mark all hatchery fish to facilitate determination of run composition at Lower Granite Dam and determination of hatchery and wild escapements and progress towards NMFS recovery standards.

Summer Steelhead

- Complete genetic profiling within the subbasin to determine population structure, gene flow and genetic similarity to support integration of hatchery recovery/conservation and harvest augmentation goals.
- Continue Natural Production Monitoring through the implementation of the following:
- Collect population status information for wild steelhead including adult spawner abundance, spawner to spawner ratios, spawning locations, and spawning timing
- Validate index areas for summer steelhead to ensure they are appropriate measures of productivity
- Calculate returns per spawner from index surveys to determine if this relationship is improving as smolt passage facilities are modified at Columbia River dams. Consider alternative approaches to assessing population status
- Continue and expand efforts to quantify juvenile abundance and smolt-to-adult return rates (SAR) of wild/natural and hatchery reared steelhead within the subbasin through the Smolt Monitoring Project Studies
- Monitor adult movement to determine if and where passage impediments exist within the basin for summer steelhead
- Investigate distribution and abundance of redds, diversity of life history traits, and genetic composition of wild steelhead
- Continue gene conservation efforts (cryopreservation) for steelhead to preserve genetic diversity within the subbasin.
- Redevelop hatchery broodstock as necessary to meet hatchery conservation and harvest augmentation goals.
- Determine anadromous/resident life history relationship for O. mykiss.
- Continue and expand monitoring of hatchery supplementation and interactions with natural fish.

- Gather improved wild, natural, and hatchery A-run and B-run steelhead population status information including tributary specific life history characteristics, juvenile and adult migration patterns, juvenile rearing areas, adult holding areas, survival factors, smolt-to-adult survival, adult spawner abundance, distribution, timing and parentage, spawning success, and spawner to spawner ratios. Improvements should include maximizing the use of spatial technology (GIS) in data collection. A mechanism is through continued and expanded Idaho Supplementation Studies and Idaho Natural Production Monitoring Program within Idaho.
- Determine the efficacy of using dorsal fin erosion to identify un-marked hatchery steelhead.
- Evaluate the effects of hooking mortality on wild steelhead in the Snake River.

Monitoring, Evaluation and Assessment

- Develop appropriate intensity and spatial distribution of monitoring to estimate parr carrying capacity to compliment and enhance Natural Production Monitoring.
- Refine aquatic life beneficial use monitoring and assessment methods to better focus restoration efforts.
- Continue Nez Perce Tribal Hatchery Monitoring and Evaluation to determine hatchery chinook performance, natural production responses, competitive interactions, harvest management and provide for applied adaptive management.
- Continue Lower Snake River Compensation Hatchery Monitoring and Evaluation to determine hatchery chinook and steelhead performance, natural production responses, competitive interactions, harvest management and provide for applied adaptive management.
- Establish or continue monitoring and evaluation efforts for all new or existing projects (respectively). Efforts should be consistent and repeatable between entities and coordinated at a subbasin scale so as to maximize effectiveness and minimize redundancy.
- Continue to develop and update watershed assessments at multiple scales (i.e. transect, reach, watershed) to facilitate integrated resource management and planning efforts. Ensure that databases used for the development of assessments are sufficiently maintained and available to relevant entities.
- Establish a centralized data repository.
- Develop Federal Recovery Plans for threatened and endangered species to provide recovery guidance for state, tribal and local entities.
- Continue coordinated temperature monitoring throughout the subbasin
- Periodically conduct longitudinal temperature profiles (such as FLIR) to better monitor temperature changes, while conducting long-term annual monitoring at point sites.
- Upgrade existing gauging stations or construct new stations to improve access to real-time streamflow and water temperature data and monitor improvement in flows and temperatures as habitat projects are completed
- Continue WDFW monitoring of LSRCP fall chinook releases and returns and evaluate direct stream releases vs. acclimated releases.

- Develop monitoring, evaluation and coordination of the Idaho Power County fall chinook mitigation program and returns to the subbasin. Evaluate direct stream releases and the potential need for acclimation.

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