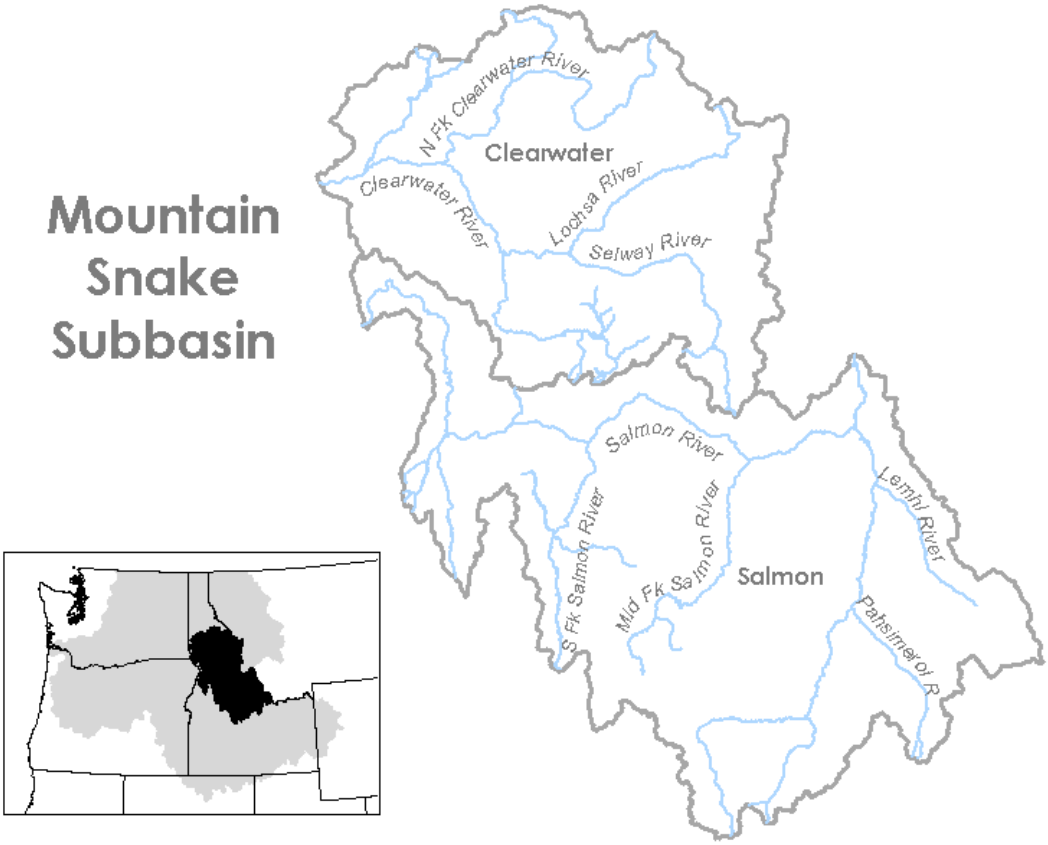
Draft FY 2002-2004 Mountain Snake Province Work Plan



Prepared for the
Northwest Power Planning Council

by the
Columbia Basin Fish and Wildlife Authority

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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 Mountain Snake Province was the fifth 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 96 project proposals were submitted and reviewed. The recommended projects address needs identified in the subbasin summaries and include 45 new and 38 ongoing projects totaling $61 million

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

Geographic Description

The Mountain Snake Province (Figure 1) is located entirely in central Idaho.

The Clearwater Subbasin is one of only two subbasins included in the Mountain-Snake province defined under the NWPPC's fish and wildlife program. Due to its substantial size, eight assessment units (AUs) were defined to assist in characterizing broad-scale areas within the Clearwater subbasin: Lower Clearwater, Lower North Fork, Upper North Fork, Lolo/Middle Fork, Lower Selway, Lochsa, Upper Selway/Moose

Creek, and South Fork Clearwater. Definition of AUs was based on subjective review of six landscape level characteristics known to influence ecosystem resources at broad landscape scales: lithology, precipitation, elevation, landforms, vegetation and ownership patterns. Each AU is similar in size to a 4th code Hydrologic Unit Code (HUC).

The Clearwater River drains approximately a 9,645 square mile area and contributes approximately one-third the flow of the Snake River and 10% of the flow of the Columbia River system annually (U.S. Forest Service 1969, cited in Maughn 1972). The subbasin extends approximately 100 miles north to south and 120 miles east to west (Maughan 1972). There are four major tributaries that drain into the mainstem Clearwater River : the Lochsa, Selway, South Fork Clearwater, and North Fork Clearwater Rivers.

The Salmon Subbasin encompasses 10 major watersheds. The Salmon River flows 410 miles north and west through central Idaho to join the Snake River in lower Hells Canyon. The Salmon is one of the largest subbasins in the Columbia River Basin and encompasses some of its most pristine terrestrial and aquatic temperate montane ecosystems. The Salmon Subbasin covers approximately 14 thousand square miles, 16.7 percent of the land area of Idaho. Ten major hydrologic units (watersheds) occur within the subbasin: the Upper Salmon, Pahsimeroi, Middle Salmon-Panther, Lemhi, Upper Middle Fork Salmon, Lower Middle Fork Salmon, South Fork Salmon, Lower Salmon, and Little Salmon watersheds.

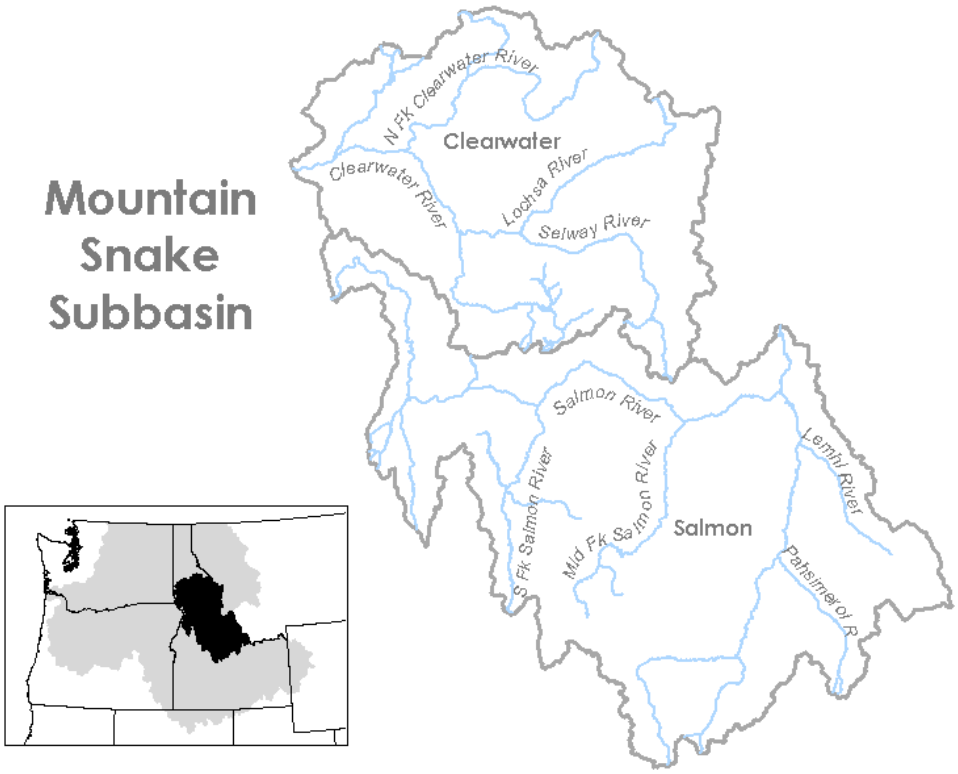

Figure 1. Mountain Snake Province.

Project Review Process

Subbasin Summaries

The Mountain Snake Province Review was conducted separately in the Clearwater and Salmon Subbasins. The Clearwater Subbasin review was initiated on March 15-16, 2001 in Lewiston, Idaho. The Salmon Subbasin review was initiated at a March 22-23, 2001, meeting in Boise, Idaho. 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 Mountain Snake Province were completed in May 2001. The BPA issued the solicitation for project proposals for the Mountain Snake 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 95 project proposals for the Mountain Snake 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

The ISRP, subbasin teams, fish and wildlife managers, the CBFWA province review team and other stakeholders toured the Clearwater Subbasin on August 13-14 and the Salmon Subbasin on August 27-29 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

Project sponsors presented their proposals to the ISRP and fish and wildlife managers in the Clearwater Subbasin on August 15-16 and the Salmon Subbasin on August 29-31. 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 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.

Preliminary ISRP Report

On September 28, 2001, the ISRP released a Preliminary Review of Fiscal Year 2002 Project Proposals for the Blue Mountain and Mountain Snake Provinces (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 22-25, 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. Every effort was made to be consistent among all project proposals reviewed. 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)?

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**

Technical Criteria	
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**

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 96 project proposals were reviewed in the Mountain Snake Province (39 ongoing projects and 57 new proposals, Appendix A). Eight projects were either deferred or withdrawn from the review process. These projects included:

- Project Proposal Number 28054, *Evaluation of Pisces Fish Protective Guidance and Monitoring System*, was submitted in the wrong geographical province. The project sponsors have indicated that they will resubmit the project in the Middle Snake Province.
- Project Proposal Number 28035, *Geomorphic Controls on Watershed-Scale Availability of Chinook Salmon Spawning Habitat in the Salmon River*, proposed an expansion of work ongoing under Objective 4 of Project Number 199902000. The tasks in this new project should be incorporated into the ongoing proposal in order to implement the tasks. The review comments for Project Number 199902000 identify the specific modifications necessary to incorporate the high priority tasks.
- Project Number 28014, *Bull trout population assessment and life history characteristics in association with habitat quality and land use: template for recovery planning*, was not reviewed. Per the ISRP's request, the sponsors have resubmitted the proposal for review in the Imnaha Subbasin in the Blue Mountain Province (Proposal 27017).
- Project Number 28012, *Four-Step Safety-Net Plan for Upper Lochsa River B-Run Steelhead*; Project Number 28015, *Benefit/Risk Analysis to Promote Long-Term Persistence of Chinook Salmon in the Middle Fork Salmon River*; Project Number 28055, *Four-Step Safety-Net Plan for Upper Lochsa River B-Run Steelhead*; Project Number 28056, *Four-Step Safety-Net Plan for South Fork Salmon River B-Run Steelhead*; and Project Number 28057, *Four-Step Safety-Net Plan for Lower Salmon River A-Run Steelhead* have been combined into Project Number 28061, *Safety Net Artificial Production Plan (SNAPP).*

Three-year Budget Recommendation

Appendix B provides a three-year funding recommendation for the Mountain Snake Province that strives to meet the goals, objectives and needs of the Province. A total of 87 projects that address needs identified in the subbasin summaries are recommended for funding and include new and ongoing projects totaling $61 million for Fiscal Year 2002. All of the projects recommended here should be initiated within the next three years

Safety Net Artificial Production Program (SNAPP)

The National Marine Fisheries Service (NMFS), U.S. Fish and Wildlife Service, Bonneville Power Administration (acting on behalf of the Action Agencies for the Federal Columbia River Power System), and the fishery co-managers of the Snake River Basin have formed a Safety-Net Artificial Propagation Program (SNAPP) to implement RPA measures 175 – 178 from the FCRPS Biological Opinion. The purpose of this program is to establish contingency action plans, potentially applying the best available artificial propagation techniques, to prevent extinction of key populations of ESA-listed salmon and steelhead while necessary improvements to main-stem passage and tributary habitats are effectuated. The program's goal is to reduce the short-term risks of population extinction and preserve stock structure and genetic variability that will contribute to future recovery actions.

Project Number 28061 provides a consolidated SNAPP proposal and replaces five previously submitted proposals (project # 28012, 28015, 28055, 28056, and 28057). The SNAPP proposal also addresses the comments of the ISRP. The 3-year budget for the proposal is estimated at $830,000 whereas the aggregate budget for the five previously submitted proposals totaled $1.1 million.

As outlined in the proposal, the fishery managers are proposing to perform extinction risk analyses, Step 1 of the safety-net process, on 38 "at-risk" populations of ESA-listed Snake River Spring/Summer Chinook and Snake River Steelhead. The results of these analyses will determine which of these populations should then undergo Step 2, development of intervention options. If the recommended intervention is an artificial propagation strategy, then a detailed benefit/risk analysis will be performed on this alternative to determine if intervention would provide net benefits to the fish population in the near-term. If net benefits are evident, then a Hatchery & Genetic Management Plan (HGMP) would be completed for the given population. Implementation of an HGMP is not within the scope of this SNAPP proposal.

According to the FCRPS Biological Opinion, the intent of the safety-net program is to develop necessary contingency plans for intervention on at-risk, listed populations. These plans would be promptly implemented if necessary or maintained in a current status in case future declines in population status of other information indicates a need to intervene. This program was conceived to prevent further population extinctions while main-stem passage and tributary habitat improvements are implemented and become effective in recovering listed populations.

Clearwater Subbasin

Twenty-one existing projects are recommended for continued funding in the Clearwater River Subbasin (Table 2).

- Project Number 19833500, *Nez Perce Tribal Hatchery*, will complete construction and begin operation of Nez Perce Tribal Hatchery supplementation program to assist in the recovery and restoration of non-listed spring chinook and ESA listed Snake River fall chinook in the Clearwater Basin.
- Project Number 198335003, *Nez Perce Tribal Hatchery Monitoring And Evaluation*, will continue to monitor and evaluate results of the Nez Perce Tribal Hatchery so that operations can be adaptively managed to optimize hatchery and natural production, sustain harvest, and minimize ecological impacts.
- Project Number 198709900, *Dworshak Dam Impacts Assessment and Fisheries Investigation*, will continue to evaluate the impacts of drawdowns and routine dam operations on resident fish populations as well as determine ways to minimize entrainment losses of fish into Dworshak Dam.
- Project Number 198740700, *Dworshak Integrated Rule Curves/M&E*, will refine the Dworshak Rule Curve Evaluation Model, use the model as a tool to help identify appropriate integrated operation (Integrated Rule Curve), and develop a comprehensive long-term monitoring and evaluation plan for Dworshak Reservoir.
- Project Number 199005500, *Steelhead Supplementation Studies in Idaho Rivers*, will continue to evaluate the feasibility of using artificial production to increase natural steelhead populations and to collect life history, genetic, and abundance data from wild steelhead populations in Idaho.
- Project Number 199303501, *Enhance Fish, Riparian, and Wildlife Habitat Within the Red River Watershed*, will continue restoring physical and biological processes to create a self-sustaining river/meadow ecosystem using a holistic approach and adaptive management principles to enhance fish, riparian, and wildlife habitat and water quality within the Red River watershed.
- Project Number 199607702, *Protect and Restore Lolo Creek Watershed*, will continue to protect, restore, and enhance the Lolo Creek Watershed to provide quality habitat for anadromous and resident fish. This will be accomplished by watershed restoration projects such as culvert replacement, road obliteration, and streambank stabilization.
- Project Number 199607703, *Protecting and Restoring the Waw'aatamnima (Fishing)(Squaw) Creek to 'Imnaamatnoon (Legendary Bear)(Papoose) Creek Watersheds Analysis Area*, will continue protecting and restoring the Waw'aatamnima (Fishing) Creek to 'Imnaamatnoon (Legendary Bear) Creek Watersheds Analysis Area by using a holistic approach, based on a completed watershed analysis,
- Project Number 199607705, *Restore McComas Meadows/Meadow Creek Watershed*, will continue to protect and restore critical riparian/stream habitat in Meadow Creek using streambank stabilization, riparian re-vegetation, road decommissioning, culvert replacement/repair, and native plant restoration approaches.
- Project Number 199608000, *Clearwater Focus Program*, will allow for the completion of a subbasin assessment, develop a subbasin plan, coordinate public review and input, and coordinate implementation projects

- Project Number 199706000, *Clearwater Subbasin Focus Watershed Program – NPT,* will continue to manage and implement a comprehensive system to coordinate multiple jurisdictions, agencies, and private landowners within the Clearwater River Subbasin.
- Project Number 199901400, *Little Canyon Creek Subwatershed-Steelhead Trout Habitat Improvement Project,* will continue to allow for the reduction of sedimentation to improve instream habitat in Lower Little Canyon Creek and the lower Clearwater River.
- Project Number 199901500, *Restoring Anadromous Fish Habitat in Big Canyon Watershed,* will continue implementing agricultural and fish habitat Best Management Practices in the Big Canyon watershed with the goals of reducing sediment and nutrient delivery, improving water retention in uplands, reducing stream temperature, and restoring riparian function.
- Project Number 199901600, *Protect and Restore Big Canyon Creek Watershed*, will continue to protect, restore and return critical spawning and rearing habitat using a ridge top to ridge top approach, based on a completed watershed assessment.
- Project Number 199901800, *Characterize and Quantify Residual Steelhead in the Clearwater River, Idaho*, will continue to assess potential negative interactions with wild steelhead and recommend modifications to hatchery practices to produce more effective smolts and reduce hatchery/wild interactions.
- Project Number 200002800, *Evaluate Status of Pacific Lamprey in the Clearwater River Drainage, Idaho,* will continue to determine distribution, population status, and life history information for Pacific Lamprey in the Clearwater River Subbasin.
- Project Number 200003400, *Protect and Restore the North Lochsa Face Analysis Area Watersheds,* will protect and restore the North Lochsa Face Watershed by working within an overall watershed approach, based on comprehensive studies of the analysis area.
- Project Number 200003500, *Rehabilitate Newsome Creek Watershed - South Fork Clearwater River,* will continue to allow for the protection and enhancement of Newsome Creek Watershed for the benefit of both resident and anadromous fish by using an overall watershed approach.
- Project Number 200003600, *Protect & Restore Mill Creek,* will continue to enhance critical riparian areas using re-vegetation and maintaining the cattle exclusion fence, and replacing/repairing culverts which pose a fish/aquatic barrier to restore quality habitat for chinook salmon, steelhead trout, bull trout and resident fish.

Twenty-one new project proposals are recommended for funding in the Clearwater River Subbasin (Table 2).

- Project Number 28004, *Lawyer Creek Subwatershed-Steelhead Trout Habitat Improvement Project,* will reduce sedimentation to improve instream habitat in Lawyer Creek and the lower Clearwater River, and improve upland water storage by implementing best management practices for sediment reduction and water retention.
- Project Number 28013, *Renovate Selway Falls Anadromous Fish Passage Tunnel,* will provide for the renovation of the Selway River anadromous fish tunnel.

- Project Number, 28017, *Monitoring the Selway Falls Renovation Project for Passage of Spring Chinook Salmon and Steelhead*, will allow for the fine-tuning of the fishway and manage it optimally.
- Project Number 28020, *Nez Perce Tribe Harvest Monitoring Program*, will develop and implement a comprehensive, biologically sound monitoring program for the Nez Perce Tribe for the Columbia River Basin and tributaries.
- Project Number 28021, *Lower Clearwater Habitat Enhancement Project*, will allow for the acquisition, protection, enhancement, and restoration of 10,000 acres of wildlife habitat on the Lower Clearwater River emphasizing habitats that will enhance recovery opportunities for listed fish stocks and/or NPTH Hatchery restoration efforts.
- Project Number 28023, *Evaluate and Control Brook Trout Populations – Addressing Competition and Hybridization Threats in the Clearwater River Drainage, Idaho*, will use biological and physical methods to suppress or eliminate brook trout populations in area where risk of competition and hybridization with bull trout is high.
- Project Number 28025, *Potlatch River Watershed Restoration*, will restore ecosystem functions, restore degraded habitat and protect natural habitat within the Potlatch River watershed in Idaho thereby improving water quality and quantity throughout the drainage.
- Project Number 28029, *Restore Lawyer Creek Habitat Targeting Steelhead and Chinook Salmon*, will restore physical and biological process in seven miles of anadromous and resident fish habitat in the Lawyer Creek watershed based on reach prioritization determined from a watershed assessment.
- Project Number 28031, *Evaluation of Unclipped Hatchery Steelhead Released in the Clearwater and Salmon River Basins*, will determine if outplanted unclipped steelhead: (a) return at higher rates than fish from other artificial propagation programs, (b) spawn where intended, and (c) increase the natural juvenile population.
- Project Number 28032, *Assessment of A-Run Steelhead Populations in the Clearwater River Basin*, will provide for an assessment of the current status and performance of the A-run steelhead population in the Clearwater Subbasin (i.e., population abundance, productivity, spatial structure, and diversity).
- Project Number 28033, *Monitoring and Evaluating Coho Salmon Reintroduction in the Clearwater River Basin*, will monitor and evaluate the results of the reintrodution of coho salmon to the Clearwater River Subbasin so that operations can be adaptively managed to optimize hatchery and natural production, sustain harvest and minimize ecological impacts.
- Project Number 28041, *Dworshak Zooplankton Entrainment*, will apply hydroacoustic technology to monitor zoopankton density and depth distribution at the Dworshak Dam forebay and apply this information to outlet selector gate operation to minimize or avoid zooplankton entrainment.
- Project Number 28042, *Timing and Location of Spawning by Pure and Introgressed Cutthroat Trout in the North Fork Clearwater River*, will identify spawning areas and accurately determine the timing of spawning for pure and introgressed westslope cutthroat trout using state-of-the-art radio telemetry systems.

- Project Number 28043, *Crooked River Ecosystem Assessment at the Watershed Scale*, will Assess watershed conditions and develop and prioritize watershed restoration activities.
- Project Number 28045, *Evaluating Stream Habitat Using the Nez Perce Tribe Fisheries/Watershed Watershed Monitoring and Evaluation Plan*, will implement habitat surveys and fish snorkel stations in order to characterize quantity and quality of available spawning and rearing habitat as well as evaluate stream response to watershed restoration and/or management activity.
- Project Number 28046, *Impacts of Salmon Carcasses on Chinook Salmon and Watershed Restoration in Subbasins of the Clearwater River*, will evaluate the effects of MDN on inland watersheds in the Clearwater River Basin where recent subbasin summaries have determined that salmon numbers are low and nutrient limitation exists.
- Project Number 28047, *Restore and Protect Red River Watershed*, will restore and protect the Red River Watershed for the benefit of both resident and anadromous fish using an overall watershed approach.
- Project Number 28048, *Protect and Restore Crooked Fork Creek to Colt Killed Analysis Area*, will protect, restore, and return critical spawning and rearing habitat using a holistic approach beginning with a comprehensive watershed assessment, which will target restoration projects.
- Project Number 28059, *Restoring Anadromous Fish Habitat in the Lapwai Creek Watershed*, will implement BMPs on agricultural lands to reduce sediment, nutrients, and stream temperature. In addition, the project will improve low summer flows by installing BMPs for water retention in the uplands.
- Project Number 28060, *Assess Stream Quality for Salmonid Recovery in the Lower Clearwater Subbasin*, will complete a stream health assessment to identify priority areas for fish habitat restoration.

Table 2. Projects recommended for funding in the Clearwater River Subbasin

ProjectID	Title	Sponsor
28004	Lawyer Creek Subwatershed-Steelhead Trout Habitat Improvement Project	LSCD
28013	Renovate Selway Falls Anadromous Fish Passage Tunnel	IDFG/IOSC
28017	Monitoring the Selway Falls Renovation Project for Passage of Spring Chinook Salmon and Steelhead	PNNL
28020	Nez Perce Tribe Harvest Monitoring Program	NPT
28021	Lower Clearwater Habitat Enhancement Project	NPT
28022	Evaluate Bull Trout Life History In Dworshak Reservoir, N.F. Clearwater River Drainage, ID	IDFG
28023	Evaluate and Control Brook Trout Populations – Addressing Competition and Hybridization Threats in the Clearwater River Drainage, Idaho.	IDFG/IOSC
28025	Potlatch River Watershed Restoration	LSWCD
28029	Restore Lawyer Creek Habitat Targeting Steelhead and Chinook Salmon	CEDA
28031	Evaluation of Unclipped Hatchery Steelhead Released in the Clearwater and Salmon River Basins	USFWS
28032	Assessment of A-Run Steelhead Populations in the Clearwater River Basin	NPT
28033	Monitoring and evaluating coho salmon reintroduction in the Clearwater River Basin	NPT
28041	Dworshak Zooplankton Entrainment	NPT
28042	Timing and location of spawning by pure and introgressed cutthroat trout in the North Fork Clearwater River	NPT

ProjectID	Title	Sponsor
28043	Crooked River Ecosystem Assessment at the Watershed Scale	NPT
28045	Evaluating stream habitat using the Nez Perce Tribe Fisheries/Watershed Watershed Monitoring and Evaluation Plan	NPT
28046	Impacts of Salmon Carcasses on Chinook Salmon and Watershed Restoration in Subbasins of the Clearwater River	NPT
28047	Restore and Protect Red River Watershed	NPT
28048	Protect and Restore Crooked Fork Creek to Colt Killed Analysis Area	NPT
28059	Restoring anadromous fish habitat in the Lapwai Creek watershed.	NPSWCD
28060	Assess Stream Quality for Salmonid Recovery in the Lower Clearwater Subbasin	NPSWCD
198335000	Nez Perce Tribal Hatchery	NPT
198335003	Nez Perce Tribal Hatchery Monitoring And Evaluation	NPT
198709900	Dworshak Dam Impacts Assessment and Fisheries Investigation	IDFG
198740700	Dworshak Integrated Rule Curves/M&E	NPT
199005500	Steelhead Supplementation Studies in Idaho Rivers	IDFG/IOSC
199303501	Enhance Fish, Riparian, and Wildlife Habitat Within the Red River Watershed	ICSWCD
199501300	Resident Fish Substitution Program	NPT
199607702	Protect and Restore Lolo Creek Watershed	NPT
199607703	Protecting and Restoring the Waw'aatamnima (Fishing)(Squaw) Creek to 'Imnaamatnoon (Legendary Bear)(Papoose) Creek Watersheds Analysis Area	NPT
199607705	Restore McComas Meadows/Meadow Creek Watershed	NPT
199608600	Clearwater Focus Program	ISCC
199706000	Clearwater Subbasin Focus Watershed Program – NPT	NPT
199901400	Little Canyon Creek Subwatershed-Steelhead Trout Habitat Improvement Project	LSCD
199901500	Restoring Anadromous Fish Habitat in Big Canyon Watershed	NPT
199901600	Protect and Restore Big Canyon Creek Watershed	NPT
199901700	Protect and Restore Lapwai Creek Watershed	NPT
199901800	Characterize and quantify residual steelhead in the Clearwater River, Idaho	USFWS
200002800	Evaluate Status of Pacific Lamprey in the Clearwater River Drainage, Idaho	IDFG/IOSC
200003400	Protect and Restore The North Lochsa Face Analysis Area Watersheds	NPT
200003500	Rehabilitate Newsome Creek Watershed - South Fork Clearwater River	NPT
200003600	Protect & Restore Mill Creek	NPT

The recommended project proposals address the key needs identified in the 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.
- Synthesize historic and existing fish and wildlife resource data to determine what is known about the subbasin, and identify gaps for more efficient and meaningful assessment, monitoring and evaluation work.
- Develop and implement comprehensive and consistent subbasin databases related to both aquatic and terrestrial resources and establish a centralized data repository. This will promote more effective resource management.
- Coordinate M&E efforts at the subbasin and provincial scale 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. These M&E activities are critical to evaluating the effectiveness of projects in improving habitat, watershed health and enhancing production of target species.

- Investigate effects of potential loss or lack of nutrients due to declines in anadromous salmonid populations, and coordinate and evaluate nutrient enhancement alternatives.
- 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.
- Continue and expand the cooperative/shared approach in research, monitoring and evaluation between tribal, federal, state, local and private entities to facilitate restoration and enhancement measures. Protection and restoration of fish and wildlife populations and habitat will not be successful without the interest and commitment by all.
- Acquire lands when opportunities arise for improved habitat protection, restoration, and connectivity and for mitigation of lost fish and wildlife habitat (land purchases, land trusts, conservation easements, landowner cooperative agreements, exchanges).
- Protect existing pristine and key fish and wildlife habitats directly threatened by subdivision, recreation, or extractive resource uses.
- Complete detailed 6th code subwatershed assessments to ground-truth existing regional databases
- 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.
- Develop Federal Recovery Plans for threatened and endangered species to provide recovery guidance for state, tribal and local entities as required by law.
- Continue coordinated temperature monitoring throughout the subbasin. Identify spatial and temporal gaps, establish additional flow and temperature gauging stations and upgrade existing 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.
- 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 agricultural sediment, fertilizer, pesticide loading, confined animals operations, storm water and road runoff, wastewater effluent, mining and logging.
- Develop catchable fish ponds in the subbasin to provide fishing opportunities. Catchable fish ponds are needed to provide opportunity as more restrictive regulations are implemented to protect native fish species. They are also needed as resident fish substitution to partially mitigate for loss of anadromous fish caused by the permanent blockage at Dworshak Dam harvest .
- Continue ongoing mitigation programs to provide sport and tribal fisheries
- Ensure natural river strategy alternative is implemented as required for recovery of listed anadromous species.

- Improve and maintain quality control of fish marking programs.
- Re-establish a smolt trap facility on the lower Clearwater River to determine migration characteristics and timing, hatchery:wild ratio, and to implant and recover tags for in-basin and out-of-basin monitoring.
- 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.
- Develop regional curves based on existing stream gauge data and specific to individual hydro-physiographic provinces within the basin for use as aids in channel morphology monitoring and in channel stream course modification/restoration. Where existing stream gauge data is not sufficient to develop regional curves, expand this network.
- Restore a more normal hydrograph to altered watersheds by addressing land use activities through implementation of BMPs and other restoration strategies.
- Inventory natural and artificial passage barriers within the subbasin and evaluate if removal or modification is warranted.
- Investigate connectivity between populations and the role of natural and artificial barriers in population isolation. Remove or modify identified natural or artificial passage barriers where aquatic considerations have been met.
- Complete culvert inventory and assess associated passage and flow issues. Evaluate whether removal or modifications are warranted.
- Renovate the Selway Falls Fish tunnel to restore upstream passage for adult chinook, steelhead and Pacific lamprey into pristine habitat in the upper Selway River drainage.
- Continue gene conservation efforts (cryopreservation) for fall chinook salmon and steelhead in the subbasin.
- Develop gene conservation efforts (cryopreservation) to preserve genetic diversity within the geographic population structure for bull trout and cutthroat trout.
- Develop conservation hatcheries with native steelhead broodstock.
- 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 Mountain Snake Province, and within designated ESUs.
- Complete a province-wide chinook salmon genetic assessment which will provide a baseline for monitoring hatchery 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.
- Enhance and diversify the fishery within Dworshak Reservoir
- Assess the status of native species that have received little attention to date. In particular, westslope cutthroat trout, bull trout, sand roller and Pacific lamprey appear

to be well below historic population levels. Collect life history, distribution, abundance by life stage, genetic and homing behavior attributes.

- Determine habitat requirements and limiting factors for Pacific lamprey production in the subbasin and assess the rehabilitation potential and process in the subbasin.
- Monitor impacts of illegal, incidental, sport and Tribal harvest on resident native populations.
- Determine how flow augmentation effects bull trout in the North Fork and Lower Clearwater Rivers.
- Determine the extent and magnitude of entrainment of resident fish including bull trout and kokanee from Dworshak Dam and develop and implement methods to minimize entrainment as appropriate.
- Monitor bull trout and westslope cutthroat trout population size in Dworshak Reservoir.
- Determine and implement ways to increase the productivity of Dworshak Reservoir.
- Develop more "fish friendly" operations at Dworshak Dam.
- Better educate the public on issues and policies important to natural resource restoration, protection, and enhancement to encourage meaningful public participation.
- Continue and improve enforcement of laws and codes related to protection of fish, wildlife and their habitats, through coordinated conservation enforcement activities by the Nez Perce Tribe, state and Federal agencies.
- Inventory, map, and assess the distribution of riparian communities and associated wildlife and plant species.
- 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 in areas of greatest need.
- Develop an information and education stewardship program to foster riparian community protection.
- Develop riparian plant nursery for propagation and restoration of native communities.
- Continue control programs for noxious weeds to restore natural habitat conditions and communities for wildlife species and improve watershed function.

Chinook Salmon

- 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. Mechanism is through continued and expanded Idaho Supplementation Studies and Idaho Natural Production Monitoring Program.
- 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 Clearwater subbasin chinook.
- Continue to monitor and evaluate impacts of Dworshak dam on spawning and rearing of fall chinook salmon in the Lower North Fork and mainstem Clearwater Rivers.
- Continue evaluating reintroduction efforts for fall chinook salmon.
- Determine the extent of natural production from outplanting hatchery adults

Summer Steelhead

- Determine smolt-to-adult return rates (SAR) for hatchery steelhead in the Clearwater River.
- 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. Mechanism is through continued and expanded Idaho Supplementation Studies and Idaho Natural Production Monitoring Program.
- Validate index areas for summer steelhead to ensure they are appropriate measures of productivity.
- Need to 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 adult movement to determine if and where passage impediments exist within the basin for summer steelhead.
- Develop an evaluation program to determine the effectiveness of releasing unmarked hatchery steelhead to re-build runs in Clearwater River tributaries
- Determine the efficacy of using dorsal fin erosion to identify un-marked hatchery steelhead.
- Determine the extent of natural production from outplanting hatchery adults
- Expand supplementation evaluation studies in the South Fork Clearwater River to address effectiveness of juvenile and adult steelhead outplants.
- Develop appropriate intensity and spatial distribution of monitoring to estimate parr carrying capacity to compliment and enhance Natural Production Monitoring..
- Refinement of aquatic life beneficial use monitoring and assessment methods to better focus restoration efforts.
- Develop a comprehensive M&E plan for Dworshak Dam operations.
- 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.

Salmon River Subbasin

Eighteen existing project proposals are recommended for funding in the Salmon River Subbasin (Table 3).

- Project Number 198909800, *Idaho Supplementation Studies*, will continue to evaluate various supplementation strategies for maintaining and rebuilding spring/summer chinook salmon populations in Idaho as well as develop recommendations for using supplementation to rebuild naturally spawning populations.
- Project Number 198909801, *Evaluate Supplementation in Idaho Rivers (ISS)*, will continue to evaluate various supplementation strategies for maintaining and rebuilding spring/summer chinook salmon populations in Idaho as well as develop recommendations for the use of supplementation to rebuild naturally spawning populations.
- Project Number 198909802, *Evaluate Salmon Supplementation Studies in Idaho Rivers- Nez Perce Tribe*, will continue to evaluate hatchery supplementation as a recovery - restoration tool for spring and summer chinook salmon as well as quantify key population status and performance variables, including early-life history and smolt- to adult survival.
- Project Number 198909803, *Salmon Supplementation Studies in Idaho- Shoshone-Bannock Tribe*s, will continue to evaluate various supplementation strategies for maintaining and rebuilding spring/summer chinook populations in Idaho as well as develop recommendations for the use of supplementation to rebuild naturally spawning populations.
- Project Number 199102800, *Monitoring smolt Migrations of Wild Snake River Sp/Sum Chinook Salmon*, will continue to collect time series information to examine migrational characteristics of wild ESA-listed Snake River spring/summer chinook salmon stocks and PIT tag wild chinook salmon parr annually; and subsequently monitor as parr/smolts at stream traps and river dams.
- Project Number 199107100, *Snake River Sockeye Salmon Habitat and Limnological Research*, will continue to enhance and monitor freshwater rearing habitat for juvenile Snake River sockeye and evaluate the effects of nutrient addition and fish stocking on the lake's ecosystems and growth and survival of planted juvenile sockeye.
- Project Number 199107200, *Redfish Lake Sockeye Salmon Captive Broodstock Program*, will continue to establish captive broodstocks of Redfish Lake sockeye salmon, spawn captive adults to produce eggs, juveniles, and adults for reintroduction and future broodstock needs as well as evaluate juvenile out-migration and adult returns by release option.
- Project Number 199107300, *Idaho Natural Production Monitoring and Evaluation*, will continue to identify limiting factors and recommend methods to improve adult-to-smolt and smolt-to-adult survival of chinook salmon.
- Project Number 199202603, *Upper Salmon Basin Watershed Project Administration/Implementation Support*, will continue to continue to provide local coordination and guidance for implementation of on-the-ground projects that improve and enhance anadromous and resident fish habitat.

- Project Number 199204000, *Redfish Lake Sockeye Salmon Captive Broodstock Rearing and Research*, will continue to provide a safety net captive broodstock program for Redfish Lake sockeye salmon and provide pre-spawning adults, eyed eggs, and smolts to aid recovery of this ESA-listed endangered species in Idaho.
- Project Number 199401500, *Idaho Fish Screen Improvement*, will continue to enhance passage of juvenile and adult fish in Idaho's anadromous fish corridors by consolidation and elimination of irrigation diversions and minimize adverse fish impacts of irrigation diversion dams by screening pump intakes and canals.
- Project Number 199405000, *Salmon River Habitat Enhancement M & E*, will continue to maintain habitat improvements and evaluate benefits; monitor salmonid populations and habitat parameters; coordinate land and water stewardship activities; coordinate planning, implementation, monitoring, and evaluation of new improvements and protections.
- Project Number 199604300, *Johnson Creek Artificial Propagation Enhancement Projec*t, will continue to enhance and monitor a weak but recoverable stock of native summer chinook salmon in Johnson Creek. Construct facilities for adult collection and holding, juvenile rearing and smolt acclimation.
- Project Number 199700100, *Captive Rearing Project for Salmon River Chinook Salmon*, will continue to develop captive rearing techniques for chinook salmon and evaluate the success and utility of captive rearing for maintaining stock structure and conservation levels of adult spawners in three drainages.
- Project Number 199703000, *Chinook Salmon Adult Abundance Monitoring*, will continue to implement state-of-the-art technologies to accurately quantify chinook salmon spawner abundance in the Secesh River, Lake and Marsh creeks.
- Project Number 199703800, *Preserve Salmonid Gametes and Establish a Regional Salmonid Germplasm Repository*, will continue to preserve Salmonid Gametes through cryogenic techniques to maintain genetic diversity in populations with low levels of abundance and at high risk of extirpation. Establish a Regional Salmonid Germplasm Repository for populations listed under the ESA.
- Project Number 199901900, *Holistic Restoration of the Twelvemile Reach of the Salmon River near Challis, Idaho*, will continue to work holistically to restore the channelized Salmon River corridor to a natural meandering form in balance with watershed processes that will restore geomorphic diversity, reduce bank erosion, lower summer temperatures and improve critical fish habitat.
- Project Number 199902000, *Analyze the Persistence and Spatial Dynamics of Snake River Chinook Salmon*, will advance current understanding of the relationship between the distribution, pattern, and persistence of chinook salmon and landscape patterns.

Twenty-seven new project proposals are recommended for funding in the Salmon River Subbasin (Table 3).

- Project Number 28001, *Evaluate Factors Influencing Bias and Precision of Chinook Salmon Redd Counts*, will assess redd count bias and precision and will have important implications for improving chinook salmon redd surveys across the Snake River basin.

- Project Number 28002**,** *Fluvial Bull Trout Migration and Life History Investigations in the Upper Salmon River Subbasin,* will identify the distribution and status of fluvial bull trout populations, seasonal habitat use and migration patterns of fluvial bull trout, and determine bull trout presence/absence, densities, population status, and spawning times.
- Project Number 28003, *Characterize and Assess Wildlife-Habitat Types and Structural Conditions for Subbasins within the Mountain Snake Province,* will provide critical baseline data for planning and monitoring efforts that is called for in the two subbasin summaries and is consistent with the NWPPC 's Subbasin Planning process.
- Project Number 28005**,** *Assessment of Spring/Summer Chinook Salmon Habitat within the Salmon River Subbasin,* will evaluate and compare attributes of streams utilized and not utilized by chinook salmon within the subbasin. Evaluated habitat characteristics would describe low gradient stream segments that foster chinook salmon production
- Project Number 28006**,** *Tag and Evaluate PIT-tag Retention in Sub-yearling Chinook Salmon,* will determine the rate of PIT-tag shedding in sub-yearling salmonids from 24 hours post-tagging to 30 days post-tagging.
- Project Number 28007**,** *Causes and Effects of Nonnative Trout Invasions in the Salmon and Clearwater River Subbasins,* will provide a better understanding of nonnative trout invasions and their effects on native salmonids and deliver models and information for evaluating management alternatives.
- Project Number 28008, *Riparian Conservation Easement Purchase of Scarrow Property on Lake Creek a Tributary to the Secesh River, Idaho,* will provide for the acquisition of sensitive riparian area to protect water quality above wild summer chinook spawning grounds.
- Project Number 28009, *Smolt Condition and Adult Returns: An Indirect Method of Assessing the Potential Mitigation Benefits of Nutrient Enhancement Projects,* will develop a standard weight equation for chinook salmon and steelhead trout smolts to provide a method to determine if the condition of Snake River smolts is poor due to the lack of marine-driven nutrients.
- Project Number 28010, *Nez Perce Salmon River Terrestrial*, will protect, enhance, and restore native canyon grassland, and associated riparian habitats within the Lower Salmon and Little Salmon River Watersheds, along with high elevation wet meadows which are the headwaters and water storage systems.
- Project Number 28011, *Incidental Mortality in Selective Sport Fisheries,* will Conduct literature review and scoping for a contemporary study of incidental mortality rates in selective sport fisheries.
- Project Number 28016, *Restoration of the Yankee Fork Salmon River,* will restore the natural river channel characteristics, floodplain function, sediment regime, and aquatic habitat within the dredged reach of the Yankee Fork.
- Project Number 28018, *Lower Salmon River Tributary Protection and Enhancement,* will protect and enhance important aquatic and terrestrial habitats in Salmon River tributaries.
- Project Number 28019, *Improve Stream Habitat by Reducing Discharge from Animal Feeding Operations,* will enhance tributary and mainstem fish habitat and water

quality by reducing direct discharge and run-off from animal feeding operations by supporting on-farm improvement with cost-share funding and technical assistance.

- Project Number 28026, *Develop HGMP's for LSRCP Programs to Address Artificial Production Reforms Identified in the FCRPS Biological Opinion and other Regional Processes*, will assess LSRCP Programs to identify needed artificial production reform measures, coordinate proposed reforms among co-managers, select and define potential reforms, and develop funding implementation.
- Project Number 28030, *Salmon River Native Resident Fish Assessment*, will investigate population status and trends, life histories, habitat needs, limiting factors, and threats to persistence of all resident native fishes in the Salmon River Subbasin. Emphasis of work will be on salmonid fishes.
- Project Number 28034, *Chinook Salmon Smolt Survival and Smolt to Adult Return Rate Quantification, South Fork Salmon River, Idaho*, will monitor smolt production and adult escapement in the South Fork Salmon River with PIT-tag detections to provide SARs and R/S ratios as performance measures.
- Project Number 28036, *Holistic Restoration of Critical Habitat on Non-federal Lands in the Pahsimeroi Watershed, Idaho*, will implement projects on non-federal lands that are effective at improving habitat conditions (and survival rates) for native anadromous and resident salmonids in the Pahsimeroi watershed, Idaho.
- Project Number 28037, *Holistic Restoration of Critical Habitat on Non-federal Lands in the Lemhi Watershed, Idaho*, will implement projects on non-federal lands that are effective at improving habitat conditions (and survival rates) for native anadromous and resident salmonids in the Lemhi watershed, Idaho.
- Project Number 28038, *Holistic Restoration of Critical Habitat on Non-federal Lands, East Fork Salmon Watershed, Idaho*, will implement projects on non-federal lands that are effective at improving habitat conditions (and survival rates) for native anadromous and resident salmonids in the East Fork Salmon watershed, Idaho.
- Project Number 28039, *Holistic Restoration of Habitat on Non-federal Lands, Middle Salmon-Panther Watershed, Idaho*, will implement projects on non-federal lands that are effective at improving habitat conditions (and survival rates) for native anadromous and resident salmonids in the Middle Salmon-Panther watershed, Idaho.
- Project Number 28040, *Holistic Restoration of Critical Habitat on Non-federal Lands, Upper Salmon Watershed, Idaho*, will implement projects on non-federal lands that are effective at improving habitat conditions (and survival rates) for native anadromous and resident salmonids in the Upper Salmon watershed, Idaho.
- Project Number 28044, *Protect and Restore Deer Creek Watershed*, will protect and restore valuable fluvial aquatic habitat by improving riparian and watershed conditions in upper watershed through watershed assessment and restoration activities in Deer Creek watershed.
- Project Number 28049, *Restore and Protect Slate Creek Watershed*, will restore and protect the Slate Creek Watershed for the benefit of both resident and anadromous fish using an overall watershed approach. Restoration and protection efforts will be done cooperatively with the Nez Perce National Forest.
- Project Number 28050, *Protect and Restore Little Salmon River*, will protect valuable riparian corridor and fluvial aquatic habitat while increasing habitat quality and quantity within the mainstem Little Salmon River Basin.

- Project Number 28051, *Assess and Monitor Steelhead in the Middle Fork Salmon River Subbasin*, will assess current population status, dynamics and genetics of steelhead in the Middle Fork Salmon River subbasin.
- Project Number 28052, *Adult Snake River Steelhead Monitoring in the South Fork Salmon River Basin*, will initiate collection of baseline steelhead adult abundance information critical for determining population status and viability in addition to identifying potential management actions needed for Snake River steelhead in Johnson Creek.
- Project Number 28058, *Restore Fish Passage and Habitat on the Upper East Fork of the South Fork of the Salmon River*, will restore fish passage and aquatic and riparian habitat through a historic open pit mine which created a migration barrier in the middle of the east Fork of the South Fork of the Salmon River (EFSFSR)

Table 3- Projects recommended for funding in the Salmon River Subbasin

Project ID	Title	Sponsor
28001	Evaluate Factors Influencing Bias and Precision of Chinook Salmon Redd Counts	USFS
28002	Fluvial Bull Trout Migration and Life History Investigations in the upper Salmon River Subbasin	SBT
28003	Characterize and Assess Wildlife-Habitat Types and Structural Conditions for Subbasins within the Mountain Snake Province	NHI
28005	Assessment of spring/summer chinook salmon habitat within the Salmon River Subbasin.	USFS
28006	Tag and evaluate PIT-tag retention in sub-yearling chinook salmon	Biomark, Inc.
28007	Causes and effects of nonnative trout invasions in the Salmon and Clearwater River subbasins	USFS
28008	Riparian Conservation Easement Purchase of Scarrow Property on Lake Creek a Tributary to the Secesh River, Idaho.	IDFG/IOSC
28009	Smolt Condition and Adult Returns: An Indirect Method of Assessing the Potential Mitigation Benefits of Nutrient Enhancement Projects	IDFG/IOSC
28010	Nez Perce Salmon River Terrestrial	NPT
28011	Incidental Mortality in Selective Sport Fisheries	IDFG/IOSC
28016	Restoration of the Yanke Fork Salmon River	CSWCD/IOSC
28018	Lower Salmon River Tributary Protection and Enhancement	IDFG
28019	Improve Stream Habitat by Reducing Discharge from Animal Feeding Operations	IDFG/IOSC
28026	Develop HGMP's for LSRCP Programs to address artificial production reforms identified in the FCRPS Biological Opinion and other regional processes.	USFWS
28030	Salmon River Native Resident Fish Assessment	IDFG
28034	Chinook Salmon Smolt Survival and Smolt to Adult Return Rate Quantification, South Fork Salmon River, Idaho	NPT
28035	Geomorphic Controls on Watershed-Scale Availability of Chinook Salmon Spawning Habitat in the Salmon River.	UI/USFS
28036	Holistic Restoration of Critical Habitat on Non-federal Lands in the Pahsimeroi Watershed, Idaho	CSWCD/IOSC
28037	Holistic Restoration of Critical Habitat on Non-federal Lands in the Lemhi Watershed, Idaho	LSWCD/IOSC
28038	Holistic Restoration of Critical Habitat on Non-federal Lands, East Fork Salmon Watershed, Idaho	CSWCD/IOSC
28039	Holistic Restoration of Habitat on Non-federal Lands, Middle Salmon-Panther Watershed, Idaho	LSWCD/IOSC
28040	Holistic Restoration of Critical Habitat on Non-federal Lands, Upper Salmon Watershed, Idaho	CSWCD/IOSC
28044	Protect and Restore Deer Creek Watershed	NPT
28049	Restore and Protect Slate Creek Watershed	NPT
28050	Protect and Restore Little Salmon River	NPT
28051	Assess and Monitor Steelhead in the Middle Fork Salmon River Subbasin	NPT
28052	Adult Snake River steelhead monitoring in the South Fork Salmon River Basin.	NPT/PNNL

Project ID	Title	Sponsor
28058	Restore Fish Passage and Habitat on the Upper East Fork of the South Fork of the Salmon River	IDFG/IOSC
198909800	Idaho Supplementation Studies	IDFG/IOSC
198909801	Evaluate Supplementation Studies in Idaho Rivers (ISS)	USFWS
198909802	Evaluate Salmon Supplementation Studies in Idaho Rivers- Nez Perce Tribe	NPT
198909803	Salmon Supplementation Studies in Idaho- Shoshone-Bannock Tribes	SBT
199102800	Monitoring smolt migrations of wild Snake River sp/sum chinook salmon	NMFS
199107100	Snake River Sockeye Salmon Habitat and Limnological Research	SBT
199107200	Redfish Lake Sockeye Salmon Captive Broodstock Program	IDFG/IOSC
199107300	Idaho Natural Production Monitoring and Evaluation	IIDFG
199202603	Upper Salmon Basin Watershed Project Administration/Implementation Support	ISCC/IOSC
199204000	Redfish Lake Sockeye Salmon Captive Broodstock Rearing and Research	NMFS
199401500	Idaho Fish Screen Improvement	IDFG/IOSC
199405000	Salmon River Habitat Enhancement M & E	SBT
199604300	Johnson Creek Artificial Propagation Enhancement Project	NPT
199700100	Captive Rearing Project for Salmon River Chinook Salmon	IDFG/IOSC
199703000	Chinook Salmon Adult Abundance Monitoring	NPT/PNNL
199703800	Preserve Salmonid Gametes and Establish a Regional Salmonid Germplasm Repository	NPT
199901900	Holistic Restoration of the Twelvemile Reach of the Salmon River near Challis, Idaho	CSWCD/IOSC
199902000	Analyze the Persistence and Spatial Dynamics of Snake River Chinook Salmon	USFS

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

- Acquire lands 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, and exchanges).
- Implement and (where applicable) continue Integrated Pest Management programs.
- Assist landowners with land holdings and easements.
- Continue long-term bird monitoring.
- Cooperate on threatened, endangered, and sensitive species recovery or conservation strategy efforts in the subbasin.
- Acquire existing ecological data sets where possible and compile metadata according to national standards.
- Monitor use of existing reference areas to assure consistency with the maintenance of ecological values.

- Establish and maintain permanent baseline monitoring systems within ecological reference areas for priority ecosystems and species.
- Identify candidate sites for the establishment of ecological reference areas based on current needs assessments. Periodically update ecological reference area needs assessments.
- 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. These M&E activities are critical to evaluating the effectiveness of projects at improving habitat, watershed health and enhancing production of target species.
- Coordinate M&E efforts at the subbasin and provincial scale to maximize effectiveness and minimize redundancy.
- Develop and implement improved practices for 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 maintain comprehensive and consistent subbasin databases related to both aquatic and terrestrial resources, and establish a centralized data repository. This will promote more effective resource management.
- Investigate effects of potential loss or lack of nutrients due to declines in anadromous salmonid populations, and coordinate and evaluate nutrient enhancement alternatives.
- Acquire lands when opportunities arise for improved habitat protection, restoration, and connectivity, and for mitigation of lost fish and wildlife habitat (land purchases, land trusts, conservation easements, landowner cooperative agreements, exchanges).
- Protect existing pristine and key 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.
- Develop Federal Recovery Plans for threatened and endangered species to provide recovery guidance for state, tribal and local entities as required by law.
- Complete road inventory 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.
- 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 and enhance the cooperative/shared approach in research, monitoring and evaluation between tribal, federal, state, local and private entities to facilitate restoration and enhancement measures. Protection and restoration of fish and wildlife populations and habitat will not be successful without the interest and commitment of all parties.

- Better educate the public on issues and policies important to natural resource restoration, protection, and enhancement to encourage meaningful public participation.
- Validation of large-scale population sampling and inventory methods
- Development and validation of landscape models used to predict the distribution, quality, and dynamics of habitat
- Identification of the key processes constraining evolutionary potential and the distribution of intraspecific diversity.
- Evaluating metapopulation dynamics and key processes such as straying and dispersal.
- Assessing patterns and effects of nonnative invasions.
- Development of a rigorous method for prioritizing habitat restoration projects that incorporates local knowledge as well as modeling approaches to assess physical needs, biological needs, and project feasibility.
- Evaluating non-invasive methods to study severely depressed salmonid stocks that may be sensitive to effects of scientific studies using conventional methods.
- Assessing whether reductions in imported marine nutrients associated with low anadromous salmonid escapements actually decrease growth and survival of salmon and steelhead parr and native resident fish, particularly at low seeding densities.
- Rigorously evaluating whether and/or how habitat enhancement activities affect egg-smolt survival, particularly at low seeding densities.
- 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.
- 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 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 Mountain Snake Province, and within designated ESUs.
- Investigate connectivity between populations and the role of natural and artificial barriers in population isolation.
- 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.
- Continue coordinated temperature monitoring throughout the subbasin. Identify spatial and temporal gaps, establish additional flow and temperature gauging stations and upgrade existing to provide real-time data, and expand longitudinal profiles. Fish distribution and habitat quality are highly influenced by water temperature. This

parameter must 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 agricultural sediment, fertilizer, pesticide loading, confined animals operations, storm water and road runoff and wastewater effluent.
- Continue, and enhance where necessary, conservation enforcement activities.
- Conduct gamete preservation on all salmonids throughout the Salmon Subbasin (*Nez Perce Tribe*).
- Implement/continue artificial propagation or supplementation programs on salmon and steelhead stocks deemed at risk (*Nez Perce Tribe*).
- Use artificial production, i.e., egg outplants, parr releases, smolt releases, and adult outplants to reestablish salmon and steelhead runs into vacant habitat throughout the Salmon Subbasin (*Nez Perce Tribe*).
- Complete a province-wide chinook salmon genetic assessment that will provide a baseline for monitoring hatchery 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.

Summer Steelhead

- 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, spawning 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. Mechanism is through continued and expanded Idaho Supplementation Studies, Idaho Natural Production Monitoring Program, and selected Tribal efforts in the South Fork Salmon River.
- Collect population status information for wild steelhead including adult spawner abundance, spawner to spawner ratios, spawning locations, spawning timing, juvenile abundance, and SARs in the South Fork Salmon River (*Nez Perce Tribe*).
- Validate index survey areas for summer steelhead to ensure they provide appropriate measures of productivity.
- Need to 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 adult movement to determine if and where passage impediments exist within the basin for summer steelhead.
- Investigate life history diversity and genetics of steelhead and relationship(s) to redband trout.

- Evaluate the extent and impacts of hatchery straying into the subbasin to control potentially adverse genetic effects on the natural population.
- Determine the extent of interaction between redband trout and steelhead, including overlap in distribution.
- Investigate the distribution and abundance of redds, diversity of life history traits, and genetic composition of wild steelhead in the Middle Fork Salmon (*Nez Perce Tribe*).
- Continue gene conservation efforts (cryopreservation) for steelhead to preserve genetic diversity within the geographic population structure (*Nez Perce Tribe*).
- Develop conservation hatcheries with native steelhead broodstock (*Nez Perce Tribe*).

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. Mechanism is through continued and expanded Idaho Supplementation Studies, Idaho Natural Production Monitoring Program, Listed Stock Escapement Monitoring project, and new projects.
- 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 developing modeling and monitoring "tools" to determine out-of-basin impacts to Salmon subbasin chinook.
- Determine the extent of natural production resulting from outplanted hatchery adults.
- Define the metapopulation structure in the South Fork Salmon and Upper and Lower Middle Fork Salmon watersheds (*Nez Perce Tribe*).
- Conduct a conservation assessment of stream-type chinook in the Upper and Lower Middle Fork Salmon watersheds (*Nez Perce Tribe*).
- Monitor fish population parameters in relation to habitat enhancement projects (*Nez Perce Tribe*).
- Continue evaluating reintroduction efforts for fall chinook salmon (*Nez Perce Tribe*).
- Continue and expand the Johnson Creek Artificial Propagation Enhancement monitoring and evaluation to determine hatchery chinook performance, natural production responses, smolt-to-adult survival, competitive interactions, harvest management, and provide for applied adaptive management (*Nez Perce Tribe*).
- Determine hatchery:natural composition of adult salmon in natural production areas (*Nez Perce Tribe*).
- Conduct small-scale studies to determine performance and contribution of listed adult hatchery chinook salmon and their use in recovery (*Nez Perce Tribe*).
- Continue gene conservation efforts (cryopreservation) for stream-type chinook in the subbasin (*Nez Perce Tribe*).
- Quantify mortality rates and straying of adult chinook salmon from Lower Granite Dam to natural production areas (*Nez Perce Tribe*).

Other Fish Species

- Assess the status of native and non-native species that have received little attention to date or where information is limited. Westslope cutthroat trout, bull trout, and Pacific lamprey appear to be well below historic population levels. Collect life history, distribution, abundance by life stage, genetic and homing behavior attributes.
- Estimate abundance and monitor known populations to establish trends and measure population response to restoration.
- Determine the extent and magnitude of nonnative species interaction and hybridization to better define treatment options.
- Control numbers and distribution of exotic species where feasible.

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