
**Columbia River Basin
Fish and Wildlife Program**

**Annual Implementation Work Plan
for Fiscal Year 1994**

**Division of Fish and Wildlife
Bonneville Power Administration**

February 1994

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Section 1. Introduction

1.1 General

The Fiscal Year 1994 (FY 1994) Annual Implementation Work Plan (AIWP) presents Bonneville Power Administration's (BPA's) plan for implementation of the Columbia River Basin Fish and Wildlife Program (Program). The Program was developed by the Northwest Power Planning Council (Council) in accordance with the Pacific Northwest Electric Power Planning and Conservation Act (Northwest Power Act), Public Law 96-501.

The purpose of the Program is to guide BPA and other federal agencies in carrying out their responsibilities to protect, mitigate, and enhance fish and wildlife in the Columbia River Basin. The Columbia River Basin Fish and Wildlife Program Annual Implementation Work Plan presents BPA's plan for implementing the Council's Program during FY 1994. The AIWP also lists projects that are in addition to the Council's Program and are considered necessary for BPA to carry out its responsibilities.

The Council has continued to modify the original 1982 Program based on current scientific information and the input of concerned interests throughout the region. The recent amendment process was divided into four phases. Phase I began the work of salmon recovery with certain fast-track measures completed in August 1991. Phase II dealt with Snake and Columbia river flow and salmon harvest and was completed in December 1991. Phase III dealt with system-wide habitat and salmon production issues and was completed in September 1992. Phase IV planning, focusing on resident fish and wildlife, began in August 1993 and was finished by the Council and adopted in November 1993.

The Council expects to reissue the revised Program (1994 *Fish and Wildlife* Program), reflecting the new measures from the four phases of amendments and revisions to ongoing measures from the 1987 Program, in January 1994. This AIWP is arranged to incorporate measures from both the 1987 Program and the *Strategy for Salmon*. Because Council action on Phase IV was not complete until November 1993, no Phase IV projects are included in this AIWP. There is a limited amount of funding available for early planning on implementation of Phase IV (see Table 1). Future editions of the AIWP should reflect the organization of the amended 1994 *Fish and Wildlife Program* and be easier to follow. This is a "transition" implementation plan bridging the two versions of the Program.

The AIWP reflects goals expressed in the 1987 Program's Action Plan (Section 1400) to provide a solid, timely, and focused basis for budgeting and program planning. Development of a method for prioritizing and sequencing the implementation of measures from both the 1987 Program and the *Strategy for Salmon* was a major part of preparing this document. Another purpose of the AIWP is to provide a means to judge the progress and success of Program implementation activities. This is addressed throughout the AIWP in over 200 individual project descriptions.

Under the request for comments on the draft AIWP, 30 comments were received. These comments are summarized in Appendix C.

1.2 Project Selection And Prioritization Process - FY 1994

The AIWP is based on the outline developed by the Policy Review Group (PRG) during Step 1 of the annual cycle of the Implementation Planning Process (IPP). The IPP process is described later in this section as is the initial outline developed by the PRG for use in this AIWP.

One of the first steps BPA fish and wildlife staff and management took was to apply the PRG guidance to project selection. In addition to the initial guidance on criteria BPA received from the PRG, BPA received suggestions on project criteria from the Council and the Columbia Basin Fish and Wildlife Authority (CBFWA). The Council also offered a list of implementation themes developed as guidance to BPA when setting its 1994 and 1995 rates.

Questions over prioritization of projects for implementation in FY 1994 and the initial list of projects for the draft AIWP dominated discussions among BPA, state and federal fish and wildlife agencies, Tribes, the Council and other fish and wildlife interest groups. These discussions were driven by the budget level BPA adopted for FY 1994 under the 1993 Rate Case. The FY 1994 budget reflects a reduced level of financial resources available for all BPA programs due, in large part, to the sixth year of a regional drought, increased costs for purchased power and resource acquisitions, and a drop in world aluminum prices.

Parallel to this regular annual process of selecting or prioritizing projects was a series of meetings and discussions regarding the Council's *Strategy for Salmon*. This amendment to the Council's Program included many new measures, many with FY 1994 implementation timeframes. In certain instances the Council's expected timeframes and BPA's fiscal realities conflicted. BPA listed measures not scheduled for funding in the draft AIWP's Appendix C, Strategy for Salmon Measures Not Scheduled for FY 1994 Funding. However, conflicts have been resolved and BPA intends to begin implementation of all measures in the *Strategy for Salmon* for 1994. The appendix has been dropped from the AIWP. For ease of identification and tracking of these measures during this first year of implementation (and until official project numbers can be assigned), the projects that were under question are numbered SS-101 through SS-121 in this document. For example, Independent Scientific Group is Project # SS 121.

1.3 FY 1994 BPA Budget Allocation - Highlights

The FY 1994 AIWP reflects extensive regional coordination and prioritization through the Implementation Planning Process. Anadromous **fish** will continue to be the area of emphasis of the AIWP highlighted by the following “expense” activities: Hydro operations/downstream migration allocation will continue to include the Non-Treaty Storage Agreement (water “rental” in Idaho); research projects in **fish** health/**artificial** propagation will continue at reduced levels; and funding and **staffing** levels in support of ESA concerns will continue to be a primary focus of the expense program. The **squawfish** management program is reduced by 33 percent over earlier plans and supplementation will see an increase in funding.

Anadromous capital program expenditures include design and construction activities for the Nez **Perce** Tribal Hatchery, **Yakima/Klickitat production** facilities, Yakima Phase II Screens, outplanting facilities for the Northeast Oregon **Hatchery** facilities, the Bonneville Fish Sampling Facility, and habitat improvement and restoration projects. Endangered Species Act construction-related expenditures include tributary diversion screening and PIT tag monitoring facilities.

Resident **fish** activities continue at a reduced level with the completion of the white sturgeon studies and most Council Program measures adopted as part of the 1987 Fish and Wildlife Program. Funds for mitigation for Libby and Hungry Horse reservoirs are included. The Phase IV amendments have funds forecasted to allow early planning and environmental analysis work to begin in FY 1994.

The wildlife program project activities are scheduled to include “in the pipeline” projects and payments to Montana under the Trust Agreement for mitigation. Funds are included for the Washington mitigation agreement. BPA plans to continue to work with Idaho and Oregon over the development of Trusts with those states,

Operation and maintenance activities will continue to increase with new facilities going into operation,

There is a significant change in the planned budget for FY 1994 between this document and the draft AIWP. Due to longer than expected negotiations over significant wildlife mitigation actions, BPA was not able to obligate \$6.6 million in FY 1993 that had been approved as part of the FY 1993 budget. The obligation authority has been added to funding that is available for wildlife during FY 1994. The net effect of this change is the direct fish and wildlife budget grows from \$80.4 million to \$87 million (see Figure 1 and Table 1).

Figure 1

FY 1994 Fish and Wildlife Program Annual Implementation Work Plan

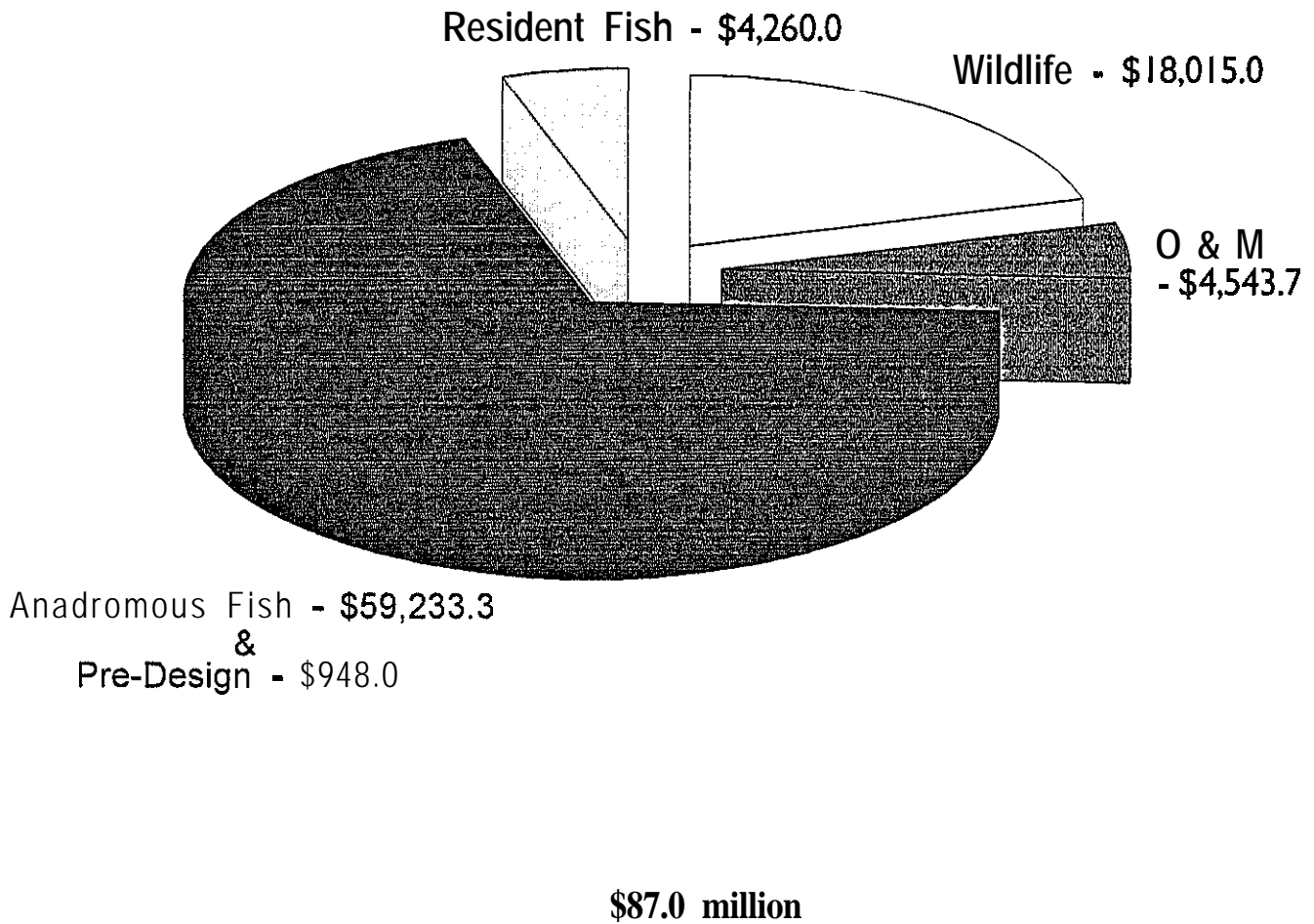


Table 1

| FISH AND WILDLIFE PROGRAM | | |
|---|--|-------------------|
| (Dollars in Thousands) | | |
| FY 1994 | | |
| FE11PM | Program Support Activities | \$6,390.9 |
| FE1101 | Hydm Operations/Downstream Migration | \$8,185.5 |
| FE1 110 | Umatilla River Basin Habitat | \$964.0 |
| FE1 113 | Fish Health/Artificial Propagation | \$1,220.0 |
| FE1 114 | Supplementation | \$2,067.1 |
| FE1 119 | Yakima River Basin | 8328.0 |
| FE1 121 | ESA Implementation - Expense | \$11,485.8 |
| FE1 122 | Squawfish Management Program | \$5,400.0 |
| FE1 124 | New Amended Program - Phase III | \$2,540.0 |
| | SUBTOTAL ANADROMOUS FISH EXPENSE | \$38,581.3 |
| FE1201 | Resident Fish-Montana | \$1,085.0 |
| FE1202 | Resident Fish - Idaho | \$275.0 |
| FE1203 | Sturgeon Projects | \$715.0 |
| FE1204 | Resident Fish. Washington | \$385.0 |
| FE1206 | Sturgeon Projects (ESA) | \$810.0 |
| FE1207 | New Amended Program-Phase IV | \$990.0 |
| | SUBTOTAL RESIDENT FISH EXPENSE | \$4,260.0 |
| | SUBTOTAL WILDLIFE (expense) | \$6,215.0 |
| | SUBTOTAL O & M | \$4,543.7 |
| | TOTAL F & W EXPENSE PROGRAM | \$53,600.0 |
| FE2105 | Umatilla Passage Improvement | \$0.0 |
| FE2106 | Umatilla Hatchery | \$2,770.0 |
| FE2107 | Nez Perce Hatchery | \$610.0 |
| FE2108 | Yakima Hatchery | \$6,012.0 |
| FE2113 | Yakima Screens- Phase II | \$2,220.0 |
| FE2114 | NE Oregon Spring Chinook Facility | \$910.0 |
| FE2115 | Bonneville Fish Sampling Facility | \$3,010.0 |
| FE2117 | ESA Implementation - Capital | \$3,010.0 |
| FE2119 | New Amended Program - Phase III (Cap) | \$2,010.0 |
| FE2130 | Hood River Production Project (NEOH) | \$100.0 |
| | SUBTOTAL ANADROMOUS FISH CAPITAL | \$20,652.0 |
| | SUBTOTAL RESIDENT FISH CAPITAL | \$0.0 |
| | SUBTOTAL WILDLIFE TRUSTS | \$0.0 |
| FE2601 | Pre-engineering Design Costs for Cnp Projects | \$303.0 |
| FE2612 | Pre-engineering Design-NE Oregon Hatchery | \$345.0 |
| FE2616 | Pre-engineering Design- Bonneville Sampling | \$0.0 |
| FE2617 | Pre-engineering Design - Hungry Horse Htch | \$300.0 |
| | SUBTOTAL PRE-ENGINEERING DESIGN | \$948.0 |
| TOTAL | F & W CAPITAL PROGRAM | \$33,400.0 |
| TOTAL | FISH AND WILDLIFE PROGRAM | \$87,000.0 |
| 1/ ALL DOLLARS ARE IN THOUSANDS AND ARE NOT "LOADED" WITH AGENCY OVERHEADS. | | |

1.4 Implementation Planning Process

Background: On October 19, 1988, BPA and CBFWA signed a letter endorsing the IPP. The IPP is an annual, sequential, nine-step process by which BPA, in collaboration with the CBFWA, plans its implementation of the Program. The nine steps of the IPP are:

- Step 1. Program Policy Review
- Step 2. Project Scoping
- Step 3. **Draft** AIWP Development
- Step 4. Public Review and Comment on **Draft** AIWP
- Step 5. Publication of **AIWP**
- Step 6. Project Specifications
- Step 7. Project Selection and Negotiation
- Step 8. Contract Awards
- Step 9. Evaluation of Implementation Progress

The IPP relies on three types of working groups to accomplish the nine steps: (1) the Policy Review Group (PRG); (2) the Scientific Review Group (SRG); and (3) Scoping Groups (SGs), formerly called Technical Working Groups.

Responsibilities: The primary role of the PRG is to provide BPA with the best possible guidance and recommendations, from a policy perspective, on the direction, emphasis, and funding of Program implementation. Most of the PRG's activities occur during Step 1 of the IPP, Program Policy Review. The PRG is comprised of senior-level representatives from the CBFWA, BPA, Northwest Power Planning Council, utilities, U.S. Forest Service, environmental groups, and other interested parties.

The SRG provides the PRG and BPA with objective scientific/technical advice and recommendations related to implementation of the Program. The SRG also prepares an annual evaluation report on implementation progress in Step 9 of the IPP. The SRG is comprised of senior-level scientists from the Northwest and other regions of the country.

The SGs assist BPA with scoping of projects (Step 2), responding to public comments (Step 4), and development of project specifications (Step 6). Currently, there are seven IPP SGs: Natural Production, Wildlife, Resident Fish, Mainstem Passage, Artificial Propagation, Habitat, and Supplementation and Genetics. These SGs are comprised of the region's technical experts in specific areas of expertise. The IPP provides a process to create additional SGs if they are needed.

BPA is responsible for developing the AIWP (Step 3), implementing the public review process (Step 4), publishing the AIWP (Step 5), initiating procurement activities (Step 6), selecting contractors (Step 7), and awarding contracts (Step 8). BPA representatives also participate with the SGs in IPP Steps 2, 4, and 6.

Progress: 1993, the PRG continued to meet as needed to accomplish IPP tasks. The PRG provided BPA with criteria for the development of BPA's FY 1994-1995 Fish and Wildlife Program. Using budget summaries the PRG also developed funding-level recommendations. The PRG also developed recommendations for FY 1994 Program Implementation. The FY 1994 AIWP is based on these recommendations to BPA regarding FY 1994 Program implementation. The PRG's recommendation for the formation of the Natural Production Scoping Group was received by BPA in spring 1993 and is now active. The SGs have been developing technical project selection and prioritization for BPA to apply to program implementation in FY 1994. The SRG continued to provide BPA and the PRG with objective advice on the scientific aspects of Program implementation.

plans: In FY 1994, the IPP will continue to provide an opportunity for the fish and wildlife agencies, Tribes, and other interested parties to participate with BPA in planning its implementation of the Program. Step 1 of the sixth annual IPP cycle, during which FY 1995 implementation will be planned, began in fall 1993. The SRG developed its fourth annual evaluation report on Program implementation in July 1993; this report provided valuable technical recommendations for use in planning FY 1995 Program implementation. The SRG and SGs will continue to meet as needed throughout FY 1994.

1.5 Policy Review Group Criteria

The PRG provides critical guidance at the beginning of the annual IPP cycle. That guidance must recognize and seek to balance the technical/scientific requirements of Program measures and the political, legal, and institutional realities existing in the Basin.

In Step 1 of the annual IPP cycle, the PRG considers knowledge gained through previous Program implementation, ongoing research, and other related planning activities in order to provide clear and concise recommendations on:

Policy matters as related to Program implementation;

Program components to be emphasized;

Prioritizing technical subjects; and

Funding levels required for support

These recommendations are made to BPA **and** serve as foundations for the technical planners in the Scoping Groups.

To guide development of the FY 1994 AIWP, the PRG developed the General Criteria below. In several of these criteria, reference is made to decisions, objectives, or other standards and criteria found in the Council's **Program**. As reflected in the AIWP, BPA will not forego its mitigation responsibilities as described under the Pacific Northwest Electric Power Planning and Conservation Act in order to support its Federal responsibilities under the Endangered Species Act.

General Criteria for the FY 1994 AIWP

GENERAL

1. Implement the Strategy for Salmon measures in the Program elements with special emphasis on measures in Phases I and II which remain unimplemented.
2. Focus on achieving the goal and program framework objectives provided in the Program with special emphasis on the six principles provided by the Council on page 18 of the *Strategy for Salmon, Volume 2*.
3. Assure that all projects funded to meet the objectives of the Program have adequate monitoring and evaluation features associated with them.
4. All research projects shall be established using the research proposal guidelines developed by the Scientific Review Group.
5. Provide additional emphasis on proposals which are directly related to increased fish productivity and survival.
6. All projects shall have demonstrable cost-effectiveness.
7. Wildlife efforts should be directed toward development or completion of Wildlife Trust Funds to agencies and Tribes.
8. Implement resident fish substitution efforts, followed by resident fish enhancement efforts.
9. BPA should exercise great care to assure that duplication of projects does not occur.

SPECIFIC

Mainstem:

Continue to fund efforts to obtain additional water in the Snake River Basin.
Focus on listed species.
Continue to evaluate the impact of **drawdown**.
Evaluate carrying capacity.

Habitat:

Focus on listed species, as well as weak stocks and their geographic area.
Separate habitat O&M from projects, and direct O&M funds to the O&M coordinator.
Evaluate carrying capacity.

Artificial Production:

Focus on survival of hatchery fish/natural fish relationships.
Fund actions to which **IHOT** principles are agreed.
Focus new production efforts on agreed to supplementation efforts.

Supplementation:

Focus on supplementation proposals which have been agreed to by the Council, RASP, etc.

Natural Production:

Focus on inventory of natural (wild) anadromous populations (listed **anadromous** weak stocks).
Focus on artificial/natural production interactions.
Focus on species interactions.
Focus on natural production measures in Phase III.

Others:

Focus on sub-regional planning and development of broad range implementation plan.
Focus on completion of tributary screening.
Focus on watershed planning.

Resident Fish:

Focus on proposed listed species.
Focus on resident **fish** substitution, and responsibility for replacement of lost resources.

Wildlife

Focus on **trust** agreements.

1.6 How To Use The AIWP

BPA's FY 1994 AIWP is a combination of the reporting format used for BPA's FY 1993 AIWP and suggestions for **integrating** the Council's *Strategy for Salmon*. Since the 1993 AIWP was released, we received comments from staff and others suggesting some improvements. Combining two existing formats is the first step to making this annual document more helpful.

Last year, we organized the AIWP by *1987 Fish and Wildlife Program* Action Item. This year we include continuing projects related to 1987 Action Items, and descriptive narrative for Action Items from the FY 1993 AIWP. All project information in the 1993 AIWP, if the project continues into FY 1994, is included in this report. However, data are shown by project number under *Strategy for Salmon* categories. We use Measure Categories from the Council's *Strategy & Salmon* to organize the AIWP into sections. Parties working together to carry out Program goals use the *Strategy for Salmon*, and are familiar with its categories (e.g., Salmon Harvest).

Each section of the AIWP then has two parts. Action Item-related narrative, including BPA objectives and plans, and corresponding tables with projects identified are first; *Strategy for Salmon Volume II* narrative and corresponding project tables are next. (See example in Figure 2.) Tables for each part are distinct. Blank areas in some tables were created when the different formats were combined.

Because we quote only certain parts of the *Strategy for Salmon* that apply to BPA, we do not include all subsections, so subsection numbers may not be consecutive. For example, Subsection 3.6F follows Subsection 3.6D. Subsection 3.6E is not included.

There are exceptions to this format. In some cases no language from the *1987 Fish and Wildlife Program* corresponds to a *Strategy for Salmon* category. Only *Strategy for Salmon* language is given.


Administrative funds, such as funds for personnel and travel expenses, are given a project number, are included in Appendix A, Index of Projects, but have no corresponding narrative in this document. For example, the following project falls into this category:

94-003 Overhead - FY 1994 (Personnel and travel expenses charged to individual RPA's)

Also, some projects not funded in FY 1994 have sufficient funds left from FY 1993 to allow the projects to continue. These projects have (*No '94 funds*) under the project number.

Figure 2 - Format Example

Action Item **Language 6.2B Artificial Production** *Strategy for Salmon Category*
 begins here

1987 F&W Program 

4.15.1 IGN AND CONSTRUCTION OF YAKIMA PRODUCTION PROJECT
 (Upon Council Approval, Fund Beginning in FY1988)

803(d) [Abstract] BPA shall fund the design and construction of a hatchery for salmon and steelhead enhancement in the Yakima River Basin...

BPA ACTION ITEM ACTIVITY SUMMARY:

Objectives

To construct a hatchery to protect wild stocks and to..

Background and Progress to Date:

BF' A will fund the design, construction, operation, and maintenance of the Yakima production facility...


Plans:

1. National Environmental Policy Act (NEPA) compliance for hatchery construction was completed...

Table with projects / Table 18 Section 6.2B Ongoing and New Projects
 from FY 1993 AIWP

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------|----------------------|-----------------|-------------------------|
| 83-6 | O&M of Fish Marking | Date Initiated: | FY 1994: BPA will.. |

strategy for Salmon language follows Bonneville

Strategy for Salmon 

5. Fund the activities of the Integrated Hatchery Operations Team so that it is operational by January 15, 1992.

TABLE 19 Section 6.2B Strategy for Salmon Projects

| Measure Number | Measure Description | BPA RPA & Project Number | Project Title & Description | Current Measure Activity | Project Duration/Start-End Dates | Project Manager |
|----------------|---|--------------------------|-----------------------------|--------------------------|----------------------------------|--|
| 6.2B.2 | Fund design of impact assessment of hatcheries on wild fish | F1121: 92-043 | | IHOT FUNDED. | | Jerry Bauer, BPA 503/230-7579; Tom Vogel, BPA 503/230-5201 |

Table with projects to meet measures

In addition to dividing projects into categories **from** the *Strategy for* Salmon, we include an index of projects in Appendix A. The Index is divided into two tables: the first table lists projects by project number; the second table lists projects by RPA and project number.

There are other format changes. Acronyms used are now in Appendix B. Appendix C contains BPA's responses to comments on the draft AIWP. Projects completed in FY 1993 are not described in detail. Instead, completed projects are listed by project number and title in Appendix D. Appendix E contains projects cut to meet budget requirements. Appendix F lists non-program, internal support projects.

Let us know if these changes help you find the information you need. We welcome suggestions for improving next year's work plan.

Section 2. Program Framework and Goal

2.2 Snake River Chinook Rebuilding Targets, Performance Standards And Monitoring

2.2A Population Monitoring

*Strategy
for Salmon*



Implementing Agencies and Fishery Managers

1. The Council calls on the implementing agencies and fishery managers to propose a limited set of populations that can **serve** as indicators of Snake River chinook populations. These can include hatchery stocks if necessary to provide harvest rates for wild **and** naturally spawning populations. The indicator stocks selection should be closely coordinated with and take advantage of existing monitoring and research efforts including U.S.1 Canada Treaty efforts, Idaho habitat evaluations and Idaho supplementation research. The entities should work closely with the Idaho Department of Fish and Game and the **Nez Perce** and **Shoshone-Bannock** tribes to prepare a proposal. The proposal should include not only a list of populations, but also the appropriate information to be collected for each population. This should include basic life history and survival rates as well as stock **status**. The proposal should be submitted to the Council by December 31, 1992, for implementation in 1993.

2.3 Development of Rebuilding Elements

Implementing Agencies and Fishery Managers

1. Working with **the** Council, begin to develop rebuilding plans for identified population management units. The plans should include the elements of a rebuilding plan identified in Appendix A, including definition of the population management unit, management goal, rebuilding target, survival targets, rebuilding schedule and performance standards. The Council views this as a limited effort that should draw on the information developed in system planning, **new** information developed since then (**including** information on genetic needs and **weak** stocks) and the coordinated analytical methods process (Section 7.3). As much **as** possible, rebuilding plans should reflect and incorporate the **subbasin** plans developed as part of the 1987 **program**. A schedule and work plan for development of the rebuilding plans should be submitted to the Council by January 15, 1993. Recommendations on the rebuilding plans for Snake River populations should be submitted to the Council by March 1, 1993. **Recommendations** for other populations should be submitted to **the** Council as soon as possible and not later than January 15, 1995.

Bonneville

2. Fund travel and reasonable expenses of the fishery managers necessary to develop these recommendations.

Table 2 - Section 2.3 Strategy for Salmon Projects

| Measure Number | Measure Description | BPA RPA & Project Number | Project Title & Description | Current Measure Activity | Project Duration/ Start-End Dates | Project Manager |
|----------------|---|--------------------------|-----------------------------|--|-----------------------------------|----------------------------------|
| 2.3.2 | Expenses of Fishery Managers Development of Rebuilding Elements | SS 101 | | The agencies and Tribes have not pursued the planning meetings specified by the measure. When these meetings occur, BPA is ready to compensate travel and reasonable expenses. | | Joyce Lindsay, BPA, 503/230-5710 |

Strategy for Salmon



2.4 Development of Performance Standards

Implementing Agencies and Fishery Managers

1. Solicit input from the following groups to develop additional performance standards: Fish Passage Advisory Committee, Fish Transportation Oversight Team, Integrated Hatchery Operations Team, Regional Assessment of Supplementation Project and the Technical Advisory Committee of the Columbia River Compact.

Recommendations for additional performance standards for individual measures or logical groupings of measures should be developed through the implementation process. Participants in the process should solicit input from other appropriate groups or individuals. Each group should review program measures appropriate to its area of expertise and provide recommendations for performance standards. A final list of recommendations should be submitted to the Council by March 1, 1993. Performance standards should reflect program measures and survival targets. The Council will review and act on these recommendations to provide a final set of performance standards.

Section 3. Juvenile Migration

3.2 River Operations

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2.1 WATER BUDGET MEASURES

303(a) [Abstract] The Federal project operators and regulators shall provide the fish and wildlife agencies and Tribes **with** a total Water Budget of 78 kcfs-months (4.64 **Maf**). It is to be divided into 58 kcfs-months (3.45 **Maf**) at Priest Rapids Dam and 20 **kcfsmonths** (1.19 **Maf**) at Lower Granite **Dam**, and used April 15 through **June** 15.

303(b) [Abstract] BPA shall **fund the** establishment and operation of a Fish Passage Center, including **funds** for two Fish Passage Manager positions and for technical and clerical support. This support will assist the **Fish** Passage Managers in: 1) **planning** and implementing **the annual smolt** monitoring program called for **in** Section 304(d)(2); 2) developing and implementing flow and spill requests; and 3) monitoring and analyzing research results to assist **in** implementing **the** Water Budget and spill planning. The **Fish** Passage Center will function as the primary program center for housing data and information regarding **juvenile** fish passage.

303(c) [Abstract] The Federal project operators, Fish Passage Managers, fish passage advisor, and power system operators will **coordinate** system operations for **the** current year and develop experimental use and accounting procedures for **both the mid-Columbia** and Snake River **Water** Budgets. Experimental Water Budget procedures shall be implemented for at least water years 1987 and 1988. **This** committee also **shall** evaluate alternative Water Budget implementation procedures **and** report to the Council.

BPA ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To provide adequate flows for **fish** migrations, and to insure clear and **timely** integration of **fish** requirements and hydrosystem operational decisions.

Background and Progress to Date:

The Council recognized **that** the agencies and Tribes lacked the expertise to work with the owners and operators of the hydrosystem. The agencies and Tribes needed such expertise **to assure that the** Water Budget would be considered in hydrosystem planning and operation. The Council, therefore, **specified that** BPA fund two **Fish** Passage Managers, one for **the** Tribes and one for **the** agencies. Subsequently, the agencies and Tribes decided to have only one Fish Passage Manager. BPA has **funded** the operation of **the** Fish Passage Center and **the** Fish Passage Data Information System since 1983.

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Plans:

BPA plans to continue to **fund** the operation of the Fish Passage Center, the Fish Passage Manager and support staff, and the Fish Passage Data Information System to integrate fish and hydrosystem operational requirements by implementing the Water Budget

22 **SMOLT MONITORING PROGRAM**

303(d) [Abstract] BPA **shall** fund an annual smolt monitoring program to be conducted by the agencies and Tribes. The monitoring program will provide information on the migrating characteristics of the various salmon and steelhead stocks and will include:

1. Field monitoring of smolt movement to determine the best timing of storage releases;
2. Coordination of runoff forecasts **with** water budget usage and shaping;
3. Continuous monitoring of runoff conditions and fish movement at Lower Granite and Priest Rapids dams to provide information to allow changes in water budget usage if actual runoff conditions are inconsistent with runoff forecasts; and
4. Coordination of hatchery releases with water budget usage.

BPA ACTION ITEM **ACTIVITY** SUMMARY

Objectives:

To determine timing of **outmigrations**, by species, at selected sites on **the mainstem** Columbia and **Snake** rivers. This information is used to implement **the** Water Budget and communicate **spill** requests.

Background and Progress to Date:

The Council sought to reduce the mortality associated **with the** downstream migrations by increasing spring flows. A Water Budget volume was derived from agencies' and Tribes' recommendations and was specified for the mid-Columbia and lower Snake rivers. To be able to implement the Water Budget effectively, **the smolt** monitoring program has evolved to sample the **downstream juvenile** migrations at many key locations throughout **the hydrosystem**.

Plans:

BPA plans to continue **funding the smolt** monitoring program to provide **outmigration timing** data.

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6.2 RESEARCH IN THE FIVE-YEAR WORK PLANS
(Begin to Fund in FY 1988)

404 [Abstract] These measures address BPA **funding** of **research**,
703(e) development, and testing of improved **fish** husbandry **practices**,
703(h) rearing operations, release strategies, stock assessment, fish
206(b) health protection, indices of **smolt** quality, and hatchery supplementation.

Measure 206(b) **in** the Program directs BPA to focus its **funding** of salmon and steelhead research in the next five years **in** the four areas of emphasis described under Action Item 6.1 **in** BPA's Work Plan. Scoping Groups **in** each of the areas of emphasis will develop a Five-Year Research Work Plan for Council approval and BPA **funding** beginning in FY 1988.

BPA ACTION ITEM **ACTIVITY** SUMMARY:

Objectives:

To fund research identified by **the** SGs in the Five-Year Research Work Plans.

Background and Progress to Date:

The Council Technical Work Group (TWG) process was **instituted to** focus research planning in **four** areas of technical emphasis considered fundamental to **the** success of **the** Fish and Wildlife Program. The four **TWGs** (Reservoir Mortality and Water Budget Effectiveness, Fish Disease, Hatchery Effectiveness, and Supplementation) submitted Five-Year Research Work Plans in 1987 or early 1988 for Council review and approval. BPA began **funding** projects **from** **the** Work Plans in late FY 1988.

Plans:

BPA plans to continue **funding** ongoing projects through completion as program budgets allow.

Through **an** annual policy and technical process, the region will address flow and **tempera-**hure regimes and reconcile measures described below to achieve protection for **salmon** and steelhead.

The committee **should** produce **an** operating plan by March 31 of each year, and will need **to** begin **in** **the** preceding year to complete its work.

The Fish Passage Center should manage water supplies for fish in accordance with the **annual** implementation plan.

Beginning in fall 1992, and of each subsequent year until **further** notice, the Council reviews the operations. At **that** time, the Council determines whether **these** measures should be revised **to** provide **the** intended **benefits** to **fish** in **the** most practical and efficient **manner**.

Table 3 - Section 3.2 Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------|--|---|--|
| 87-127 | <p>Fish Passage Center and Smolt Monitoring Program - PSMFC</p> <p><u>Project Officer:</u> G. Johnson</p> <p><u>Objectives:</u> Fund the operation of the Fish Passage Center and Smolt Monitoring Program. (See also Action Item 2.1)</p> | <p><u>Date initiated:</u> Feb. 1987</p> <p><u>Results/Conclusions:</u> BPA funded the operation of the Fish Passage Center, including the Fish Passage Data Information System and Smolt Monitoring Program in N 1993.</p> | <p>Continuing: BPA will continue to fund the operation of the Fish Passage Center.</p> <p>Continuing: Contractors will guide the smolt monitoring program; they will provide an annual report by December 31 of each year and a smolt monitoring program by August 15 of each year.</p> |
| | <p>Smolt Monitoring/Spill</p> <p><u>Project Officer:</u> W. Maslen</p> <p><u>Objectives:</u> Provide monitoring of juvenile salmonid out-migrations at Lower Monumental and Ice Harbor Dams, as provided in the Fish Spill Memorandum of Agreement (MOA), to determine smolt numbers, migration timing, and species composition. This information will be used by the fishery agencies and Tribes to manage spill for fish passage under the terms of the MOA.</p> | <p><u>Date Initiated:</u> 1989</p> <p><u>Results/Conclusions:</u> Under the terms of the fish spill MOA, monitoring at Lower Monumental was discontinued with installation of bypass. By mutual agreement of the parties, monitoring was not conducted at Ice Harbor Dam in 1993.</p> | <p>N 1994: By mutual agreement of the parties, monitoring is not planned for Ice Harbor. No monitoring is planned for N 1994.</p> |

Table 3 - Section 3.2 Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------|---|--|---|
| 84-14 | <p>Monitoring of Downstream Salmon and Steelhead at Federal Hydroelectric Facilities - NMFS</p> <p><u>Project officer:</u> P. Poe</p> <p><u>Objectives:</u> To monitor the seaward migration of juvenile salmon and steelhead at John Day and Bonneville dams as part of the Columbia River Smolt Monitoring Program; to provide daily fish capture and condition data, as well as dam operations and river flow data, to the Fish Passage Center to assist in Water Budget management.</p> | <p><u>Date initiated:</u> March 1984</p> <p><u>Results/Conclusions:</u> Project provided information that has been used by the Fish Passage Center as a basis for Water Budget requests and for Water Budget management directed toward improving the survival of juvenile salmon and steelhead migrants. Project has provided information on the migrating characteristics of the various stocks of salmon and steelhead produced in the Columbia River system. Project continues to provide time-series information for investigating relationships among flows, spill, travel time, smolt condition, and adult production. The 1984-1992 Annual Reports are available; 1993 Annual Report will be available May 1994.</p> | <p>FY 1994: Project will continue to be funded as part of the Smolt Monitoring Program.</p> <p>Contractor will provide annual operational reports and recommend changes as needed to the smolt monitoring schedule and facilities,</p> |
| | <p>Smolt Monitoring/Spill - NMFS</p> <p><u>Project Officer:</u> W. Maslen</p> <p><u>Objectives:</u> Provide monitoring of juvenile salmonid out-migrations at John Day and The Dalles Dams, as provided in the Fish Spill MOA, to determine smolt numbers, migration timing, and species composition, This information will be used by the fishery agencies and Tribes to manage spill for fish passage under the terms of the MOA.</p> | <p><u>Date Initiated</u> 1989</p> <p><u>Results/Conclusions:</u> By mutual agreement of the parties, monitoring was terminated at The Dalles Dam in 1992. Monitoring at John Day Dam was conducted during the summer outmigration (no additional monitoring over the ongoing Smolt Monitoring Program).</p> | <p>By mutual agreement of the parties, monitoring is not planned at The Dalles. Smolt monitoring at John Day is through the ongoing Smolt Monitoring Program.</p> |

Table 3 - Section 3.2 Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------|--|--|---|
| 83-323 | <p>Smolt Monitoring at the Head of Lower Granite Reservoir and Lower Granite Dam - IDFG</p> <p><u>Project Officer:</u> P. Poe</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. Operate the Lewiston, Clearwater, and Salmon rivers traps from March 15 to mid-July as part of the Smolt Monitoring Program for Water Budget, fish collection, and transportation management purposes. 2. Monitor arrival time, relative passage index, and condition of juvenile salmon and steelhead into the head of Lower Granite reservoir from Snake River tributaries. 3. Determine travel time for hatchery chinook, hatchery steelhead, and wild chinook and steelhead migrants from the trap locations to Lower Granite Dam using PIT- tagged smolts marked at the traps as well as freeze-branded and PIT-tagged smolts passing the traps from upriver sites. | <p><u>Date initiated:</u> Jan. 1983</p> <p><u>Results/Conclusions:</u> The information collected on the migrational timing and condition of juvenile hatchery-produced and wild salmon and steelhead trout Snake River stocks from 1983 through 1993 has been used for in-season operational decisions relative to Water Budget, facility power operations, and fish collection and transportation programs. The collected information is also being used to investigate the relationships among river flows, travel time, smolt survival and condition, and adult production of salmon and steelhead trout stocks produced in the Snake River system. The 1983-1991 Annual Reports are available; 1992 Annual Report will be available fall 1993.</p> | <p>FY 1994: BPA will continue to fund Project 83-323 activities as part of the Smolt Monitoring Program.</p> <p>Continuing: Contractor will provide annual evaluation reports summarizing biological studies and present comparison to historical data.</p> |
| 87-401 | <p>Assessment of Smolt Condition for Travel Time Analysis - USFWS</p> <p><u>Project Officer:</u> P. Poe</p> <p><u>Objectives:</u> Collect information on smoltification and prevalence of disease for marked groups of juvenile salmon and steelhead used by the Fish Passage Center in their travel time studies as part of the Smolt Monitoring Program. Continue the development of a smolt condition index to monitor fish quality during the seaward migration for use in real-time management and evaluation.</p> | <p><u>Date initiated:</u> May 1987</p> <p><u>Results/Conclusions:</u> Results show that level of stress, smoltification, and fish health can introduce bias/errors into estimates of smolt survival, and travel time. Measurements of parameters used to quantify the extent of smolt development, level of stress, and prevalence of disease are needed to evaluate how these biological factors are influencing experimental design assumptions in Columbia River mainstem passage juvenile fish migration studies. The 1987-1990 Annual Reports are available; 1991 Annual Report will be available September 1993.</p> | <p>FY 1994: BPA will continue to fund Project 87-401 activities as part of the Smolt Monitoring Program.</p> <p>Contractor will provide annual evaluation reports that include a comparison of data to historical time-series data.</p> |

Table 3 - Section 3.2 Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------|---|--|--|
| 91-28 | <p>PIT-Tagging of Wild Spring Chinook in Idaho and Oregon</p> <p><u>Project Officer:</u> P. Poe</p> <p><u>Objectives:</u> Assess the migrational characteristics of wild/natural parr in selected streams above Lower Granite Dam in Idaho and Oregon during the summer/fall (marking phase). During the recovery phase the following spring, actual characteristics will be established at PIT-tag recovery sites.</p> | <p><u>Date Initiated:</u> May 1991</p> <p><u>Results/Conclusions:</u> Information from wild spring/summer chinook salmon parr PIT-tagged during summer/fall 1991 is available. Annual report presenting results from 1991 summer/fall marking and 1992 spring recovery available fall 1993.</p> | <p>FY 1994: BPA will continue to fund activities as part of the Smolt Monitoring Program,</p> <p>Contractor will provide annual reports summarizing biological studies and a comparison to historical data.</p> |
| 83-319 | <p>Passive Integrated Transponder (PIT) Tag Research - NMFS</p> <p><u>Project Officer:</u> J. Bauer</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. Determine the biological feasibility of injecting salmon and steelhead with PIT tags for passage and monitoring research activities, 2. Determine biological and engineering feasibility of adult and smolt salmon and steelhead detection facilities for passage monitoring and research activities. | <p><u>Date Initiated:</u> 1983</p> <p><u>Results/Conclusions:</u> All data to date show that there are no biological problems with the PIT tag. The detection systems and monitors continue to be improved and are working extremely well. Adult chinook salmon with PIT tags have been detected at Lower Granite Dam.</p> | <p>FY 1994: Contractor will finalize biological studies and equipment development and provide evaluation reports annually.</p> |
| 91-41 | <p>Non-Treaty Storage Compensation - Idaho Power Company</p> <p><u>Project Officer:</u> D. Daley</p> <p><u>Objectives:</u> To rent surplus irrigation water from Idaho water banks and other sources and release it from storage during spring, summer, and/or fall months to improve anadromous fish passage conditions in the lower Snake River.</p> | <p><u>Date Initiated:</u> May 1991</p> <p><u>Results/Conclusions:</u> Rented 200 KAF in 1991. Rented 100 KAF in 1993.</p> | <p>FY 1994: Continue to pursue water rental according to Salmon strategy.</p> |

Table 3 - Section 3.2 Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------|--|---|---|
| 93-44 | <p>EDF Water Acquisition Pilot Program</p> <p><u>Project Officer:</u> D. Daley</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. Determine the fair market value of water to acquire. 2. Negotiate a pilot water lease. 3. Arrange to have Idaho Power shape the water. 4. Model the benefits from increases in hydroelectric generation and water availability for fish. 5. Evaluate the environmental benefits from enhanced instream flows from potential water acquisitions. 6. Develop methods to evaluate economic values of water sales and leases for specific blocks of water. | <p><u>Date Initiated:</u> April 15, 1993</p> <p><u>Results/Conclusions:</u> Currently negotiating lease/option with Skyline Farms. Working with BPA modeling to develop methods to evaluate benefits. Report on progress received August 1993.</p> | <p>FY 1994: Next report due November 1993.</p> |
| 93-029 | <p>Survival Estimates for the Passage of Juvenile Salmonids through Dams and Reservoirs - NMFS-UW</p> <p><u>Project Officer:</u> P. Poe</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. Test and develop the ability to precisely measure the survival of juvenile salmon as they pass through dams and reservoirs. 2. Apply methodology within selected reaches of the Columbia and Snake rivers to obtain current reliable baseline information on juvenile salmon passage survival for a variety of hatchery-reared and wild stocks, spanning a spectrum of water years, and relate the estimates to environmental and biological variables such as flow, temperature, and smolt condition, 3. Provide valid survival estimates to the scientific community and river managers to ensure that future Columbia River fish policy decisions are based on the best up-to-date biological information available. 4. Establish good, reliable science as the basis for making decisions on which salmon recovery measures are improving juvenile passage survival. | <p><u>Date Initiated</u> February 1993</p> <p><u>Results/Conclusions:</u> Research efforts and results reported to Council July 1993.</p> | <p>FY 1993: Conducted initial pilot study using hatchery-reared yearling chinook to field test and evaluate statistical design elements and research methods of a modified single release model using PIT tag technology, advanced computer technology, and scientific analysis. Present preliminary results to Council.</p> <p>FY 1994: Present 1993 results to Council in November 1993 and finalize in annual report February 1994. Field test and evaluate protocol for a second year, refining the statistical methodology. Define and eliminate logistical constraints.</p> <p>FY 1995 & 1996: Apply previous year's findings toward determining survival estimates for both hatchery produced and wild chinook migrants.</p> |

Table 3 - Section 3.2 Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------|---|--|---|
| 93-055 | <p><u>Water Acquisition/Lease Fee/Purchase Option</u></p> <p><u>Project Officer: D. Daley</u></p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. Benefits to hydropower generation, environmental quality and improvements in Snake River flows to be evaluated under Project #93-044. 2. Initial lease/option period will investigate the feasibility and potential consequences of water acquisition for flow augmentation. 2. Address NPPC measures 3.3A(4), 3.3B(7), 3.6A(1) and 6.6B(4). | <p><u>Date Initiated:</u> July 1993</p> <p><u>Results/Conclusions:</u> Initiated negotiations on lease/option agreement on up to 50 kaf of water originating from water rights held on Snake River mainstem and Malheur River near Ontario, OR.</p> | <p>FY 1994: Finalize lease/option agreement on up to 50 kaf of water or exercise option to purchase. Explore other opportunities for water acquisition to benefit T&E stocks.</p> |
| 90-80 | <p>Columbia River Basin PIT-Tag Information System (PTAGIS)- PSMFC</p> <p><u>Project Officer: J. Bauer</u></p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. To develop, operate, maintain, and enhance a long-term Columbia River Basin-wide database of information on PIT-tagged fish to ensure that all PIT-tag information is available in a timely and useful manner to all state, Federal, Tribal and other interested entities. 2. To perform all other activities related to Columbia River PIT-tag systems including: maintenance and documentation of fish tagging and interrogation systems; operation and maintenance of equipment at the remote sites. Provision of technical support for software and hardware; provision of training to users; and purchase of PIT-tags and associated equipment. | <p><u>Date Initiated:</u> May 1990</p> <p><u>Results/Conclusions:</u> PTAGIS office established at the Pacific States Marine Fisheries Commission (PSMFC) in Portland in 1990. Completed transfer of data and maintenance of PIT tag systems from NMFS, Seattle to PTAGIS, Portland, 1991.</p> | <p>Continuing: BPA will continue to fund PTAGIS.</p> |

**Strategy
for Salmon****3.3 Snake River Flow, Velocity And Temperature Control****3.1B Columbia River Spring Migrants**

In addition to the existing water budget volume, provide up to 3 million acre-feet of water for spring migrants subject to conditions specified below.

3.3A Spring Migrants

Use the following measures to aim to provide a minimum monthly average flow equivalent of 85,000 cubic-feet per second at Lower Granite from April 16 through June 15 in all water years.

Bonneville, Corps of Engineers, Bureau of Reclamation and Other Parties

2. Operate the Dworsbak Reservoir to improve salmon migration conditions consistent with the measures listed.

Bureau of Reclamation, Idaho, Oregon, Bonneville and Other Parties

4. Unless the forecasted April through July runoff at Lower Granite exceeds 29 million acre-feet, use water efficiency improvements, water marketing transactions, dry-year option leasing, storage buy-backs, and other measures to secure at least 100,000 acre-feet of water from the Snake River Basin for spring migrants.

Bonneville

5. Fund an independent, third-party evaluation of the effectiveness of these measures in providing water for salmon and steelhead.

3.3B Fall Chinook

Corps of Engineers, Bonneville and other Parties

1. Continue to release cool water during August and September from both Dworsbak and the Hells Canyon Complex dams to reduce lower Snake River water temperatures for adult fall chinook salmon and steelhead. Evaluate the effectiveness of this measure. The objective of this evaluation is to target reduced water temperatures at Ice Harbor Dam by September 1 of each year, and to determine the effectiveness of these operations on adult fish passage through the lower Snake River. Report results of this evaluation to the Council by December 1993.

2. If Dworsbak reservoir is full or nearly full by the end of July, draft Dworsbak Reservoir as much as 20 feet in August as needed for the temperature control elevation. In September, beginning immediately after Labor Day, release up to 200,000 acre-feet of additional cool water from Dworsbak Reservoir, as needed for the temperature control evaluation. If Dworsbak Reservoir is not full, use of Dworsbak for temperature control will be addressed in the July meeting of the Fish Operations Executive Committee.

All Parties

3. Seek funding assistance for necessary modifications to recreational and commercial facilities to allow Dworshak Reservoir to operate at reduced levels to improve survival of fall chinook consistent with the mitigation provisions of these amendments.

Bureau of Reclamation, Idaho, Bonneville and Other Parties

7. Use water efficiency improvements, water marketing transactions, dry-year option leasing, storage buy-backs, and other measures to provide up to 137,000 acre-feet of water to refill the Brownlee Reservoir in August, and to provide 100,000 acre-feet of water to reduce water temperatures.

Bonneville

8. **Fund** an independent, third-party evaluation of the effectiveness of these measures in Section 3.3B7, above, to provide water for salmon and steelhead.

Table 4 - Section 3.3 Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------|--|---|---|
| 91-067 | <p>Idaho Water Rental Pilot Project - Feasibility/ Coordination Study - Resident Fish and Wildlife - JDFG</p> <p><u>Project Officer</u>: D. Watkins</p> <p><u>Objectives</u>:</p> <ol style="list-style-type: none"> 1. Identify existing resident fish and wildlife resources and programs in the Snake, Payette and Clearwater rivers. Conduct literature review to determine the habitat conditions for resident fish and wildlife in these rivers (e.g., goose nesting below reservoirs, reservoir fisheries, Snake River sturgeon populations, river channel capacity, etc.). 2. Identify expected changes in habitat conditions in each river system resulting from various water release strategies to assist anadromous fish migration. 3. Relate expected changes in habitat conditions to potential impacts/benefits to resident fish and wildlife resources and programs. 4. Develop water release strategies that will protect or provide enhancement for resident fish and wildlife resources and programs. 5. Prepare final report. | <p><u>Date Initiated</u>: Aug. 1, 1991</p> <p><u>Results/Conclusion</u>: First annual report for Phase 1 printed October 1992.</p> | <p>N 1993: Refined modeling efforts, developed a monitoring plan to coordinate assessments of water releases on resident fish and wildlife resources and programs, and quantified benefits/impacts to resident fish and wildlife as a result of water rental releases for the improvements of anadromous fish migration.</p> <p>FY 1994: Continue with Phase 2 and 3 of study to refine predicted impacts, develop and implement a monitoring plan and make future recommendations.</p> |
| 93-043 | <p>Snake River Steering Committee Coordination</p> <p><u>Project Officer</u>: D. Daley</p> <p><u>Objectives</u>:</p> <ol style="list-style-type: none"> 1. Prepare a report that assesses opportunities to secure, by the end of 1996, at least 1 million acre-feet of additional water from the Snake River Basin, using water efficiency measures, market transactions, etc | <p><u>Date Initiated</u>: July 1, 1993</p> <p><u>Results/Conclusions</u>: Responses from Request for Proposals received May 1993.</p> | <p>N 1994: Finalized contractor selection made to Procurement Sept. 1993.</p> <p>3. Report due by 1 year from contract award.</p> |

Table 5 - Section 3.3 Strategy for Salmon Projects

| Measure Number | Measure Description | BPA RPA & Project Number | Project Title & Description | Current Measure Activity | Project Duration/ Start-End Dates | Project Manager |
|----------------|---|--------------------------|-----------------------------|---|-----------------------------------|----------------------------------|
| 3.3A.4 | Secure at least 100,000 acre-feet from Snake River Basin for spring migrants. | F1101: 93-044 (93-055) | | Negotiations in progress using the Idaho Water Rental Committee. | | Dan Daley, BPA, 503/230-3066 |
| 3.3A.5 | Snake River Flow Evaluation | SS 102 | | BPA and the Northwest Power Planning Council staff will be working during FY 1994 to develop necessary protocols and identify required data to evaluate Snake River flows. If these activities require FY 94 funds, BPA will make them available. | | Joyce Lindsay, BPA, 503/230-5710 |
| 3.3B.8 | Snake River Flow Evaluation | SS 103 | | BPA and the Northwest Power Planning Council staff will be working during FY 1994 to develop necessary protocols and identify required data to evaluate Snake River flows. If these activities require FY 94 funds, BPA will make them available. | | Joyce Lindsay, BPA 503/230-5710 |

*strategy
for Salmon*



3.4 Columbia River Flow And Velocity

3.4A Spring Migrants

Bonneville, Corps of Engineers, Bureau of Reclamation and Other Parties

1. **Monitor** and evaluate the biological benefits of **John Day** Reservoir operations so that the Fish Operations Executive Committee can gain better information to determine **in future** years how the operations can complement flow velocities and other factors to achieve rebuilding targets.

Bonneville

4. **Beginning in** January of each year, provide to the Council and other interested parties a **written monthly** report of the volume of water stored pursuant to Section 3.4A2, above. By April 30th of each year, identify the location and total volume of water stored for juvenile fish flow augmentation.

Bonneville

8. Because of the uncertainty in the supply of out-of-region energy, immediately secure options for one or more resources to augment reduced hydroelectric energy during winter months.

**Strategy
for Salmon****3.4B Summer Migrants**

Bonneville

1. During July and August in below average water years, provide a volume of water from **the** U.S. Non-Treaty Storage water available in that year to facilitate evaluations described below.
2. Continue to seek energy exchanges and other energy alternatives with potential to increase Columbia River flows in July and August to facilitate evaluations and improve **sur-**vival of summer migrants.

3.5 Snake River Reservoir Drawdown Strategy

The region must expand existing options for improving survival of juvenile fish migrating in the river.

Parties conducting tests and evaluations should report progress to the Council no less than semiannually, beginning May 30,1992, and submit interim reports by November 1,1992, and final reports by November 1,1993.

3.5A Drawdown Evaluation

An integrated, multidisciplinary planning effort is necessary to demonstrate and develop the Snake River reservoir drawdown strategy. The development of the reservoir drawdown strategy will focus on the four lower Snake River projects and will include an operations plan, design plan, mitigation plan and biological plan.

Interim Plans

By November 1,1992, interim plans prepared pursuant to this section should be submitted to the Council for review and approval. At that time, the Council will establish an implementation schedule for **further** steps in the development of a reservoir drawdown program. Final plans should be submitted by November 1,1993, for Council review and approval.

Bonneville and Corps of Engineers

1. In consultation with the fishery managers of the Snake River Basin, stating as early as possible in 1992, conduct any tests necessary to assist in the formulation of the plans called for in this measure.

Council, Bonneville, Corps of Engineers and Bureau of Reclamation

2. Establish a committee to coordinate analyses conducted by the federal agencies and oversee the development of the plans described in this section.

**Strategy
for Salmon****Bonneville**

3. In coordination with the committee, **fund** independent technical resources as needed to enable the committee to review the adequacy of analyses conducted by the federal agencies and to conduct their own analyses when the committee or the chair deem appropriate. Funding will be based on a scope of work approved by the Council no later ~~than~~ February 1992.

Table 6 - Section 3.5 Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------|---|---|--|
| 93-10 | <p>Technical Assistance in the Development of the Snake River Drawdown Biological Plan</p> <p><u>Project Biologist:</u> R. MacKay</p> <p><u>Objectives :</u></p> <ol style="list-style-type: none"> 1. Describe resources affected by lower Snake River drawdown. 2. Estimate potential effects of drawdown on above resources. 3. Identify missing or weak information necessary for analysis. 4. Provide preliminary risk assessment on drawdown. 5. Provide recommendations for Wore analysis. | <p><u>Date Initiated:</u></p> <p><u>Results/Conclusions:</u> Draft Biological Plan to be completed fall 1993.</p> | <p>FY 1994: Final Biological Plan doe.</p> |

3.6 Additional Measures to Increase Survival

Parties conducting tests and evaluations should report progress to the Council no less than semiannually, beginning May 30, 1992, and submit final reports by the end of 1993.

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(See Section 6.2B)



Table 7 - Section 3.6 Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------|--|---|--|
| 89-107 | <p>Development of Epidemiological Methods for Use in Quantifying Survival Relationships from PIT Tag Releases of Salmon and Steelhead Smolts - UW</p> <p><u>Project Officer:</u> P. Poe</p> <p><u>Objectives:</u> 1. Phase I: Develop epidemiological models and regression estimators, tests of survival relationships, and tests of assumptions and goodness-of-fit statistics. Phase II: Determine location and number of required size calculations for PIT tag release studies, conduct computer studies of robustness of models, develop alternative scenarios for PIT tag studies, and develop computer package for statistical design and analysis.</p> | <p><u>Date Initiated:</u> October 1989</p> <p><u>Results/Conclusions:</u> Under Phase I, the statistical capabilities to analyze complex statistical models for PIT tag release studies that incorporate pre-release covariates were developed. Under Phase II a suite of statistical models with expanded flexibility in describing relationships between survival probability, detection probabilities, and measured covariates was developed. Recommendations were made to develop user-friendly computer software so that these statistical models can be used by fisheries managers, biometricians, and administrators.</p> | <p>FY 1993: Complete statistical software programs to expand usefulness to potential users.</p> <p>FY 1994: Continue to provide on an as-needed basis to BPA and the region, biological and statistical guidance on the design and analysis of PIT tag survival studies, drawdown tests, and protocols for effective monitoring and evaluation that can be implemented with existing analytical tools and facilities.</p> |
| 89-46 | <p>Spring Chinook Smolt Quality Assessment - NMFS</p> <p><u>Project Officer:</u> R. Morinaka</p> <p><u>Objectives:</u> 1. Select and monitor fish quality at five hatcheries. 2. Correlate these data with overall survival of the released groups (total contribution). 3. Determine suitability of smolt quality indices and other physiological parameters for assessing fish quality and improving hatchery effectiveness.</p> | <p><u>Date Initiated:</u> February 1989</p> <p><u>Results/Conclusions:</u> 1. Sampling during the first two years at four hatcheries indicated that most fish were released prior to the initiation of the smoltification process. 2. Significant differences were noted in upriver vs. downstream hatchery releases in degree of smoltification. 3. Sampling is continuing. 4. Developed plan for monitoring physiological parameters of wild smolts. 5. Results will tentatively include 1993 return adults.</p> | <p>N 1993-1996: Recovery of adult returns.</p> <p>FY 1996: Recovery of adult fish complete; final report written.</p> |

Table 7 - Section 3.6 Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------------------|---|---|--|
| 93-008 | <p>Allowable Gas Supersaturation for Fish Passing Hydroelectric Dams.</p> <p><u>Project Officer</u>: G. R. Bouck</p> <p><u>Objectives</u>:</p> <ol style="list-style-type: none"> 1. Design and construct test chambers that provide similar pressure changes and turbulence to approximate (a) passes through a turbine, and (b) through a smolt collection and bypass system. 2. Using the above, determine the allowable level of total dissolved gas (supersaturation) that will not increase the immediate post-passage predation problem. | <p><u>Date Initiated</u>: January 1993</p> <p><u>Results/Conclusions</u>: None.</p> | <p>FY 1994: start procurement October 1993. Award contract November 1993. Complete Objective 1, April 1994.</p> <p>FY 1995: Complete Objective 2, November 1994. Final Report May 1995.</p> |
| 91-17 (no '94 funds) | <p>Factors Affecting Migration and Survival of Juvenile Spring/Summer Chinook Salmon above Lower Granite Dam (Lower Granite Reservoir Migration Study) - NMFS</p> <p><u>Project Officer</u>: P. Poe</p> <p><u>Objectives</u>:</p> <ol style="list-style-type: none"> 1. Identify and quantify the major sources of natural and man-caused mortality affecting migratory juvenile chinook salmon above Lower Granite Dam. 2. Project will be implemented in two phases. Phase I will perform a literature review, identify data needs, and assemble a technical steering committee to define project scope and develop a long-term study plan. Phase II will implement specific studies which address objectives of the long-term study plan. | <p><u>Date Initiated</u>: February 1991</p> <p><u>Results/Conclusions</u>: Phase I Research plan completed August 1993.</p> | <p>FY 1993: Two studies that addressed information needs identified in the long-term study plan were implemented in 1993; BPA Project # 93-029 NMFS/UW Pilot Survival Study and USFWS/NPT Juvenile Radio Tracking Migration Study funded under Corps Columbia River Salmon Mitigation Analysis.</p> <p>FY 1994: Project 93-029 and USFWS/NPJ Juvenile Migration Study to continue.</p> <p>FY 1994 and Beyond: Identification, prioritization and implementation of other specific research projects addressing long-term study plan will occur through Mainstem Scoping Group IPP process.</p> |

**Strategy
for Salmon****3.6A John Day Drawdown**

Corps of **Engineers, Bonneville, Washington**, Oregon and Others

1. Identify and report to the Council by March **15, 1992**, any measures that can be implemented promptly to remove **limiting** conditions and allow the John Day Reservoir to be operated at a lower level without adversely affecting present users, even if the measures do not achieve **minimum operating** pool level.
2. Beginning immediately: determine requirements, including cost of measures, **time** to complete, and mitigation of impacts to reservoir users, to permit annual operation of John Day Reservoir at **minimum** operating pool level (257 feet elevation) from May 1 to August 31; and evaluate potential biological impacts of such **an** operation. Report these findings to the Council as soon as feasible and not **later than** November **1, 1992**.
3. Following Council review of the findings described in Section **3.6A2**, above, and in consultation with user groups along **the** reservoir, prepare and implement a mitigation plan consisting of measures **to** mitigate **the** economic and other impacts of the reservoir **drawdown** to the extent practicable.

3.6B Additional Storage

Bureau of Reclamation, Corps of **Engineers, Bonneville**, Idaho, Oregon and Others

1. Beginning in 1992 and concluding by **the** end of 1993, conduct a cooperative appraisal of **the** potential for new Snake River **Basin** storage to provide additional water for lower Snake River flow augmentation to aid migrating **salmon** and steelhead, or to provide added flood control storage that would augment **salmon** and **steelhead** flows. In addition, expeditiously explore **short**-term options to develop storage capacity for at least 200,000 acre-feet of water.

3.6C Water Measures

Augmenting flows for salmon and **steelhead will** require a mix of **measures** because no single alternative **is** likely to **eliminate** the need for all other alternatives. This section puts a high priority on measures such as **water** banks, water **efficiency** improvements, water transactions and **the like**.

Idaho, Oregon, Washington, and **Bureau** of Reclamation

2. Submit a work **plan** and budget for Snake flow augmentation water committee, and potential contractor assistance **to** accomplish this work and submit recommendations no later than **the** end of 1993.

Bonneville

3. Fund travel and related expenses for **committee** members, and **staffing** and contractor expenses shown in the work plan and budget approved by the Council.

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for Salmon



Bonneville, Corps of Engineers and Bureau of Reclamation

5. Under **the** auspices of the Columbia River Water Management Group, **fund** a review of the current water supply forecasting system. Should **the** review identify methods for improving accuracy or significant benefits elsewhere, **Bonneville**, the Bureau, the Corps or **the** states should fund implementation of those methods.

3.6D River System Investigations

Bonneville, Corps of Engineers and **Bureau** of Reclamation **in** Consultation with **the Council** and **Other** Patties

1. Evaluate seasonal exchanges, long-term **nonfirm** transactions, options for storing water above power **rule** curves, accelerated acquisition of **winter peaking** conservation and **renewables**, efficient direct application of renewable resources, wholesale and retail price structures, and other changes **in** power system operations that could increase flows for salmon and steelhead, or offset the cost of improving **salmon** and **steelhead** flows. Complete and report to the **Council** not **later than** the end of 1993.

3.6F Research and Monitoring

Flow, Velocity and Salmon Survival

During the **1980s**, the region made unsatisfactory progress **in** evaluating the relationship between spring and **summer** flow, **velocity** and **fish** survival, **notwithstanding** concerted efforts by several parties. ... The Council joins with **the** National Marine Fisheries Service and other regional interests in insisting that **this** relationship immediately receive **the** highest priority in **the** region's research **efforts**.

Bonneville

3. As soon as possible, fund additional, independent, third-party scientific evaluations to determine the relationship of flow and water velocity to the travel time and survival of **juvenile** spring, summer and **fall chinook** and sockeye salmon.

4. The independent contractor(s) should report **their** research design, efforts and results to date to the Council by July **15, 1993**, and quarterly **thereafter**.

5. Continue to fund, on **an** expedited basis, ongoing evaluations in this research area of **emphasis**.

PIT Tags3

Bonneville

7. Fund on an expedited basis application of PIT tags, installation of detectors, and other **salmon** marking techniques for evaluations.

8. Fund **the** installation of juvenile **salmon** PIT tag detection facilities at Little Goose,

**Strategy
for Salmon**



Lower **Monumental, John Day, McNary** and Bonneville dams, to facilitate assessments of **naturally** producing stocks and improve the quality **of monitoring** the effects **of juvenile** and **adult** fish passage. Installation should be in coordination with the Corps of Engineers and **the fishery managers**.

Gas Supersaturation

Bonneville

9. Fund a **study** of gas supersaturation and its effects on **salmon** and steelhead passing through dam turbines, collection and bypass systems, spillways, adult ladders and **other** means, **particularly** in connection with possible reservoir **drawdowns**.

Smolt Monitoring

Fish Passage Center, Council and Other Parties

10. Continue existing monitoring efforts on flows, fish passage, water conditions, **smolt** condition, etc.

Resident Fish and Wildlife

Idaho, Montana, Oregon and Washington, in Coordination with Appropriate Indian Tribes

11. By February **28, 1993**, review, compile and submit to **the** Council all existing information on the impacts of **salmon** and steelhead flow operations on resident fish or wildlife. In addition, identify specific research, monitoring and evaluation activities needed to **determine** the potential impacts of salmon and steelhead flow operations **on** resident **fish** and wildlife, particularly native species, **in** and around Hungry Horse, Libby, Grand **Coulee, Brownlee** and **Dworshak** reservoirs. Use this information to develop analytical methods or biological rule curves for reservoir **operations...**

Bonneville

12. Fund research, monitoring and evaluation activities needed to determine **the** potential impacts of **salmon** and steelhead flow operations on resident fish and wildlife, particularly native species, in and around Hungry Horse, Libby, Grand **Coulee, Brownlee, Dworshak** and other reservoirs.

Table 8 - Section 3.6 Strategy for Salmon Projects

| Measure Number | Measure Description | BPA RPA & Project Number | Project Title & Description | Current Measure Activity | Project Duration/Start-End Dates | Project Manager |
|----------------|---|---|---|---|----------------------------------|---|
| 3.6F.3 | Fund evaluations of flow and velocity effectiveness in improving survival. | F1101: 93-029 | | Results of 1993 Pilot Survival Study, Project 93-029, to be presented to Council, November 1993; annual evaluation report available February 1994. | | Carolyn Zarnekee, BPA, 503/230.3656; Pat Poe, BPA, 503/230-4043 |
| 3.6F.4 | Bring entity conducting flow/survival study to Council for report on status and progress | F1101: 93-029 | | Reported to Council July 1993, on progress and status. Presentation of results November 1993. | | Carolyn Zarnekee, BPA, 503/230-3656 |
| 3.6F.5 | Fund independent studies of flow/survival relationships | F1101: 93-029 | | No specific independent studies on flow survival initiated. 93-029 deals with development of methods to measure flow survival. | | Carolyn Zarnekee & Pat Poe, BPA, 503/230-3656/4043. |
| 3.6F.7 | Fund PIT tags, detectors and other marking techniques for evaluation | F1121: 92.073 F1101: FL-028 F2616: 91-040 | | 92-073, laser marking experiments ongoing. 91-028 deals with PIT tagging wild chinook. 91-040, pre-engineering design for Bonneville Dam juvenile fish sampling, continues. Project 83-3 19, with project 92-071, looking at feasibility of acoustic PIT tag. | | Jerry Bauer, BP.4 503/230-7579; Pat Poe, BPA, 503,230.4043 |
| 3.6F.S | Fund installation of juvenile PIT tag detectors at mainstem dams. | F2117: 91-064 F2115: 91-040 | | work on Lower Monumental progress under project 91-064. Bonneville design work under project 91-040. John Day preliminary design to commence 12/93. No project number yet assigned. Little Goose PIT finished FY 93. | | Steve Levy, BPA, 503/231-6968 Bill Maslen, BPA, 503/230-5549 |
| 3.6F.9 | Fund a study of gas supersaturation effects on survival | F1121: 93-008 | | RFP deferred to 1994. RFP has components that deal with effects of drawdown supersaturation. Also, existing predator research (82-003) has a component dealing with gas supersaturation. | | Jerry Bouck, BPA 503/231-6942; Bill Maslen, BPA, 503,230.5549 |
| 3.6F.10 | Continue existing monitoring efforts on flows, passage, water conditions, etc. | F1101: 82-127 | | Ongoing responsibility. Funds for FPC & all SMP contractors in 87.127. | | Gary Johnson, BPA, 503,230.5823 |
| 3.6F.11 | Review and submit existing information on impacts of flow operations on storage reservoirs. Continue to develop biological rule curves. | 86-118, 83-465, 87-407, 87-99, 88-63 | All contracts are administered by Coordination and Review staff | Funded through the SOR. Ongoing development with regularly scheduled committee meetings. No definite date established. | | Charles Craig, BPA, 503/231-6946 with SOR |
| 3.6F.12 | Fund research and monitoring of effects of salmon flows on resident fish and wildlife at storage reservoirs. | 86-118, 87-99 | All contracts are administered by Coordination and Review staff | Studies funded under SOR | | Charles Craig, BPA, 503/231-6946 with SOR |

Strategy
for Salmon



3.7 Screens

the **Council** establishes **performance** standards and sets schedules for the installation of new or improved screens and bypass systems at Snake and Columbia river **federal** dams. Additionally, the Council calls for **monitoring** and evaluation of existing screens and new screen designs to improve **their** effectiveness and **ensure the availability** of functional screens for anticipated changes in flow/velocity regimes.

3.7B Measures

Corps of **Engineers, Bonneville** and Other Parties

6. Continue **to** implement **fully** the **1989 Fish** Spill Memorandum of Agreement

Corps of Engineers and **Other Parties**

7. Explore promising new approaches to fish bypass technologies, including the use of sound to guide fish. Should results of this research indicate **high** efficiencies at costs lower than screen modifications, and no persuasive biological or **other** considerations **that** would preclude use of a new technique, bring a proposal to the Council for incorporating it into bypass strategies.

Table 9 - Section 3.7 Ongoing and New Projects

| Project No. | Title and Objectives | status | Schedule and Milestones |
|-------------------------|---|---|--|
| 91-40 | <p>Bonneville Dam Juvenile Pit Tag Detection Facility -USACE</p> <p><u>Project Officer:</u> S. Levy</p> <p><u>Objectives:</u> Design and construct juvenile PIT tag detection facilities at Bonneville Dam.</p> | <p><u>Start Date:</u> March 1992</p> <p><u>Results/Conclusions:</u> None at this time.</p> | <p>N 1993: Started environmental and design work.</p> <p>N 1994: Continue design and environmental work.</p> <p>N 1995 & FY 1996: Continue design.</p> <p>N 1997: Begin construction.</p> |
| 91-64 | <p>Little Goose/Lower Monumental PIT-Tag Facility - USACE</p> <p><u>Project Officer:</u> W. Maslen</p> <p><u>Objectives:</u> This contract funds the Architect-Engineer to provide the plans, specifications, design analysis, construction and installation of a Passive Integrated Transponder (PIT) Tag Detector System at the Little Goose and Lower Monumental Juvenile Fish Facilities. Facilities would enable conduct of special juvenile fish monitoring and research activities associated with ESA and increase the capability to measure the effectiveness of any Program action.</p> | <p><u>Date Initiated:</u> March 1991</p> <p><u>Results/Conclusions:</u> PIT-tag detector gate was installed at Little Goose Dam.</p> | <p>N 1993/1994: Install PIT-tag facility at Lower Monumental Dam by spring 1994.</p> |
| 92-45 (no '94 funds) | <p>Phase 2 Screen Design and Construction - Cascade Irrigation District</p> <p><u>Project Officer:</u> M. Nelson</p> <p><u>Project Biologist:</u> J. Stroklund</p> <p><u>Objectives:</u> Conduct design, and construct fish screening facilities for a pumping plant for the Cascade Irrigation District. These facilities will protect juvenile spring chinook from being trapped in the pumping intake.</p> | <p><u>Date Initiated:</u> April 1992</p> <p><u>Results/Conclusions:</u> Contract executed, pre-design initiated. Final design completed and construction completed in N 1993.</p> | <p>N 1993: Final design completed and construction completed in N 1993.</p> <p>N 1994: Test facilities. Close contract.</p> |

Table 10 - Section 3.7 Strategy for Salmon Projects

| Measure Number | Measure Description | BPA RPA & Project Number | Project Title & Description | Current Measure Activity | Project Duration/ Start-End Dates | Project Manager |
|----------------|--|--------------------------|-----------------------------|--|-----------------------------------|----------------------------|
| 3.7B.7 | Investigate use of sound to divert fish. | F11PM: 92-071 | | BPA has lead. Literature review completed under Phase I Sept. 1993. Phase II effort - addressing experimental protocols for systematic investigations of applications of sound to modify behavior of fish. | | Pat Poe, BPA, 503/230-4043 |

Strategy for Salmon



3.8 Predation

the Council calls for measures to reduce predation A comprehensive monitoring and evaluation program will evaluate the effectiveness of predator control efforts.

3.8A Performance Standard

Bonneville Corps of Engineers and Mid-Columbia Public Utility Districts

1. Reduce squawfish population by about 20 **percent**, with the expectation that this will lower salmon mortality in reservoirs by 25 percent, in the Snake and Columbia rivers.

3.8B Measures

Bonneville and Other Parties

1. Implement, monitor and evaluate long-term effectiveness of an expanded squawfish demonstration project. Evaluation should quantify changes in predator populations and **in the overall** rate of predation. Provide an annual report to the Council on the effectiveness of this program beginning October 1992.

Corps of Engineers, **Bonneville** and Federal Energy Regulatory Commission

2. Evaluate and expeditiously implement measures to reduce smolt mortality due to fish and avian predation at bypass system release sites.

Table 11 - Section 3.8 Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------|--|---|--|
| 90-77 | <p>Development of a System-Wide Predator Control Program - ODFW</p> <p><u>Project Officer:</u> W. Maslen</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. Determine the significance of predation in Columbia River reservoirs through implementation of indexing of predator abundance and integration with consumption indices. 2. Implement squawfish management throughout the Lower Columbia and Snake Rivers. 3. Implement an evaluation of the Squawfish Management Program. | <p><u>Date Initiated:</u> April 1990</p> <p><u>Results/Conclusions:</u> Squawfish abundance was indexed in the Lower Columbia River (Bonneville to Ice Harbor) in 1990, Lower Snake River (Ice Harbor to Hells Canyon) in 1991, and in the lower river below Bonneville Dam in 1992.</p> <p>The significance of predation is of a similar order of magnitude in each federal reservoir when compared to John Day. Predation is greatest downstream of Bonneville and in Bonneville and The Dalles reservoirs and somewhat less in Snake River reservoirs when compared to John Day.</p> <p>Over 200,000 squawfish were caught throughout the federal hydrosystem in 1991 and over 230,000 in 1992; this equates to an annual exploitation rate of about 12%. Total catch in 1993 was approximately 128,000 northern squawfish.</p> | <p>FY 1994 and beyond: Continue implementation and evaluation of squawfish management throughout the Lower Columbia and Snake Rivers.</p> |

Table 11 - Section 3.8 Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------|--|--|---|
| 90-78 | <p>System-Wide Significance of Predation on Juvenile Salmonids in Columbia and Snake River Reservoir - USFWS</p> <p><u>Project Officer:</u> W. Maslen</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. Index predator consumption rates of juvenile salmonids in reservoirs of the Lower Columbia and Snake River Basin. 2. Assist ODFW (Project 90-77) to index predator abundance, integrate predator abundance and consumption indices to estimate system-wide losses of juvenile salmonids to predators. Continue to provide support to implement, manage, and evaluate squawfish management program. | <p><u>Date Initiated:</u> March 1990</p> <p><u>Results/Conclusions:</u> Squawfish consumption was indexed in the Lower Columbia River (Bonneville to Ice Harbor) in 1990, Lower Snake River (Ice Harbor to Hells Canyon) in 1991, and in the lower river below Bonneville Dam in 1992.</p> <p>See Project 90-077.</p> | <p>FY 1994: continue integration of consumption indices with abundance indices to determine the significance of predation in the Lower Columbia and Snake Rivers relative to John Day reservoir.</p> <p>Continue to assist ODFW in the implementation and evaluation of the squawfish management program.</p> |
| 82-3 | <p>Significance of Predation and Development of Prey Protection Measures for Juvenile Salmonids in the Columbia and Snake River Reservoirs.</p> <p><u>Project Officer:</u> W. Maslen</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. Determine if substandard juvenile salmonids (dead, injured, stressed, diseased, naive) are more vulnerable than standard or normal juvenile salmonids. 2. Develop and test smolt protection measures to control predation on juvenile salmonids by reducing predator-smolt encounters or predator capture efficiency. | <p><u>Date Initiated:</u> 1983</p> <p><u>Results/Conclusions:</u> 1. Results, to date, indicate dead prey may be preferred over live. There is no significant difference in selection of injured vs. uninjured smolts, and stressed fish may be more vulnerable to predation than unstressed fish. 2. Research to develop prey protection measures are underway, with focus on developing biological criteria for juvenile fish release sites at dams. Evaluation of the effect of intensive, site specific removal of squawfish is being conducted at Bonneville Hatchery; the first two years of this 3 year study indicate slight to moderate increases in fish survival as a result of localized squawfish removal.</p> | <p>FY 1994: (1) Continue prey selection experimentation in the laboratory and the field to determine relationship between predation and prey condition and (2) develop and evaluate prey protective measures (e.g., reducing predator-prey encounters, reducing predator feeding efficiency, reduce encounters between prey and predators, etc.).</p> |

Table 12 - Section 3.8 Strategy for Salmon Projects

| Measure Number | Measure Description | BPA RPA & Project Number | Project Title & Description | Current | Measure Activity | Project Duration/ Start-End Dates | Project Manager |
|----------------|--|--------------------------|-----------------------------|---------|--|-----------------------------------|----------------------------------|
| 3.8B.1 | Report on the effectiveness of the squawfish demonstration project | F1 121: 90.077 | | | Presentation made at Council meeting, 1/14/93. 1992 draft reports available for review. Field activities ongoing. | | Bill Maslen, BPA 503,230.5549 |
| 3.8B.2 | Evaluate modifications to bypass release systems to reduce predation | F1122: 82-003 | | | BPA contract 82-003 has work related to predator related mortality. Corps has lead on study changes to bypass facilities. Final report for 1992 due in March 1993. Field activities ongoing. | | Bill Maslen, BPA 503/230-5549 |

Strategy
for Salmon



3.9 Transportation

the Council calls on the Corps, in **collaboration** with the tribes, state fishery managers and the National Marine Fisheries Service, to aggressively evaluate **and** implement potential **transportation** program **improvements**.

10. Expedite **funding** for a preliminary evaluation of: a) the feasibility of constructing and operating alternative fish bypass and collection facilities at the **upstream** end of Lower Granite Reservoir and nearby tributaries for downstream migrating **salmon** and steelhead; b) the feasibility of constructing an alternative stream channel or pipeline **structure** adjacent to or **in** the river to transport smolts to below Bonneville Dam; and c) the feasibility and benefits of net pens to increase survival of transported fish **ii** reducing mortality associated with bypass outfall **are**. The evaluation will include preliminary engineering, as well as economic and biological parameters. Report results of **all** evaluations by December 31, 1992.

Bonneville

11. Continue to conduct research on the survival of hatchery, wild and naturally spawning chinook salmon from headwater production areas and sites to mainstem transport sites to determine the extent of mortality prior to transportation.

Table 13 - Section 3.9 Strategy for Salmon Projects

| Measure Number | Measure Description | BPA RPA & Project Number | Project Title & Description | Current Measure Activity | Project Duration/Start-End Dates | Project Manager |
|----------------|---|-----------------------------|-----------------------------|---|----------------------------------|----------------------------|
| 3.9.11 | Continue research to determine survival rates of fish before reaching transportation collection sites | F1101: 91-017 F1121: 93-024 | | Phase 1 of 91-017 will develop research priorities, and tools to measure effects. Phase 2, implementation of cause/effect of survival, deferred until NMFS recovery plan; could be reprioritized. Corps drawdown studies by Rondorf, Bennett, et al. ongoing. | | Pat Poe, BPA, 503/230-4043 |

Section 4. Adult Migration

Strategy for Salmon



The Council has adopted a number of measures to improve adult migrant survival. The Council calls on the Corps of Engineers to implement all spill and operating criteria for mainstem adult fish passage facilities and to make needed improvements. In addition, the Council calls on the Corps to leave juvenile fish screens installed for a longer period to provide protection for adult salmon that fall back through the powerhouse. The Council also recommends adding project biologists to routinely inspect fish passage facilities at mainstem Corps dams. The Council also calls for various evaluations and studies to improve the effectiveness of passage facilities and, ultimately, the survival of adult salmon and steelhead.

4.1 Measures

Corps of Engineers, Bonneville and Fishery Managers

9. Evaluate the extent, and identify the causes of interdam or other automatic counting and species recognition systems for monitoring adult fish passage at mainstem Columbia and Snake river dams. Report results to the Council by December 1993.

Bonneville

11. Continue with research and development on the feasibility of installing adult fish PIT-tag detectors in the adult fish passage facilities of mainstem dams, including consideration of the capability of removing selected fish stocks for transport. Report results to the Council by December 1994.

Bonneville and Corps of Engineers, in Cooperation with Idaho Power Company and Other Interested Parties

12. Continue to evaluate whether releasing cool water from both Dworshak Dam and the Hells Canyon Complex during August and September improves adult fall chinook survival. Report results of this evaluation to the Council by December 1993. In addition:

- a. Upgrade the COLTEMP water temperature prediction model using the data and knowledge gained from all previous water temperature control operations and monitoring;
- b. Add to the existing water temperature data monitoring network to collect meteorological and hydrological data that will identify the effect of tributary watershed management and resulting inflow temperatures on mainstem Snake River water temperatures. Include additional water temperature and water velocity measurements in the lower Snake River.
- c. Conduct additional salmon and steelhead migration studies, and coordinate with ongoing fish migration and behavior such as timing, movement, fallback, straying and other characteristics. Report results to the Council by December 1993.
- d. Provide for coordinated data base management.

Starbuck Dam, Tucannon River

Various habitat problems are being addressed through cooperative efforts in the Tucannon Subbasin. There is a need to modify Starbuck Dam, however, to allow salmon and steelhead to pass the structure while blocking squawfish from passage.

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for Salmon



Bonneville

16. Fund the placement of structures immediately downstream of Starbuck Dam to provide sufficient backwater for spring chinook and steelhead to jump the dam during spring runoff, and construction of a structure at the base of the dam to allow fall chinook passage during low flows.

Table 14 - Section 4 Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------------------|--|---|--|
| 92-41 | <p>Fish Passage Evaluations</p> <p>Project Officer: W. Maslen</p> <p>Objectives:</p> <ol style="list-style-type: none"> Determine effect of zero night flow in Snake River on adult passage;- Determine passage of adults into tributaries via radio tracking; Determine hatchery/wild fish composition using discriminate scale analysis. | <p><u>Date Initiated:</u> 1992</p> <p>Results/Conclusions: Adult fish passage timing was assessed in the Snake River. Passage time ranges from about one up to several days/dam; intradam loss averaged less than 5% dam. Assessment of factors associated with passage behavior are continuing.</p> | <p>FY 1994 and beyond: Continue to provide joint funding with Corps to evaluate adult fish passage in the FCRPS.</p> |
| 88-22 | <p>Umatilla River Basin Trap and Haul - ODFW</p> <p>Project Officer: J. Marcotte</p> <p>Objective: To provide for passage of adults and smolts under low-flow river conditions</p> <p>Improvement: Passage</p> <p>Species: Summer steelhead, spring and fall chinook</p> | | <p>FY 1994: Continue to conduct program, conduct shake-out at facilities and refine operational criteria. ODFW and CTUIR are funded by BPA to operate trap and haul program. In 1993, a pescalator was acquired to move smolts from trap to trailer at Westland. Spring 1993 will provide first operational experience with enhanced flows.</p> |
| 92-25 (no '94 funds) | <p>Starbuck Passage Improvements- WDF</p> <p>Project Officer: J. Marcotte</p> <p>Objectives: Improve passage for spring chinook to reduce delay; provide passage for fall chinook.</p> | <p><u>Date Initiated:</u> January 1992</p> <p>Results/Conclusions: Construction complete October 1992. Improvements appear to be working. WDF will operate and maintain facility as part of their current program. Construction complete.</p> | <p>FY 1994: Monitor passage of fish over dam.</p> |

Table 15 - Section 4 Strategy for Salmon Projects

| Measure Number | Measure Description | BPA RPA & Project Number | Project Title & Description | Current Measure Activity | Project Duration/ Start-End Dates | Project Manager |
|----------------|--|--------------------------|-----------------------------|---|--------------------------------------|---|
| 4.1.9 | Evaluate intedam adult losses | F1121: 92-046 | | Draft annual report for WDF fall chinook migration study (92.046) 9/93. Completed project 93-026 w/Battelle produced report on adult migration 6193. Bjornn's radio-tagging study, funded by Corps, providing info on spring chinook and steelhead. Also see Measure Number 4.1.12c. | | BPA503/230-4458 |
| 4.1.10 | Evaluate feasibility of using video based counting. Report to Council; institute if feasible | F1121 92.055 | | BPA funding project 92-055 with CRITFC. This 2-yr. project is testing video counting of adults at Lower Granite Dam. Annual report printed 3/93. Report to Council not currently scheduled. Project continues through 3/94. | | Deb Watkins, BPA 503/230-4458 |
| 4.1.11 | Continue research and development of adult PIT tag detectors at mainstem dams. Report to Council | F1101: 83-319 | New Fish Tag System. | BPA project 92.046 (WDF) fall chinook study is ongoing. Draft annual report due 9/93. Corps-funded spring chinook and steelhead migration project with Bjornn ongoing. | | Jerry Bauer, BPA 503/230-7579; Pat Poe, BPA 503,230-4043 |
| 4.1.12b | Add to water temperature data network on Snake temperatures | F1121: 91-029 | | Some data is collected for fall chinook study 91-029, with UGFWg ongoing fish 1996. | | Deb Watkins, BPA 503/230-4458 |
| 4.1.12c | Conduct ongoing adult migration studies. Report to Council | F1121: 92-046 | | BPA project No. 92-046 (WDF) fall chinook study is ongoing. Draft annual report received 9/93. Corps-funded spring chinook and steelhead migration project with Bjornn ongoing. | | BPA 503,230-4458; Bill Maslen, BPA, 503/230-5549 |
| 4.1.16 | Fund Starbuck Dam passage improvement | F1121 92-025 | | Project successfully completed. | | Jay Marcotte, BPA.503/231-6962 Pat Powers, WDF 206/586.2441 |

Section 5. Salmon Harvest

Strategy for Salmon



Because of the critical status of some salmon stocks and the need to realize the benefits of changes in hydmsystem operations, the number of salmon harvested must be further limited to allow a efficient number of adult fish to **return** to spawn. Those salmon that return, called the escapement, must do so in large enough numbers to rebuild the populations, not just to **sustain current** low numbers. The Council has developed measures in this section that call for:

- Development of a program that will help fishery managers **identify** weak stocks so that these stocks **can** be afforded better protection in mixed-stock fisheries. Ongoing review and revision of sport and commercial **fishing** regulations **in areas** where weak stocks are found. More complete accounting of salmon harvest in general and, **in particular**, as a **by-catch in** fisheries for other species. Improved law enforcement to reduce illegal taking of salmon and public education programs concerning the impacts of illegal or wasteful fisheries. Development of **marking** and alternative **capture** technology that will allow unmarked wild and naturally spawning salmon to be released safely. Development of terminal harvest **opportunities in** the Columbia River and tributaries to allow harvest of stronger stocks while minimizing impacts on weak ones.

5.1 Harvest Goals, Objectives and Rebuilding Schedules

5.2 Harvest Rates and Regimes

While there is need to reduce harvest to facilitate rebuilding in the short term, there is also an **urgency** to move forward with salmon marking programs and to develop selective fishing gear and terminal harvest opportunities to increase harvest over the long term while protecting weak stocks of salmon.

5.2E Voluntary Harvest Reduction For All Fisheries

Fish Bank Program

Bonneville, Fishery Managers and Commercial Fishers

1. Design and implement a “fish bank” program (similar to a farm bank where farmers are paid not to farm) to temporarily reduce harvest by leasing available fishing permits and/or licenses.

Bonneville

3. Develop a compensation plan including **criteria** for **qualifying** for and continuing in the program. Continue the program through 1995. Review its effectiveness annually **with** the Council.
4. Fund the planning and implementation of the program, upon Council approval.

*Strategy
for Salmon*



5.3 Harvest Alternatives

5.3A Harvest Planning

Bonneville

1. Fund the fishery managers and fishers to develop and implement plans to evaluate the feasibility of live-catch fishing **technologies** and known-stock **fisheries** by 1995.

5.3B Development of Alternative Capture Technologies

This **measure** develops and evaluates capture technologies to increase harvest of abundant fish stocks and minimize effects on depleted salmon stocks. The gear should minimize **mortality** of fish that are to be released.

Bonneville

1. Fund pilot projects to demonstrate the feasibility of various methods to selectively harvest abundant stocks while conserving weak stocks.

5.3C Terminal Harvest Fisheries in the Columbia River and Tributaries

This measure calls for identification and development of terminal fishing opportunities to harvest abundant stocks while minimizing the incidental harvest of weak stocks.

Booneville

1. Fund a study to evaluate potential **terminal fishery** sites and **opportunities**.

Table 16 - Section 5.3 Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------------------|---|--|---|
| 93-60 | Columbia River Terminal Fisheries Research Project <u>Project Officer</u> : S. Smith <u>Objectives</u> : 1. Determine the feasibility of creating or expanding terminal, known stock fisheries in the Colombia River Basin to allow harvest of strong salmon stocks while providing greater protection of depressed fish stocks. | | Phase I: 1. <u>Survey</u> and classify potential terminal sites for fishability and rearing/release capability. 2. Determine costs and benefits of large-scale terminal fishing. 3. Determine environmental consequences of terminal fishing. 4. Assess necessary legal and regulatory changes needed to pursue terminal fisheries. Phase II: 1. Test rearing and release fish in terminal areas 2. Test fisheries on returning adults. Phase III: 1. Develop final terminal fishing program for regional review. |
| 92-77 (no '94 foods) | Youngs Bay Terminal Fishery <u>Project Officer</u> : R. Westerhof <u>Objectives</u> : 1. Evaluate terminal fishery opportunities in Columbia River Basin. 2. Improve the survival of artificially propagated coho salmon adults returning to Youngs Bay . 3. Acclimate and rear coho in net pens over winter in Youngs Bay. | <u>Date Initiated</u> : September 30, 1992 <u>Results/Conclusions</u> : 1. Transferred 1.25 million coho to net pens in Youngs Bay during November 1993. 2. Released 1.4 million coho May 1993. 50k were coded wire tagged to monitor survival. | FY 1994: Transfer 1.125 million coho to net pens in Youngs Bay during November 1994. FY 1994: Release 1.125 million coho at 10 fish/lb. in April or May. |

Table 17 - Section 5.3 Strategy for Salmon Projects

| Measure Number | Measure Description | BPA RPA & Project Number | Project Title & Description | Current Measure Activity | Project Duration/ Start-End Dates | Project Manager |
|----------------|---|--------------------------|-----------------------------|---|-----------------------------------|-------------------------------------|
| 5.3A.1 | Harvest Planning and Alternative Capture Technologies | 94-023 | | These measures will be funded through the Administrator's increased flexibilities and funding efficiencies . BPA anticipates issuing a request for proposal in FY 1994. | | Steve Vigg, BPA 503/230-5744 |
| 5.3B.1 | Harvest Planning and Alternative Capture Technologies | | 94-023 | These measures will be funded through the Administrator's increased flexibilities and funding efficiencies . BPA anticipates issuing a request for proposal in FY 1994. | | Steve Vigg, BPA 503,230.5744 |
| 5.3C.1 | Terminal Harvest Fisheries in the Tributaries | SS 106 | | Implementation of the measure has not had support from the region's agencies and Tribes. BPA will issue a letter seeking action on planning implementation of the measures . BPA is ready to fund a viable resulting project . | | Joyce Lindsay, BPA, 503/230-5710 |

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for Salmon



5.4 Stock Identification

5.4A Expand Genetic Stock Identification Sampling

Fishery Managers

1. Develop and implement an expanded genetic stock identification program for monitoring in river and ocean fisheries. Review the proposed program with the Council by January 31, 1993, prior to implementation.

Bonneville and Fishery Managers

2. Share the cost of expanding the program to achieve the desired level of information needed.

5.4B Improve Genetic Stock Identification Data Base

Fishery Managers

1. Determine the need for **further** development of a genetic stock identification data base for Columbia River stocks. Evaluate the potential for using DNA "**fingerprinting**" and other methods to identify chinook, **coho**, chum, sockeye and steelhead stocks in the Columbia River Basin. Review **findings** and **recommendations** with the Council by **January 31, 1993**.

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for Salmon**

Bonneville

2. Fund the genetic stock ~~identification~~ program upon Council approval

5.4C Increase Sample Rate of Harvest

Fishery Managers

1. Develop expanded marking and catch sampling programs as required for ocean and in river fisheries where Colombia River weak stocks are caught. Review with the Council as quickly as possible the magnitude and cost-effectiveness of any expansion in the existing marking and catch sampling programs prior to implementation.

Bonneville and Fishery ~~Managers~~

2. Share the cost of expanding marking and sampling programs to achieve the desired level and precision of additional coverage.

Table 18 - Section 5.4 Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------|--|--|---|
| 93-07 | Genetic Stock Identification Expansion Project <u>Project Officer:</u> R. Westerhof <u>Objectives:</u> 1. Develop and implement an expanded genetic stock identification program for monitoring in river and ocean fisheries. | <u>Date Initiated:</u> <u>Results/Conclusions:</u> Funded ODFW and WDF | Develop coordinated project FYs 1994 and 1995. |

Table 19 - Section 5.4 Strategy for Salmon Projects

| Measure Number | Measure Description | BPA RPA & Project Number | Project Title & Description | Current Measure Activity | Project Duration/ Start-End Dates | Project Manager |
|----------------|---|---|-----------------------------|--|-----------------------------------|---|
| 5.4B | Scope genetic stock identification data base for Columbia River stocks. Review with Council | F1121: 92-035 | | Final project report received. Presentation was given to BPA with Council staff attendance in February 1993. | | Deb Watkins, BPA 503/230-4458; Rick Westerhof, BPA 503/230-5061 |
| 5.4C | Develop expanded catch sample and marking programs. Review with Council the effectiveness of existing programs. | F1101: 82-013 F1121: 89-065, -066, -069 | | Existing contracts for FY93 included expanded coded wire tagging for in river sampling. August '93 meeting with fisheries managers discussed further expansion, but adequate funding is unknown. | | Jerry Bauer, BPA 503/230-7579 |

Strategy for Salmon



5.5 Other Harvest Measures

5.5C Law Enforcement and Public Education on Impacts of Illegal or Wasteful Fisheries

Illegal Domestic Ocean and River Harvest

Bonneville and Appropriate Tribal, State and Federal Enforcement Agencies

2. Develop and implement an expanded enforcement program to provide additional **protection** to Columbia River salmon and steelhead with an emphasis on weak stocks throughout their life cycle. Fund the needed program, and review accomplishments and scope of the program **annually** with the Council.

5.5D Voluntary Commercial Fishing Permit Buy-Back Program

Washington, Oregon, Bonneville and Regional Utilities

1. Develop and fund a voluntary commercial **fishing** permit buy-back program for non-treaty Columbia River commercial **fisheries**.

Table 20 - Section 5.5 Ongoing and New Projects

| Project No. | Title and Objectives | status | Schedule and Milestones |
|-------------|---|---|---|
| 92-24 | <p>Increased Levels of Fishery Harvest Law Enforcement and Public Awareness for Anadromous Salmonids in the Columbia River - CRITFC, ODSP, WDF/WDW, IDFG</p> <p>Project Officer: S. Vigg</p> <p>Objectives: 1. Increase levels of fishery harvest law enforcement through-out the Columbia and Snake River Basins. 2. Increase public awareness on the declines of Columbia Basin anadromous salmonids, and the need to reduce illegal harvest. 3. Improve adult spawning escapement of anadromous salmonids by reducing illegal take. 4. Evaluate the effectiveness of the program.</p> | <p>Date Initiated: January 1992</p> <p>Results/Conclusions: 1. Four grants were put in place effective January 1, 1992, for the initiation of the comprehensive law enforcement program. 2. Contract developed to enhance interagency task forces. 3. Request for Proposal (RFP) developed for the evaluation component of the program.</p> | <p>January 1, 1993: Funding of four grants was continued to more than double the fisheries law enforcement efforts over 1991 levels. March 1993: Draft annual report for the first year of the program completed. October 1993: Fund evaluation component of the program via RFP. December 31, 1994: three-year demonstration phase of program completed. FY 1994-95: Decision for continuation of program based on its effectiveness in reducing illegal harvest activities and available funding.</p> |

Table 21 - Section 5.5 Strategy for Salmon Projects

| Measure Number | Measure Description | BPA RPA & Project Number | Project Title & Description | Current Measure Activity | Project Duration/ Start-End Dates | Project Manager |
|----------------|---|-------------------------------------|-----------------------------|--|-----------------------------------|------------------------------|
| 5.5C.2 | Implement harvest enforcement program; review accomplishments annually with Council | F1121: 92.024 (01.02, 03,04, 05 06) | | 1993 work procured with multi-state/tribal law enforcement agency participation. Report made to Council 12/92. 4/93: Draft annual report has been submitted; final should be available 12/93. | | Steve Vigg, BPA 503/230-5744 |

Section 6. Production and Habitat

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6.1 Coordinated Habitat and Production Processes

6.1B Subregional Process

On June 1, 1991, the fisheries agencies and Indian tribes of the Columbia Basin Fish and Wildlife Authority submitted the Integrated System Plan for Salmon and Steelhead Production in the Columbia River Basin to the Council. The building blocks for the Integrated System Plan are the 31 subbasin plans prepared for each of the major subbasins or watersheds of the Columbia River Basin that produce salmon and steelhead. These plans, along with other resource management plans, will be the starting point for identifying actions to help specific salmon populations. Plans developed under the program, and **otherwise**, will be used to address **other** fish and wildlife species.

Fishery Managers and **Bonneville**

1. Form subregional teams to assist in implementation of fish and wildlife measures in the following subregions of the **Columbia** River Basin:

below Bonneville Dam;
Bonneville Dam to Priest Rapids Dam;
Priest Rapids Dam to Chief Joseph Dam;
above Chief Joseph Dam;
Snake River **from** mouth to Hells Canyon Dam; and
above Hells Canyon Dam.

6.1C Evaluation of Carrying Capacity

The Council calls on Bonneville and federal agencies to evaluate salmon survival in the Columbia River, its **estuary** and in the ocean. **This** analysis should increase understanding of the ecology, carrying capacity and **limiting** factors that influence salmon survival under current **conditions**.

Bonneville

1. Fund a **preliminary** evaluation of tributary, mainstem (including reservoirs), **estuary**, plume, near-shore ocean and marine salmon **survival**, ecology, carrying capacity and limiting factors.

2. Fund development of a study plan based on the critical uncertainties and research needs identified in the evaluation, which should be presented to the Council by December 1993. The study **plan** should include provisions for federal **funding** or cost **sharing** of the study.

Table 22 - Section 6.1 Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------|---|--|--|
| 90-58 | <p>Project Leader Function - Consultant</p> <p><u>Project Manager:</u> T. Clune</p> <p><u>Objectives:</u> Project was requested by Council to coordinate identification and resolution of fishery management issues associated with the Yakima/Klickitat Production Project. The Project Leader was appointed by the YIN, WDF, and WDW.</p> | <p><u>Date Initiated:</u> FY 1990</p> <p><u>Results/Conclusions:</u> Project progressing satisfactory.</p> | FY 1994: Continue project. |
| 93-12 | <p>Columbia River/Estuary Carrying Capacity Study</p> <p><u>Project Officer:</u> J. Gislason</p> <p>Objectives: The overall objective is implementation of Program Measure 6.1C.</p> <p>Phase I:</p> <ol style="list-style-type: none"> 1. Conduct a preliminary evaluation of Columbia River mainstem (including reservoirs), tributaries, estuary, plume, nearshore ocean, and marine survival, exology, carrying capacity, and limiting factors. Include competition between shad and anadromous salmonids. Estimate carrying capacity of above ecosystem segments, using primarily existing data. 2. Develop a study plan based on the critical uncertainties and research needs identified under Objective 1. 3. Submit study plan to Council for approval. <p>Phase II: If the study plan is approved by the Council, and BPA is identified as a funding entity for the study, fund those portions of the study appropriate for BPA funding.</p> | <p><u>Start Date:</u> November 1993</p> <p><u>Results/Conclusions:</u> None at this time.</p> | <p>November 1993: Begin procurement of Phase I.</p> <p>April 1995: Complete Phase I, submit study plan to Council.</p> |

Table 22 - Section 6.1 Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------------------|---|---|---|
| 92-43 | <p>Integrated Hatchery Operations Team - Various Agencies and Tribes</p> <p><u>Project Officer:</u> J. Bauer</p> <p><u>Objectives:</u> Develop for all existing and proposed facilities:</p> <ol style="list-style-type: none"> 1. Operational policies. 2. Production schedules. 3. Operating guidelines for policies 4. Implementation guidelines. 5. Performance standards. | <p><u>Date Initiated:</u> February 1992</p> <p><u>Results/Conclusions:</u> Existing hatchery operation policies for each operating entity have been developed. Operational plans for all hatcheries in an agreed-upon format have been developed. Draft policies for coordinated operations have been prepared.</p> | <p>January 1993: Began Annual Reports to Council.</p> <p>January 1994: Complete implementation guidelines, performance standards and operating guidelines consistent with NMFS Recovery Plan.</p> <p>June 1994: Submit Plan for implementing Production Policies.</p> |
| 91-48 (no '94 funds) | <p>Evaluation of Environmental Impacts of the Yakima Production Program • BPNL</p> <p><u>Project Manager:</u> M. Nelson</p> <p><u>Objectives:</u> This project will evaluate the environmental impacts of the acclimation pond siting and operations of the Yakima Production Project. The information will be used as the basis for an Environmental Impact Statement.</p> | <p><u>Date Initiated:</u> January 1991</p> <p><u>Results/Conclusions:</u> None at this time.</p> | <p>FY 1993: Complete EIS.</p> <p>FY 1994: Complete EIS with all alternatives listed.</p> |

Table 23 - Section 6.1 Strategy for Salmon Projects

| Measure Number | Measure Description | BPA RPA & Project Number | Project Title & Description | Current Measure Activity | Project Duration/Start-End Dates | Project Manager |
|----------------|---|--------------------------|-----------------------------|---|----------------------------------|----------------------------------|
| 6.1B.1 | Subregional Planning Process | SS 110 | | Planning teams need to be formed and the subregional planning process begun. BPA is committed to help convene and conduct these meetings. | | Joyce Lindsay, BPA, 503/230-5710 |
| 6.1C.1 | Fund a preliminary evaluation of ecological carrying capacity and limiting factors. | F1121: 93-012 | | 5/93: Start-up deferred to FY94. Includes 6.1C.2. Project 93-012. | | Jeff Gislason, BPA 503/230-3594 |

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for Salmon**

6.2 Production

Because opportunities to achieve **significant** salmon production increases through improving natural habitats are limited, additional salmon increases may have to be achieved through artificial production, creating artificial spawning and rearing environments such as hatcheries.

In developing these production measures, the Council has identified measures that are consistent with the goal of doubling the number of salmon and steelhead in the basin while maintaining existing levels **of biodiversity**. This **means** understanding and documenting the **life** cycle of wild and naturally spawning fish populations at the stream level so that broader management decisions, while not necessarily made at the stream level, are better informed.

6.2A Wild and Naturally Spawning Populations

Collection of Population Status, Life History and Other Data on Wild and **Naturally** Spawning Populations

To meet the program goal, base-line information that will improve management and conservation of wild and **naturally** spawning populations is needed. High priority populations should be identified immediately so that these can be monitored as soon as possible. An extensive initial data collection effort is needed so that interim population units in the basin **can** be identified. And long-term monitoring strategies need to be developed. The **following** actions should be coordinated with development of rebuilding schedules called for in Section 2.3. Utilize the Habitat Selection Criteria developed by the coordinated habitat and production process as part of the criteria for collection of biological data.

Bonneville

3. Fund the design of an extensive one- or two-year study to identify wild and **naturally** spawning salmon and steelhead populations in the Columbia River Basin based on genetic, morphological, life history and any other relevant information, and recommend possible indicator populations for monitoring. Bring alternative study designs to the Council by December 31, 1992. Upon Council approval, fund the study.

Bonneville

5. Find a project to scope program costs, duration, feasibility and relative benefits for levels of monitoring ranging from complete monitoring of all wild and 'naturally spawning salmon and **steelhead** populations, to monitoring of index populations only. Report to the **Council** with **alternative** program approaches by September 30, 1993.

AU Interested Regional Entities

8. Cooperatively fund a feasibility study for a Pacific Northwest **biodiversity** institute.

Population Vulnerability Analyses

Bonneville

9. Fund the development and application of a procedure to conduct population **vulnerability** analyses for depleted salmon and **steelhead** populations. Report to the Council by June 30, 1993.

Table 24 - Section 6.2A Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------|---|--|---|
| 91-29 | <p>Identification of the Spawning, Rearing, and Migratory Requirements of Fall Chinook Salmon in the Columbia River Basin - USFWS</p> <p><u>Project Officer:</u> D. Watkins</p> <p><u>Objectives:</u> Identify the physical and biological factors influencing spawning of fall chinook salmon in the free-flowing Snake River and their rearing and seaward migration in Columbia River basin reservoirs.</p> <ol style="list-style-type: none"> <li>1. Identify and describe the characteristics of fall chinook salmon spawning habitat in the Snake River, and estimate the extent of utilization and production of emergent fy <li>2. Identify and describe the characteristics of rearing habitats used by subyearling chinook salmon in mainstem reservoirs. <li>3. Describe the factors influencing the migratory behavior of subyearling chinook salmon in mainstem reservoirs. <li>4. Estimate the relationships among various flow regimes and the timing, travel time, and survival of outmigrating sub-yearling chinook salmon in mainstem reservoirs. <li>5. Synthesize data and prepare final report. | <p><u>Date Initiated:</u> August 1, 1991</p> <p><u>Results/Conclusions:</u> Work completed through FY 1993 includes PIT tagging and tracking of fall chinook subyearlings and lab work to determine the effect of flows, photoperiod and physiological development on migration timing of fall chinook subyearlings. FY 1993 spawning ground surveys have been completed. Draft annual reviewed and ready to finalize.</p> | <p>FY 1994: Continue work of FY 1993. Anticipate project completion 1996.</p> |

Table 24 - Section 62A Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------|---|---|--|
| 92-22 | <p>Assess the Impacts of Hatchery Production on Wild Fish by Evaluating Hatchery and Wild Fish Behavior and Physiology -NMFS</p> <p><u>Project Officer:</u> T. Vogel</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. Identify difference in physiological parameters and temporal development of wild/natural fish and hatchery fish. 2. Identify differences in behavior of wild/natural and hatchery fish through smoltification and adult reproduction. 3. Assess whether any observed differences in behavior of hatchery fish impact wild/natural stocks. | <p><u>Start Date:</u> FY 1992</p> <p><u>Results/Conclusions:</u> None at this time.</p> | <p>FY 1993 - If feasible and practical, fully implement and set out by year, milestones and completion.</p> <p>FY 1994 - Complete milestone and completion schedules</p> <p>- Define M&E Plan</p> <p>- Initiate M&E Plan</p> |
| 93-33 | <p>A. South Fork Salmon River Anadromous Fish Enhancement</p> <p><u>Project Officer:</u> S Levy</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. Increase summer chinook and steelhead production by reducing sediment loading and providing habitat diversity. Use fencing, erosion control structures, revegetation on 23.6 miles. 2. Species: summer chinook and steelhead. | <p><u>Date Initiated:</u> FY 1993</p> <p><u>Results/Conclusions:</u></p> <p>Benefit: Chinook increase - 190,808 smolts; steelhead increase - 11,363 smolts. FY 1993 began NBPA.</p> | <p>FY 1994: Begin measure implementation.</p> |
| 93-34 | <p>Antimony Mine Restoration</p> <p><u>Project Officer:</u> S Levy</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. Increase summer chinook and steelhead production by reducing sediment loading. Use erosion control structures, revegetation, sediment pond on 13.8 miles. 2. Species: summer chinook and steelhead. | <p><u>Date Initiated:</u> FY 1993</p> <p><u>Results/Conclusions:</u></p> <p>Benefit: Chinook increase - 32,966 smolts; steelhead increase - 2,442 smolts.</p> | <p>FY 1993: Complete design, NEPA</p> <p>FY 1994: Begin measure implementation.</p> |

Table 24 - Section 6.2A Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------|--|--|-------------------------|
| 91-73 | <p>Monitoring and Evaluation of Idaho Habitat Improvement Projects - IDFG</p> <p>Project Officer: R. Austin</p> <p><u>Objective:</u> Evaluate the juvenile chinook and steelhead production benefits of habitat and passage improvement projects in the Clearwater and Salmon River basins in order to produce the off-site mitigation record for Idaho.</p> | <p>Detailed project accomplishments are described in the 1990 annual report. Project benefits to date are modest; barrier removals, followed by instream structures, have had the largest effect on increasing anadromous fish production. More intensive evaluations by this project have detected some significant density increases due to structures, but the majority of differences were not significant. Benefits of habitat improvement projects in terms of adult returns and resulting seeding levels will depend on improved flows and passage conditions. The depressed nature of upriver anadromous stocks has precluded attainment of full benefit of habitat project in Idaho. Monitoring of control and treatment streams within the Clearwater and Salmon River drainages will continue FY 1994. Project was reviewed in FY 1992 to continue monitoring of habitat projects and status of Idaho salmon stocks.</p> | |

Table 24 - Section 6.2A Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------|--|--------|--|
| 84-11 | Collawash River Falls Passage Subproject | | O&M in FY 1993. |
| | Project Officer: A. Thorns | | |
| | <u>Objective:</u> Construct a fishway to correct Collawash Falls passage problems. The falls prevent access to potential spawning and rearing habitat. | | |
| | <u>Improvement:</u> Structure and passage | | |
| | <u>Habitat:</u> 10 miles | | |
| | <u>Species:</u> Spring chinook, winter and summer steelhead, and coho Benefit: Increase of 55,532 smolts and 2,957 adults. | | |
| | Lake Branch/West Fork Hood River Improvement Subproject | | FY 1994 activities include O&M and M&E of previous projects. |
| | <u>Objective:</u> Improve adult/juvenile fish passage and the quality of spawning and low-flow rearing habitat. | | |
| | <u>Improvement:</u> Instream structure and passage | | |
| | <u>Habitat:</u> 10.0 miles | | |
| | <u>Species:</u> Summer and winter steelhead, chinook Benefit: 1,309 chinook smolts; 1,748 steelhead smolts. | | |
| | Fish/Wash Creek Habitat Improvement Subproject | | FY 1994 activities include O&M and M&E of past projects. |
| | <u>Objective:</u> Improve spawning and rearing habitat for measures. | | |
| | <u>Improvement:</u> Instream structure | | |
| | <u>Habitat:</u> 4 miles | | |
| | <u>Species:</u> Spring chinook, coho, winter and summer steelhead. Benefit: 1,857 steelhead smolts; 1,317 coho smolts. | | |

Table 24 - Section 6.2A Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|----------------|---|--------|--|
| 86-124 | Little Fall Creek Fish Passage -Facilities Maintenance <u>Project Officer:</u> D. New <u>Objective:</u> Provide O & M funding for Fish Passage facilities. <u>Improvement:</u> Structure and passage <u>Habitat:</u> 14miles <u>Species:</u> Salmon and steelhead <u>Species:</u> Salmon and steelhead Benefit: Potential of adults: Steelhead adults: 543 Spring chinook adults: 256 | d | FY 1994 continues O&M. |
| 86-79 93-40 | Fiieemnil Creek Habitat Improvement - ODFW <u>Project Officer:</u> A. Thorns <u>Objective:</u> Increase wild winter steelhead production to levels which approximate historic maximum run sizes. <u>Improvement:</u> Passage and instream structure <u>Habitat:</u> 120 miles <u>Species:</u> Wild winter steelhead Benefit: 11,715 smolts/year | | O&M continued under Project #86-79-01 in FY 1993 and beyond. |
| 81-108 | Habitat Quality and Anadromous Fish Production Potential on the Warm Springs Indian Reservation - CTWSIR <u>Project Officer:</u> S Levy <u>Objective:</u> The project consists of three phases: Phase I., Survey existing and potential fishery resources on the Reservation; Phase II. Identify factors limiting anadromous fish production and design appropriate instream or riparian enhancement measures to correct limiting factors; and Phase III. Implement measures and evaluate effectiveness. <u>Species:</u> Summer steelhead and spring chinook. | | O&M of past projects in FY 93 and beyond. |

Table 24- Section 6.2 A Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------|---|--------|---|
| | Beaver Creek Habitat Improvement Subproject | | O&M of past projects in FY 1993 and beyond. |
| | <u>Objective:</u> Construct instream structures to provide juvenile salmon and steelhead rearing habitat in channeled sections of Beaver Creek. Fence riparian zone and rip-rap banks with juniper. <u>Improvement:</u> Instream and riparian <u>Habitat:</u> 2 miles <u>Species:</u> Wild spring chinook. Benefit: 6,750 spring chinook smolts. | | |
| | Mill Creek Habitat Improvement Subproject <u>Objective:</u> Construct instream structures to provide juvenile salmon and steelhead rearing habitat in the Potter's Pond section of Mill Creek. Fence riparian zone. <u>Improvement:</u> Instream and riparian <u>Habitat:</u> 1 mile <u>Species:</u> Wild spring chinook and summer steelhead Benefit: 1,020 spring chinook and 540 summer steelhead smolts. | | O&M of past projects in FY 1993 and beyond. |
| | Shitike Creek Habitat Improvement Subproject <u>Objective:</u> Stabilize stream channel, create a low-flow passage channel, develop pool habitat, and provide shading. <u>Improvement:</u> Instream and riparian. <u>Habitat:</u> 3 miles <u>Species:</u> Wild spring chinook and summer steelhead. Benefit: 3,139 spring chinook smolts and 2,642 summer steelhead smolts. | | O&M of past projects in FY 1993 and beyond. |

Table 24 - Section 6.2A Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-----------------------------|--|--------|--|
| 84-62 | Trout Creek Riparian Enhancement - ODFW <u>Project Officer:</u> A. Thorns <u>Objective:</u> Construct instream and riparian structures to provide juvenile salmon and steelhead rearing habitat and adult spawning habitat. <u>Improvement:</u> Instream and riparian <u>Habitat:</u> 90 miles <u>Species:</u> Steelhead and spring chinook. <u>Benefit:</u> 1000 - 1500 adult steelhead. | | O&M in FY 1993 and beyond. |
| 84-8 93-38 | N. Fork John Day River Habitat Enhancement - USFS/Umatilla NF Desolation Creek Subproject <u>Project Officer:</u> A. Thorns <u>Objective:</u> Increase the production potential of summer steelhead and spring chinook by improving pool:riffle ratio, constructing adult salmon resting pools, increasing quality and quantity of spawning habitat, and controlling bank erosion. <u>Improvement:</u> Instream structure <u>Habitat:</u> 42 miles <u>Species:</u> Spring chinook, summer steelhead Benefit: Spring chinook - 4950 smolts Summer steelhead - 2475 smolts | | FY 1994 activities include O&M of previous projects, |

Table 24 - Section 6.2A Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------|---|--------|--|
| | North Fork John Day River Habitat Improvement Subproject - USFS/Umatilla NF | | FY 1994 activities include O&M of previous projects. |
| | <p>Desolation Creek Subproject</p> <p><u>Objective:</u> Increase the production potential of summer steelhead and spring chinook by improving pool:riffle through side-channel modification, improve juvenile rearing area, improve bank stabilization, increase adult resting areas, and increase amount of riparian vegetation.</p> <p><u>Improvement:</u> Instream structure</p> <p><u>Species:</u> Spring chinook</p> <p>Benefit: 5,000 smolts/yr.</p> | | |
| | <p>Wall Creek System Subproject</p> <p><u>Objective:</u> Improve quality and quantity of juvenile salmonid rearing area and adult spawning area; control bank erosion; increase amount of riparian vegetation.</p> <p><u>Improvement:</u> Instream structures.</p> <p>Habitat 7 miles</p> <p><u>Species:</u> Summer steelhead.</p> <p>Benefit: 2,274 summer steelhead smolts.</p> | | O&M is included for FY 1994. |
| | <p>Fivemile Creek Subproject</p> <p><u>Objective:</u> Increase production of summer steelhead</p> <p><u>Improvement:</u> Instream structure</p> <p><u>Habitat:</u></p> <p><u>Species:</u> Summer Steelhead</p> <p>Benefit: 375 steelhead smolts</p> | | O&M is included for FY 1994 |

Table 24 - Section 62A Ongoing and New Projects

| Project No | Title and Objectives | Status | Schedule and Milestones |
|------------|---|--------|--|
| | <p>Camas Creek System Subproject</p> <p><u>Objective:</u> Improve quality of juvenile salmonid rearing area and adult spawning area; control bank erosion; increase amount of riparian vegetation.</p> <p><u>Improvement:</u> Instream structures.</p> <p><u>Habitat:</u> 16.5 miles</p> <p><u>Species:</u> Summer steelhead</p> <p><u>Species:</u> Summer steelhead</p> <p>Benefit: 5,362 summer steelhead smolts.</p> | | O&M is included for N 1994. |
| | <p>Clear/Granite Creeks Subproject</p> <p><u>Objective:</u> Increase the potential of spawning salmon through habitat improvement measures.</p> <p><u>Habitat:</u> 12 miles</p> <p><u>Species:</u> Spring chinook</p> | | FY 1994 activities include O&M of previous projects. Will negotiate potential implementation projects through the Habitat Scoping Group. |
| 84-2 1 | <p>Mainstem, Middle and North Fork/John Day River - ODFW</p> <p>Mainstem John Day River Subproject</p> <p>Project Officer: S Levy</p> <p><u>Objective:</u> Provide additional rearing habitat for juvenile salmon and steelhead.</p> <p><u>Improvement:</u> Fencing and instream structure</p> <p><u>Habitat:</u> 23 miles</p> <p><u>Species:</u> Spring chinook and Summer steelhead</p> <p>Benefit: Steelhead smolt increase - 344,000; chinook smolt increase - 371,000 to 996,000</p> | | O&M is included for N 1994. |

Table 24 - Section 6.2A Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------|--|--------|--|
| | <p>Middle Fork John Day River Subproject</p> <p>Objective: Provide additional holding areas for adult chinook and steelhead; improve rearing area for juveniles of both species.</p> <p>Improvement: Fencing and instream structure</p> <p>Habitat: 30 miles</p> <p>Species: Spring chinook, summer steelhead</p> <p>Benefit: Included in benefits for the Mainstem John Day River</p> | | <p>O&M is included for N 1994. N 1993: Constructed fence and livestock crossing on Oxbow Ranch. Also revegetate riparian zone, improve bank stability, and provide off-site water development.</p> |
| | <p>North Fork John Day River Subproject, including Fox Creek</p> <p>Objective: Fox Creek - improve steelhead spawning and rearing conditions through increasing riparian vegetation, reducing erosion and sedimentation, and increasing pool areas,</p> <p>Improvement: Fencing and instream structure</p> <p>Habitat: 42 miles</p> <p>Species: Spring chinook and steelhead</p> <p>Benefit: Included in benefits for the Mainstem John Day River.</p> | | <p>N 1994 activities include O&M of previous projects.</p> |
| | <p>North Fork John Day River Subproject, including Camas Creek</p> <p>Objectives: Provide additional rearing habitat for juvenile steelhead.</p> <p>Improvement: Fencing and instream structure</p> <p>Habitat: 5 miles</p> <p>Species: Summer steelhead</p> <p>Benefit: Included in benefits for the Mainstem John Day River.</p> | | |

Table 24 - Section 62A Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------|---|--------|---|
| 84-22 | Middle Fork and Tributaries, John Day River-USFS/Malheur NF <u>Project Officer:</u> S. Levy <u>Objective:</u> Increase the quantity, quality, and diversity of pool habitat for juvenile steelhead and chinook salmon. <u>Improvement:</u> Instream structure <u>Species:</u> Chinook and Steelhead <u>Habitat:</u> 6 miles | | FY 1994 activities include O&M of previous projects. |
| 85-71 | South Fork John Day River Habitat Enhancement/Izee Falls Fish Passage - ELM Izee Falls Subproject <u>Project Officer:</u> S. Levy <u>Objective:</u> Provide fish access to 81 miles of spawning and rearing habitat by providing passage over 56-foot falls. <u>Improvement:</u> Passage <u>Species:</u> Wild Summer Steelhead Benefit: Benefit:Cost ratio is 5.4:1 <u>Habitat:</u> 81 miles | | O&M and monitoring and evaluation of past habitat enhancement projects continue in FY 1994. |

Table 24 - Section 62A Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------|--|--------|--|
| 84-9 | Grande Ronde Habitat Improvement Project - USFS/Wallowa-Whitman NF Upper Grande Ronde Basin Subproject | | FY 1994 activities include O&M of previous projects. |
| | <u>Project Officer:</u> A. Thoms <u>Objective:</u> Improve spawning and rearing habitat in the Upper Grande Ronde River. <u>Improvement:</u> Instream structures <u>Habitat:</u> 53 miles | | |
| | Upper North Fork John Day Basin Subproject | | FY 1994 activities include O&M of previous projects. |
| | <u>Objective:</u> Improve spawning and rearing habitat in the North Fork John Day River <u>Habitat:</u> 49 miles <u>Species:</u> Wild spring chinook and steelhead | | |
| | Lower Grande Ronde Basin Subproject | | FY 1994 activities include O&M of previous projects. |
| | <u>Objective:</u> Improve spawning and rearing habitat in the Lower Grande Ronde River. <u>Habitat:</u> 30 miles <u>Species:</u> Spring chinook and summer steelhead | | |
| 84-25 | Grande Ronde Habitat Improvement Project - ODFW Upper Grande Ronde Subbasin Subproject | | FY 1994 activities include O&M of previous projects. Construct habitat improvement activities, |
| | <u>Objective:</u> Improve the quality and quantity of spawning and rearing habitat for salmon and steelhead through fencing along Beaver Creek. | | |
| | Joseph Creek Subbasin Subproject | | FY 1994 activities include O&M of previous projects. |
| | <u>Objective:</u> Improve the quality and quantity of spawning and rearing habitat for steelhead through habitat improvement activities. | | |

Table 24 - Section 6.2A Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones | | | | | | | | | | | | |
|-----------------|--|-----------------|---|-----------------|-----------|----------------|--------|---------|--------|--------|--|--|-------|--|--|
| 86-75 | <p>Little Naches River Passage - USFS/Wenatchee NF</p> <p><u>Project Officer:</u> D. New <u>Objective:</u> Construct fish passage facility to correct passage problems resulting from Salmon Falls. Rehabilitate flood-damaged reach below falls to provide an adequate passage corridor to the fish passage facility. <u>Improvement:</u> Passage, instream channel modification, and riparian revegetation <u>Habitat:</u> 18 to 24 miles, depending on species <u>Species:</u> Spring chinook, coho, and steelhead</p> <table border="0"> <tr> <td><u>Benefit:</u></td> <td><u>Species</u></td> <td><u># Smolts</u></td> </tr> <tr> <td></td> <td>Spring chinook</td> <td>30,300</td> </tr> <tr> <td></td> <td>Coho</td> <td>39,600</td> </tr> <tr> <td></td> <td>Steelhead</td> <td>6,500</td> </tr> </table> | <u>Benefit:</u> | <u>Species</u> | <u># Smolts</u> | | Spring chinook | 30,300 | | Coho | 39,600 | | Steelhead | 6,500 | | Construction of fishway and channel rehabilitation completed fall 1987. BPA will continue to fund operation and maintenance activities in FY 94 and beyond. |
| <u>Benefit:</u> | <u>Species</u> | <u># Smolts</u> | | | | | | | | | | | | | |
| | Spring chinook | 30,300 | | | | | | | | | | | | | |
| | Coho | 39,600 | | | | | | | | | | | | | |
| | Steelhead | 6,500 | | | | | | | | | | | | | |
| 84-23 | <p>Camas Creek, Idaho - USFS/Salmon NF</p> <p><u>Project Officer:</u> D. New <u>Objective:</u> Improve riparian conditions to increase salmon and steelhead spawning and rearing potential. <u>Improvement:</u> Fencing and riparian revegetation <u>Habitat:</u> 3 miles <u>Species:</u> Spring chinook and steelhead</p> <table border="0"> <tr> <td><u>Benefit:</u></td> <td><u>Smolt</u></td> <td><u>Adults</u></td> </tr> <tr> <td>Steelhead</td> <td>4,586</td> <td>76</td> </tr> <tr> <td>Chinook</td> <td>24,570</td> <td>128</td> </tr> </table> | <u>Benefit:</u> | <u>Smolt</u> | <u>Adults</u> | Steelhead | 4,586 | 76 | Chinook | 24,570 | 128 | | Monitoring and O&M will continue in FY 1994 and beyond. | | | |
| <u>Benefit:</u> | <u>Smolt</u> | <u>Adults</u> | | | | | | | | | | | | | |
| Steelhead | 4,586 | 76 | | | | | | | | | | | | | |
| Chinook | 24,570 | 128 | | | | | | | | | | | | | |
| 83-359 | <p>Salmon River Habitat Enhancement - Shoshone/Bannock Tribe Bear Valley Creek Habitat Improvement Subproject</p> <p><u>Objective:</u> Enhance habitat degraded by historic mining and dredging operations, <u>Improvement:</u> Instream structure and riparian enhancement <u>Species:</u> Wild chinook salmon and summer steelhead</p> | | O&M and monitoring will continue in FY 1994. East Fork construction began in FY 1993 and will be completed in FY 1994. Monitoring O&M will continue in FY 1994 and beyond. | | | | | | | | | | | | |

Table 24 - Section 6.2A Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------|--|--------|--|
| | Yankee Fork/East Fork Salmon River Subproject | | O&M and monitoring will continue in 1994. |
| | <p><u>Objective:</u> Enhance habitat degraded by historic mining and dredging operations.</p> <p><u>Improvement:</u> Instream structure</p> <p><u>Habitat:</u> 152 miles</p> <p><u>Species:</u> Salmon and steelhead</p> | | |
| 84-24 | <p>Marsh/Elk/Valley/Upper Salmon River, Idaho - USFS/Region 4</p> <p><u>Project Officer:</u> S. Levy</p> <p><u>Objective:</u> Identify and implement measures to improve habitat for salmon and steelhead.</p> <p><u>Improvement:</u> Instream structure</p> <p><u>Habitat:</u> 150 miles</p> <p><u>Species:</u> Steelhead, spring and summer chinook</p> | | O&M and monitoring will continue in 1994 and beyond. |
| 93-41 | <p>Clackamas River Fish Habitat and Riparian Project</p> <p><u>Project Officer:</u> A. Thorns</p> <p><u>Objectives:</u> Develop or enhance approximately seven side channel habitat areas for over wintering smolt.</p> | | |

Table 25 - Section 6.2A Strategy for Salmon Projects

| Measure Number | Measure Description | BPA RPA & Project Number | Project Title & Description | Current Measure Activity | Project Duration/Start-End Dates | Project Manager |
|----------------|---|--------------------------|-----------------------------|---|----------------------------------|----------------------------------|
| 6.2A.3 | Wild and Natural Spawning Populations | SS 107 | | Yakima Basin projects are closely related to requirements of measures. Yakima program is more detailed and complex than measure intent. Referred to a Scoping Group to review and re-focus BPA-funded efforts. '94 funds will be available if needed. | | Joyce Lindsay, BFA 503/230-5710 |
| 6.2A.5 | Wild and Natural Spawning Populations | SS 108 | | Yakima Basin projects are closely related to requirements of measures. Yakima program is more detailed and complex than measure intent. Referred to a Scoping Group to review and re-focus BPA-funded efforts. '94 funds will be available if needed. | | Joyce Lindsay, BFA, 503/230-5710 |
| 6.2A.9 | Wild and Natural Spawning Populations | SS 109 | | Yakima Basin projects are closely related to requirements of measures. Yakima program is more detailed and complex than measure intent. Referred to a Scoping Group to review and re-focus BPA-funded efforts. '94 funds will be available if needed. | | Joyce Lindsay, BFA, 503/230-5710 |
| 6.2A.9 | Report on procedure to conduct population vulnerability analyses on depleted stocks | F1114: 89-096 | | Activity has or is occurring under different projects including the genetic monitoring program (89-096), Yakima Fisheries Project (92-018 & 85-062, and John Emlen's Population Vulnerability of the Snake River Chinook Salmon (93-013). | | Tom Vogel, BPA 503/230-5201 |

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6.2B Artificial Production

4.15.1 DESIGN AND CONSTRUCTION OF YAKIMA PRODUCTION PROJECT (Upon Council Approval, Fund Beginning in FY 1988)

803(d) [Abstract] BPA shall fund the design and construction of a hatchery for salmon and steelhead enhancement in the Yakima River Basin and elsewhere as described in Section 503(c)(2), 703(f)(3), and 803(g)(3).

BPA ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To construct a hatchery to protect wild stocks and to enhance depressed stocks by using hatchery-reared fish to reseed underutilized habitat. The project will test the principles of supplementation, maintain genetic diversity, and increase harvest opportunities.

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Program**Background and Progress to Date:**

BPA will **fund** the design, **construction**, operation, and **maintenance** of **the** Yakima production facility. The facility will enhance **the** fishery for the Yakima **Indian** Nation and for other **harvesters by supplementing natural runs. In November 1987, the Council completed the facility** master plan, and BPA began **pre**design in November 1987. Pre design was completed **in** April 1990. **Final design will be completed by** October 1993.

BPA will also fund **several other related** studies, including a study to **determine the** feasibility of establishing **anadromous fish runs** above Cle Elum Dam (Project 86-45). The results of this **project will directly influence the size and production profile of the Yakima outplanting** facility. Another study (Project 87-136) **will determine canals prior to** release. Additional **studies will be** initiated when defined by the hatchery science team. The science team, a component of the **Yakima Hatchery Technical Work Group (TWG), will develop** objectives for the **supplementa-**tion program and the associated monitoring and evaluation program. Projects **will be** identified **by the TWG and implemented to answer questions resulting from the experimental/supplementa-**tion program and should not be regarded as separate or distinct studies.

Plans:

1. **National Environmental Policy Act (NEPA) compliance for hatchery construction was completed in April 1990. An EIS will be conducted on operational and siting issues. Completion expected October 1994.**

2. **BPA will fund design, construction, operation, and maintenance of the hatchery:**

Pre design: 1 1/87 - 3/90

Final design: 8/90 - 1 0/94

Construction: 1 1/94 - 12/98

O&M: **Begin 12/94 and continue**

3. Facility expected to be partially operational in FY 1995.

4.16.1 **NORTHEASTERN OREGON SPRING CHINOOK OUTPLANTING FACILITY**

4.16.2 **(Fund Development of Master Plan in FY 1988 or Earlier; Upon Council Approval, Fund Design and Construction)**

703(f)(5) BPA shall **fund** planning, design, **construction**, operation and maintenance, and evaluation of artificial **production** facilities to raise **salmon** and steelhead for enhancement in **the Hood, Umatilla, Walla Walla, Grande Ronde, and Imnaha** rivers in Oregon. The artificial production facilities shall be used to supplement **natural** production in **these** rivers.

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BPA ACTION ITEM ACTIVITY SUMMARY:

Objectives:

Background and Progress to Date:

The measure provides for **outplanting** of about 2.3 million to 3.0 million juveniles in the five Oregon rivers identified in the measure. ODFW, CTWSIR, CTUIR and NPT are preparing Master Plans for each subbasin under contract to BPA. The Master Plans may identify broader production needs in the basin, not all of which would be addressed by this project. Because of independent utility and differences in timing, implementation of the "project" has been **disaggregated** into discrete projects by subbasins, or groups of subbasins. The Hood River Master Plan (which was connected to Measure 4.17.6, Pelton Ladder) was completed in spring 1992 and submitted to the Council. Hood River/Pelton project master plans were conditionally approved by the Council. BPA is proceeding to design and **construct** the portion of the project needed to collect basic fish run information. BPA hired a consulting engineer to conduct site feasibility studies and **conceptual** design for all subbasins except Hood River, which was done by ODFW. Work commenced in December 1992 and is to be completed by spring 1994.

Plans:

The **status** of the remaining four Master Plans, including siting and conceptual design, is scheduled to be resolved by early FY 1994. There exists serious uncertainty about the scope and timing of this project, especially in light of ESA concerns. Initial discussions have begun between the project team and NMFS. When and if all approvals are completed, BPA will proceed with design, construction, operation, and monitoring of the facilities. This will probably not occur before 1996 at the earliest.

Hood River data inventory facility design is underway by ODFW and will be constructed in FY1994.

4.17.1 JUVENILE RELEASE/ADULT COLLECTION AND HOLDING FACILITIES ON UMATILLA RESERVATION (Operate, Maintain)

703(f)(1) [Abstract] BPA shall fund the Confederated Tribes of the Umatilla Reservation (CTUIR) to operate and maintain the Bonifer and Minthorn juvenile release and adult collection and holding facilities on the reservation.

BPA ACTION ITEM ACTIVITY SUMMARY

Objectives:

To fund operation, maintenance, and evaluation of the Bonifer and Minthorn facilities.

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Background and Progress to Date:

The facilities are to acclimate and imprint juvenile **salmon and steelhead** before release **into the Umatilla River, thereby increasing survival of juveniles and the homing ability of adults.** The facilities are also used to hold adults before artificial spawning. When constructed, the **Umatilla Hatchery (Project 84-33; Action Item 4.17.2) will rear juveniles for acclimation at the Minthorn and Bonifer facilities.** Currently, juveniles from other hatcheries are acclimated at the facilities.

BPA has funded **the** operation and maintenance of the **Bonifer and Minthorn** facilities since **construction in 1983 and 1985, respectively. During this time, about 2.2 million fall chinook, 1.2 million spring chinook, 1.0 million coho salmon, and 425,000 steelhead juveniles have been acclimated and released. A study to evaluate the fishery benefits and operation of the acclimation facilities was begun in FY 1987.**

Plans:

BPA will continue funding operation, maintenance, and evaluation of **the** facilities through **an** Intergovernmental Agreement **with the** CTUIR as long as there is **an** Action Item calling for BPA funding. BPA expects that results of the evaluation study will be used by the CTUIR to **determine the actual fishery benefits of acclimation, to select effective juvenile release strategies, and to improve operational efficiency.**

4.172 EXPANDED UMATILLA HATCHERY
(Fund, upon Council Approval)

703(9)(1)(A) [Abstract] BPA shall **fund** the construction of a facility to test **the** efficacy of oxygen supplementation hatchery techniques **to** produce up to 290,000 pounds of **summer** steelhead and chinook **salmon smolts.** These **smolts** shall be for release **in the Umatilla juvenile** release and adult collection holding facilities and for **outplanting** in **the** upper Umatilla River to enhance **natural** and hatchery production. Prior to construction of **this** facility, the ODFW and the CTUIR will develop a facility master plan for Council approval.

BPA ACTION **ITEM** ACTIVITY SUMMARY:

Objectives:

To **provide an improved contribution of anadromous fish production from the Umatilla River to the Colombia River Basin and to re-establish salmon runs (fall and spring chinook) in the Umatilla River.**

Background and Prowess to Date:

Umatilla Hatchery began operations **in** August 1991 **with** the first batch of chinook eggs delivered to the incubators. The **first** year saw rearing of about 100,000 spring chinook fingerlings, over 2.5 million fall chinook fry and about 200,000 **steelhead.** In late winter, **the** operator, ODFW, discovered that the well water system would only develop about 9000 gpm, about two-thirds of **the** design capacity. Also, adjoining Irrigon Hatchery was experiencing

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water supply shortages. Both hatcheries use the same aquifer, which is directly recharged by the river. Preliminary investigations by USACE indicate a strong correlation between John Day Pool level and aquifer flow. Water shortages have corresponded to the reservoir levels being lowered to accommodate construction at McNary Dam. Future drawdowns for smolt passage could seriously affect the ability of these two hatcheries to meet production goals. The USACE and BPA continue a study to identify possible sources of supplementary water. The studies involve test well production to the west as well as investigations of water exchanges and surface water treatment. Results will help determine future courses of action for the hatchery program.

Planning for satellite facilities began in FY 1990, with the need to have one or two additional chinook adult holding facilities on line before the mid-1990s. BPA contracted for site feasibility and conceptual design of facilities for direct release, satellite rearing/acclimation, and adult holding in December 1990. Final siting and concept design reports were submitted in spring 1991. Final design of satellite facilities began in fall 1992.

Plans:

Hatchery: Continue operational shakedown. Continue M&E studies. Continue water supply study.

Satellites:

- Fred Gray, Thornhollow acclimation ponds—complete by spring 1994.
- Fall chinook adult holding (Three Mile Dam)—complete in FY 94.
- Spring chinook adult holding (South Fork Walla Walla)—complete in FY 96.
- Four additional acclimation ponds—complete by spring 1995.

Table 26 - Section 6.2B Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------|--|---|---|
| 83-6 | <p>Operation and Maintenance of BPA Fish Marking Trailer - USFWS</p> <p><u>Project Officer:</u> J. Bauer</p> <p><u>Objectives:</u> Using mobile fish marking trailers, conduct marking (coded-wire tags, freeze brand, and PIT tags) of juvenile salmonids throughout the region for BPA-funded projects, including the Columbia River Basin Smolt Monitoring Program and Yakima Basin Monitoring and Evaluation.</p> | <p><u>Date Initiated:</u> 1983</p> <p><u>Results/Conclusions:</u> A total of approximately 2.2 million fish were marked in 1993.</p> | <p>Continuing: BPA will continue to fund marking of various fish groups for BPA-funded projects.</p> |
| 86-45 | <p>Yakima Hatchery: Cle Elum Study - NMFS</p> <p><u>Project Biologist:</u> J. Stroklund</p> <p><u>Objectives:</u> Determine the feasibility of establishing sockeye salmon above Cle Elum Dam.</p> | <p><u>Date Initiated:</u> October 1986</p> <p><u>Results/Conclusions:</u> Eggs have been collected from Wenatchee River broodstock since 1987. Eggs are incubated and juveniles reared at the NMFS Montlake Lab in Seattle. Juveniles have been released in and below Lake Cle Elum and performance evaluated at Prosser and McNary Dams. Three adult sockeye returned to the Yakima River in 1991.</p> | <p>FY 1993: Released 1991 brood year with CWT and PIT tags.</p> <p>Continuing: Evaluate survival of tagged fish. Continue through 1994. Develop juvenile bypass system. Determine the mechanism to trigger the emigration response.</p> |
| 88-115 | <p>Yakima/Klickitat Production Facilities Design and Construction</p> <p><u>Project Manager:</u> M. Nelson</p> <p><u>Objectives:</u> Continue design for Yakima/Klickitat Production Facilities.</p> | <p><u>Date Initiated:</u> N 1988</p> <p><u>Results/Conclusions:</u> Completed pre-design report April 1990. Presented report to Council. Initiated EIS December 1990.</p> | <p>FY 1993: Complete final design and EIS.</p> <p>FY 1994: Complete EIS with implementation schedule. Complete final design to match schedule.</p> |

Table 26 - Section 6.28 Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------|--|--|--|
| 89-82 | <p>Experimental Design - WDF</p> <p>Project Biologist: J. Stroklund <u>Objectives:</u> Refine experimental features of Yakima Hatchery Project. Develop genetic guidelines for stocks of salmon and steelhead for Yakima Basin supplementation program. Develop a smolt River to determine distribution of fall chinook juveniles.</p> | <p><u>Date Initiated:</u> June 1989</p> <p><u>Results/Conclusions:</u> Initial experimental design has been completed.</p> <p>Projects 90-66 and 9067 have been consolidated with this project.</p> | <p>N 1993: Refine experimental design and assist in the development of the monitoring and evaluation program. Continue smolt monitoring.</p> <p>N 1994: Refine experimental design and assist in the development of the monitoring and evaluation program. Continue smolt monitoring.</p> |
| 90-69 | <p>Yakima Hatchery Final Design - Consultant</p> <p>Project Manager: M. Nelson <u>Objectives:</u> Final design of Yakima Basin Facilities.</p> | <p><u>Date Initiated:</u> FY 1991</p> <p><u>Results/Conclusions:</u> Final design ongoing. Delayed due to EIS.</p> | <p>N 1993: Continue final design.</p> <p>N 1994: Begin production facility construction.</p> |
| 92-09 | <p>Yakima Phase II Screen Operations and Maintenance</p> <p>Project Officer: D. New <u>Objectives:</u> Prevent loss of salmon in irrigation diversions. Maintain Phase II screen sites.</p> | <p><u>Date Initiated:</u> FY 1993</p> <p><u>Results/Conclusions:</u> Contract in place for FY 1993-94.</p> | <p>N 1993: Fund O&M of 6 screens through contract with WDF.</p> <p>N 1994 and beyond: Fund additional O & M as screens are completed.</p> |

Table 26 - Section 6.2B Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|--|---|--|---|
| 88-53 | <p>NEOH Siting/Conceptual Design - consultant</p> <p><u>Project Officer:</u> J. Marcotte</p> <p><u>Objectives:</u> Conduct site feasibility and conceptual design for NEOH facilities. These products will be integrated into the Master Plan submitted to Council. This objective for Umatilla being accomplished under separate contract in conjunction with Umatilla Satellite Facilities.</p> | <p><u>Date Initiated:</u> December 1990</p> <p><u>Results/Conclusions:</u> Facility siting and concept design proposals have been based on production program details that are still undecided. Delays are still being encountered due to difficulties clarifying program definition and goals, especially in light of ESA influence.</p> | <p>N 1994: Final concept design due December 1993. Clarify NEPA compliance issues, redefine program, begin implementation as possible.</p> |
| 88-53-1 88-53-2 88-53-3 88-53-4 | <p>Northeastern Oregon Artificial Production Facilities - CTUIR/CTWSIR/NPT/ODFW</p> <p><u>Project Officer:</u> J. Bauer</p> <p><u>Objectives:</u> Fund Master Plan of artificial production program and facilities for NEOH project,</p> | <p><u>Date Initiated:</u> Planning began in N 1988.</p> <p><u>Results/Conclusions:</u> Contract in place to produce Master Plans.</p> <p>Phase I complete April 1990. Phase II began May 1990. Completed September 1993.</p> | <p>N 1993-94: Complete Master Plans. N 1994-1995: Obtain Council approval of Master Plans.</p> |
| 83-435 | <p>Minthorn and Bonifer Springs Summer Steelhead Juvenile Release and Adult Collection Facilities - CTUIR</p> <p><u>Project Officer:</u> J. Bauer</p> <p><u>Objectives:</u> To operate, maintain, and evaluate the Minthorn and Bonifer facilities for the acclimation and imprinting of juvenile anadromous salmonids and the collection and holding of adults.</p> | <p><u>Date Initiated:</u> N 1983</p> <p><u>Results/Conclusions:</u> Approximately 110,000 spring chinook, and 68,000 steelhead juveniles were acclimated and released during N 1992. No results of the facility evaluation study are available yet.</p> | <p>Continuing: BPA till fund operation, maintenance, and evaluation of the facilities.</p> <p>Continuing: Contractor will provide an annual operational report and preliminary results of the evaluation study in the Project's annual report.</p> <p>N 1994: Two additional acclimation sites will be placed into operation.</p> |

Table 26 - Section 6.2B Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------|--|--|---|
| 84-33 | <p>Umatilla Hatchery Construction and O&M - USACE</p> <p><u>Project Officer:</u> J. Marcotte</p> <p><u>Objectives:</u> Design and construct the Umatilla Hatchery.</p> | <p><u>Date Initiated:</u> N 1986</p> <p><u>Results/Conclusions:</u> Council approved hatchery predesign in October 1986. Hatchery site next to existing Irrigon Hatchery was selected in cooperation with Morrow County. Umatilla Hatchery Environmental Assessment was issued February 1987. FONSI issued April 1987. Council amended Program to expand hatchery production to 160,000 pounds and added salmon to production, Council amended program to expand production to 290,000 pounds and test efficiency of 0, supplementation. Final designs completed. Master Plan complete February 1989. Council approved Master Plan in October 1989. O&M contract finalized in spring 1990; ODFW began operation during summer 1991. Hatchery production continued in N 1993.</p> | <p>N 1994: Continue operational shakedown Spring 1994 mark and release third year production.</p> <p>Monitoring and evaluation studies underway for year 3.</p> <p>USACE/BPA study new water sources for hatchery,</p> |
| 84-33-06 | <p>Umatilla Hatchery Water Supply</p> <p><u>Project Officer:</u> J. Marcotte</p> <p><u>Objectives:</u> Study various alternative measures for augmenting water supplies at Umatilla and Irrigon hatcheries. Provide cost estimates, priorities and schedules for implementation. Alternatives include new wells, groundwater recharge exchange programs and surface water treatment.</p> | <p><u>Date Initiated:</u> 1993</p> <p><u>Results/Conclusions:</u> Started and continued studies. Contract in place for N 1994.</p> | <p>N 1994: Complete studies, document conclusions, finalize plans for implementation.</p> |

Table 26 - Section 6.28 Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------|--|--|--|
| 90-5 | <p>Umatilla Hatchery Monitoring and Evaluation - ODFW</p> <p><u>Project Officer:</u> J. Bauer</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. Comparison of production for fall chinook (ChF) and summer steelhead (StS) in O₂ and standard rearing systems. 2. Smolt-adult survival rates for ChF and StS in O₂ and standard rearing systems. 3. Comparison of production and survival of summer chinook (ChS) full-term and age-0 smolts. 4. Estimation of natural production success for ChS and ChF. 5. Assess changes in genetic and life history characteristics of wild StS as a result of supplementation, | <p><u>Date Initiated:</u> 1991</p> <p><u>Results/Conclusions:</u> Releases only in operation at this time. Released first full-term ChS smolts and second-year production of ChF, ChS, and StS smolts.</p> | <p>N 1994: Release second full-term ChS smolts and third-year production of ChF and ChS O's smolts. Also release third year of StS smolts. Continue sampling of hatchery environmental conditions.</p> |
| 90-05-01 | <p>Umatilla River Natural Production Monitoring and Evaluation - CTUIR</p> <p><u>Project Officer:</u> J. Bauer</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. Define carrying capacities for anadromous stocks. 2. Determine genetic components for wild steelhead. 3. Monitor interaction of hatchery steelhead and wild steelhead. | <p><u>Results/Conclusions:</u> Developed population transects to monitor hatchery releases.</p> | <p>N 1994: Report genetic background collections for steelhead. Add downstream smolt collection sites.</p> |

Table 26 - Section 6.28 Ongoing and New Projects

| Project No. | Title and Objectives | status | Schedule and Milestones |
|-------------|--|---|---|
| 88-160 | <p>Bioengineering Evaluation of Retrofitted Supplemental Oxygen for Rearing Spring Chinook - ODFW</p> <p><u>Project Officer:</u> R. Morinaka</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. Rear spring chinook under experimental conditions; tag fish, monitor fish health/quality. 2. Recover and decode tags for returning adults. 3. Analyze and summarize all data. 4. Transfer technology to user groups. 5. Write final report. | <p><u>Date Initiated:</u> September 1988</p> <p><u>Results/Conclusions:</u> None at this time.</p> | <p>FY 1994: Begin recovering and decoding tags from returning adults.</p> <p>June 2000: Complete data analysis. Complete final report.</p> |
| 89-30 | <p>Evaluation of Pre-Release Temperature Acclimation at "Groundwater" Hatcheries - WDF</p> <p><u>Project Officer:</u> R. Morinaka</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. To provide Klickitat River acclimation water to the Klickitat Hatchery site. 2. Compare the performance (survival of adults to hatchery rack) of spring chinook stnolts raised in and released directly front a groundwater supplied hatchery to stnolts released from the same hatchery following acclimation, with the ambient tributary receiving water for a period of time before release. | <p><u>Date Initiated:</u> July 1989</p> <p><u>Results/Conclusions:</u> Construction for delivery of water to rearing area complete.</p> | <p>June 30, 1998: Final report and project completion.</p> |
| 82-13 | <p>Coded Wire Tag/Sampling Program Recovery - PSMFC</p> <p><u>Project Officer:</u> J. Bauer</p> <p><u>Objectives:</u> Support WDF, WDW, and ODFW fishery recoveries of coded-wire tagged salmon and steelhead.</p> | <p><u>Date Initiated:</u> 1982</p> <p><u>Results/Conclusions:</u> Commercial and sport fishery recoveries of coded-wire tagged salmon and steelhead were decoded, compiled, and repotted.</p> | <p>Continuing: BPA will continue to fund coded-wire tag recoveries.</p> |
| 89-65 | <p>Coded-Wire Tag Evaluation of Missing Hatchery Groups - USFWS</p> <p><u>Project Officer:</u> J. Bauer</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. Identify missing production groups of salmon for Columbia River hatcheries. 2. Recover, decode and record survivability data. 3. Evaluate hatchery production programs. | <p><u>Date Initiated:</u> November 1989</p> <p><u>Results/Conclusions:</u> All groups for FY 1990 have been tagged. All groups for 1991 and 1992 have been tagged. A total of 829,000 salmon were tagged. Summaries of survival rates and areas of contributions for the last 3-5 brood years was developed.</p> | <p>FY 1993: Missing production groups tagged and evaluations begun.</p> <p>FY 1994: Evaluations continue; final tagging of missing production groups.</p> <p>FY 1995-1996: Evaluation continues.</p> |

Table 26 - Section 6.2B Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------|---|---|--|
| 89-32 | <p>Registration of Erythromycin - UI</p> <p><u>Project Officer:</u> R. Morinaka</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. Analyze existing data on erythromycin. 2. Develop additional analytical data required by the Food and Drug Administration (FDA) for drug registration. 3. Work with appropriate sponsor for erythromycin registration. 4. Conduct field studies to develop data to support the registration application. 5. Determine levels and dosage for oral and injectable forms of erythromycin. 6. Determine tissue residues. 7. Complete registration package for FDA. | <p><u>Date Initiated:</u> March 1989</p> <p><u>Results/Conclusions:</u> Pharmokinetics have been described in detail in adult spring chinook salmon. Field data is being collected at regional hatcheries. This has been coordinated with FDA, Washington, D. C.</p> | <p>FY 1994: Continue FY 1993 work. Submit registration package to FDA.</p> |
| 91-22 | <p>Hatchery Sorting for Bacterial Kidney Disease (BKD)</p> <p><u>Project Officer:</u> R. Morinaka</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. Transfer the present BKD detection technology in the hatchery system. 2. Demonstrate that segregation of progeny by BKD infection levels will increase the quality of the smolts being released and positively affect adult returns. 3. Analyze the data generated by this research to evaluate the impact of BKD on hatchery-reared spring chinook salmon and assess the benefits of a segregation program. | <p><u>Date Initiated:</u> FY 1991</p> <p><u>Results/Conclusions:</u> Participating agencies are USFWS, IDFG, ODFW, WDF Hatcheries have been selected.</p> | <ol style="list-style-type: none"> 1. ELISA analysis of tissue. 2. Segregation of egg lots. 3. Health monitoring. 4. Evaluation of juvenile and adult mortality, |

Table 26 - Section 6.26 Ongoing and New Projects

| Project | Title and Objectives | Status | Schedule and Milestones |
|---------|--|--|--|
| 89-66 | <p>Coded-Wire Tag Evaluation of Missing Hatchery Groups - WDF</p> <p>Project Officer: J. Bauer</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. Identify missing production groups of salmon for Columbia River hatcheries. 2. Recover, decode and record survivability data. 3. Evaluate hatchery production programs. | <p><u>Date Initiated:</u> September 1989</p> <p><u>Results/Conclusions:</u> All fish groups scheduled for tagging in 1989-91 were completed. All groups for 1992 have been tagged. A total of 1,229,245 salmon were tagged. Tag recoveries for 1988-89 brood coho shows a survival range of 1-7%. Chinook returns are incomplete.</p> | <p>N 1993: Missing production groups tagged and evaluation begun.</p> <p>N 1994: Final tagging of missing production groups while evaluation continues.</p> <p>N 1995-1996: Evaluation continues.</p> |
| 89-69 | <p>Coded-Wire Tag Evaluation of Missing Hatchery Groups - ODFW</p> <p>Project Officer: J. Bauer</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. Identify missing production groups of salmon for Columbia River hatcheries. 2. Recover, decode, and record survivability data. 3. Evaluate hatchery production programs. | <p><u>Date Initiated:</u> September 1989</p> <p><u>Results/Conclusions:</u> All fish groups scheduled for tagging in 1989-91 were completed. Groups for 1992 have been tagged. A total of 1.2 million salmon were tagged this past year. Recoveries of 1988 brood coho indicate 1.3 to 4.2% survival rates. chinook returns are incomplete.</p> | <p>N 1993: Missing production groups to be tagged and evaluation to begin.</p> <p>N 1994: Final tagging of missing production groups while evaluation continues.</p> <p>N 1995-1996: Evaluation continues.</p> |
| 90-6 1 | <p>Research on Fungal Infections of Spring and Summer Chinook Salmon - uw</p> <p>Project Officer: R. Westerhof</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. Identification of fungi infecting spring chinook salmon in the Columbia River System. 2. Develop bio-control program. 3. Develop DNA identification. 4. Determine primary or secondary pathogenesis. | <p><u>Date Initiated:</u> December 7, 1990</p> <p><u>Results/Conclusions:</u></p> <ol style="list-style-type: none"> 1. Identification of potential parasite of Saprolegnia. Collection of 900 isolates has been completed. 2. Woronina has been identified as a possible parasite of Saurolezuia. 3. Symposium titled "Saprolegnia in Salmon" held in August 1992. Experts from all over the world attended and a report is forthcoming. | <p>Phase II</p> <ol style="list-style-type: none"> 1. DNA fingerprinting of Saprolegnia collection will continue using PCR and sequencing. 2. Development and use of sampling techniques to measure Saprolegnia. 3. Evaluation of Woronina as a potential bio-control agency against Saprolegnia. 4. Development of selection procedures to identify bacteria that selectively inhibit growth of Saprolegnia. 5. Isolation and culture of any new Saprolegnia strains causing unique hatchery problems. 6. Continuation of studies of other fungal parasites of salmon. |

Table 26 - Section 6.28 Ongoing and New Projects

| Project | Title and Objectives | Status | Schedule and Milestones |
|---------------------------|---|--|---|
| 91-51 | <p>Analysis of Relationship of River Flow to the Migratory Travel Time and Survival of Juvenile Salmonids (for Endangered Species Act) - UW/Consultant</p> <p><u>Project Officer:</u> P. Poe <u>Objectives:</u> Phase I: 1. Assess PIT tag data. 2. Assess freeze brand data. 3. Assess coded-wire tag data. 4. Participate in development of analytical procedures for estimating smolt survival. 5. Provide technical assistance to BPA for review of research proposals, plans and other technical reports addressing the migrational characteristics and survival of Columbia River salmon populations.</p> | <p><u>Date Initiated:</u> February 1991 <u>Results/Conclusions:</u> Report identifying factors contributing to mortality above Lower Granite Dam completed October 1991. Report identifying research plan for evaluation of juvenile passage completed April 1992. Report on analyses of historic data on freeze-branded chinooks in the Snake River drainage completed fall 1993.</p> | <p>N 1994: Complete objectives of Phase I and report results. Provide technical assistance on analytical approach for biological test of drawdown and other analyses as needed. N 1995 and Beyond: Phase II continue to provide flexibility and capability to deliver timely technical analyses of Columbia River juvenile and adult anadromous salmon data to meet the needs of Fish and Wildlife Program and mandates of Endangered Species Act.</p> |
| 89-81-2 (no '94 funds) | <p>Erythrocytic Inclusion Body Syndrome (EIBS) Research - OSU</p> <p><u>Project Officer:</u> R. Morinaka</p> <p><u>Objectives:</u> 1. Determine epizootiology of EIBS virus including susceptibility and modes of transmission, 2. Assess relationship between EIBS and other fish pathogens relative to immunosuppression. 3. Develop more accurate and efficient methods to detect the early stages of the syndrome.</p> | <p><u>Date Initiated:</u> September 1989</p> <p><u>Results/Conclusions:</u> An adequate hybrid has not been developed to culture the virus.</p> | <p>N 1994: Completion Report October 1993.</p> |
| 92-53 (no '94 funds) | <p>Ringold Hatchery Water Rights Acquisition - WDW</p> <p><u>Project Mananer:</u> M. Nelson <u>Objectives:</u> Investigate the feasibility of acquiring up to 100 cfs additional water supply for Ringold Hatchery Complex.</p> | <p><u>Expected Start Date:</u> June 1992</p> <p><u>Results/Conclusions:</u> Predesign report and engineering report to be completed by April 1994.</p> | <p>1993: Meet with WDF, WDW, and Washington DOE to determine the feasibility of acquiring additional water right. If feasible, at a future date construct collection and distribution facilities for the water supply.</p> <p>Report to be completed by April 1994</p> |

Table 26 - Section 6.2B Ongoing and New Projects

| Project NO. | Title and Objectives | Status | Schedule and Milestones |
|-------------------------|--|---|---|
| 89-54 (no '94 funds) | <p>Research to Identify Effective Anti-Fungal Agents - USFWS</p> <p><u>Project Officer:</u> R Morinaka</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. Identify and test alternate anti-fungal agents that can safely replace malachite green for the control and treatment of fungal infections on eggs, juveniles, and adult spring chinook. 2. Evaluate test results and rank order tested agents, based on safety and effectiveness on spring chinook eggs and adults. 3. Recommend alternative antifungal agent for U.S. Food and Drug Administration registration for use on food fish and eggs. | <p><u>Date Initiated:</u> September 1989</p> <p><u>Results/Conclusions:</u></p> <ol style="list-style-type: none"> 1. List of ten alternative anti-fungal agents selected for testing on salmonid eggs. Selection criteria based upon fungicidal activity of agents from in-vitro test results. 2. Testing initiated on salmonid eggs. 3. Testing of alternative anti-fungal agents initiated on eggs, juveniles, and adult spring chinook salmon. 4. Although some initially selected antifungal agents have been discontinued from farther testing due to their failure to pass mammalian toxicity tests, researchers are currently testing several promising compounds that have shown good results in toxicity and treatment efficacy tests. 5. Results to date are available in the project report. | <p>FDA registration work deferred pending future budget allocations. Completion report 9/94.</p> |
| 93-14 | <p>ESA Anadromous Fish Capital</p> <p><u>Project Officer:</u> T. Clune</p> <p><u>Objective:</u> This RPA includes capital measures related to ESA functions. For example: Idaho and Oregon Fish Screen Fabrication Shops, and fish screen construction projects on tributaries which host threatened, endangered or weak stocks of salmon and steelhead. These projects are being cost-shared with NMFS, Soil Conservation Service, US Forest Service, US Bureau of Reclamation and the States.</p> | <p><u>Date Initiated:</u> FY 1993</p> <p><u>Results/Conclusions:</u> None.</p> | <p>FYs 1994: Continue to implement habitat/passage projects consistent with the new Amended Program.</p> |

Table 26 - Section 6.2B Ongoing and New Projects

| Project NO. | Title and Objectives | Status | Schedule and Milestones |
|-------------|---|---|---|
| 94-11 | Comprehensive Analysis of Anadromous Fish Production <u>Project Officer:</u> T. Clune <u>Objective:</u> 1. Conduct a comprehensive examination of the cumulative and systemwide impacts of Columbia Basin anadromous fish production activities. The analysis will provide fishery managers with a coordinated implementation strategy for efforts to rebuild Columbia River Anadromous fish resources. | <u>Date Initiated</u> August 1993 <u>Results/Conclusions:</u> Ongoing. | Ns 1994, 1995, 1996: Continue analysis. |
| 93-067 | Comprehensive Environmental Analysis of Production (CEA) <u>Project Officer:</u> T. Clune | <u>Date Initiated:</u> 1993 <u>Results/Conclusions:</u> Ongoing, | N 1994: Project will involve the development of a plan that will guide the implementation of a comprehensive environmental analysis within the Columbia Basin, which is expected to begin in N 1995 and take several years to complete. |

*Strategy
for Salmon***Hatchery Policies, Coordination and Operations**

Nearly 100 **artificial production facilities produce 170 million to 200 million smolts annually** in the Columbia River Basin. Approximately 75 percent of Columbia River Basin **salmon and steelhead** adults are produced **in** hatcheries, The purpose of these facilities is to mitigate for losses of **salmon** and steelhead production resulting from dams and other developments. The Council concluded **that** regional standards and procedures for hatchery operations should be developed that are consistent with **the** goal of rebuilding weak wild and naturally spawning stocks.

Bonneville

1. Fund fishery managers and **other** experts as needed to develop by October 31, 1992, **in consultation with appropriate specialists in genetics, basinwide guidelines to minimize genetic** and ecological impacts **of hatchery** fish on wild and naturally spawning stocks. Submit a report to the Council for public review in early 1993.
2. **Fund the design of an impact assessment to examine the effects of Columbia River Basin** hatcheries (**individually** and collectively) on wild and naturally spawning fish. Complete the design, and report to the Council by June 30, 1993.

Integrated Hatchery Operations Team and Fishery Managers

4. By **January 15, 1992**, create an Integrated Hatchery Operations Team

Bonneville

5. Fund the activities **of the** Integrated Hatchery Operations Team so **that** it is operational **by January 15, 1992**.
6. Fund the development of regionally integrated hatchery policies, building upon guidelines being developed under **Section 6.2B1**.

Fishery Managers

7. **Develop regionally integrated policies for management and operation of all existing and** proposed hatcheries in **the Columbia** Basin. Prepare a work plan by **January 15, 1992**.

Integrated Hatchery Operations Team

8. Develop detailed descriptions for each of the above policies by October 31, 1992.
9. Develop criteria for the hatchery audits, **to** be used by independent auditors. Complete **the** criteria by **January 31, 1993**. Report to the Council by **March 31, 1993**.

Integrated Hatchery Operations Team

- 1 1 . **Prepare a program to monitor compliance with the hatchery performance standards and** provide for a coordinated hatchery monitoring program.
- 1 2 . **Report to the Council annually, beginning in January 1993.**

**Strategy
for Salmon****Hatchery Evaluation****Bonneville**

13. Beginning in 1993, fund ongoing independent audits of hatchery performance in consultation **with** the Integrated Hatchery Operations Team. Results of the audits should be presented to **the** Council beginning **in** December 1993.

14. Fund a comprehensive analysis of existing **data** on **basinwide** trends **in hatchery fish** survival. The results of the analysis should be reported to the Integrated Hatchery Operations Team **by January 1994**.

Creative Partnerships in Hatchery Production**Bonneville**

15. By **June 15, 1993**, fund **an** analysis of opportunities for alternative hatchery **institutional** arrangements and ways **to** implement them. By December 31, 1993, develop and propose a policy to encourage **artificial production programs** in which **alternative institutional** arrangements between implementors and managers are used. **Marking Hatchery Salmon** **Marking all** hatchery **salmon has** the potential to help solve ... problems, making it possible to identify stray hatchery fish and remove them **from** wild and naturally spawning populations and from other hatchery brood stocks, to harvest hatchery **fish** selectively, affording some protection to **naturally** spawning stocks, and allowing better data to be **gathered** on characteristics of hatchery stocks.

Bonneville

17. **Starting** in 1992, **fund a program** to mark all salmon from hatcheries having **high** stray rates, using the mark determined by fishery management agencies to be acceptable for this purpose, **and** to evaluate the effectiveness of such marking.

18. Fund fishery managers to coordinate **with** appropriate technical experts to **determine the feasibility of marking all hatchery salmon, scope the marking program and identify alternative** uses for the information obtained. Report to the Council by **February 1, 1992**.

19. Share **funding of externally marking Willamette River spring chinook** to allow identification of adults upon **return** to the **Willamette** Basin.

Bonneville and Fishery Managers

20. Mark all hatchery-reared **chinook** by 1995 to **facilitate** selective harvest **in the future**, **pursuant to findings from the marking feasibility study called for above**.

Table 27 - Section 6.2B Strategy for Salmon Projects

| Measure Number | Measure Description | BPA RPA & Project Number | Project Title & Description | Current Measure Activity | Project Duration/ Start-End Dates | Project Manager |
|----------------|--|--------------------------|-----------------------------|--|-----------------------------------|---|
| 6.2B.2 | Impact Assessment of Columbia River Hatcheries | ss 111 | | Ongoing activities in the Comprehensive Environment.4 Analysis (CEA), partly funded by BPA address this measure. The extent of implementation and the direction of future efforts will be determined by the Council staff. | | Joyce Lindsay, BPA, 503,230.5710 |
| 6.2B.4 | Form Integrated Hatchery Operations team | F1121: 92-043 | | IHOT FUNDED. | | Jerry Bauer, BPA, 503,230.7579 & Don Sampson, CBFWA; 503.326.7033 |
| 6.2B.7 | Prepare work plan for development of hatchery guidelines | F1121: 92.043 | | HOI FUNDED. | | Jerry Bauer, BPA 503/230-7579 |
| 6.2B.8 | Descriptions for hatchery policies and performance standards | F1121: 92.043 | | IHOT FUNDED. | | Jerry Bauer, BPA 5031230.7579 |
| 6.2B.9 | Report the results of scientific review of hatchery audit criteria | F1 121: 92-043 | | IHOT FUNDED. Will follow the completion of the 6.2B.8, description of existing hatchery policy and performance criteria. | | Jerry Bauer, BPA 5031230.7579; Jay Marcotte, BPA, 503/231-6962 |
| 6.2B.11 | Prepare program to monitor compliance with performance standards | F1121: 9 2 .043 | | IHOT FUNDED. Will follow the completion of the audit criteria. | | Jerry Bauer, BPA 503/231-6962 |
| 6.2B.12 | Report an hatchery policies and operations | F1121: 92-043 | | S/5: IHOT work plan completed for Bonneville funding. 4193: Complete in print. | | Jerry Bauer, BFA 503/230-7579 |
| 6.2B.13 | Report results of independent hatchery audits | F1121: '92.043 | | Audit criteria being developed prior to implementation hatchery audits. Final criteria under development. | | Jerry Bauer, BPA 503/230.7579 |
| 6.2B.13 | Independent Audit of Hatchery Performance | | | The audit is a part of the Integrated Hatchery Operations Team (MOT) efforts. BPA is committed to funding the audits as soon as the scope of work is defined. Anticipate funding in FY 1994 | | BPA 503,230.5710 |

Table 27 - Section 6.2B Strategy for Salmon Projects

| Measure Number | Measure Description | BPA RPA & Project Number | Project Title & Description | Current Measure Activity | Project Duration/ Start-End Dates | Project Manager |
|----------------|--|---|-----------------------------|---|-----------------------------------|----------------------------------|
| 6.2B.14 | Fund analysis of existing data on basinwide trends in hatchery fish survival | F1101: 82-013 F1121: 89.065, -066, -069 | | Coded wire tag studies will provide basis for this analysis. IHOT is currently working on a proposal for the analysis. | | Jerry Bauer, BPA 503/230-7579 |
| 6.2B.14 | Analysis of Trends in Hatchery Survival | SS 113 | | The proposal to conduct the audit was unacceptable to IHOT members due to principle investigator. Regional consensus on process and results is considered essential. BPA is ready to find when a resolution is reached. | | Joyce Lindsay, BPA, 503/230-5710 |
| 6.2B.15 | Fund an analysis of opportunities for alternative institutional arrangements for hatchery production | F1121: 92-093 | | This will be a function of the implementation phase of IHOT. The current analysis of hatchery operations will provide the basis for these actions | | Jerry Bauer, BPA 503/230.,579 |
| 6.2B.15 | Propose a policy to encourage artificial production programs in which alternative institutional arrangements between implementors and managers are used. | F1 121: 92-093 | | Will be part of implementation phase of IHOT. | | Jerry Bauer, BPA 503/230.7579 |
| 6.2B.17 | Fund program to mark salmon from hatcheries with high stray rates | F1 101: 83-006 | | Fish from Yakima, Umatilla, Rapid River, and Lyon's Ferry were marked in 1992 and 1993. Will continue in 1994. | | Jerry Bauer, BP& 503/230-7579 |
| 6.2B.18 | Determine feasibility of marking hatchery salmon | F1121: 92-073 | | Laser marking project proceeding as planned. Work also continues with Mark Advisory Committee to develop alternative marking systems in conjunction with PIT tags and coded wire tags. | | Jerry Baw, BPA 503/230-7579 |
| 6.2B.19 | Shared Funding of Willamette River Spring Chinook Marking | SS 114 | | BPA funding awaits resolution of problems within the Oregon Department of Fish and Wildlife. This measure will be funded through the Administrator's increased flexibilities and funding efficiencies. | | Joyce Lindsay, BPA, 503/230-5710 |

6.2C Supplementation Planning and Implementation

(see Section 6.2B and the following)

1987 F&W
Program



4.17.3 LOW-CAPITAL PROPAGATION FACILITY ON NEZ PERCE RESERVATION (Design/Begin Construction by May 1 989)

703(g)(2) Upon approval by the Council of design and construction plans for low-capital propagation facilities on the Nez Perce Reservation, Bonneville shall fund the construction, operation, and maintenance of those facilities. The Nez Perce Tribe will develop the facility plan and will incorporate the information provided under Section 703(g)(1).

BPA ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To design and construct a low-capital production facility to enhance fisheries on Nez Perce Reservation.

Background and Progress to Date:

Through construction of facilities for spawning, incubation, and rearing of chinook salmon and steelhead trout, the Nez Perce Tribe (NPT) seeks to re-establish its salmon and steelhead fishery. This fishery has nearly been destroyed through construction and operation of dams and poor land use practices, including agriculture, logging, road construction, and mining.

Work began on this measure in September 1983. The initial phase of the project, which developed an artificial propagation facility feasibility study, was completed in January 1985. Site investigations were conducted in FY 1988, FY 1989, and FY 1990.

Plans:

Preliminary design scheduled to begin in FY 1990, followed by environmental evaluation and final design in FY 1993. Project completion scheduled for FY 1994.

4.17.6 PROPAGATION OF SALMON/STEELHEAD IN PELTON DAM FISH LADDER (Fund, upon Council approval of Master Plan)

703(g)(3) BPA shall fund propagation of salmon and/or steelhead smolts in the 2.8-mile-long fish ladder located at Pelton Dam on the Deschutes River in Oregon. This production shall be in addition to the fish propagated in the ladder by Portland General Electric to mitigate the effects of Pelton and Round Butte dams and will not affect the mitigation responsibilities of that company. The Oregon Department of Fish and Wildlife and the Confederated Tribes of Warm

1987 F&W Program



Springs will develop a master plan for Council approval prior to BPA funding of design and construction. The master plan should contain the same type of information as in other hatchery master plans for Yakima, Umatilla, and northeastern Oregon facilities.

BPA ACTION ITEM ACTIVITY SUMMARY:

Objectives:

Fond the design and construction of propagation facilities at the Pelton Dam ladder; fond the propagation of salmon and/or steelhead.

Background and Prowess to Date:

The agencies and tribes have completed the Master Plan. BPA has submitted it to the Council for action. The Council approved the first year of production and the collection of additional biological data.

Plans:

The necessary construction alterations will be made to allow for the experimental rearing of a second cell for spring Chinook. The design of a plan to collect the biological data will be developed.

Table 28 - Section 6.2C Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-----------------------|---|--|--|
| 92-018 | <p>Scientific Services to Support Fisheries Supplementation Research - Morbrand Biometrics, Inc.</p> <p><u>Project Officer:</u> T. Vogel</p> <p><u>Objective:</u> Provide BPA with scientific and technical services required to explicitly implement adaptive management policy for the Yakima Fisheries Project and other supplementation research projects in the Columbia River Basin.</p> | <p><u>Date Initiated:</u></p> <p><u>Results/Conclusions:</u> Two task orders have been completed under this task order contract: (1) Development of Planning and Implementation documents for Yakima Fisheries Project; (2) Consultations with BPA on monitoring and evaluation, habitat/model watershed, and hatchery production.</p> | <p>FY 1994: Continue funding master contract. Initiate individual technical assistance task orders as required by BPA.</p> |
| 88-126 (no '94 funds) | <p>Nez Perce Technical Support - IDFG</p> <p><u>Project Officer:</u> S. Levy</p> <p><u>Objectives:</u> To provide technical support on planning for Nez Perce Hatchery project.</p> | <p><u>Date Initiated:</u> January 1988</p> <p><u>Results/Conclusions:</u> None.</p> | <p>Ongoing technical support will continue through FY 1994.</p> |

Table 28 - Section 6.2C Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------|--|---|---|
| 88-120 | <p>Yakima and Klickitat Basin Artificial and Natural Production Enhancement Program - YIN</p> <p><u>Project Biologist:</u> J. Stroklund</p> <p><u>Objectives</u> : Provide for participation of YIN, WDF, and WDW in development of a natural and artificial production program.</p> | <p><u>Date Initiated:</u> October 1987</p> <p><u>Results/Conclusions:</u> Agreement executed, participation in hatchery TWG and public involvement. Project 87-136, Yakima Hatchery: Wapato Canal, has been consolidated with Project 88-120.</p> | <p>1. Continuing: Collect baseline data for chinook salmon and steelhead natural production in Yakima basin.</p> <p>2. Continue through production facilities construction.</p> <p>3. Assist in the development of the Yakima monitoring and evaluation program.</p> |
| 89-89 | <p>Radiotelemetry Study - NMFS</p> <p><u>Project Biologist:</u> J. Stroklund</p> <p><u>Objectives:</u> Determine the distribution of distinct stocks of spring chinook.</p> | <p><u>Date Initiated:</u> June 1989</p> <p><u>Results/Conclusions:</u> Initial results indicate up to 30% of steelhead entering the river do not survive to spawning.</p> | <p>N 1993: Radio- tagging and monitoring.</p> <p>N 1994: Continue radio-tagging and monitoring.</p> |
| 89-105 | <p>Species Interaction Study - WDW</p> <p><u>Project Biologist:</u> J. Stroklund</p> <p><u>Objectives:</u> Determine the effect of anadromous fish production on resident fish. Refine experimental design features of Yakima Hatchery Project.</p> | <p><u>Results/Conclusions:</u> Data collection ongoing. Initial experimental design has been completed. Project 89-83 has been incorporated into this project.</p> | <p>N 1993: Study and develop the monitoring and evaluation program.</p> <p>N 1994: Continue study and assist in the development of the monitoring and evaluation program.</p> |
| 90-64 | <p>Klickitat River Monitoring</p> <p><u>Project Biologist:</u> J. Stroklund</p> <p><u>Objectives:</u> Monitor spring chinook and steelhead smolts in the hatchery supplementation program. Coordinate with MEG, and supplementation TWG's.</p> | <p><u>Start Date:</u> March 1992</p> <p><u>Results/Conclusions:</u> None at this time.</p> | <p>N 1993: Monitoring.</p> <p>N 1994: Continue monitoring.</p> |

Table 28 - Section 6.2C Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------|---|---|---|
| 90-65 | <p>Juvenile Monitoring Trap Calibration - NMFS</p> <p><u>Project Biologist:</u> J. Stroklund</p> <p><u>Objectives:</u> Calibrate Prosser smolt trap for in river vs. canal distribution of outmigrating salmon and steelhead.</p> | <p><u>Date Initiated:</u> N 1990</p> <p><u>Results/Conclusions:</u> Smolt Monitoring procedures (Prosser facility) developed.</p> | <p>FY 1993: survival studies and development of the Yakima monitoring program.</p> <p>N 1994: Continue survival studies and assist in the development of the Yakima monitoring program.</p> |
| 91-55 | <p>Supplementation Fish Quality</p> <p><u>Project Biologist:</u> J. Stroklund</p> <p><u>Objectives:</u> Define criteria for setting quality of hatchery fish for supplementation. Conduct studies against established criteria.</p> | <p><u>Date Initiated:</u> July 1991</p> <p><u>Results/Conclusions:</u> None at this time.</p> | <p>N 1993: Behavioral studies at prototype facilities.</p> <p>FY 1994: Continue conducting behavioral studies.</p> |
| 92-21 | <p>Experimental Design Development - CWU</p> <p><u>Project Biologist:</u> J. Stroklund</p> <p><u>Objectives:</u> Assist in the refinement of the project experimental design and annual work plans for the Artificial Environment and Natural Environment Task Teams.</p> | <p><u>Date Initiated:</u> November 1991</p> <p><u>Results/Conclusions:</u> None at this time.</p> | <p>N 1993: Experimental design and behavioral studies.</p> <p>N 1994: Continue experimental design and behavioral studies.</p> |
| 91-14 | <p>Umatilla Satellites -Planning, Siting, Design, and Construction - Consultant</p> <p><u>Project Officer:</u> J. Marcotte</p> <p><u>Objectives:</u> Provide complementary facilities for adult holding for broodstock purposes or required by the Umatilla artificial production program, and for direct release to river. Also provide ponds and facilities to allow recovery/acclimation benefits to smolts, trucked from Umatilla Hatchery, prior to release.</p> | <p><u>Date Initiated:</u> N 1991</p> <p><u>Results/Conclusions:</u> Siting and conceptual design completed spring 1992. Final design started fall 1992. NEPA and land acquisition underway in 1993. Facility construction to be phased from spring 1994 through spring 1995.</p> | <p>Spring 1994: First two acclimation ponds operational.</p> <p>Fall 1994: Adult fall chinook holding/spawning facilities operational (Three Mile Dam).</p> <p>Spring 1995: Complete remaining four acclimation and direct release sites.</p> <p>Spring 1996: Adult spring chinook hold/spawning facilities complete (SFWW).</p> |

Table 28 - Section 6.2C Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------|---|--|--|
| 83-350 | <p>Nez Perce Low-Capital Production Facility - NPT</p> <p><u>Project Officer</u>: S. Levy</p> <p><u>Objectives</u>: Design and construct a low-cost salmon propagation Reservation.</p> | <p><u>Date Initiated</u>: N 1983</p> <p><u>Results/Conclusions</u>: None at this time.</p> | <p>N 1994: Commence NEPA; continue preliminary design.</p> <p>N 1995: Complete NEPA; commence final design.</p> <p>N 1996: Complete final design; commence construction.</p> <p>N 1997: Continue construction, begin O&M.</p> <p>N 1998: Complete construction; continue O&M.</p> |
| 89-29 | <p>Propagation in Pelton Dam Ladder - ODFW</p> <p><u>Project Officer</u>: J. Bauer</p> <p><u>Objectives</u>:</p> <ol style="list-style-type: none"> 1. To experimentally rear spring chinook smolts in Pelton Ladder. 2. To determine the capacity for additional rearing of smolts. 3. To produce spring chinook smolts for Deschutes River and other acceptable basins to meet Program production goals. | <p><u>Date Initiated</u>: September 1989</p> <p><u>Results/Conclusions</u>: Council has approved Master Plan. First year production will be developed.</p> | <p>N 1993/94: Begin rearing spring chinook smolts.</p> <p>N 1996: First smolt releases.</p> <p>N 1998: Final report on experiment to determine ladder rearing capacity.</p> |
| 89-29-01 | <p>Propagation in Pelton Dam Ladder - CTWS</p> <p><u>Project Officer</u>: J. Bauer</p> <p><u>Objectives</u>: Detail value, feasibility, and costs to monitor genetics and environmental activities for Pelton Ladder production.</p> | <p><u>Date Initiated</u>: October 1992</p> <p><u>Results/Conclusions</u>: Completed development of M&E Plan.</p> | <p>N 1994: Implement M&E Plan.</p> |

Table 28 - Section 6.2C Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------|---|---|--|
| 89-96 | <p>A Genetic Monitoring and Evaluation Program for Supplemental Populations of Salmon and Steelhead in the Upper Columbia River Basin - NMFS</p> <p><u>Project Officer:</u> T. Vogel</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. Evaluate the nature and extent of genetic changes in hatchery stocks to be used for supplementation. 2. Quantify the genetic impact of supplementation on targeted natural stocks and non-targeted wild stocks. | <p><u>Date Initiated:</u> September 1989</p> <p><u>Results/Conclusions:</u></p> <ol style="list-style-type: none"> 1. Tentative conclusion that Snake River spring and summer chinook salmon may have somewhat lower levels of genetic variability than are found in Lower Columbia River stocks, but the difference may not be as large as suggested by earlier studies. 2. There is genetic evidence for restricted gene flow between streams in the same drainage. See Annual Report August 1991. | <p>Original plans called for evaluation of results prior to N 93. However, because of uncertainty of the role of supplementation in the Snake River Basin as a result of ESA listing, the evaluation and long-term planning for this study will now take place in January 1994.</p> |
| 89-97 | <p>Evaluation of the Success of Supplementing Imnaha River Summer Steelhead with Hatchery-Reared Smolts and Assessment of the Effect on Natural Production Performance, Life History Characteristics, and Genetic Characteristics - ODFW</p> <p><u>Project Officer:</u> T. Vogel</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. Determine the effects on naturally produced fish due to predation by hatchery fish and competition for food and space between naturally produced fish and hatchery fish. 2. Determine the effects on indigenous stock productivity that result from hatchery adults interbreeding with indigenous wild fish. 3. Determine the effects of supplementation with hatchery fish of indigenous stock. | <p><u>Date Initiated:</u> September 1989</p> <p><u>Results/Conclusions:</u> None at this time.</p> | <p>October 1993 : Evaluate experimental design with respect to production objectives, risks, and M&E.</p> <p>December 1993: Initiate Phase II if plan consistent with ESA, acceptable Risk Management Plan development, and experimental design consistent with need to gain knowledge of supplementation.</p> |

Table 28 - Section 6.2C Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|--|---|--|--|
| 89-98 89-98-1 89-98-2 89-98-3 | <p>Determination of Effectiveness of Supplementation Strategies and Assessment of Interaction between Supplemental Hatchery Chinook Salmon on Natural Populations in the Salmon, Snake, and Clearwater Rivers in Idaho - IDFG, USFWS, Nez Perce Tribe, Shoshone-Bannock Tribe</p> <p><u>Project Officer:</u> T. Vogel</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. Determine the effects of outplanting different life stages of spring and summer chinook on natural fish production. 2. Determine effectiveness of supplementation in building self-sustaining natural runs of the species. 3. Develop guidelines for future supplementation in terms of size and time of release. | <p><u>Date Initiated:</u> September 1989</p> <p><u>Results/Conclusions:</u> See Experimental Design Report, December 1991.</p> | <p>October 1993: Evaluate project production objectives, Risk Management Plan and consistency with ESA.</p> <p>December 1993 : Modify contracts and incorporate results of evaluation.</p> |
| 90-52 | <p>Performance/Stock Productivity Impacts of Hatchery Supplementation - USFWS</p> <p><u>Project Officer:</u> T. Vogel</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. Evaluate costs and benefits of alternative sources for hatchery broodstocks in supplementation programs. 2. Evaluate whether a hatchery stock initiated with local, wild fish and supplemented with wild fish in the broodstock each year has been effective at keeping hatchery fish genetically similar to the wild fish. 3. Evaluate whether environmental conditions in the hatchery can be modified to reduce genetic differences between hatchery and wild fish while retaining some minimum level of economic efficiency. | <p><u>Date Initiated:</u> N 1991</p> <p><u>Results/Conclusions:</u> Selected study streams and began experimentation.</p> | <p>N 1994: Juvenile releases ongoing.</p> <p>N 1995: Juvenile releases ongoing.</p> <p>N 1996: Juvenile portion of study complete.</p> <p>N 1999: Adult return evaluations begin.</p> <p>N 2003: Study complete.</p> |

Table 28 - Section 6.2C Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------------------|--|---|--|
| 90-55 (no '94 funds) | <p>Effectiveness of Supplementation Strategies and Assessment of Interactions Between Wild/Natural and Hatchery Stocks of Summer Steelhead in Idaho - IDFG</p> <p><u>Project Officer:</u> T. Vogel</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. Assess the performance of hatchery and wild brood sources to reestablish steelhead in streams where extirpated. 2. Evaluate the ability of returning adults from hatchery smolt and fingerling releases to produce progeny in natural streams. 3. Estimate recovery rates and the frequency of supplementation required to establish viable steelhead populations in restoration rivers. 4. Evaluate broodstock management at existing weirs in relation to natural production objectives. 5. Assess the abundance, habitat, and life history characteristics of existing steelhead populations in the Salmon and Clear-water river drainages. 6. Assess the behavioral and ecological effects of supplementation on natural chinook, steelhead, and resident trout populations. 7. Evaluate post release survival of fish raised by alternative hatchery techniques in comparison to conventional hatchery practices. | <p><u>Date Initiated:</u> N 1991</p> <p><u>Results/Conclusions:</u> Experimental design complete.</p> | <p>October 1993 : Evaluate project production objectives, Risk Management Plan and consistency with ESA.</p> <p>N 1994: Consolidate with Project 89-098.</p> |

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Regional Assessment of Supplementation

Regional Assessment of Supplementation Project Team

1. Working with appropriate experts in genetics, provide a framework for implementing and evaluating proposed and ongoing supplementation activities in a coordinated and experimental fashion. Complete a basinwide experimental design framework for supplementation by December 31, 1991. Complete the remainder of the supplementation framework and submit it to the Council for review and approval by December 31, 1992.

Bonneville

2. Continue to fund the Regional Assessment of Supplementation Project.

Evaluation, Design and Implementation of Proposed Additional Supplementation Experiments

Fishery Managers

2. Use existing processes, including Regional Assessment of Supplementation Project and Chapter III.C. of the Integrated System Plan, to prepare evaluations, including biological risk assessments, for proposed supplementation experiments that have been submitted by the Columbia River Inter-Tribal Fish Commission. Conclude initial review and report to the Council by January 31, 1993. Complete evaluations by June 30, 1993.

Bonneville

3. Fund evaluations, including biological risk assessments, of priority supplementation projects proposed by the fishery managers.

Table 29 - Section 6.2C Strategy for Salmon Projects

| Measure Number | Measure Description | BPA RPA & Project Number | Project Title & Description | Current Measure Activity | Project Duration/ Start-End Dates | Project Manager |
|----------------|---|--------------------------|-----------------------------|---|-----------------------------------|-----------------------------|
| 6.2C.1 | Report on framework to improve and evaluate supplementation | F2108: 92-018 | | Implementation began August 1993. Project will be completed April 1995. | | Tom Vogel, BPA 503/230-5201 |
| 6.2C.2 | Continue to find regional assessment of supplementation project (RASP). | F1119: 85-062 | | Project completed December 1992. Final report published. Follow-up appendices report available 12/93. | | Tom Vogel, BPA 503/230-5201 |
| 6.2C.3 | Fund evaluation, including biological risk assessments, of priority supplementation projects. | F1114: 94-016 | | 9/93: Contract negotiations in progress. Completed by end of FY 1994. Identify project objectives and strategies for priority supplementation projects. | | Tom Vogel, BPA 503/230-5201 |

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6.2D New Production Initiatives

Identification, Evaluation and Implementation of New Production Initiatives

Fishery Managers

1. Use the Coordinated Habitat and Production process identified in Section 6.1 to identify, **evaluate** and implement new production initiatives. Such initiatives may include measures to address the needs of weak stocks, such as scientifically sound supplementation, restoration of eliminated populations, demonstrations of captive brood stock technology, cryopreservation, portable and low-capital techniques, acclimation, conversion of existing artificial production facilities and other approaches. Initiatives may also include actions to provide harvest opportunities in tributaries or other areas and to facilitate rebuilding of weak stocks.

Development of Master Plans

Fishery Managers

2. Because of the need to address potential conflicts among increased production, **mixed-stock** harvest, gene conservation, consistency with other plans and other objectives, the Council calls for detailed master plans where there is not a National Environmental Policy Act document that provides enough information to evaluate new artificial production projects. Below, the Council provides a suggested list of master plan elements. This list is intended to offer guidance, not to impose requirements. Not all of these elements may be relevant in all projects, and some elements we have not listed may be important. In general, however, the following elements should be considered in the course of master planning:

- a. project goals;
- b. measurable and time-limited objectives;
- c. factors limiting production of the target species;
- d. expected project benefits (e.g., gene conservation, preservation of biological diversity, fishery enhancement and/or new information);
- e. alternatives for resolving the resource problem;
- f. rationale for the proposed project;
- g. how the proposed production project will maintain or sustain increases in production;
- h. the historical and current status of anadromous and resident **fish** in the subbasin;
- i. the current (**and** planned) management of anadromous and resident **fish** in the subbasin;
- j. consistency of proposed project with Council policies, National Marine Fisheries Service's recovery plans, other fishery management plans, watershed plans and activities;
- k. potential impact of other recovery activities on project outcome;
- l. production objectives, methods and strategies;
- m. brood stock selection and acquisition strategies;
- n. rationale for the number and life-history stage of the **fish** to be stocked, particularly as they relate to the carrying capacity of the target stream and potential impact on other species;
- o. production profiles and release strategies;
- p. production policies and procedures;
- q. production management structure and process;

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- r. related harvest plans;
- s. constraints and uncertainties, including genetic and ecological risk assessments and cumulative impacts;
- t. monitoring and **evaluation** plans, including a genetics monitoring program;
- u. conceptual design of the proposed production and monitoring facilities, including an assessment of the availability and utility of existing facilities; and
- v. cost estimates for various components, such as fish culture, facility design and construction, monitoring and **evaluation**, and operation and maintenance.

Emergency Cases

Fishery Managers

3. The Council recognizes that more immediate actions may be required for emergency cases, such as badly damaged populations with decreasing escapements. Documentation of the emergency nature of any such case and proposals for immediate production actions should be brought to the Council, which then will work with relevant parties to evaluate and initiate the necessary actions.

National Marine Fisheries Service

4. At an early date, develop guidelines for **determining** when emergency actions, such as using captive brood stock or other emergency propagation, live trapping and transplantation technologies, should be used to aid in recovery of listed or potentially listed salmon and **steelhead** populations.

Table 30 - Section 6.2D Ongoing and New Projects

| Project NO. | Title and Objectives | Status | Schedule and Milestones |
|-------------|--|---|---|
| 92-73 | <p>Development of Laser-Marking Salmonids</p> <p><u>Project Officer:</u> J. Bauer</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. Develop laser mark which remains visible through adulthood. 2. Determine if laser marking reduces survival. 3. Develop codeable marks. 4. Develop laser marking system which marks fish "on the swim," without handling. 5. Develop and build laser marking trailer. | <p><u>Date Initiated:</u></p> <p><u>Results/Conclusions:</u> Laser-marked three groups of coho and chinook. Retained one group and released two groups for ocean migration.</p> | <p>FY 1994: Looking at different laser marks with anticipation of more lasting effects, and examining the potential for using laser to excise fins.</p> |
| 88-163 | <p>Effects of Coded-Wire Tagging on the Survival of Spring Chinook Salmon - WDF</p> <p><u>Project Officer:</u> R. Morinaka</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. Mark entire production of each of three hatcheries with otolith marks and mark a portion of the production with coded-wire tags. 2. Repeat procedure for three brood-years at each facility. 3. Determine difference in survival rates between coded-wire tagged and untagged groups. | <p><u>Date Initiated:</u> January 1, 1989</p> <p><u>Results/Conclusions:</u> Coded-wire tagging fish completed.</p> | <p>September 1993: Begin sampling otoliths from adults.</p> <p>June 30, 1997: End of project; final report completed.</p> |

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6.2E Environmental Impacts and Carrying Capacity

System wide and Cumulative Impacts of Existing and Proposed Artificial Production Projects

Bonneville

1. Scope a study to **evaluate** the cumulative and systemwide impacts of existing and proposed artificial production activities on the ecology, genetics and other important characteristics of Columbia River Basin anadromous and resident salmonids. Report to the Council by December 31, 1992. Upon Council approval, fund the study.
2. Fund a study to develop a method to be used by project proposers and implementors for assessing systemwide and cumulative impacts of proposed new artificial production projects. Report to the Council by December 31, 1992.

Table 31 - Section 6.2E Strategy for Salmon Projects

| Measure Number | Measure Description | BPA RPA & Project Number | Project Title & Description | Current Measure Activity | Project Duration Start End Dates | Project Manager |
|----------------|---|--------------------------|---|---|----------------------------------|---|
| 6.2E.1 | Scope a study to evaluate cumulative impacts of current and proposed artificial production activities. | F1124 94-11 | Comprehensive Analysis of Production | This action is being indirectly covered by the current proposals for CBFWA in submitting supplementation projects, and in BPA's overall evaluation scoping effort of artificial production projects. | | Tom Clune, BPA, 503/231-6949; Tom Vogel, BPA 503/230-5201 |
| 6.2E.2 | Fund a study to develop a method for project proposers and implementors to assess systemwide and cumulative impacts of proposed artificial production projects. | F1124 94-11 | Comprehensive Analysis of Production | CEA initiated under contract with USFWS in lead. To date, scoping has occurred. Report will be developed based on scoping analysis. Anticipate 1-2 yrs. for report. | | Jerry Bauer, BPA, 503/230- 7579; Tom Vogel, BPA, 503/230-5201; Tom Clune, BPA, 503/231-6949 |
| 6.2E.2 | Fund a study to develop a method for project proposers and implementors to assess systemwide and cumulative impacts of proposed artificial production projects. | F1124 93-067 | Comprehensive Environmental Analysis of Production (CEA) | In '94 develop a plan that will guide the implementation of a comprehensive environmental analysis within the Columbia Basin, which is expected to begin in FY 95 and take several years to complete. | | Tom Clune, BPA, 503/231-6949 |

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6.2G Other Production Measures

Captive Brood Stocks

Captive broodstock programs have the potential to rapidly increase adult fish numbers, while retaining genetic diversity of severely depleted wild or naturally spawning stocks of **salmon**. . . . considerable technical information is required prior to implementation of large-scale captive brood stock programs.

National Marine Fisheries Service and Bonneville

1. Complete a scoping study **identifying** captive brood stock research needs by March 31, 1993, and fund necessary research by June 30, 1993.
2. Fund captive brood stock demonstration projects identified under the coordinated habitat and production process.

Cryopreservation

Cryopreservation (preservation of fish gametes by freezing) has the potential of allowing “banking” of genetic stocks for **future** use, especially when the population is severely depleted and its habitat has been damaged or destroyed.

Federal and State Agencies

3. By December 31, 1992, fund research to improve cryopreservation technology and develop applications for helping to restore and preserve depleted populations.
4. Fund demonstrations of cryopreservation identified in the coordinated habitat and production process.

Portable Facilities for Adult **Salmon** Collection and Holding, and for Juvenile **Salmon**

Acclimation

As weak stocks or populations of salmon and steelhead are identified and assessed, supplementation will be one option to consider to help rebuild these stocks. The demonstration project should involve only existing hatchery programs or fish populations that are currently being supplemented.

Bonneville

5. Fund the planning, design, construction and operation of a demonstration project for the development of portable adult collection and holding facilities and juvenile acclimation and release facilities. The project should be initiated in 1991, with facilities in place in 1992.
6. Fund additional demonstration projects identified in the coordinated habitat and production process.

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Ringold Hatchery Site Enhancement and Water Development

Bonneville

7. Insofar as needed to secure a 100 cubic-feet per second water right for the **Ringold** hatchery facility, fund planning, design and construction of the necessary facilities to capture up to 100 cubic-feet per second of water and deliver it to the area of the hatchery site.

8. Fund planning, design and construction of the facilities determined to be necessary to improve existing production. Report to the Council for approval before proceeding with construction.

Reintroduction of Anadromous Fish in the Upper **Cowlitz** River **Basin**

Pacific Lamprey

Pacific lamprey are anadromous fish historically present in the Columbia and Snake rivers. Lamprey are a traditional food source for Columbia Basin Indians and remain culturally important.

Bonneville

9. Fund a unified data collection and analysis project to provide a status report to the Council on Pacific lamprey populations in the Columbia and Snake rivers by December 31, 1993.

Table 32 - Section 6.26 Strategy for Salmon Projects

| Measure Number | Measure Description | BPA RPA & Project Number | Project Title & Description | Current Measure Activity | Project Start End Dates | Project Manager: |
|----------------|---|--------------------------|-----------------------------|---|-------------------------|--|
| 6.2G.1 | Complete scoping study of captive breeding research needs | F1124: 93-056 | | SOW has been developed with NMFS. First product will be literature review, with subsequent development of alternative methods, and funding of demonstration. | | Jeny Bauer, Tom Vogel, BPA 503/230-7579/5201 |
| 6.2G.2 | Captive Broodstock Demonstration | SS 116 | | BPA plans to obligate approximately \$1.1 million in projects in FY 1994. | | Joyce Lindsay, BPA, 503/230-5710 |
| 6.2G.5 | Fund demonstration project for (no '94 portable adult holding and funds) juvenile acclimation facilities. | F2117: 94-009 | | Umatilla tribes implementing on Catherine Creek. BPA will fund, and FWS/LSCP will design, fabricate and install facilities using ODFW. Further planning and implementation to await resolution of Grande Ronde Basin fish stock issues. | | Jay Marcotte, BPA, 503/231-6962 |
| 6.2G.6 | Portable Collection, Holding , and Acclimation Facilities, additional demonstration projects. | SS 118 | | Due to the site-specific requirements of these facilities, portability is not feasible. With the goal of designing a demonstration of the technology, the matter will be assigned to a Scoping Group. BPA is ready to fund a viable resulting project. | | Joyce Lindsay, BPA, 503/230-5710 |
| 6.2G.8 | Ringold Hatchery Planning , Design, and Construction | SS 1 ⁱⁱ | | BPA will not fund construction at a Mitchell Act facility. Council staff intends to pursue relevant policy matters. | | Joyce Lindsay, BPA, 503/230-5710 |
| 6.2G.9 | Pacific Lamprey | 94-026 | | BPA will implement the measure by performing information and data collection and analysis using Division of Fish and Wildlife staff. The results of the effort will be reported to the Council as soon as possible in FY 1994. | | D. New, BPA, 503/230-7463 |

Strategy
for Salmon



6.3 Specific Actions To Assist Weak Stocks

6.3A Snake River Sockeye Salmon

In the summer of 1991, the Shoshone-Bannock Tribes, the Idaho Department of Fish and Game, the Bonneville Power Administration and others initiated an emergency program to conserve Snake River sockeye.

*Strategy
for Salmon*



Bonneville

1. Fund the program of the Shoshone-Bannock Tribes and the Idaho Department of Fish and Game to protect and rebuild Snake River sockeye.
2. Regularly update the Governors of the Northwest states, the Northwest Congressional delegation, the Council and other concerned parties on the progress of this project.

Bonneville and Fishery Managers

3. Fund and develop for Council review a feasibility study for reintroduction of sockeye **salmon** into appropriate production areas.

6.3B Snake River Fall Chinook Salmon

Fishery Managers

1. In consultation with the National Marine Fisheries Service and consistent with the recovery plan, use the Regional Assessment of Supplementation Project process and develop an experimental design for implementing, monitoring and evaluating supplementation of Snake River fall chinook. Submit to Council for approval by March 31, 1993.

Bonneville

2. Upon approval by the Council in consultation with the National Fisheries Service, implement supplementation experimental design developed by the fishery managers.
3. Expeditiously fund studies to **define** the range, limiting factors and needs, especially regarding flow and temperature, and provide basic life history information for Snake River fall chinook.
4. Fund studies to determine the genetic structure and population status of Snake River **fall** chinook.
5. **Fund a study of the** spawning and rearing habitats utilized by fall chinook salmon in the **Snake River**, and examine factors influencing their migratory behavior.

6.3C Endemic Spring Chinook in Grande Ronde Subbasin

The Minam and Wena rivers, in the Grande Ronde River Basin, have been designated by the state of Oregon as genetic sanctuaries for wild, endemic spring chinook salmon. But stray hatchery fish of non-local origin have been observed in the Minam and Wena basins in recent years. There is an immediate need to eliminate hatchery strays from entering these genetic sanctuaries.

Bonneville

1. **Fund planning, design, construction and operation of spring chinook trapping** facilities on the lower reaches of the Minam and Wena rivers.



6.3D Lower Columbia River Coho Salmon

Natural production of coho salmon in the lower Columbia River has declined to extremely low levels.

Bonneville and Fishery Managers

4. Survey **subbasin** plans submitted as part of the Integrated System Plan to determine limiting factors for naturally reproducing **coho** populations.
5. **Fund a survey of land management regulations affecting coho habitat. Include reviews of state forest practices, regulations and federal land management plans affecting coho habitat. Develop recommendations for revisions to support rebuilding objectives.**
6. **Fund a review of current production and harvest management practices for impacts on naturally reproducing coho populations, including competition from release of juveniles, disease and predation. Solicit recommendations for revisions of management practices to support rebuilding efforts.**

6.3E Columbia River Chum Salmon

Chum salmon are listed in the Integrated System Plan as a stock of high concern.

Bonneville and Fishery Managers

3. Survey **subbasin** plans submitted as part of the Integrated System Plan to determine limiting factors for naturally reproducing chum **salmon populations**.
4. Fund a survey of **land management regulations affecting chum salmon habitat. Include reviews of state forest practices, regulations and federal land management plans affecting chum salmon habitat. Develop recommendations for revisions to support rebuilding objectives.**
5. Fund **a review of current production and harvest management practices for impacts on naturally reproducing chum salmon populations. Solicit recommendations for revisions of management practices to support rebuilding efforts.**

6.3F Columbia River Sea-Run Cutthroat Trout

Sea-run cutthroat trout are found in all tributaries below and several tributaries above Bonneville Dam. No good measure of run strength exists. Likewise, little is known about early life history survival, ocean survival, catch, or escapement of Columbia Basin sea-run cutthroat trout populations.

Bonneville and Fishery Managers

3. Survey **subbasin** plans submitted as part of the Integrated System Plan to determine limiting factors for naturally reproducing sea-run cutthroat trout populations.
4. Fund a survey of land management regulations affecting sea-run cutthroat trout habitat. Include reviews of state forest practices, regulations and federal land management plans affecting sea-run cutthroat trout habitat. Develop recommendations for revisions to support rebuilding objectives,
5. Fund a review of current production and harvest management practices for impacts **on naturally reproducing sea-run cutthroat trout populations** Solicit recommendations for revisions of management practices to support rebuilding efforts.

Table 33 - Section 6.3 Strategy for Salmon Projects

| Measure Number | Measure Description | BPA RPA & Project Number | Project Title & Description | Current Measure Activity | Project Duration/Start-End Dates | Project Manager |
|----------------|---|---------------------------------------|-----------------------------|---|----------------------------------|---|
| 6.3A.1 | Fund Snake River experimental sockeye recovery project | F1121: 90-093, 91-071, 91-072, 92-042 | | 12/7 - Four contracts in place: 91-71 (Sho-Ban Tribes), 91-72 (IDFG), 92-42 (NMFS), and 90-93 (UI); BPA publishes regular fact sheet. | | Jeff Gislason, BPA, 503/230-3594; Rick Westerhof, BPA, 503/230-5061 |
| 6.3B.3 | Fund studies to define the range, limiting factors and needs of Snake River fall chinook | F1107: 88-015. F1121: 91-029, 92-046 | | Work ongoing in 91-029, 92-046, & 88-015. IPC also providing funds. 5/93: 91-029 draft annual reviewed and ready for finalization. | | Debbie Watkins, BPA, 503/230-4458 |
| 6.3B.4 | Fund studies to determine genetic structure and population status of Snake River fall chinook | F1121: 92-046 | | WDF performing work under project 92-046. It's ongoing. 92-046 draft annual report on genetic portion of study received by BPA. | | Debbie Watkins, BPA, 503/230-4458 |
| 6.3B.5 | Fund study of spawning and rearing habitat used by Snake River fall chinook | F1111: 91-029 | | USFWS conducting study under BPA contract 91-029. 5/93: 91-029 draft annual reviewed and ready for finalization. | | Debbie Watkins, BPA, 503/230-4458 |
| 6.3B.5 | Snake River Fall Chinook Spawning and Rearing Habitat | ss 115 | | Measure language adopted as part of Early Implementation Program. As language evolved during amendment process, Council considered a specific Nez Perce Tribe project. BPA will work to implement project through flexibilities and funding efficiencies. | | Joyce Lmdsay, BPA, 503/230-5710 |
| 6.3C.1 | Plan, Design, Construct, and Operate Spring Chinook facilities on the Minam and Wenaha Rivers | ss 120 | | Implementation of this measure is "on hold" until the Council, agencies, and Tribes resolve fish management implications in the basin. BPA is ready to fund a viable resulting project. | | Joyce Lmdsay, BPA, 503/230-5710 |

1987 F&W
Program



6.4 Habitat Objectives, Policies & Performance Standards

42 HABITAT AND PASSAGE IMPROVEMENT PROJECTS

703(c)(1) [Abstract] **BPA shall fund habitat and tributary passage projects as provided in Action Item 4.2. Upon Council approval of system plans provided for in Section 205, System Planning, BPA shall fund habitat and passage restoration or improvement measures in those plans, including those measures identified in the plans that are listed in Appendix A Table: Planning Inventory of Enhancement Projects. Phase Two amendments extended the date for completion of Action Item 4.2 through FY 1994.**

BPA ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To fund habitat and tributary passage projects as provided in Action Item 4.2.

Background and Progress to Date:

plans:

BPA will continue to fund construction/implementation activities (in addition to O&M) for specific Action Item 4.2 habitat projects in FY 1994. BPA will continue to fund O&M activities for these and other projects in FY 1994 and beyond.

BPA plans to include monitoring and evaluating of habitat projects beginning in FY 1993, based on the results of a project contracted with BPNL (Project 91-15) and technical input from the IPP's anadromous fish habitat Scoping Group. The BPNL project will recommend the use of a comprehensive project implementation plan for all future BPA-funded habitat projects, including elements such as pre-project information requirements and monitoring and evaluation guidelines specifically based on the habitat project's objectives. Expected fishery and riparian benefits will be tracked over time and project success as measured by achievement of objectives will be assessed. BPA will seek cost sharing, where appropriate, for funding project-level monitoring and evaluation activities.

4.5 YAKIMA RIVER FISH PASSAGE IMPROVEMENTS

(Completion of Elements in Table 3 of 803(b)(5): December 1, 1988)
(Post-Construction Evaluations)

803(b)(5) Upon approval by the Council, BPA shall fund the design and construction of the improvements listed in Table 2. All fish screening facilities shall meet current screening design standards.

1987 F&W
Program



BPA ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To construct **Yakima River** fish passage improvements.

Background and Progress to Date:

A network of irrigation canals diverts water from the Yakima and Naches rivers for use by various agricultural interests in the Yakima River Basin of Central Washington. Juvenile salmon and steelhead often stray into these canals during their outmigration to the sea. BPA, USBR, Bureau of Indian Affairs (BIA), and the State of Washington are constructing fish screens to direct the young salmon and steelhead back to the Yakima and Naches rivers.

Yakima Project entities will fund the construction of fish ladders at various projects to facilitate the normal upstream migration of adult salmon and steelhead.

plans:

BPA plans to fund construction through to completion and to evaluate projects as they are completed.

4.6 WATER EXCHANGE FOR UMATILLA RIVER

(Support Beginning Spring 1987)

(Report Evaluations: Annually)

703(a)(17) [Abstract] BPA shall provide power or reimbursement for power costs to USBR pumping plants designed to exchange Columbia River water for Umatilla River water. The USBR must obtain consent from all affected water users and regulators and provide assurance to the Council that water exchanged to augment streamflows will be used to meet annual flow objectives established by ODFW and CTUIR. The Oregon Water Resources Department (OWRD) will certify annually to the Council that the exchanged water will improve in stream flows and will benefit fish. The USBR shall fund state and tribal fish and wildlife agency monitoring and evaluation studies to determine the biological effectiveness of this measure.

BPA ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To support in stream flow enhancement efforts, which will increase Umatilla anadromous fish production by improving passage and rearing conditions.

*1987 F&W
Program***Background and Progress to Date:**

Federal authorizing legislation prepared by project sponsors was approved in fall 1988. The Council amended its Program to provide for **BPA funding of power costs** associated with interim pumping. USBR will handle operation and maintenance, capital and **evaluation** activities.

Because the original Program language did not include interim pumping and because USBR pumping **plants** are still in the **planning/design** stage, no water exchanges under this Action Item took place until spring 1989. **Through passage-assistance projects (Projects 87-409 and 88-50)** under Action Item 4.2, BPA had provided for pumping power to operate existing West Extension Irrigation District (WEID) **pumps to increase flows below Three Mile Dam during spring and fall 1987 and during spring and fall 1988. Under Project 89-27, BPA has reimbursed USBR for power costs for interim pumping conducted each spring and fall, and will continue to do so until Phase I of the USBR's Umatilla Basin Project is in place.**

In June 1989, the **USBR**, with assistance from BPA, OWRD, ODFW, Tribes, and the Basin Steering Committee, finalized a basin work plan that included the schedule for interim pumping and project completion and defined the scope of monitoring and evaluation activities. BPA and USBR entered into an Interim Pumping Agreement in 1990 to provide for the transfer of funds for power costs associated with interim pumping. **The first interim pumping under this Program** measure took place in spring 1989. In spring 1990, USBR and BPA began planning for power needs for the **USBR's Umatilla Basin Project.**

Construction of Phase I facilities was completed in spring 1993 and the first exchanges took **place in June. Also this year a permanent pumping agreement with USBR was put in place.** BPA also contracted with PP&L for provision of **Phase I** power, and with **Umatilla Electric** Cooperative Association for provision of Phase II power. A negotiated settlement was reached among the above parties, the irrigation districts, Waterwatch of Oregon and Oregon Trout that allowed the Phase II water right process to proceed. All parties signed several **MOA's** designed to clarify support for the water exchange project.

Wild and naturally spawning populations of **salmon** and steelhead are generally at low levels throughout the Columbia River Basin. Accordingly, habitat is seeded at low levels. Even so, improvements in habitat quality are needed to increase the productivity of many stocks.

*Strategy
for Salmon***6.4B Habitat Policies**

Federal, State and Local Land and Water Managers, Users and Owners; Fishery Managers; and Others

5. Provide elevated or new **funding** necessary for the successful and timely implementation of the items listed in this section. Funding sources for implementing provisions of the habitat section should include, but not be limited to, the U.S. Forest Service, Bureau of Land Management, Bureau of Reclamation, Soil Conservation Service, National Marine Fisheries Service, U.S. Fish and Wildlife Service, Corps of Engineers, Agricultural Stabilization and Conservation Service, Bonneville Power Administration, other relevant federal agencies, all relevant state agencies, local governments, private landowners, resource users and tribes. Cost and effort sharing is encouraged.

Table 34 - Section 6.4 Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------|---|---|--|
| 86-79-1 | <p>Fifteenmile Creek - Phase IV-V - ODFW</p> <p><u>Project Officer:</u> A. Thorns <u>Objectives:</u> Overall objective is to increase the production of wild winter steelhead within the basin:</p> <ol style="list-style-type: none"> 1. Reduce lethal summer water temperatures. 2. Increase summer water flow. 3. Restore fish habitat diversity within the stream. 4. Improve stream channel stability. 5. Reduce sediment loading through restored riparian vegetation. | <p><u>Date Initiated:</u> Nov. 1, 1990</p> <p><u>Results/Conclusions:</u> None at this time.</p> | <p>F'Y 1993: Continued implementation of habitat restoration measures along with maintaining previous projects completed under Contract #86-79.</p> <p>FY 1994: Finalize habitat fencing and continue O&M of fences.</p> |
| 91-57 | <p>Yakima Phase 2 Screen Fabrication - WDF</p> <p><u>Project Manager:</u> M. Nelson <u>Objectives:</u> Fabrication of Phase 2 screen drum assemblies and associated mechanical components.</p> | <p><u>Date Initiated:</u> May 1991</p> <p><u>Results/Conclusions:</u> Fabrication of group 1 assemblies ongoing.</p> | <p>FY 1993: Fabrication of groups 2 through 5 screen assemblies.</p> <p>FY 1994.: Continue fabrication of groups 3-5 screen assemblies.</p> |
| 91-75 | <p>Phase 2 Screen Design and Construction - USBR</p> <p><u>Project Manager:</u> M. Nelson <u>Objectives:</u> Predesign/NEPA of 63 fish screen facilities throughout the Yakima Basin. Project 88-1 11, Stevens/Naches/Selah Screens, and Project 86-65, Snipes/Allen Screens, have been combined with Project 89-90.</p> | <p><u>Date Initiated:</u> April 1992</p> <p><u>Results/Conclusions:</u> Preliminary design of Group 1 complete. Construction initiated on the first of the group 1 sites.</p> | <p>FY 1993: Construct group 2 sites and complete design of group 3 projects.</p> <p>FY 1994: Construct group 3 sites and complete design of group 4 projects.</p> |
| 92-09 | <p>Operations and Maintenance of Phase II Screens</p> <p><u>Project Officer:</u> D. New <u>Objectives:</u> Maintain Phase II screen sites.</p> | <p><u>Date Initiated:</u> 1993</p> <p><u>Results/Conclusions:</u> Washington Department of Fisheries O&M completed screens.</p> | <p>FY 1993: O&M contract in place.</p> <p>FY 1994: Add new screens to O&M contract.</p> |

Table 34 - Section 6.4 Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|---------------------------|--|--|---|
| 83-435 | <p>O&M of Umatilla Ladders and Screens</p> <p><u>Project Officer:</u> J. Marcotte <u>Objective:</u> Design and construct facilities, including ladders and canal screens, to enhance fish passage at Three Mile Dam and WEID canal screens. Design and build trapping and counting facilities. <u>Improvement:</u> Passage <u>Species:</u>er steelhead, spring and fall chinook</p> | <u>Date Initiated:</u> 1987 | N 1994: Continue O&M. |
| 89-27 | <p>Provide Power for USBR Columbia River Pumps (also Interim Flow Enhancement)</p> <p><u>Project Officer:</u> J. Marcotte <u>Objectives:</u> Enhance instream flows in the Umatilla River by exchanging Columbia River water for Umatilla River water.</p> | <p><u>Date Initiated:</u> N 1989</p> <p><u>Results/Conclusions:</u> The Phase I facilities were completed in N 1993, allowing the first water exchanges with WEID to occur. BPA contracted with UECA to provide power to the Phase II pump plant, including the design and construction of a 1-mile tap line.</p> | <p>N 1994: BPA complete supplementary NEPA analysis of the tapline needed to provide Phase II power. N 1995: Provide power to completed Columbia River pumps. (Phase 2).</p> |
| 89-27-1 (no '94 funds) | <p>Stanfield Water Release - Stanfield Irrigation District</p> <p><u>Project Officer:</u> J. Marcotte</p> <p><u>Objectives:</u> Purchase rights to stored water for use to enhance attraction flows and improve passage flows for returning fall chinook.</p> | <p><u>Date Initiated:</u> Oct. 19, 1992</p> <p><u>Results/Conclusions:</u> About 200 acre-feet of water were released daily during 10 days in October to increase flows. Fish returns to the Umatilla increased significantly during this period.</p> | Bureau budget planned for N 1994 and beyond. |
| 90-7 1 | <p>Smolt Loss Evaluation</p> <p><u>Project Biologist:</u> J. Stroklund <u>Objectives:</u> To determine smolt losses in the Yakima River due to various factors including predation, temperature, and passage conditions.</p> | <p><u>Start Date:</u> N 1992</p> <p><u>Results/Conclusions:</u> None at this time.</p> | <p>N 1993 : Continue smolt loss evaluation. N 1994: Continue smolt loss evaluation.</p> |
| 91-59 | <p>Habitat Inventory and Food Abundance - CWU</p> <p><u>Project Biologist:</u> J. Stroklund <u>Objectives:</u> This project will complete habitat inventories, determine food abundance, and integrate data into the Central Washington University GIS.</p> | <u>Results/Conclusions:</u> None at this time. | <p>N 1993: Continue data collection in cooperation with the WDW Interaction Study. N 1994: Continue data collection in cooperation with the WDW Species Interaction Study.</p> |

Table 34 - Section 6.4 Ongoing and New Projects

| Project NO. | Title and Objectives | Status | Schedule and Milestones |
|-------------|---|---|---|
| 92-14 | Habitat Definition, Assessment and Improvement <u>Project Biologist:</u> J. Stroklund <u>Objectives:</u> Define habitat criteria important to the experimental program. Measure habitat parameters based on established criteria. Prioritize and begin improvements of critical habitat. | <u>Start Date:</u> March 1992 <u>Results/Conclusions:</u> None at this time. | N 1993: Identity, prioritize, and implement habitat improvements necessary to achieve natural production goals. N 1994: Continue identifying, prioritizing and implementing habitat improvement necessary to achieve natural production goals. |
| 92-28 | Regional Fish Screen Oversight Committee - PSMFC <u>Project Manager:</u> T. Clune <u>Objectives:</u> Form the Fish Screening Oversight Committee (FSOC), develop a plan of priority projects, identify appropriate technical work groups, and correct high priority screening and passage problems. | <u>Date Initiated:</u> November 1991 <u>Results/Conclusions:</u> The FSOC has been formed. Developed a regional plan of high priority and long-term fish passage and screening improvements. • Initiated NEPA and design of high priority projects. • Identified cost sharing arrangements. • Implemented high priority improvements with Mitchell Act funds. | N 1994: Continue implementation under agreed on cost sharing arrangements. |
| 93-39 | John Day Fish Habitat Improvement <u>Project Officer:</u> A. Thorns <u>Objectives:</u> 1. Increase salmonid production by reducing sediment loading and improving passage habitat diversity. Use fencing, revegetation, passage. 2. Species: spring chinook and summer steelhead. | <u>Date Initiated:</u> N 1993 <u>Results/Conclusions:</u> Began NEPA and design. | N 1994: Complete NEPA and design; begin implementation. |
| 93-42 | Grande Ronde Fish Habitat Improvement <u>Project Officer:</u> A. Thorns <u>Objectives:</u> 1. Increase salmonid production by reducing sediment loading and improving habitat diversity. Use fencing, revegetation. 2. Species: spring chinook and summer steelhead. | <u>Date Initiated:</u> N 1993 <u>Results/Conclusions:</u> Began NEPA and design. | N 1994: Begin implementation. |

Table 34 - Section 6.4 Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------|---|---|---|
| 93-35 | <p>Red River Meadow</p> <p><u>Project Officer:</u> S. Levy</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. Increase salmonid production by reducing sediment loading and providing habitat diversity. Use bank stabilization, fencing, erosion control structures, revegetation. 2. Species: spring chinook and steelhead. | <p><u>Date Initiated:</u> N 1993</p> <p><u>Results/Conclusions:</u> Began planning and NEPA.</p> | N 1994: Begin implementation. |
| 93-36 | <p>Hayfork Gloryhole</p> <p><u>Project Officer:</u> S. Levy</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. Increase salmonid production by reducing sediment loading. Use fencing, revegetation, sediment pond dredging. 2. Species: spring chinook and steelhead. | <p><u>Date Initiated:</u> N 1993</p> <p><u>Results/Conclusions:</u> Began planning and NEPA and implementation.</p> | N 1994: Complete implementation. |
| 93-045 | <p>Buck Hollow 2000 Watershed Enhancements and Fish Habitat Project (ODFW)</p> <p><u>Project Officer:</u> S. Bettin</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. To develop the riparian portion of the comprehensive Buck Hollow Watershed Enhancement Plan. | <p><u>Date Initiated:</u> April 1993</p> <p><u>Results/Conclusions:</u> None.</p> | <p>Year 2: Complete fisheries and riparian portion of the watershed 2000 plan.</p> <p>Year 5: Complete implementation of the plan.</p> |
| 93-030 | <p>Buck Hollow 2000 Watershed Enhancement and Fish Habitat Project (WCSWCD)</p> <p><u>Project Officer:</u> S. Bettin</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. To develop a land management plan for the Buck Hollow Watershed which leads to improved fish and wildlife habitats. | <p><u>Date Initiated:</u> April 1993</p> <p><u>Results/Conclusions:</u> None.</p> | <p>Year 2: Complete comprehensive plan.</p> <p>Year 5: Complete implementation of the plan.</p> |
| 94-17 | <p>Idaho Model Watershed Habitat Projects</p> <p><u>Project Officer:</u> D. New</p> <p>Implementation of habitat projects which will be prioritized by the Model Watershed planning program.</p> | | <p>Model Watershed prioritization to be completed by March 1994. Project design and implementation in spring/summer 1994.</p> <p>N 1994: Refine project prioritization and develop projects for N 1995.</p> |

Table 34 - Section 6.4 Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------------------|--|---------------------------|---|
| 94-18 | <p>Washington Model Watershed Habitat Projects</p> <p><u>Project Officer:</u> M. Nelson Implementation of habitat projects which will be prioritized by the Model Watershed plating program.</p> | | <p>Model Watershed prioritization to be completed by January 1994. Project design and implementation in spring/summer 1994. N 1994: Refine project prioritization and develop projects for N 1995.</p> |
| 94-27 | <p>Grande Ronde Model Watershed Habitat Projects</p> <p><u>Project Officer:</u> A. Thorns Implementation of habitat projects which will be prioritized by the Model Watershed planning program.</p> | | <p>Model Watershed prioritization to be completed by January 1994. Project design and implementation in spring/summer 1994. N 1994: Refine project prioritization and develop projects for N 1995.</p> |
| (no project number yet) | <p>Sociological Situational Assessment of Model Watersheds</p> <p><u>Project Officer:</u> M. Shaw</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. Ensure that the broad-range of interests at stake in the model watershed program planning process have been identified. 2. Identify communication methods appropriate to diverse publics which could be used in management planning and implementation. 3. Identify opportunities to incorporate public interests and issues within the constraints of the plating process. | <u>Start Date:</u> N 1994 | |

Table 34 - Section 6.4 Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------------------|---|---|--|
| (no project number yet) | <p>Application of RASP to Grande Ronde Model Watershed</p> <p><u>Project Officer:</u> M. Shaw</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. Provide assistance to the Technical Subcommittee which has been formed by the Grande Ronde Model Watershed Board of Directors to deal with fish production recovery issues. 2. Guide the Subcommittee through a first iteration of the planning process developed by the RASP and described in "Supplementation in the Columbia Basin: Summary Report Series" (RASP, 1992). | <u>Start Date:</u> N 1994 | |
| 87-100 93-32 | <p>Umatilla River Basin Fish Habitat Enhancement - USFS/Umatilla NF</p> <p><u>Project Officer:</u> J. Bauer</p> <p><u>Objective:</u> Instream and riparian habitat improvement for portions of the Umatilla River and tributaries on the Umatilla National Forest.</p> <p><u>Improvement:</u> Instream structures</p> <p><u>Habitat:</u> 18 miles</p> <p><u>Species:</u> ar steelhead and spring chinook.</p> <p><u>Benefit:</u> (e basin) 21,700 summer steelhead and 2 1,100 spring chinook smolts.</p> | <u>Results/Conclusions:</u> Finished construction in Pearson Creek and Meacham Creek. O&M of structures already built. | N 1994: O&M of existing structures is major activity. Survey of physical integrity of the structures will be made. |
| 87-100-I | <p>Umatilla River Basin Fish Habitat Enhancement - CTUIR</p> <p><u>Project Officer:</u> J. Bauer</p> <p><u>Objective:</u> Instream and riparian habitat improvement for portions of the Umatilla River and tributaries on the Umatilla Reservation.</p> <p><u>Improvement:</u> Fencing, riparian revegetation, instream structures</p> <p><u>Habitat:</u> 18 miles</p> <p><u>Species:</u> ar steelhead and spring chinook.</p> <p><u>Benefit:</u> Project 87-100.</p> | Began biological evaluation of Squaw and Meacham Creek and maintenance of existing structures. | N 1994: Major activity is O&M of existing structures. Determine condition of existing spawning and rearing habitat. Develop plans to mitigate impacts of ongoing land management activities through implementation of protective measures. |

Table 34 - Section 6.4 Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------------------|---|---|--|
| 87-100-2 | <p>Umatilla River Basin Fish Habitat Enhancement - ODFW</p> <p><u>Project Officer:</u> J. Bauer <u>Objectives:</u> Instream and riparian habitat improvement for portions of the Umatilla River and tributaries on privately-owned land. <u>Improvement:</u> Fencing, riparian revegetation, instream structures <u>Habitat:</u> 18 miles <u>Species:</u> er steelhead. <u>Benefit</u> Project 87-100</p> | <p><u>Results/Conclusions:</u> Began work in East Birch Creek. Moved to maintenance of structures.</p> | <p>N 1994: Major activity is O&M of existing structures on Birch Creek. Monitor and evaluate existing structures. Conduct biological surveys of Birch Creek.</p> |
| 93-19 | <p>Design/Construct Powerdale Dam Facilities (NEOH)</p> <p><u>Project Officer:</u> J. Marcotte <u>Objectives:</u> Design and build fishtrap facilities in Powerdale Dam to allow data collection activities. Study results will eventually be used to refine the Hood River artificial production program.</p> | <p><u>Date Initiated:</u> N 1993 <u>Results/Conclusions:</u> Continued design and land activities. Contract in place for N 1994.</p> | <p>N 1994: Complete construction by summer and begin data collection.</p> |
| 92-15 (no '94 funds) | <p>Dryden Screens Design and Construction - Chelan P.U.D.</p> <p><u>Project Manager:</u> M. Nelson <u>Objectives:</u> Conduct environmental analysis, design, and construct fish screening facilities at the Dryden Canal. These facilities will protect juvenile spring and summer chinook from being trapped in the Dryden Canal.</p> | <p><u>Date Initiated:</u> October 1991 <u>Results/Conclusions:</u> Contract executed, pre-design initiated. Final design completed and construction to be complete in N 1993.</p> | <p>N 1993 : Construct facility. N 1994: Operate facility and make evaluation in accordance with screen by-pass criteria.</p> |
| 85-62 | <p>Passage Improvement Evaluations - BPNL</p> <p><u>Project Manager:</u> M. Nelson <u>Project Biologist:</u> J. Stroklund <u>Objectives:</u> Evaluate effectiveness of passage improvement projects.</p> | <p><u>Date Initiated:</u> March 1985 <u>Results/Conclusions:</u> Evaluation is ongoing; results published in BPA annual reports.</p> | <p>Continuing: Evaluation will continue as projects are completed and go on line.</p> |
| 91-45 (no '94 funds) | <p>Adult Trap Predesign - USBR</p> <p><u>Project Manager:</u> M. Nelson <u>Objectives:</u> Design and construction of adult trap facilities for the Yakima Hatchery project.</p> | <p><u>Date Initiated:</u> N 1991 <u>Results/Conclusions:</u> Design of Roza Trap complete. Construction started November 1992.</p> | <p>N 1993 : Complete EIS. Design of Roza Adult Trap completed. Construction to be completed. N 1994: Roza Trap to be certified, operated and tested for use.</p> |

Table 34 - Section 6.4 Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------------------|---|--|---|
| 91-66 (no '94 funds) | Ice Harbor/Lower Granite Fish Trapping Improvements <u>Project Officer:</u> J. Marcotte <u>Objectives:</u> Evaluate current trapping operations and physical facilities for trapping. Determine operational adjustments and/or physical improvements that would allow for capture and identification of all salmon. Non-Snake River fish would be prevented from passing these facilities. Operational adjustments would be implemented as soon as feasible. | <u>Start Date:</u> June 1991 <u>Results/Conclusions:</u> Several scoping meetings have been held among interested parties to identify project objectives and timeframes. However, progress has been delayed owing to emergence of more time-critical work efforts. Currently, BPA budget allocates no funds for this project in FY 94 or FY 95. Preconsultation discussions with NMB in July 1993 may yield conclusions that affect the scope and timing of this project. | No current schedule. |
| 93-07 | Genetic Stock Identification Expansion Project <u>Project Officer:</u> R. Westerhof <u>Objectives:</u> 1. Develop and implement an expanded genetic stock identification program for monitoring in river and ocean fisheries. | <u>Results/Conclusions:</u> Funded ODFW and WDF | Develop coordinated project N 94 and N 95. |
| 92-78 (no '94 funds) | Idaho Fish Screen Shop <u>Project Officer:</u> T. Clune <u>Field Inspector:</u> D. New <u>Objectives:</u> Construct a modern screen fabrication shop in Salmon, Idaho. Jointly funded by NMFS and BPA. | <u>Date Initiated:</u> October 1992 <u>Results/Conclusions:</u> Began construction. | N 1994: Complete construction. |
| 93-66 | Oregon Fish Screen Shop <u>Project Officer:</u> J. Marcotte <u>Objective:</u> Construction of a modern screen fabrication shop jointly funded by NMFS and BPA. | <u>Date Initiated:</u> June 1992 <u>Results/Conclusions:</u> None | N 1994: Acquire existing facilities, construct new facilities. N 1995: Begin operations. |

Table 34 - Section 6.4 Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------|---|-------------------------------------|--|
| 94-015 | Idaho Fish Screen Improvement | <u>Date Initiated:</u> October 1993 | <u>N 1994:</u> Develop team and initiate coordination among agencies involved. |
| | <u>Project Officer:</u> D. New | <u>Results/Conclusions:</u> None. | |
| | <u>Objectives:</u> Work with NMFS, State of Idaho, BLM, Forest Service, ASCS, SCS, and BOR to consolidate diversions, screen unscreened diversions, and enhance passage of juvenile and adult salmon in the Salmon River and tributaries. | | |

6.5 Cooperative Habitat Protection and Improvement with Private Landowners

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3.1 MODEL WATERSHEDS

3.1 (a) [Abstract] BPA: Fund **planning for three** or more model watershed projects, including at least one in Oregon, Idaho, and Washington, to comprehensively address land and water factors that limit salmon and steelhead productivity in tributary areas.

3.1(f) Bonneville: After Council approval, share in the costs of implementing model watershed projects. **Planning** should be completed expeditiously so that implementation **can begin in 1992**.

BPA IMPLEMENTATION **ACTIVITY** SUMMARY:

Objectives:

Idaho, Washington, and Oregon will select watersheds which can be cooperatively managed for maintenance, rehabilitation, and enhancement of the **anadromous** fisheries resources. This will include State, **and** Federal agencies, Tribal governments, county and municipal **governments**, private landowners **and** resource developers, environmental groups, etc. The watershed plans will consider all existing and future planning efforts such as Forest Plans **and** subbasin plans, and resolve possible conflicts. Project cost sharing will be implemented wherever possible. Monitoring and evaluation goals and actions will play an **integral** part in assessing watershed plan progress. The watershed plans will be long-term in nature to insure full implementation. Valuable information gained from **planning** and implementation will be transferred to other subbasins and watersheds.

Background and Progress to Date:

The following watersheds were selected by the states: Oregon selected the **Grande Ronde** River watershed, **with the** Department of Water Resources as the lead state agency, and the Blue Mountain Natural Resource Institute providing local coordination efforts; Washington selected the Asotin Creek watershed, with the Soil and Water Conservation Commission as the lead state agency, and the Soil and Water Conservation District as the local coordinator; Idaho chose the Lemhi River, Pahsimeroi River, and East Fork Salmon River watersheds, with the Conservation Commission, **and** the local Conservation District as facilitators.

Plans:

Contracts have been established with each of the coordinating entities in the three states. Each of the watersheds has hired a watershed coordinator, and terms and conditions, based on **the outline of desired products from the Strategy For Salmon, Volume II has been established within** the contracts. Budgets for FY 1993 reflect the desired end products of an analysis of existing conditions, **and preliminary prioritization of potential projects, both for needed new information,**

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and for on-the-ground projects. It is anticipated that the process will continue into FY 1994, with a continued refinement of the recommendations, and in some cases, **final delivery of the first analysis** of conditions and project proposals.

Projects:

Grande Ronde Subbasin: Radio telemetry tracking of adult spring chinook to characterize use and condition of pre-spawning, and spawning habitat. See Project 88-108, System Monitoring and Evaluation Program.

Table 35 - Section 6.5 Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------|--|--------|-------------------------|
| 93-62 | Upper Salmon River Anadromous Fish Passage <u>Project Officer:</u> D. New <u>Objectives:</u> BPA is cost-sharing diversion consolidations, headgates, and other aspects of Lemhi Model Watershed fish passage improvement with ASCS, BOR, NMFS, and irrigators to reduce travel time for smolts and to ensure that the fish will not be diverted into irrigation canals. | | |

Table 35 - Section 6.5 Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------|--|---|---|
| 92-026 | Grande Ronde Model Watershed Planning and Implementation <u>Project Officer:</u> M. Shaw | <u>Date Initiated:</u> September 15, 1992 <u>Results/Conclusions:</u> A Board of Directors (BOD) was established representing the agencies, tribes and private interests of the basin. Organization structure dominated the process in the first several months. Developed a mission statement, goals and objectives, and by-laws of operation. A level of trust has been established, and the BOD is working cooperatively to guide the next steps of developing a report on existing conditions, prioritizing project proposals, and developing a public participation process. | August 1, 1993: Draft report on existing conditions and recommended actions. September 30, 1993: Final report on existing conditions and recommended actions. January 1, 1994: Recommendations for BOD on actions for fisheries/watershed projects. March 1, 1994: Design implementation package for proposed actions. May 1, 1994: Begin implementation of selected watershed projects. |
| 93-070 | Grande Ronde Radio Telemetry Tracking <u>Project Manager:</u> M. Shaw <u>Objectives:</u> Monitor spring chinook in Grande Ronde River by tracking radio tagged adults to prespawning habitat and spawning habitat. Characterize habitat quality and quantity, and develop possible habitats protection, rehabilitation and enhancement strategies for this habitat. Concurrently, begin planning and scoping for Measure 6.2A, Wild and Natural Spawning Populations to list, monitor, and evaluate these populations on a regionwide basis. | <u>Date Initiated:</u> FY 1993 <u>Results/Conclusions:</u> None at this time. | FY 1993: Track radio-tagged fish in Grands: Ronde River during June through September. Characterize habitat and its use. FY 1994: Interpret data and publish report on prespawning habitat use. Recommend possible habitat protection and enforcement actions and/or fund management actions to protect, rehabilitate, or enhance habitat through the Grande Ronde Model Watershed process. Conduct radio-telemetry tracking for one more season or April through October 1994. |

Table 35 - Section 6.5 Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------|---|--|--|
| 93-11 | <p>Public Education - Fish and Wildlife Habitat</p> <p><u>Project Officer:</u> A. Thorns</p> <p>Objectives: Project will initiate new and/or enhance and expand existing programs and materials useful in creating public awareness and involvement in fish and wildlife habitat protection and restoration. The function, operation, and effectiveness of programs developed by various Federal, state, and local agencies will be monitored, assessed, and evaluated. Education programs which are effective in fish and wildlife education within the Columbia Basin will be targeted to increase public participation in these programs and thereby increase public involvement in fish and wildlife enhancement efforts. Where these educational programs involve youth, this will also increase the potential pool of those who may seek advanced training for careers in resource management.</p> | <p><u>Start Date:</u> FY 1992 <u>Results/Conclusions:</u> None at this time.</p> | <p>FY 1993/94: Education project programmatically encompasses environmental education from childhood through adult. The project spans the BPA service area with an array of subprograms ranging from speaking engagements, video loans, stream walks, and curricula, to collecting field data, producing reports and participating in regional, national and global computer networks.</p> |
| 92-065 | <p>Fish and Wildlife Education</p> <p><u>Project Officer:</u> W. Maslen</p> <p><u>Objectives:</u> Public Education on BPA's Fish and Wildlife Program</p> | <p><u>Date Initiated:</u> 1992 <u>Results/Conclusions:</u> Visibility of the ratepayers' investment in fish and wildlife has been increased via information included in Oregon and Washington sport fishing regulations pamphlet.</p> | <p>FY 1994: Continue to disseminate information to the general public on the comprehensive Fish and Wildlife Program funded by electricity ratepayers.</p> |

Table 35 - Section 6.5 Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------|--|--|---|
| 92-026-02 | Eastern Washington Model Watershed Planning and Implementation <u>Project Officer:</u> M. Shaw | <u>Date Initiated:</u> October 1, 1992 <u>Results/Conclusions:</u> Asotin Creek was chosen as the model watershed candidate. Brian Sangster , local district conservationist now devotes 50% of his time to the model watershed. The Soil Conservation Service, Spokane, is providing leadership and technical support to development of a watershed plan. A locally based steering committee with representatives of the affected private, state, and federal land managers has been formed, along with a technical advisory committee to help guide the development of the watershed plan. A work plan has been written to guide the product development.. | July 1, 1993: Possible expansion of watershed process in the Tucannon River watershed. September 1, 1993: Draft report on existing conditions and recommended actions. October 3 1, 1993: Final report on existing conditions and recommended actions. January 1, 1994: Recommendations from steering committee on actions for fisheries/watershed projects. March 1, 1994: Design implementation package for proposed actions. May 1, 1994: Begin implementation of selected watershed projects. |
| 92-026-03 | Lemhi River, Pahsimeroi River, and East Fork Salmon River Model Watershed Planning and Implementation <u>Project Officer:</u> M. Shaw | <u>Date Initiated:</u> October 1, 1992 <u>Results/Conclusions:</u> Ralph Swift, local district conservationist now devotes 100% of his time to the model watershed. A locally based steering committee with representatives of the affected private, state, and federal land managers has been formed, along with a technical advisory committee to help guide the development of the watershed plan. A work plan has been written to guide the product development. | August 1, 1993: Draft report on existing conditions and recommended actions. September 30, 1993: Final report on existing conditions and recommended actions. December 1, 1993: Recommendations from steering committee on actions for fisheries/watershed projects. March 1, 1994: Design implementation package for proposed actions. May 1, 1994: Begin implementation of selected watershed projects. |

Strategy
for Salmon



The Council has adopted the following as a program habitat objective: Ensure human activities affecting production of salmon and steelhead in each subbasin are coordinated on a comprehensive watershed management basis.

6.5A Coordination of Watershed Activities

Bonneville

2. Provide initial funding for at least one coordinator in each of the states of Idaho, Oregon and Washington to initiate efforts to coordinate watershed activities.

6.5B Model Watersheds

Bonneville

1. Provide initial funding for at least one model watershed coordinator selected by each respective state. These coordinators may also coordinate watershed activities (see Section 6.5A2, above).

Idaho, Oregon and Washington

2. Each state should select a coordinating entity for each model watershed project, such as the state conservation commission or other appropriate entity.

Table 36 - Section 6.5 Strategy for Salmon Projects

| Measure Number | Measure Description | BPA RPA & Project Number | Project Title & Description | Current Measure Activity | Project Duration/Start End Dates | Project Manager |
|----------------|---|------------------------------|---|---|----------------------------------|--------------------------------|
| 6.5A.2 | Fund a coordinator in Oregon, Washington and Idaho to initiate coordinated watershed activities. May coordinate model watershed activities. | F1124 92-026-(01, 02, 03) | | FUNDING COVERED UNDER FOLLOWING ACTION. | | Mark Shaw, BPA 503/230-5239 |
| 6.5B.1 | Provide initial funding for model watershed coordinators | F1124 92-026-(01, 02, 03) | Grande Ronde Model Watershed Model Watershed Studies - Lemhi River Basin Eastern Washington Model Watershed | Coordinators have been funded and hired for Grande Ronde watershed in Oregon, Lemhi-E. Fk. Salmon-Pahsimeroi in Idaho, and Asotin Cr. in Washington. Local steering and technical committees established, and planning/implementation is under way. | 9/1/92 - 12/31/94 | Mark Shaw, BPA 503/230-5239 |

6.6 State, Federal and Tribal Habitat Actions

Table 37 - Section 6.6 Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------|--|--|--|
| 90-93 | <p>Genetic Analysis of <u>Oncorhynchus nerka</u> - UI</p> <p>Project Officer: R. Westerhof</p> <p>Objectives: 1. Determine if Redfish Lake <u>O. nerka</u> comprise more than one deme. 2. Quality relationships among life history forms present in the Snake River system. 3. Compare anadromous and non-anadromous <u>O. nerka</u> in ecosystems where sockeye have been blocked and re-established. 4. Investigate DNA analyses as genetic tools.</p> | <p>Date Initiated: August 1, 1991</p> <p>Results/Conclusions: 1. Three forms of <u>O.nerka</u> exist in Redfish Lake: anadromous sockeye, "resident beach spawning," <u>O.nerka</u>, and resident kokanee. Anadromous sockeye and "residual" sockeye spawn on the historical beach spawning site in October and November, respectively, while the resident kokanee spawn in Fishhook Creek during August and September. 2. Life history characteristics of the three forms were assessed with some differences in development rate of eggs and number of gill rakers counts. 3. DNA analysis included assessment of other <u>O.nerka</u> stocks in the Salmon/Snake River system, the Upper Columbia River and outside the Columbia River system. Development of DNA markers or probes is still underway that might readily segregate the three forms. Preliminary results indicate three forms closely related, but may be sufficiently different to be considered three separate stocks.</p> | <p>FY 1994:</p> <ol style="list-style-type: none"> 1. Continue development of DNA markers or probes to separate anadromous sockeye from resident kokanee. 2. Investigate early life history characteristics among the three <u>O. nerka</u> forms in the lake for possible differences. |

Table 37 - Section 6.6 Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------|---|--|---|
| 91-71 | <p>Sockeye Salmon Habitat and Limnologic Research - Shoshone-Bannock Tribes</p> <p><u>Project Officer:</u> J. Gislason</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. Restore fertility of nursery lakes to levels conducive to optimum sockeye growth. 2. Modify existing migratory blocks at outlets of nursery lakes to allow free passage of sockeye salmon, while providing barriers to rough fish where necessary. 3. Determine <u>O. nerka</u> population characteristics and densities in the Stanley Basin nursery lakes, in cooperation with IDFG. | <p><u>Date Initiated:</u> August 20, 1991</p> <p><u>Results/Conclusions:</u> Limnological and fisheries studies, in preparation for lake fertilization, were continued in 1993. Effects of different levels of nutrient addition were tested in 1993, using model ecosystems (limnocorrals) in two lakes. The 1992 Annual Report (DOE/BP-22548-1) is available.</p> | <p>FY 1994:</p> <ol style="list-style-type: none"> 1. Implement whole-lake fertilization test on one nursery lake. 2. Continue assessment of <u>O. nerka</u> and predator/competitor fish populations in five Stanley Basin nursery lakes. 3. Continue limnological monitoring of nursery lakes. 4. Conduct hydrological surveys in nursery lake outlet streams as part of barrier modification feasibility study. |
| 91-72 | <p>Idaho Sockeye Salmon Research and Recovery - IDFG</p> <p><u>Project Officer:</u> J. Gislason</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. Capture <u>O. nerka</u> smolts and returning adults at the Redfish Lake creek trap and establish captive <u>O. nerka</u> broodstock to be used for recovery of sockeye salmon in Stanley Basin nursery lakes. 2. Develop broodstock holding/rearing at Eagle Fish Health Research Facility. 3. Provide project planning, technical consultation, project coordination, technical review, and public review. 4. Assess <u>O. nerka</u> and predator/competitor fish populations in Stanley Basin sockeye nursery lakes, in cooperation with SBT. | <p><u>Date Initiated:</u> June 11, 1991</p> <p><u>Results/Conclusions:</u> Outmigrants were captured in 1993 and are being reared. Rearing of offspring of 1991 returning adults and 1991 and 1992 outmigrants continued in 1993. The 1991 Redfish Lake outmigrants are expected to mature and be spawned artificially in the fall of 1993. The progeny will be outplanted in one or more Stanley Basin sockeye nursery lakes. Improvements to rearing facilities at Eagle, ID were completed in 1993. The 1992 Annual Report (DOE/BP 21065-1) is available.</p> | <p>FY 1994:</p> <ol style="list-style-type: none"> 1. Continue to trap outmigrants and adults (if any) for the captive broodstock program. 2. Outplant progeny of 1991 Redfish Lake and Alturas Lake outmigrants in Redfish and Alturas lakes, respectively. Fish will be reared for approximately 6 months in floating net-pens, then released to overwinter in the lakes. 3. Continue fish population assessment in nursery lakes. 4. Continue rearing fish in the captive broodstock program. |

Table 37 - Section 6.6 Ongoing and New Projects

| Project NO. | Title and Objectives | Status | Schedule and Milestones |
|-------------|---|---|---|
| 92-40 | <p>Redfish Lake Sockeye Salmon Captive Broodstock Rearing and Research - NMFS</p> <p><u>Project Officer:</u> J. Gislason</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. Rear 1991-brood Redfish Lake sockeye salmon. 2. Compare freshwater and seawater rearing for 1990-brood Lake Wenatchee stock sockeye salmon. 3. Evaluate survival of 1991-brood progeny of anadromous Lake Wenatchee stock sockeye salmon held full-term to maturity in fresh water vs. 1991-brood progeny of Lake Wenatchee stock parents with a period of seawater residence. | <p><u>Date Initiated:</u> March 9, 1992</p> <p><u>Results/Conclusions:</u> Brood-year 1991 sockeye salmon are being reared successfully; research continues. The juvenile sockeye were transferred from NMFS' Seattle facility to rearing facilities at Big Beef Creek, Seabeck, WA, in spring 1993. The 1992 Annual Report (DOE/BP-41841-1) is available.</p> | <ol style="list-style-type: none"> 1. FY 1994: Continue rearing brood-year 1991 sockeye and continue research. 2. FY 1995: Spawn 1991 brood-year sockeye and transfer fertilized eggs to IDFG. 3. FY 1996: Complete research on saltwater vs. freshwater survivals and rearing and publish results in final report. |

6.6A Land Management

Strategy
for Salmon



U.S. Forest Service (Regions 1, 4, 6) and Bureau of Land Management (Idaho and Oregon/Washington Offices) **Bonneville** and Other Implementing Entities

10. Provide funding for the acquisition and management of permanent conservation easements for rebuilding and maintaining Columbia Basin salmon and steelhead populations. Report to the Council on progress on this measure by June 30, 1993, and **annually** thereafter.

6.6B Water Quality and Quantity Instream Flows for Salmon and Steelhead

Bonneville and Other Implementing Entities

4. Provide funding for the acquisition and management of critical water rights for rebuilding and maintaining Columbia Basin salmon and steelhead populations. Report to the Council on progress on this measure by June 30, 1993, and annually thereafter.

Water Conservation

Salmon and steelhead need adequate river flows for spawning, rearing and migration. With growing development pressures on streams, there is a need to **find** innovative ways to leave more water in streams.

Strategy
for Salmon



Bureau of Reclamation

7. **In 1991, initiate a cooperative effort with the states of Idaho, Oregon and Washington, and with irrigators, to select and designate at least four demonstration water conservation projects, to provide additional instream flow and enhanced water quality for production of weak stocks.**

8. Take initiative to secure the necessary funding to complete watershed selection and planning by the end of 1993, and complete implementation of the demonstration projects by **December 31, 1996.**

Water Availability

The Council is concerned that **continuing** diversions of **Columbia** River and tributary water will degrade stream conditions needed by salmon and steelhead.

Idaho, Montana, Oregon, Washington, **Bureau Of Reclamation and Bonneville, in Coordination with Indian Tribes and Other Parties**

13. Develop a regional assessment of the availability of water for salmon and steelhead spawning, incubation, emergence and migration in the Columbia River and its tributaries, given current and projected water use and plans to provide secure flows for salmon and steelhead. Scope the assessment and submit a plan of work to the Council by October 31, 1992, and submit the assessment by the end of 1993.

Subbasin Water Projects

Umatilla **Subbasin** Pumping Project

Bonneville

18. Provide power or reimbursement for power costs to Bureau of Reclamation pumping plants designed to **exchange Columbia River water for Umatilla River water, so long as the exchange is administered in accordance with federal and state laws, the permit issued pursuant to Application 7 1293, the transfer order issued pursuant to Application T662 1 E, and memoranda of agreement resulting from the Contested Case Proceeding on Protested Water Applications 71293 and T662 1 E.**

6.6C Water Diversion Screening

There is an immediate need to accelerate the installation of new facilities on unscreened diversions and repair or upgrade older facilities.

Fishery Managers

1. **Develop a prioritized list of tributary screening and passage facility improvements for stream diversions in the Columbia River Basin affecting salmon and steelhead.**

*Strategy
for Salmon*



Bonneville

3. Fund costs associated with operation of the Fish Screening Oversight Committee and Technical Work Groups established by the National Marine Fisheries Service.

National Marine Fisheries Service, Working with Oversight Committee, Appropriate Technical Work Groups and Bonneville

4. **Identify** resources that will be needed to accomplish screening and passage work, and prepare a general operational plan, including a schedule, budget, proposed cost sharing and incentive programs. The National Marine Fisheries Service, the oversight committee, and Bonneville should review this plan with the Council by February 1, 1992. The goal is to complete the installation of all needed screens and passage facilities by the end of 1995.

6.6D Expedited Process for Funding Projects

Many high priority habitat improvement projects involve transactions **with private landowners** and water rights holders. In working with the private sector, timely access to funding will be essential once negotiations have concluded and parties are ready **to proceed**. This ability to move quickly is not currently in place, and it is essential to capitalize on agreements to undertake cooperative habitat improvement and protection.

Bonneville

1. **...explore** alternative procedures for funding high priority habitat projects expeditiously. Report to the Council on a proposed procedure by December 31, 1992.

Table 38 - Section 4.6 Strategy for Salmon Projects

| Measure Number | Measure Description | BPA RPA & Project Number | Project Title & Description | Current Measure Activity | Project Duration/Start-End Dates | Project Manager |
|----------------|--|--------------------------|-------------------------------------|---|----------------------------------|--|
| 6.6A.10 | Fund acquisition and management of conservation easements and critical water rights | F1101: 93-044 | EDF Water Acquisition Pilot Project | Purchase of Skyline Ranch on lower Snake River with associated water right, which would be left in river. | | Dan Daley, BPA 50312303066 |
| 6.6B.4 | Report progress on acquiring and maintaining critical water rights for fish | F1101: 93-044 | | Purchase of Skylme Ranch on lower Snake River with associated water right, which would be left in river. | | Dan Daley, BPA 503/230-3066 |
| 6.6B.13 | Submit regional assessment of water availability in the Snake River and its tributaries. | F1101: 93-043 | | 1/93: Being conducted under Snake River steering committee. RFP in preparation, see Measure 3.6C.2 . | | Dan Daley, BPA 503/230-3066 |
| 6.6C.1 | Develop prioritized list of tributary screening and passage projects | F2117: 92-028 | | Bonneville finding screen shops and design; NEPA needed for participation in actual screening; 5/29: Work in progress on Salmon, Grande Ronde Tribes. 7/23 - CBFWA sent status report to Council. 10/9 - Contract for Idaho screen shop funded. | | Tom Clune, BPA, 503/231-6949 & Jack Donaldson, CBFWA, 503/326-7031 |

Section 7. Coordinated Implementation, Monitoring and Evaluation

Strategy for Salmon



The Council recognizes the need to employ a systemwide approach to address the needs of Columbia River Basin fish and wildlife.

7.1B Implementation and Monitoring

As the region moves forward to realize the ambitious goals of the fish and **wildlife** program it will pursue two closely related, parallel paths. One is the implementation path that is, taking specific actions identified in the **annual** implementation work plan, This path will include steps to address uncertainties and **refine** actions over time. The second path is evaluation. The evaluation path **will** monitor overall program implementation, evaluate the effectiveness of actions taken, and judge their scientific merits.

Implementation of Actions Including Research Projects

... the Council calls for this implementation process to be broadened **to** include land and water managers and other interested parties to produce an annual implementation work **plan** and a monitoring report, and to provide for independent scientific review of the program and its implementation.

Bonneville, Fishery Managers and Others

1. Expand the implementation planning process so that participants prioritize and coordinate implementation of all program measures, including research.
2. Participants in this expanded process should prepare an **annual** implementation work **plan**.
3. The annual implementation work plan should include (but not be limited to) actions to address key scientific uncertainties associated with the program and its measures.
4. The annual implementation work plan should be submitted to the Council by June 15 of each year.

Table 39 - Section 7.1 Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------|--|---|---|
| 89-62 | <p>CBFWA Fish and Wildlife Program Planning and Coordination</p> <p><u>Project Officer</u>: J. Lindsay</p> <p><u>Objectives</u>:</p> <ol style="list-style-type: none"> 1. Facilitate communication among BPA, CBFWA, Policy Review Group (PRG), Scientific Review Group (SRG), and IPP Scoping Groups (SG's). 2. Ensure the timely delivery of all PRG and SRG work products required by the IPP. 3. Administer financial support (time and travel expense reimbursement) of non-Federal SRG scientists. | <p><u>Date Initiated</u>: May 1989</p> <p><u>Results/Conclusions</u>: Ongoing. Coordination efforts continue.</p> | <p>This coordination agreement funds the annual administration of the policy and technical activities of CBFWA as related to the Program. Specific IPP activities supported are the IPP Coordinator, SRG, and Scoping Groups.</p> |
| 89-72-1 | <p>Scientific Review Group (SRG) Support - DOE</p> <p><u>Project Officer</u>: M. Schneider</p> <p><u>Objectives</u>: To provide financial support (time and travel expense reimbursement) for SRG scientist employed by DOE.</p> | <p><u>Date Initiated</u>: Sept. 1989</p> <p><u>Results/Conclusions</u>: Ongoing. SRG support continues.</p> | <p>One member of the SRG is a contractor for Oak Ridge National Laboratory. The SRG efforts of this individual are funded through a DOE contract separate from the remainder of the SRG.</p> |

Strategy
for Salmon



7.2 Monitoring and Evaluation

The purpose of these monitoring and evaluation activities is to ensure that the region systematically improves its knowledge of what measures work, what measures do not and why.

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Program

(See Section 6.2B)



Table 40 - Section 7.2 Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------------------|--|-------------|--|
| 89-24-1 | <p>Passage Facility Evaluation and URB Adult Fish Monitoring</p> <p><u>Project Officer:</u> J. Bauer</p> <p><u>Objectives:</u> Evaluate loss of juvenile fish due to passage through or over WEID Canal screens. Monitor passage of adult salmon and steelhead at Three Mile Dam.</p> <p><u>Species:</u> steelhead, spring and fall chinook</p> | | FY 1993: Monitor Three-Mile facilities and begin Maxwell evaluation. Monitor Westland. |
| 90-74 (no '94 funds) | <p>Yakima Monitoring and Evaluation Program</p> <p><u>Project Manager:</u> M. Nelson</p> <p><u>Project Biologist:</u> J. Stroklund</p> <p><u>Objectives:</u> Implement monitoring and evaluation of Yakima salmon and steelhead stocks pursuant to the experimental design. The experimental program will be refined based upon information obtained. Includes determining specific fish marking and detection requirements and the acquisition and installation of necessary equipment to mark and detect salmon and steelhead.</p> | New FY 1993 | <p>FY 1993: Monitoring and evaluation.</p> <p>FY 1994: Continue monitoring and evaluation.</p> |

Table 40 - Section 7.2 Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------|--|---|---|
| 92-5 | <p>Evaluation of the Yakima Production Project.</p> <p><u>Project Manager</u>: M. Nelson</p> <p><u>Objectives</u>: The objectives are to evaluate the ongoing steelhead and fall chinook acclimation programs. Determination will be made as to the best methods of acclimation to avoid adult straying.</p> | Deferred to 1994 | FY 1993: Delayed to N 1994 during the preparation of project EIS. |
| 92-07 1 | <p>Assessment of Technologies to Improve Measurement Capabilities in the Columbia River System - BPNL (Represents three separate task orders issued under Master Task Order Agreement Project 86-1 18 - Technical Assistance to BPA)</p> <p><u>Project Officer</u>: P. Poe</p> <p><u>Objectives</u>:</p> <ol style="list-style-type: none"> 1. Explore existing and new technologies to improve measurement capabilities for monitoring and evaluation and for improving salmon survival in the Columbia River Fish and Wildlife Program. 2. Task Order No. 49432-Perform comprehensive technical review of sound effects on fish behavior and implement a sound effects technology to the extent applicable for desirable fish behavior modification. 3. Task Order No. 06298-Technical assistance via participation technical oversight of development of extended range adult salmon RF-PIT detection system and R&D and implementation strategy for Acoustic PIT tag. 4. Task Order No. 05733-Technical assistance in establishing environmental monitoring systems. | <p><u>Date Initiated</u>: April 1992</p> <p><u>Results/Conclusions</u>: Review of Sound Technology completed September 1993</p> | <p>N 1994: Continue work under three task orders:</p> <ol style="list-style-type: none"> 1. Applications of Sound -- Perform Phase II-Develop experimental and implementation protocols and prioritize. 2. Technical Assistance R&D Adult PIT detection and R&D Acoustic PIT tag. 3. Assist Project 9 1-028-NMFS in the development of environmental monitoring system in the Upper Snake River Basin. |

Strategy
for Salmon**7.2A Annual Program Monitoring Report**

Bonneville

1. Fund the coordinated preparation of an annual program monitoring report as part of the expanded implementation planning process. The final report should be submitted to the Council and the National Marine Fisheries Service by June 15 each year.

7.2B Independent Scientific Evaluation

Bonneville

1. Fund an independent **scientific** group to evaluate the program.

The group should scope its review process, prepare a proposed budget and report to the Council by June 15, 1993. Following Council approval of the budget, evaluation activities should proceed, and evaluation reports should be submitted to the Council biennially, beginning on June 15, 1994.

7.2C Key Uncertainties

Independent Scientific Group

1. **Identify** and revise over time key uncertainties associated with program measures. These key uncertainties should be those information needs most critical to the achievement of program goals, and rebuilding and survival targets.

7.2E Prioritization and Cost-Effectiveness

council

1. Continue to review program measures for purposes of prioritization, cost-effectiveness and biological effectiveness.

Table 41 - Section 7.2 Strategy for Salmon Projects

| Measure Number | Measure Description | BPA RPA & Project number | Project Title & Description | Current Measure Activity | Project Duration/Start End Dates | Project Manager |
|----------------|---|--------------------------|-----------------------------|--|----------------------------------|----------------------------------|
| 7.2B.1 | Independent Scientific Group (ISG) | ss 121 | | BPA is committed to continued participation in development of the ISG concept, definition of ISG goals, objectives, organization, membership and authorities. This measure will be funded through Administrator's increased flexibilities and efficiencies . | | Joyce Lindsay, BPA, 503/230-5710 |
| 7.2E.1 | Continue to review program measures for prioritization, cost-effectiveness, and biological effectiveness. | F11PM: 93-037 | | BPA proposed a C-E amendment for Phase IV. Council will develop briefing paper on C-E. | | Kasi Beale, BPA, 503/230-7463 |

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7.3 Regional Analytical Methods Coordination

To develop and assess regional strategies to rebuild salmon and steelhead, and to make the program framework operational, analytical tools should be developed that are **both** understandable and credible.

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(See Section 3.2)

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7.3A Implementation Process

Bonneville, Fishery Managers and Others

1. Begin a continuing process to review, coordinate and develop analytical tools to assist decision making, facilitate program evaluation, and identify critical uncertainties. Provide a progress report to the Council by July 1993.

Bonneville

2. Supply funding necessary to establish and maintain this process including travel expenses of participants and facilitation, documentation or other support.

Table 42 - Section 7.3 Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|--------------------------------|--|--|--|
| 87-413-2 (Task Order 01772) | <p>Analysis of Historic Data for Juvenile and Adult Salmonids - UW</p> <p><u>Project Officer</u>: P. Poe</p> <p><u>Objectives</u>:</p> <ol style="list-style-type: none"> Phase I: Assemble a data base of statistically bounded estimates of survival from smolt to adult and contribution rates to ocean fisheries for Columbia River salmon and steelhead hatchery stocks based on the last 15 years of Coded-Wire Tag (CWT) data. Phase II: Analyze adult production and survival data base created in Phase I in relation to riverine factors that affect production and survival. Phase II will be funded upon outcome of Phase I. | <p><u>Date Initiated</u>: September 1989</p> <p><u>Results/Conclusions</u>: A data base of survivals and variances and/or contribution rates of Columbia River hatchery stocks was produced from the assembly and analysis of CWT data under Phase I. Phase II will assemble riverine factors, apply the methods developed under Phase I, and explore multivariate relationships to survival. Final report Phase I activities completed August 1993. Final report Phase II scheduled for completion March 1994.</p> | <p>FY 1994: Continue review of Phase II effort and print report.</p> |
| 89-108 | <p>Columbia River Salmon Passage Model - UW</p> <p><u>Project Officer</u>: D. Askren</p> <p><u>Objectives</u>:</p> <ol style="list-style-type: none"> Modernize downstream juvenile salmonid migration model. Model analysis. Model documentation. Interface/aggregation with other models. Project coordination. | <p><u>Date Initiated</u>: 1988</p> <p><u>Results/Conclusions</u>:</p> <ol style="list-style-type: none"> Beta version of stochastic model (CRiSP. 1) delivered November 1991, incorporating mechanistic submodels for flow modulation, project passage, pool passage, smolt release and behavior, spill, and nitrogen supersaturation. Completed comparison of FISHPASS and alpha version (CRiSP.0). Completed initial calibration of CRiSP. 1. Preliminary model sensitivity analysis performed on CRiSP.0 and CRiSP. 1. Manuals for CRiSP.0 delivered May 199 1, and for CRiSP.1, March 1993. Draft CRiSP. 1 Users and Theory manuals delivered August 199 1. Completed recoding of RFF's life-cycle model (SLCM) for interface with CRiSP.1. Performed CRiSP. 1 runs to support ESA biological assessment, SOR, and model coordination processes. Supported distributed network of 28 Sun workstations at 15 sites | <p>Last Quarter FY 1993: Calibrate dissolved nitrogen model to 1992 drawdown observations; develop wild fish release generator; incorporate Bledsoe CREM smolt/predator density mortality model into CRiSP; complete alpha version of harvest model.</p> <p>FY 1994:</p> <ol style="list-style-type: none"> Adapt and apply juvenile downstream passage model (CRiSP1) for use in coordination of "real time" operation of hydrosystem. Target April 1, 1994. Apply 1993 Snake River (Skalski) Survival study results to calibration of CRiSP. Provide a user-friendly harvest model (CRiSP2) for use in chinook harvest planning. Beta version of forecasting portion based on the Pacific Salmon Commission Chinook Model targeted for December 1, 1993. |

Table 42 - Section 7.3 Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-----------------------|---|---|------------------------------|
| 89-108-01 (CRITFC) | Participation in Analytical Methods Coordination and Documentation | <u>Date Initiated:</u> 1992 | Summary Report October 1993. |
| 89-108-2 (ODFW) | <u>Project Officer:</u> D. Askren | <u>Results/Conclusions:</u> The draft overview report was prepared and submitted to the Northwest Power Planning Council in March 1992. Two workshops have been held addressing the structure, assumptions, and calibration of the passage models and life cycle models. A third workshop has investigated passage baselines and model sensitivities. A future workshop will address life cycle response and sensitivity. Drafts of the summary report sections have been prepared for basic model structure and calibration. Coordination of this project with concurrent "Peer-Review, " Endangered Species Act, and NEPA modeling has slowed progress and confused responsibilities. It is anticipated that several of these similar initiatives may be combined in FY 1994. | |
| 89-108-3 (IDFG) | <u>Objectives:</u> | | |
| 89-108-4 (WDF) | 1. Assist preparation of an overview report regarding the general structure, key assumptions and approaches, and parameterization of each of 3 salmon passage-life cycle model system. | | |
| 89-108-5 (PSMFC) | 2. Compare behavior and sensitivity of models through concurrent workshops addressing calibration of each model, baseline simulations. | | |
| | 3. Compare results of standard analyses addressing a range of management actions. | | |
| | 4. Summarize the process and results in a summary report. | | |

Table 42 - Section 7.3 Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------|--|--|---|
| 92-32 | <p>Life Cycle Model Development</p> <p><u>Project Officer:</u> M. Shaw</p> <p>Using the SLCM:</p> <ol style="list-style-type: none"> 1. Estimate relative effectiveness of proposed projects for salmon/steelhead. 2. Improve functionality of SLCM for ease of use by interested parties. 3. Improve data bases of distribution, abundance, and viability for resident and anadromous fish and their availability to fishery managers. | <p><u>Results/Conclusions:</u> SLCM has been developed, and being refined with current data. Hypertext database being utilized to link SLCM components, and facilitate ease of use. Linking to recent habitat/GIS surveys in Idaho. SCLM has been presented throughout the region in workshops. User friendly format has been developed in cooperation with the University of Washington. Two linked watersheds in Idaho have been GIS mapped and geomorphic and aquatic information is being analyzed and linked to the SCLM.</p> | <p>12/92 - Continue to develop GIS data layers.</p> <p>6/93 - Complete analysis of comparison of linked watersheds.</p> <p>7/93 - Link GIS data bases to SLCM</p> <p>8/93 - Analyze relationships of GIS to SLCM</p> <p>9/93 - Draft report on GISISLCM relationships</p> <p>9/93 - Analysis of use of process in application to other Program measures.</p> <p>10/93 - Review application to land management activities in Snake River Basin</p> <p>8/94 - Expand GIS mapping to integrate habitat and population survey with SLCM.</p> <p>9/94 - Draft GIS/SLCM analysis of USFS/Snake River Basin Streams</p> <p>1 1/94 - Final Report</p> |
| 93-037 | <p>Cost-Effectiveness Analysis, Model Enhancement, and Modeling Support - RFF</p> <p><u>Project Officer:</u> K. Beale</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. Develop and analyze alternative rebuilding schedules for ESA stocks. 2. Model dynamic elements of rebuilding salmon stocks. 3. Conduct sensitivity analysis of model results. 4. Apply cost-effectiveness concepts and risk analysis to monitoring and evaluation planning. 5. Conduct training seminars and presentations of results to keep BPA staff and publics informed of progress. | <p><u>Date Initiated:</u> May 1993</p> <p><u>Results/Conclusions:</u> Initial results will be available early 1994.</p> | <ol style="list-style-type: none"> 1. Complete Objective 1 by November 1993. 2. Complete Objective 2 by July 1994. 3. Complete Objective 3 by July 1994. 4. Complete initial report for Objective 4 by February 1995. 5. Objective 5 ongoing during project. |

Table 42 - Section 7.3 Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------|--|---|--|
| 93-20 | <p>ADP Support for PMIS Development</p> <p><u>Project Officer:</u> K. Hartner</p> <p><u>Objectives:</u> Analyze the business processes and the data that support the BPA Fish and Wildlife Program. Develop a set of recommendations to address:</p> <ul style="list-style-type: none"> • Future enhancement or replacement of PMIS • Ability to share F&W program data with external entities • Ability to interface F&W program data with the Coordination Information System (CIS) • Ability to interface F&W program data with BPA's Geographic Information System (GIS) | <p><u>Date Initiated:</u> FY 1992</p> <p><u>Results/Conclusions:</u> Analysis of the business processes and the data that support the F&W Program was completed and documented in the Current Business Model. This document was delivered March 1993. Results of the analysis are currently being compiled into a set of recommendations which will be delivered in August 1993. These results include replacing PMIS in addition to a number of recommendations to change current business processes.</p> | <p>FY 1994: Assuming acceptance of the key recommendations:</p> <ol style="list-style-type: none"> 1. Develop conceptual process and data models. 2. Determine technical environment for new PMIS. 3. Develop system design for new PMIS. |
| 87-413 | <p>Fish and Wildlife Task Order Agreement, Fisheries Technical Assistance - TJW</p> <p><u>Project Officer:</u> P. Poe</p> <p><u>Objectives:</u> To assist the limited staff and time resources of BPA's Division of Fish and Wildlife through the services of a uniquely qualified professional staff able to provide technical assistance on diverse fish and wildlife issues.</p> | <p><u>Date Initiated:</u> Sept. 1987</p> <p><u>Results/Conclusions:</u> Numerous task orders have been completed under this master task order agreement, including (1) review of Project 84-46, Development of a Vaccine for Bacterial Kidney Disease in Salmon; (2) review of BPA's anadromous fish passage assessment methods; (3) review of relevant statistics and reports on population dynamics of Hanford Reach fall chinook salmon; and (4) conduct of a smolt survival workshop. If the task order implements a Program project, the project is listed under the appropriate Action Item.</p> | <p>FY 1994 and Beyond: Continue master task order agreement. Initiate individual technical assistance task orders as required by BPA staff.</p> <p>Ongoing FY 1994 tasks are Project 87-413-02 and Project 91-051.</p> |

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7.5 Research and Monitoring Information Dissemination

Bonneville and Corps of *Engineers*

1. Annually publish a summary of results from **all** studies **funded under** the program.
2. **Specify** as part of the above task that summaries of research originating from the fish and **wildlife** program be submitted to the Coordinated Information System in appropriate form for incorporation into its research information data base. Fund the development of similar summaries for prior research conducted under the fish and wildlife program.
3. Hold annual symposiums at which contractors present the results of their studies, beginning **in March** 1993.

Table 43 - Section 7.5 Strategy for Salmon Projects

| Measure Number | Measure Description | BPA RPA & Project Number | Project Title & Description | Current Measure Activity | Project Duration/Start-End Dates | Project Manager |
|-----------------------|--|-------------------------------------|--|--|---|-------------------------------|
| 7.5. | Publish results from studies performed under program, hold annual symposium. | F11PM: 94-13 | | Bonneville held symposium 9/92. Next symposium tentatively scheduled for 1/94. | | Jerry Bouck, BPA 503/231-6942 |

7.6 Coordinated Information System

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(see Section 6.2B)

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1. Continue to **fund** the development of the Coordinated Information System to promote effective exchange and **dissemination** of information in standardized, electronic format throughout the basin.

Table 44 - Section 7.6 Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------|--|--|---|
| 90-72 | <p>Computer Information System Quality Control Program Development</p> <p><u>Project Manager:</u> M. Nelson <u>Project Biologist:</u> J. Stroklund <u>Objectives:</u> Develop CIS for Yakima/Klickitat supplementation program.</p> | New FY 1993 | <p>FY 1993: Refine program, coordinate with Basin CIS program. FY 1994: Refine program, coordinate with Basin CIS program.</p> |
| 88-108-01 | <p>Coordinated Information System</p> <p><u>Project Manager:</u> K. Beale</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. Form project team. 2. Report on information needs. 3. Update Stock Assessment Reports. 4. Develop data catalog including natural production, hatchery production, habitat and land use data. 5. Identify technical and administrative options for CIS. 6. Prepare a plan for prototyping and implementing the CIS. 7. Develop prototypes for anadromous Fish Information System and Anadromous Fish Reference System, and link them via an electronic user interface. 8. Demonstrate and refine prototypes. 9. Implement and maintain the CIS. | <p><u>Date Initiated:</u> FY 1988, current contract FY 1992.</p> <p><u>Results/Conclusions:</u> Objectives 1-6 (Phases I and II) are completed. Technical reports are available. Phase II products are now available in electronic format, and the accessinterfaceprototype has been tested and is being improved.</p> | <p>Objectives 7 and 8 will be completed in late 1993. CIS will be fully operational in 1994.</p> |

Table 44 - Section 7.6 Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-----------------------------|---|--|--|
| 89-104 (no '94 funds) | <p>Historical Data Base - USFS/PNWRS</p> <p><u>Project Manager:</u> M. Shaw</p> <p><u>Objectives:</u> Archive summaries and raw data from original Bureau of Fisheries habitat surveys of the Columbia River and tributaries. Publish summaries in book form by subbasin. Classify selected subbasins in the Blue Mountain ecosystem by a geomorphic/ecosystem analysis and integrate with original surveys.</p> | <p><u>Date Initiated:</u> FY 1989</p> <p><u>Results/Conclusions:</u> Draft reports have been completed on all streams. After review of Idaho drafts, all reports will be published in final form with accompanying data bases. General habitat trends have been loss of large pools.</p> | <p>1. FY 1990 to FY 1993: Produce a data base management system for historical stream inventories which is integrated with CIS protocols for subbasin stream inventory data. Edit and produce Columbia Basin stream inventory for areas above and below Bonneville Dam.</p> <p>2. FY 1993: Project scheduled for completion. Drafts will be finalized and published. Preliminary geomorphic and ecosystems classifications will be developed.</p> <p>3. FY 1994: Geomorphic/ecosystem classification will be completed and will be mapped from GIS data base for Blue Mountain ecosystem.</p> |

Table 45 - Section 7.6 Strategy for Salmon Projects

| Measure Number | Measure Description | BPA RPA & Project Number | Project Title & Description | Current Measure Activity | Project Duration/ Start-End Dates | Project Manager |
|----------------|---|----------------------------|-----------------------------|--|-----------------------------------|---------------------------------|
| 7.6.1 | Release revised Stock Assessment Report | F11PM: 88-108 | | Stock Summary Reports are available. | | Kasi Beale, BPA 503/230-7463 |
| 7.6.1 | Fund Coordinated System | Information F1 1PM: 88-108 | A | prototype user interface has been completed. | | Kasi Beale, BPA 503/230-7463 |

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7.7 Project Accounting Data Base

Bonneville

1. In cooperation with the fishery managers, develop a data base and tracking system to monitor and categorize expenditures by geographic location (Environmental Protection Agency River Reach System), species, type of action and other relevant categories. Bonneville should expedite development of this data base and seek to have a working prototype by September 1993.

Table 46 - Section 7.7 Strategy for Salmon Projects

| Measure Number | Measure Description | BPA RPA & Project Number | Project Title & Description | Current Measure Activity | Project Duration/ Start-End Dates | Project Manager |
|----------------|---|--------------------------|-----------------------------|--------------------------|-----------------------------------|-------------------------------------|
| 7.7.1 | Develop project database to track projects. | 93-020 | F11PM: Assessment | completed | 9/93. | Martin Larsen, BPA, 503/231-6967 |

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7.8 Promising New Ideas for Improving Salmon Survival

Bonneville, Corps of **Engineers** and Bureau of Reclamation

1. Accept and, if necessary, solicit proposals from all sources to improve passage and other aspects of salmon **survival**.
2. Screen and **evaluate** such proposals on an expedited basis and promptly present promising ideas to the Council. Upon Council approval, development should be promptly **funded**.

Section 8. Resident Fish

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7.1 COLVILLE HATCHERY

(Complete Construction: March 1989)
(Fund Operation and Maintenance)

903(g)(1)(A) [Abstract] Design, construction, operation and maintenance of a resident trout hatchery on the Colville Indian Reservation. The Council expects that state-of-the-art technologies will be used in the design of the hatchery.

BPA ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To design and construct a resident trout hatchery on the Colville Indian Reservation to mitigate partially for anadromous fish losses from hydroelectric development and operation.

Background and Progress to Date:

The primary purpose of the hatchery is to produce trout to stock lakes and streams on the Reservation. The Colville Confederated Tribes (CCT) constructed the hatchery through subcontracts. The **final** design for the hatchery was completed in October 1987. Construction began in July 1988 and was completed in fall 1989. Operations began in October 1989. The hatchery met its production and release goals for year 3 (FY 1992) and year 4 (FY 1993) operations.

plans:

BPA will continue to fund the operation and maintenance of the facility by the CCT. Year 4 (FY 1994) operations are funded and underway. In FY 1994, the monitoring and evaluation will be reviewed through the IPP process, and, if accepted, will begin in FY 1995.

72 COEUR D'ALENE RESERVATION ACTIONS

(Fund Stream Survey; Design Construction, Operation, and Maintenance of Cutthroat/Bull Trout Hatchery; Habitat Improvement Projects; 3-Year Monitoring Program)

903(g)(1)(B) [Abstract] BPA shall fund a baseline stream survey of tributaries located on the Coeur d'Alene Indian Reservation to compile information on improving spawning habitat, rearing habitat, and access to spawning tributaries for cutthroat and bull trout, and to evaluate the existing fisheries. If justified by the results of the survey, fund the design, construction, and operation of a cutthroat and bull trout hatchery on the Coeur d'Alene Reservation; necessary habitat improvement projects; and a 3-year monitoring program to evaluate the effectiveness of the hatchery and habitat improvement projects. If the baseline survey indicates a better alternative than construction of a fish hatchery, the Coeur d'Alene Tribe will submit an alternative plan for consideration in program amendment proceedings.

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BPA ACTION ITEM **ACTIVITY SUMMARY:**

Objectives:

Survey the streams on the Coeur **d'Alene** Indian Reservation for status of stocks **and** the possibility of improving habitat. If feasible, construct habitat improvement projects. Determine need for stock supplementation and, if needed, fund design, construction, and operation of a cutthroat and bull trout hatchery.

Background and **Progress** to Date:

The purpose of this study was to conduct physical and biological surveys of streams located on the Coeur **d'Alene** Indian Reservation. Surveys were designed to collect information on improving spawning habitat, rearing habitat, and access to spawning tributaries for bull trout and cutthroat trout and to evaluate existing fish stocks.

The objectives of the second year of the study were to:

1. Develop a stream ranking system to select the five streams of primary fisheries potential.
2. Conduct physical field surveys.
3. Determine population dynamics.
4. Determine growth rates of existing trout species,
5. Determine macroinvertebrate densities and diversities, and,
6. Determine baseline angler utilization.

plans:

During FY 93, the following objectives will be addressed:

1. Continue data collection.
2. Submit a **final** report that identifies biological habitat restoration alternatives and established biological objectives.
3. Develop advance designs for physical habitat enhancement projects to be implemented on Lake, Benewah, Evans and Alder creeks.
4. Work with BPA engineers to develop preliminary designs for cutthroat and bull trout hatchery.

7.3 KOKANEE SALMON HATCHERIES

(Fund Design, Construction, Operation, Maintenance of Hatcheries at Galbraith Springs and Sherman Creek: Begin FY 1988.)

(**Fund Monitoring** Programs)

903(g)(1)(C) [Abstract] BPA shall fund design, construction, operation, and maintenance of two kokanee **salmon** hatcheries, one at Galbraith Springs and one at Sherman Creek. The Sherman Creek hatchery will be used as an imprinting site and egg collection facility to provide a source of kokanee fry for: i) stocking into Banks Lake and ii) transferring to Galbraith Springs hatchery for rearing to **fingerling** size before planting into Lake Roosevelt. Decisions

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on hatchery production, stocking, and outplanting locations will be coordinated by a **three-** member committee **consisting** of one representative each appointed by the Colville Confederated Tribes, Spokane Tribe, and the Washington Department of Wildlife.

BPA ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To fund the design, construction, operation, and maintenance of two **kokanee** salmon hatcheries.

Background and Progress to Date:

Preliminary design began in FY 1988. Construction completed in FY 1992.

Plans:

Fund O&M

7.4 HABITAT AND PASSAGE IMPROVEMENTS ON LAKE ROOSEVELT TRIBUTARY STREAMS

(Fund Design, Construction, Operation, Maintenance of Projects: Begin FY 1989)
(Fund Monitoring Programs).

903(g)(1)(D) [Abstract] BPA shall fund capital, operation, and maintenance of pilot projects for improving habitat and passage into and out of Lake Roosevelt tributary streams for rainbow trout. The aim of this measure is to emphasize natural production by: i) facilitating passage of migratory rainbow trout between Lake Roosevelt and its tributary streams and ii) improving **fry** and fingerling rearing habitat in these streams.

903(g)(1)(E) [Abstract] Monitoring to evaluate the effectiveness of the above measures.

BPA ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To improve stream habitat and passage into and out of Lake Roosevelt tributary streams for rainbow trout. Determine status of **fish** stocks **in** Lake Roosevelt before habitat improvements and hatchery construction. Evaluate the contribution of the hatcheries and habitat improvement projects of stocks in Lake Roosevelt.

Background and Progress to Date:

BPA funded a stock assessment study in FY 1988. Monitoring program started in summer of 1988.

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Plans:

BPA will continue to **fund** habitat improvement projects in FY 1994. Annual reports on monitoring are available.

7.5 **KOOTENAI INDIAN RESERVATION STURGEON HATCHERY**

(Fund Design Construction, Operation, Maintenance of Hatchery: Begin FY 1988)

(Fund Evaluation Study)

903(g)(1)(H) [Abstract] BPA shall fund design, construction, operation and maintenance of a low-capital sturgeon hatchery on the Kootenai Indian Reservation. BPA and the Kootenai Tribe also shall explore alternative ways to make effective use of the hatchery facility **year-round**.

BPA ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To design, construct, and operate a low-cost experimental sturgeon hatchery on the Kootenai Reservation in Idaho.

Background and Progress to Date:

Project was funded to develop a water supply, design a hatchery, and train personnel in sturgeon culture in FY 1990. Groundwater was found to be unsuited for **fish** production - City of Bonners Ferry water mixed with Kootenai River water is being used. Hatchery, completed in spring of 1991, is in operation and sturgeon were stocked into the **Kootenai River** in 1991 and 1992.

plans:

BPA has funded project as stated above. Hatchery was constructed and operational in spring of 1991. The facility will continue to operate on an **experimental basis**.

7.6 **STURGEON AND WATER LEVEL FLUCTUATIONS: IDAHO PORTION OF KOOTENAI RIVER**

(Fund Study to Assess Impacts: Begin FY 1989)

903(g)(1)(I) [Abstract] BPA shall fund a survey of the Kootenai River downstream from Bonners Ferry, Idaho, to the Canadian border to: i) evaluate the effectiveness of the hatchery and ii) assess the impact of water level fluctuations caused by Libby Dam on hatchery operation for outplanting of sturgeon in the Idaho portion of the Kootenai River.

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BPA ACTION **ITEM** ACTIVITY SUMMARY:

Objectives:

To assess the status of sturgeon stocks in the Kootenai River; obtain brood fish for hatchery; assess the impact of water level fluctuations caused by Libby Dam.

Background and Progress to Date:

BPA has funded a project with IDFG to begin looking for broodstock and tram hatchery personnel. Project began in **late** FY 1988. Sturgeon have been caught and tagged and are being monitored. Broodstock were spawned in spring of 1991 - 1992 and experimental rearing is ongoing.

plans:

BPA will continue to fund this study in FY 1994, with emphasis directed toward monitoring sturgeon stock in Kootenai River. River will be monitored for success of spawning "test flows" of 1993 spring. Management plan for the river will be developed by sturgeon Workgroup.

7.11 ONGOING STUDIES IN MONTANA (Mitigate for Resident Fish Losses)

903(h)(1) Hungry Horse Dam Resident Fish Mitigation.

[Abstract] Resident fish losses estimates identified in the Fisheries Mitigation Plan for Losses Attributable to the Construction and Operation of Hungry Horse Dam prepared by Montana Department of Fish, **Wildlife** and Parks and the Confederated Salish and Kootenai Tribes are incorporated into the program. BPA is directed to fund a program to mitigate for these losses.

BPA ACTION **ITEM** ACTIVITY S - Y

Objectives:

Begin implementation by developing a plan to address baseline data collection, fish passage over man-caused barriers, initiation of Kokanee supplementation, off-site mitigation and **on-site** habitat improvements,

Background and Progress to Date:

The plan was adopted in March 1993 by the Council.

plans:

Continue hatchery supplementation of kokanee. Continue habitat improvement projects and monitoring and evaluation.

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Kokanee supplementation and hatchery improvement project is in place, with USFWS. Monitoring and **evaluation** and habitat improvement projects are in place with MDFWP.

other:

— CABINET GORGE HATCHERY IMPROVEMENTS (FORMER ACTION **ITEM** 41.4)

Not applicable. Council deleted measure in amended Program.

TECHNICAL SUBJECT ACTIVITY SUMMARY:Objectives:

To design, construct, and evaluate the Pend Oreille (Cabinet Gorge) Hatchery. Evaluate the degree to which the Albeni Falls and Cabinet Gorge projects are responsible for the decline of the Lake Pend Oreille fishery, and the level of mitigation necessary to restore a reasonable number of fish in Lake Pend Oreille.

Background and Progress to Date:

The Pend Oreille (Cabinet Gorge) Hatchery was completed in 1985. The hatchery is designed to produce 20 million kokanee **fry annually** to enhance the fishing of Lake Pend Oreille, which has been adversely affected by Cabinet Gorge and Albeni Falls dams and the introduction of mysis shrimp. BPA and Washington Water Power Company shared the costs of constructing the facility. IDFG **funds** the operation and maintenance of the hatchery. Evaluation activities funded under the Program were completed December 1992. IDFG is funding a small scale evaluation at present

Plans:

It has been determined that development of another well field will give the hatchery manager more flexibility in **controlling** water temperatures at the hatchery. BPA, IDFG and Washington Water Power Company have agreed to each fund one third of the cost to develop this water supply.

7.15 ONGOING DRAWDOWN STUDIES

(Continue Cooperative Studies; Present Results to Council. Submit Recommendations by March 1, 1988.)

903(b)(3-4) [Abstract] BPA shall fund research to develop operating procedures for Libby and Hungry Horse, including establishment of reservoir levels to protect resident fish and development of alternative means to resolve conflicts between **drawdown** limits and requirements for **fish**

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flows by means of the water budget. BPA shall submit results to the Council by March 1, 1988. Mitigation projects shall be identified in the **Flathead** Basin in relation to construction and operation of Hungry Horse. Results will be submitted to the Council by November 15, 1987.

BPA ACTION **ITEM A - SUMMARY:**

Objectives:

To determine the effects of reservoir operations on **fish** in Libby and Hungry Horse Reservoirs. Identify mitigation projects in the **Flathead** Basin in relation to construction and operation of the Hungry Horse **hydroproject**.

Background and Progress to Date:

Projects at Libby and Hungry Horse Reservoirs have been funded since 1983. Both projects were designed to document the effects of water level fluctuations on resident **fish**. The fluctuations reduce primary and secondary production in the reservoirs, hence they have a direct impact on fish production. Annual reports from 1983 through 1988 document these effects. Mitigation alternatives for losses from the construction and operation of Hungry Horse Dam are described in the **final** report for BPA-funded Project 85-23. The models developed during the project have been critically reviewed by researchers at the University of Washington.

Plans:

Recommendations for further action will be submitted to the Council after completion of the studies. Biological models will be run concurrently with the System Analysis Model to help guide recommendations.

Table 47 - Section 8 Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------|--|---|--|
| 85-38 | Colville Hatchery O&M - CCT <u>Project Officer:</u> M. Bateson <u>Objectives:</u> Operate and maintain a resident trout hatchery to provide recreational fishery on the Colville Indian Reservation. | <u>Date Initiated:</u> October 1991. <u>Results/Conclusions:</u> Hatchery operations have met Annual Operating Plan goals and objectives. | FY 1994 and beyond: Continue O&M funding. |
| 90-44 | Stream Survey, Hatchery, Improvements, and Monitoring on the Coeur D'Alene Reservation <u>Project Officer:</u> R. Austin <u>Objectives:</u> 1. Survey streams and determine stock status. 2. Assess possibilities for habitat improvement. 3. Recommend construction of hatchery, if justified biologically. 4. Monitor results of habitat improvement projects and hatchery supplementation. | <u>Date Initiated:</u> September 1990 <u>Results/Conclusions:</u> 1. Initial stream survey by aircraft completed in December 1990 using BPA helicopter and pilot. 2. Criteria for ranking tributaries for more intensive on-the-ground stream surveys were selected. 3. Ten streams were selected for further study in 1992-93 using the ranking criteria that were developed. 4. Final results pending release of completed analysis and plan. Completed field sampling and analyzed all data collected. | FY 1994: Finalize list of proposed alternative strategies; hold public meetings to gather local comments on proposed plans; final recommendations due to BPA and Council by December 1993. |
| 91-46 | Spokane Tribal Hatchery O&M - Spokane Tribe <u>Project Officer:</u> M. Bateson <u>Objectives:</u> Operate and maintain kokanee hatchery to provide a recreational fishery in Lake Roosevelt and Banks Lake, In conjunction with the Sherman Creek Hatchery. | <u>Date Initiated:</u> January 1991 <u>Results/Conclusions:</u> Hatchery operations have met Annual Operating Plan goals and objectives. | FY 1994: Continue O&M funding . |

Table 47 - Section 8 Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------|---|--|--|
| 91-47 | <p>Sherman Creek Hatchery O&M- WDW</p> <p><u>Project Officer:</u> M. Bateson</p> <p><u>Objectives:</u> Operate and maintain facility to provide kokanee for Lake Roosevelt and Banks Lake.</p> | <p><u>Date Initiated:</u> June 199 1</p> <p><u>Results/Conclusions:</u> Hatchery operations have met Annual Operating Plan goals and objectives.</p> | <p>N 1994 and beyond: Continue funding O&M.</p> |
| 90-18 | <p>Lake Roosevelt Habitat Improvement Projects - CCT</p> <p><u>Project Officer:</u> S. Levy</p> <p><u>Objectives:</u> Facilitate passage of resident fish in Lake Roosevelt tributaries and improve rearing habitat.</p> | <p><u>Date Initiated:</u> April 1990</p> <p><u>Results/Conclusions:</u> None at this time.</p> | <p>N 1993: Implement improvements from work plan. N 1994: Continue implementation,</p> |
| 88-64 | <p>Design, Construct, and Operate a Sturgeon Hatchery on the Kootenai Reservation, Idaho - Kootenai Tribe</p> <p><u>Project Officer:</u> R. Westerhof</p> <p><u>Objectives:</u> Same as title.</p> | <p><u>Date Initiated:</u> September 1988</p> <p><u>Results/Conclusions:</u> Hatchery constructed N 199 1. Two age groups have been stocked in Kootenai River from the hatchery (1991-92).</p> | <p>N 1994: Continue hatchery operations.</p> <p>If Kootenai River sturgeon work group agrees, stock fish in river. Carry on temperature, water supply and heavy metals contamination experiments with young sturgeon.</p> |
| 88-65 | <p>Assess Impacts of Water Level Fluctuations on Sturgeon in the Kootenai River - IDFG</p> <p><u>Project Officer:</u> R. Westerhof</p> <p><u>Objectives:</u> Assess status of sturgeon stocks in the Kootenai River and effects of water fluctuations on these stocks. Obtain brood fish for hatchery. Assess status of burbot and rainbow trout in the Kootenai River system.</p> | <p><u>Date Initiated:</u> September 1988</p> <p><u>Results/Conclusions:</u> BPA contracted with IDFG to conduct this study beginning in 1988. Sturgeon are being caught, tagged and monitored. Broodstock for experimental rearing were obtained for 1991 and 1992 and young sturgeon stocked in river. Experimental test flows were obtained in 1993 to check for natural spawning. Success of flows is being monitored by IDFG and the Kootenai Tribe.</p> | <p>Continuing: Status of sturgeon populations and availability of brood stock are being determined. Eggs will be taken for experimental rearing under Project 88-64. Sturgeon stocked from 1991 and 1992 brood are tagged and their movement monitored. Sturgeon work group will develop a management plan for the Kootenai River.</p> |

Table 47 - Section 8 Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------|--|--|---|
| 94-12 | <p>Kootenai River White Sturgeon Monitoring and Evaluation (This project is an enhancement to Projects 88-64 and 88-65.)</p> <p><u>Project Officer</u>: R. Westerhof</p> <p><u>Objectives</u>: To increase the monitoring and evaluation of sturgeon migration and spawning activities in the Kootenai River. IDFG and Kootenai Tribe will coordinate activities on the river to increase M&E.</p> | New Project 1994 | <p>1. River activities should begin late May and extend to late July.</p> <p>2. Interim draft record will be available in fall.</p> |
| 91-19 | <p>Hungry Horse Mitigation Fish Culture/Biologist - USFWS</p> <p><u>Project Officer</u>: R. Morinaka</p> <p><u>Objectives</u>: 1. Oversee planning for mitigation needs at Creston NFH. 2. Coordinate egg procurement, fish production and outplanting of fish produced at Creston NFH. 3. Initiate, develop and coordinate an experimental bull trout culture program. 4. Coordinate development and construction of the Rose Creek Isolation Facility.</p> | <p><u>Start Date</u>: April 1992</p> <p><u>Results/Conclusions</u>: None at this time.</p> | <p>1. Kokanee production started.</p> <p>2. Refine Kokanee production S.O.P.</p> |
| 91-19-3 | <p>Hungry Horse Dam Fisheries Mitigation Habitat Improvements</p> <p><u>Objectives</u>: See Project 91-19 above.</p> | Work has begun on Taylor's Outflow, Hay, Big and Coal Cr. Continued spawning ground surveys. | N 1994: Continue the habitat improvements. Continue the surveys and complete bull trout genetic surveys. |
| 91-19-4 | <p>Kokanee Production at Creston NFH</p> <p><u>Objectives</u>: See Project 91-19 above.</p> | 900,000 were reared and released in Flathead Lake. | Production of next year's release started. |
| 94-004 | <p>Cabinet Gorge Hatchery Improvements - IDFG</p> <p><u>Project Officer</u>: R. Westerhof</p> <p><u>Objectives</u>: Develop another water supply at Cabinet Gorge Hatchery to add flexibility in controlling water temperatures.</p> | New project. | BPA, IDFG and Washington Water Power Company will share cost of developing well field in N 1994. |

Table 47 - Section 8 Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------|---|--|--|
| 83 -467 | <p>Quantification of Libby Reservoir Levels Needed to Maintain or Enhance Reservoir Fisheries - MDFWP</p> <p><u>Project Officer:</u> R Westerhof</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. To study the effects of reservoir drawdown. 2. To develop a predictive model of hydro operations on resident fisheries, and recommend season drawdown levels compatible with the needs of the fish. 3. To perform an instream flow study below Libby Dam. | <p><u>Date Initiated:</u> April 1983</p> <p><u>Results/Conclusions:</u></p> <p>Gill net sampling indicates fluctuations in kokanee numbers. The reservoir model now includes a hydrologic component downstream to Duncan and Corra Linn dams.</p> | <ol style="list-style-type: none"> 1. Work on fish entrainment through the Libby Dam penstocks and effects of operations on the river fishery continue in N 1993 and N 1994 to increase utility of the reservoir model. 2. Effects of stream fluctuations on burbot examined in N 1993 and continue in N 1994. 3. IFIM studies were completed in Kootenai River below dam to determine spawning area available to sturgeon at various river flows. |
| 93-003 | <p>Sherman Pass Visitor's Center</p> <p><u>Project Officer:</u> D. New</p> <p><u>Objectives:</u></p> <p>Cooperative effort among U.S. Forest Service, U. S. Park service, BPA, Washington DOT, Washington Department of Wildlife, and local groups to provide information on all aspects of the area for the public.</p> <p>Benefit: BPA will have the opportunity to present both the power and fish and wildlife story.</p> | <p><u>Date Initiated:</u> May 1993</p> <p><u>Results/Conclusions:</u> 90% of the design is completed.</p> | <p>N 1994: Construction of the Visitor's Center. Design BPA displays.</p> |
| 86-50 | <p>Determine the Status and Habitat Requirements of White Sturgeon Populations in the Columbia River Downstream from McNary Dam - ODFW (WDF, USFWS, and NMFS are subcontractors)</p> <p><u>Project Officer:</u> R. Westerhof</p> <p><u>Objectives:</u> Determine the status and habitat requirements of white sturgeon in the Columbia River. Detailed objectives and results are described in the Project's annual reports.</p> | <p><u>Date Initiated:</u> 1986</p> <p><u>Results/Conclusions:</u></p> <p>Collection of all age groups of sturgeon has been successful, with larval sturgeon and eggs being collected in The Dalles and Bonneville Dam pools. Coordination with the work ongoing below Bonneville Dam is excellent.</p> <p>Annual reports for 1988-DOE/BP-63584-2, 1989-DOE/BP-63584-3, 1990-DOE/BP-63584-4, and 1991-DOE/BP-63584-5 are available.</p> | <ol style="list-style-type: none"> 1. 1993: Model development was continued to identify effects of hydropower on population status and habitat. Project was extended into the McNary Pool. 2. 1994: Project will be extended into the Mid-Columbia area below Priest Rapids and work continued in the McNary Pool on the Snake River up to Ice Harbor Dam. |

Table 47 - Section 8 Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------|---|--|---|
| 88-63 | <p>Lake Roosevelt Monitoring Program - Spokane Tribe</p> <p><u>Project Officer:</u> C. Craig</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. Determine status of fish stocks in Lake Roosevelt before construction of habitat improvement projects and hatcheries. 2. Evaluate contribution of these projects and hatcheries to Lake Roosevelt. 3. Determine the losses of Kokanee and rainbow caused by entrainment at Grand Coulee Dam | <p><u>Date Initiated:</u> July 1988</p> <p><u>Results/Conclusions:</u> Available in annual reports.</p> | <p>Continuing: Assess status of stocks in Lake Roosevelt and measure the success of habitat improvement projects and hatcheries.</p> <p>N 2000: Project scheduled for completion.</p> |
| 93-16 | <p>Pre-engineering Hungry Horse Hatchery</p> <p><u>Project Officer:</u> R. Morinaka</p> <p><u>Objective:</u> To provide the pre-engineering and construction of modifications to the Creston NFH. The reason for the modification is to retrofit this facility to rear 1 million kokanee for the Hungry Horse Mitigation Program. Retrofit is needed because this facility was not originally built for this large of a program.</p> | <p><u>Date Initiated:</u> June 1993</p> <p><u>Results/Conclusions:</u> A basic degas system was installed in N 1993 to lower nitrogen levels during peak loading periods. A pollution abatement system was designed and will be constructed in fall 1993-winter 1994.</p> | <p>January 1994 completion.</p> |
| 94-10 | <p>Mitigation for Excessive Withdrawal</p> <p><u>Project Officer:</u> R. Austin</p> <p><u>Objective:</u></p> <p>Mitigate for excessive withdrawal from Libby and Hungry Horse Reservoir. A combination habitat restoration and passage improvements will be the key components for this projects. It will key on weak and listed stocks which included bull trout and west slope cutthroat trout. The first portion of the project will determine the best and most efficient areas to rehabilitate and will consist of cost-sharing with other governmental and private funds.</p> | <p><u>Date Initiated:</u> N 1994</p> | <p>None at this time.</p> |

Table 47 - Section 8 Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|--------------------------|---|---|--|
| 88-152 (no '94 funds) | <p>Infectious Hematopoietic Necrosis (IHN) Virus Research - OSU</p> <p><u>Project Officer:</u> R. Morinaka</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. To investigate and determine the pathogenicity of IHN virus strains in the Columbia River. 2. To determine the mechanism of the location of IHN virus throughout the life cycle of rainbow trout and kokanee salmon. | <p><u>Date Initiated:</u> May 1989</p> <p><u>Results/Conclusions:</u> (1) Several new methods of detecting IHNV <u>in situ</u> were optimized. These include oligonucleotide probes to the viral nucleocapsid (N) and glycoprotein genes and the use of monoclonal antibody to viral N protein. A dot blot assay was developed for the detection of anti-IHNV antibodies in fish serum and a new rapid coagglutination test was successfully employed to specifically identify IHNV. Virulence testing on IHNV isolates from spawning kokanee and chinook salmon has been initiated and to date no significant differences in virulence have been observed for virus taken throughout the spawning run. Samples of aquatic organisms and water have been taken from two river systems but no virus has been detected to date. (2) Completion report plus manuscript will be submitted November 1993.</p> | N 1994: Complete Report for Year 5. |
| 93-27 (no '94 funds) | <p>Development of Breeding Plans for Threatened Fish Populations in Kootenai River</p> <p><u>Project Officer:</u> R. Westerhof</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. Construct broodstock development plans for the Kootenai River white sturgeon and rainbow trout. 2. Determine impacts of supplementation on the wild Kootenai River white sturgeon. 3. Develop breeding plan for captive broodstock to maintain long-term fitness of white sturgeon. 4. Provide technical support to Technical Group concerning genetics. | <p><u>Date Initiated:</u> January 1, 1993</p> <p><u>Results/Conclusions:</u> Draft white sturgeon plan has been submitted.</p> | N 1994: Final sturgeon plan due November 1993. |

Table 47 - Section 8 Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------------------|---|---|---|
| 92-10 (no '94 funds) | Fort Hall Bottoms Habitat Enhancement - Shoshone-Bannock Tribes <u>Project Officer:</u> S. Bettin <u>Objectives:</u> Improve habitat for cutthroat and rainbow trout in Clear Creek and Spring Creek along the Fort Hall Bottoms on the Fort Hall Reservation. | <u>Date Initiated:</u> FY 1992 <u>Results/Conclusions:</u> Continued riparian habitat improvement projects. | FY 1994: Complete habitat improvement projects. Final report due January 1994. |
| 83-465 (SOR funds) | Quantification of Hungry Horse Reservoir Levels Needed to Maintain or Enhance Reservoir Fisheries - MDFWP <u>Project Officer:</u> C. Craig <u>Objectives:</u> 1. To study the effects of reservoir drawdown. 2. To develop a predictive model of hydro operations on resident fisheries, and recommend seasonal drawdown levels compatible with the needs of the fish. | <u>Date Initiated:</u> 1991 - SOR <u>Results/Conclusions:</u> Reservoir drawdown has adverse effects on benthic macro-invertebrates and zooplankton, can increase competition between fish, and makes juveniles more accessible to predators. Fall drawdown is particularly damaging to cutthroat growth rates. The technical analysis of data, model simulations and refinement, and coordination of SOR efforts related to Hungry Horse and Libby Reservoirs are still being developed and improved. Incorporated RASP method in project planning. Evaluated the impacts associated with the 21 hydroregulation options. | Draft EIS due spring 1994. Final EIS due late summer 1994. |
| 94-006 | Council's Phase IV Amendments <u>Project Officer:</u> R. Austin <u>Objectives:</u> To enhance resident fish and wildlife affected by the development and operation of the Federal hydroelectric system. | Amendment process will be completed in fall 1993. | Implementation of the amendment will begin in early 1994. |
| 88-156 | Duck Valley Fish Stocking <u>Project Officer:</u> S. Bettin <u>Objectives:</u> To stock and grow out catchable rainbow trout in Sheep Creek and Mountain View Reservoir. | <u>Date Initiated:</u> FY 1988 <u>Results/Conclusions:</u> Management plan implemented; trout purchased. | FY 1993: Continue stocking. FY 1994: Final year of stocking. |

Section 9. Wildlife

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8.0 WILDLIFE SCOPING GROUP

The Wildlife SG in the IPP has worked to develop and refine a set of **criteria** based on the Council's Wildlife Rule in order to **evaluate** wildlife project proposals for technical merit and Program consistency. These criteria have been applied **in** the evaluation of all project proposals received in the IPP. While the criteria are still considered to be in a **"draft"** stage, they have been used consistently during each evaluation session of the Wildlife SG. Further review and revision is expected in late FY 1993. Following are criteria in their current format:

Bonneville Implementation: BPA shall implement Council-approved mitigation priorities and plans at federal projects through the IPP. In that process, BPA will invite proposals for specific measures to achieve the mitigation priorities approved by the Council. Proposed measures will include estimates of capital, operation and maintenance funding needs. In reviewing proposals, the IPP will consider the extent to which proposals would:

A. Complement the activities of the region's state and federal wildlife agencies and **Indian Tribes**:

Documented evidence of complementing to include all pertinent federal and the region's state **fish** and wildlife agencies, and appropriate Indian Tribes. Agencies and Tribes will determine and explain complementarity. The SG will assign points to the agencies' and Tribes' decision. **Points**: 0 = no evidence of complementarity, and 3 = documentation of **complementarity** from all pertinent entities.

B. Be the least costly way to achieve the biological objective:

Where equally effective alternative project proposals for achieving the same sound, biological objectives exist, the proposal with minimum cost will be given priority consideration. Proposal should demonstrate cost-effectiveness where alternative(s) exist. **Points**: 1 = less cost-effective, 3 = the same, **and** 3 = more cost-effective.

C. Protect or enhance special habitat or species that would not be available unless prompt action is taken; such proposals should be implemented only with the consent of the council:

Is project a lost opportunity? Yes [] No []. Will require Council consent

D. Encourage the formation of partnerships with other persons or entities, which would reduce project costs, increase benefits **and/or** eliminate duplicative activities:

Partnerships, reduce cost, increase benefits, or eliminate duplicate activities. **Points**: 0 = no evidence, 1 = anticipated or possible partnerships, and 3 = written documentation **from** partners and/or demonstrated commitment.

E. Have measurable objectives, such as the restoration of a given number of habitat units:

Does the end product of the proposal have measurable objectives, such as Habitat Units and/or species response to actions? **Points**: 0 = not measurable, and 3 = measurable.

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F. Not impose on BPA the **funding** responsibilities of others, as prohibited by section 4(h)(10)(A) of the Northwest Power Act (if in lieu of is determined, this project will not be considered):

Wildlife mitigation expenditures shall be in addition to, not in lieu of, other expenditures authorized or required **from** other entities **under** other agreements or provisions of law. points: 0 = **in lieu of**, and 3 = **not in lieu of**.

G. Address special wildlife losses in areas that formerly had salmon and steelhead runs that were eliminated by hydroelectric projects (for example, societal and Tribal wildlife losses):

The mitigation project that **will** be credited towards the dam and reservoir. Points: 0 = no blockage of anadromous fish by a dam, 2 = Dworshak Dam and Willamette (some projects) where anadromous **fish** make it to the base of the dam, and 3 = Blockage of *anadromous* fish by **a dam**.

H. Protect high **quality**, native, or other habitat or species of special concern whether at the project site or not, including endangered, threatened, or sensitive species. Document status of the species:

For the main objective of the mitigation project. points: 0 = does not address points listed below, 1 = historical potential and restorable, 2 = high quality native habitat without Threatened, Endangered, or Sensitive Species, and 3 = high quality native habitat that host Threatened, Endangered or Sensitive Species, or Species of Special Concern.

I. Provide riparian or other habitat that may benefit both fish and wildlife:

For resident and anadromous fish. Points: 0 = no benefit to **fish**, 1 = incidental benefits, 2 = secondary benefits, and 3 = immediate **benefits**.

J. Address concerns over additions to public land ownership and impacts on local communities, such as reduction or loss of local government tax base, special district tax base, or the local *economic* base; or consistency with local governments' comprehensive plans:

Points: 0 = does not demonstrate tangible effort to address concerns, and 3 = does demonstrate tangible effort to address concerns.

K. Use publicly-owned land for mitigation, or management agreements on private land, in preference to acquisition of private land, while providing permanent protection or enhancement of wildlife habitat in the most cost-effective manner (explain why proposal is or is not cost-effective):

Points: 0 = nonpermanent protection and /or fee-acquisition not cost-effective, 2 = fee-title acquisition that is cost-effective, 2 = combination of fee-title acquisition and (permanent easement and/or management agreement), 3 = permanent easement on private land that is **cost-effective**, and 3 = permanent enhancement of public land that is cost-effective.

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L. Mitigate losses in-place; in-kind, where practical. When a wildlife measure is not directly related to a hydroelectric caused loss, the habitat units protected, mitigated or enhanced by the measure will be credited against mitigation due for one or more hydroelectric projects, including power-related storage or regulatory dams:

“In-place” is mitigation in the vicinity of the reservoir. “Out-of-place” is biologically, physically or politically not practical to mitigate in the vicinity of the reservoir. “In-kind” is habitat type or target species impacted by the reservoir. “Out-of-kind” is habitat type or target species not impacted by the reservoir. **Points:** 1 = out-of-kind or not practical in-kind, 2 = in-kind and out-of-place, but is practical in place, 3 = in-kind and out-of-place, but is not practical in-place, and 3 = in-kind and in-place.

M. Help protect or enhance natural ecosystems and species diversity over the long term:

Points: proposal addresses either naturally self-sustaining ecosystem or species diversity, 2 = previously natural self-sustaining ecosystem that needs management actions to restore it to a natural self-sustaining ecosystem that will provide species diversity, and 3 = natural self-sustaining ecosystem that provides maximum species diversity.

N. Are based on, and supported by, the best available scientific knowledge **and:**

Biologically possible. **Points:** low confidence, 2 = medium confidence, and 3 = high confidence.

O. Address achieving the Council’s mitigation priorities (see attached sheet):

The Council’s **subbasin** priorities (upper Columbia, lower Columbia and Snake River), including habitat types, target species and Habitat Units. **Points:** 1 = low priority, 2 = medium priority, and 3 = high priority.

THE FOLLOWING CRITERIA ARE USED IN THE CONSIDERATION OF PROJECT PROPOSALS THAT ARE CONSIDERED TO BE RESEARCH-TYPE PROJECTS.

1. Do the objectives of the proposal address a need for additional data relative to correct implementation decisions?
2. Will the proposal provide information necessary to fill in data gaps that will guide decisions in adaptive management and species needs in existing projects?
3. Does research proposal indicate that a sufficient literature search **has** been accomplished to determine if the proposal hypothesis has not already been addressed?
4. Does the proposal include a pilot project to test viability?

A research proposal does not necessarily have to address all of these evaluation criteria to receive favorable consideration.

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8.14 INNOVATIVE FUNDING OF HUNGRY HORSE/LIBBY AND DWORSHAK MITIGATION

(Fund the Montana and Dworshak **Wildlife** Trust)

1003(b)(7) [Abstract] Bonneville shall implement Council approved mitigation priorities and plans at Federal Projects. Council approved mitigation plans and priorities for Libby, Hungry Horse and Dworshak dams are listed in Table 4 of the 1987 Fish and Wildlife Program

B P A ACTION ITEM ACTIVITIES - Y :

Objectives:

Implement the Wildlife Mitigation Agreements (Montana Trust Fund and Dworshak Trust Fund) negotiated between BPA and the State of **Montana** for funding wildlife mitigation for Libby **and** Hungry Horse dams, and BPA, the Nez Perce Tribe and the State of Idaho for funding mitigation at Dworshak Dam.

Background and Progress to Date:

BPA and the State of Montana signed a mitigation agreement in December 1988. The agreement establishes a \$12.5 million Trust Fund to **finance** wildlife mitigation for Libby and Hungry Horse Dams. BPA made its **first** payment of \$2 million to the Trust Account in December 1989 and subsequent payments of \$2 million in December of **1990, 1991** and 1992.

BPA, Nez Perce Tribe and the State of Idaho signed a mitigation agreement on March **10**, 1992. NEPA is in progress. Upon completion of NEPA in **fall** 1993, BPA will pay \$6.6 million to the NPT Trust, \$3.019 million to the State of Idaho Trust, and transfer title of the pine lands and Birch Creek old growth to the State.

Plans:

BPA plans to make its scheduled payment to the Trust account in December 1993.

BPA plans to make payment to the Tribe and title lands and make payment to the State of Idaho in December 1993 or January 1994.

Table 48 - Section 9 Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------|---|--|---|
| 91-60 | <p>Pend Oreille Wetlands - UCUT</p> <p><u>Project Officer:</u> J. DeHerrera</p> <p><u>Objectives:</u> Protect through fee acquisition, 440 acres of wetlands and riparian habitat. Develop management plan/NEPA and MOA with Kalispel Tribe. Implement management plan for enhancement and protection activities.</p> | <p><u>Date Initiated:</u> September 1991</p> <p><u>Results/Conclusions:</u> Acquisition complete in Nov. 1992. Interim management contract initiated in May 1993. NEPA completed.</p> | FY 1994: Implement management plan. |
| 91-78 | <p>Burlington Bottoms - ODFW</p> <p><u>Project Officer:</u> C. Craig</p> <p><u>Objectives:</u> Develop management plan, habitat inventory and evaluation, public use plan, evaluation, public use plan, and other resource surveys.</p> | <p><u>Date Initiated:</u> October 1991</p> <p><u>Results/Conclusions:</u> Baseline habitat evaluation procedure complete.</p> | FY 1994: Complete Phase I, begin implementing Phase II. |
| 92-059 | <p>Amazon/Willow Creek - TNC</p> <p><u>Project Officer:</u> C. Craig</p> <p><u>Objectives:</u> Phase I: Complete programmatic management plan, MOA and HEP.</p> | <u>Start Date:</u> Aug. 1993 | FY 1994: Complete Phase I. Acquire option on Bailey Parcel winter 1993. |
| 89-52 | <p>Montana Wildlife Trust</p> <p><u>Project Officer:</u> R. Walker</p> <p><u>Objectives:</u></p> <ol style="list-style-type: none"> 1. Establishes a \$12.5 million Trust Account. 2. Sixty year agreement. 3. Addresses impacts to wild-life from the development of Libby and Hungry Horse Dams. 4. Montana, through the use of Trust Account, responsible for Wildlife Mitigation. | <p><u>Date Initiated:</u> December 1988</p> <p><u>Results/Conclusions:</u> Initial payment of \$2 million was made to the Trust Account in December 1989. Subsequent payments of \$2 million made in December of 1990, 1991, and 1992.</p> | <ol style="list-style-type: none"> 1. December 1993: Make scheduled payment to the Trust Account. 2. Subsequent payments to be made on an annual basis. |
| 94-006 | See Table for Section 8 | | |

Table 48 - Section 9 Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|------------------------------|---|---|--|
| 91-61 (funds from 93-58) | Tracy Rock Sharp Tail Grouse - WDW <u>Project Officer:</u> J. DeHerrera <u>Objectives:</u> Phase I: Develop programmatic management plan, NEPA, memorandum of agreement with WDW, Habitat Evaluation Procedure (HEP) and easement terms and conditions for management area. Inventory and prioritize acquisition/protection areas. Phase II: Implement easement/fee acquisition as per plan. Initiate necessary operations and maintenance programs. | <u>Date Initiated:</u> August 1991 <u>Results/Conclusions:</u> Management Plan completed and NEPA completed fall 1992. Completed Phase I. Initiated Phase II and completed acquisition of 10,000 acres. | FY 1994: Acquire easements or additional acreage of core area as available. Implement management plan enhancement activities on 10,000 acres Roloff acquisition. |
| 93-009 (funds from 93-58) | Pygmy Rabbit <u>Project Officer:</u> J. DeHerrera <u>Objectives:</u> Phase I: Develop programmatic management plan, NEPA, memorandum of agreement with WDW, Habitat Evaluation Procedure (HEP) and easement terms and conditions for management area. Inventory and prioritize acquisition/protection areas. Phase II: Implement easement/fee acquisition as per plan. Initiate necessary operations and maintenance programs. | <u>Date Initiated:</u> August 1991 <u>Results/Conclusions:</u> Management Plan completed and NEPA completed fall 1992. | FY 1994: Protection of 500-700 acres, implement enhancement. |
| 91-62 (funds from 93-58) | Blue Creek Winter Range <u>Project Officer:</u> J. DeHerrera <u>Objectives:</u> Protect and enhance up to 5,400 acres of riparian and upland forest area for upland birds and large herbivores on the Spokane Reservation. | <u>Date Initiated:</u> August 1991 <u>Results/Conclusions:</u> Management Plan completed NEPA initiated. | FY 1994: Lease agreement enhancement activities. |
| 92-47 (funds from 93-58) | Peregrine Falcon Reintroduction <u>Project Officer:</u> J. DeHerrera <u>Objectives:</u> Reintroduce successful breeding pair of peregrine falcons to Lake Roosevelt. | <u>Date Initiated:</u> FY 1992 <u>Results/Conclusions:</u> Management Plan completed; NEPA completed; first juvenile birds "hacked" during summer 1992. | FY 1994: M&E success of "hacking;" release additional birds if necessary. |
| 92-48 (funds from 93-58) | Hellsgate Big Game Winter Range <u>Project Officer:</u> J. DeHerrera <u>Objectives:</u> Protect and enhance 5,000 acres of upland shrub steppe, forest habitat for upland birds and large herbivores on the Colville Reservation. | <u>Date Initiated:</u> September 1992 <u>Results/Conclusions:</u> Management Plan completed; NEPA completed; acreage acquired. | FY 1994: NEPA, Implementation of Management Plan. |

Table 48 - Section 9 Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-----------------------------|--|---|--|
| 92-49 (funds from 93-58) | Vancouver Lowlands <u>Project Officer:</u> J. DeHerrera <u>Objectives:</u> Protect and enhance 814 acres of wetlands, riparian and uplands for waterfowl, shorebirds, wintering wildlife and migratory wildlife near Vancouver, WA. | <u>Date Initiated:</u> September 1992 <u>Results/Conclusions:</u> Appraisal of initial 250 acres completed. | FY 1994: Completion of Phase I Management Plan, NEPA, and acquisition of initial 250 acres. |
| 92-62 (funds from 93-58) | Lower Yakima Valley Wetlands/Riparian <u>Project Officer:</u> J. DeHerrera <u>Objectives:</u> Protect and enhance up to 4,870 acres of riparian and wetlands habitat along Satus Creek, Yakima River and other sites in the Yakima Reservation for waterfowl, shorebirds, migratory wildlife and wintering wildlife. | <u>Date Initiated:</u> September 1992 <u>Results/Conclusions:</u> Appraisal of initial 450 acres completed. | FY 1994: Completion of Phase I Management Plan, NEPA, and protection of initial 450 acres. |
| 92-057 | Dworshak Wildlife Trust <u>Project Officer:</u> R. Walker <u>Objectives:</u> 1. Establish \$6.6 million Trust with Nez Perce Tribe and \$3.019 million Trust with State of Idaho. 2. Sixty year agreement. 3. Addresses impacts to wildlife and habitat by construction of Dworshak Dam and reservoir. 4. Idaho and Tribe through use of Trust funds and mitigation lands are responsible for wildlife mitigation. | <u>Date Initiated:</u> March 1992 <u>Results/Conclusions:</u> Initial payment (\$500 K) to Nez Perce Tribe 3/92 . NEPA in progress to determine final implementation. | December 1993 - February 1994: Complete NEPA. Make final payment to Tribal Trust and State Trust. Transfer title of mitigation lands to State. |
| 90-92 | Conforth Ranch <u>Project Officer:</u> C. Craig <u>Objectives:</u> Protect 2,800 acres wetlands, riparian, ponds and shrub steppe. Develop Management Plan/NEPA with Umatilla Tribe. Implement plan for O&M , enhancement and protection activities. | <u>Date Initiated:</u> June 1993 <u>Results/Conclusions:</u> Acquisition complete June 1993. Interim management contract initiated July 1993. Draft Management Plan in progress. | FY 1994.: Initiate NEPA O&M. |

Table 48 - Section 9 Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|-------------------------|---|---|---|
| 93-63 (no '94 funds) | <p>Washington Project Coordination</p> <p><u>Project Officer:</u> J. DeHerrera</p> <p><u>Objectives:</u> Develop further pipeline project implementation options and new project proposals with appropriate agency, governmental, public and interested party coordination. Use products for continued implementation under Project #93-58.</p> | <p><u>Date Initiated:</u> May 1993</p> <p><u>Results/Conclusions:</u> None at this time.</p> | FY 1994: Develop 5 year implementation schedule and documentation of coordination process. |
| 92-69 (no '94 funds) | <p>Craig Mountain Interim Management</p> <p><u>Project Officer:</u> J. DeHerrera</p> <p><u>Objectives:</u> Interim management of Craig Mountain wildlife acquisition through NEPA process on Dworshak Agreement through June 1994.</p> | <p><u>Date Initiated:</u> July 1992</p> <p><u>Results/Conclusions:</u> O&M in place.</p> | N 1994: Title transfer to Idaho Dept. of Fish and Game on June 30, 1994 after completion of NEPA. |
| 92-68 (no '94 funds) | <p>Western Pond Turtle</p> <p><u>Project Officer:</u> R. Walker</p> <p><u>Objectives:</u> Inventory populations, habitat and monitor biology. Develop Management Plan and habitat inventory and prioritization with alternatives for successful pond turtle mitigation and protection activities.</p> | <p><u>Date Initiated:</u> June 1992</p> <p><u>Results/Conclusions:</u> Inventory and evaluation in progress.</p> | N 1994: Completion of Management Plan, NEPA initiated. |
| 91-63 (no '94 funds) | <p>Palisades Bald Eagle/South Fork Snake River</p> <p><u>Project Officer:</u> R. Walker</p> <p><u>Objectives:</u> Protect and enhance riparian woodlands for bald eagles and associated species habitat along S. Fork of the Snake River.</p> | <p><u>Date Initiated:</u> FY 1991</p> <p><u>Results/Conclusions:</u> Management Plan completed. Inventories of habitat completed.</p> | N 1994: Initiate and complete NEPA. |
| 92-60 (no '94 funds) | <p>Camas Prairie</p> <p><u>Project Officer:</u> C. Craig</p> <p><u>Objectives:</u> Protect and enhance wetlands for waterfowl, shorebirds and raptors along Camas Creek in N. Central Idaho.</p> | <p><u>Date Initiated:</u> August 1993</p> <p><u>Results/Conclusions:</u> None.</p> | N 1994: Ongoing work on Phase I. |

Table 48 - Section 9 Ongoing and New Projects

| Project No. | Title and Objectives | Status | Schedule and Milestones |
|--|---|---|---|
| 92-6 1 (no '94 funds) | Pack River <u>Project Officer:</u> C. Craig <u>Objectives:</u> Protect and enhance riparian and forested wetlands habitat along Pack River flowing into Lake Pend Oreille in N. Idaho. | <u>Date Initiated:</u> August 1993 <u>Results/Conclusions:</u> None. | N 1994: Continue ongoing work on Phase I component. |
| 93-058 (91-61; 93-09; 91-62; 92-47; 92-48; 92-49; 92-62) | Washington Interim Wildlife Agreement <u>Project Officer:</u> R. Walker <u>Objectives:</u> Continue to fund wildlife mitigation in Washington (pipeline and new projects) in accordance with agreed upon annual funding levels. Inclusive of Phase I & II activities. | Start: March 1993 | N 1994: Fund \$5.5 million (fund pipeline and new projects out of each member's annual authorization as obligated). |

Appendix A - Index of Projects

Columbia River Fish and Wildlife Program Annual Implementation Work Plan - FY 1994

Index by Project Number

| PROJ NUM: | RPA: | PROJECT TITLE: | ONGOING WO 94 FUNDS: | COTR: | AREA OF INTEREST: | PAGE: |
|-----------|---------------------|--|----------------------|-------|----------------------|--------------|
| 8110800 | F1501 | WARM SPRINGS HABITAT / PROD POTENTIAL ASSESSMENT | | SML | 6.2A | 63 |
| 8200300 | F1122 | PREDATION/DEVELOPMENT OF PREY PROTECTION | | WCM | 3.8 (3.8B.2) | 40 (41) |
| 8201300 | F1101 | CODED-WIRE TAG RECOVERY | | JAB | 5.4C (6.2B, 6.2B.14) | 52 (83, 92) |
| 8300600 | F1101 | SMOLT MARKING - USFWS | | JAB | 6.28 (6.2B.17) | 78 (92) |
| 8331900 | F1101 | NEW FISH TAG SYSTEM | | JAB | 4.1.11 | 45 |
| 8332300 | F1101 | SMOLT MONITORING - IDFG TRAPS | X | PHP | 3.2 | 20 |
| 8335000 | F2107 | NEZ PERCE TRIBAL HATCHERY | | SML | 6.2C | 97 |
| 8335900 | F1501 | BEAR VALLEY / YANKEE FK I EAST FK HABITAT IMP | | SML | 6.2A | 71 |
| 8343500 | F1501 | BONIFER/MINTHORN RELEASE & COLLECTION FACILITIES | | JAB | 6.4 | 80,116 |
| 8343600 | F1501 | UMATILLA PASSAGE O&M | | JGM | 6.2A | 111 |
| 8346500 | Power Marketing RPA | PART OF SOR | | c c | 3.6F.11 (8.0) | (35) 166 |
| 8346700 | F1201 | LIBBY RESERVOIR LEVELS | | REW | 8 | 163 |
| 8400800 | F1501 | NORTH FORK JOHN DAY HABITAT IMPROVEMENT | | ACT | 6.2A | 65 |
| 8400900 | F1501 | JOSEPH CREEK, GRANDE RONDE RIVER, OREGON (USFS) | | SML | 6.2A | 70 |
| 8401100 | F1501 | COLLAWASH RIVER FALLS PASSAGE SUB-PROJECT | | ACT | 6.2A | 62 |
| 840 1400 | F1101 | SMOLT MONITORING AT FEDERAL DAMS | X | PHP | 3.2 | 19 |
| 8402100 | F1501 | MAINSTEM, MIDDLE FORK, JOHN DAY RIVER | | SML | 6.2A | 67 |
| 8402200 | F1501 | MAINSTEM AND UPPER JOHN DAY RIVER | | SML | 6.2A | 6 9 |
| 8402300 | F1501 | CAMAS CREEK, IDAHO | | DAN | 6.2A | 71 |
| 8402400 | F1501 | MARSH I ELK I UPPER SALMON RIVER, IDAHO | | SML | 6.2A | 72 |
| 8402500 | F1501 | JOSEPH CREEK, GRANDE RONDE RIVER, OREGON (ODFW) | | SML | 6.2A | 70 |
| 8403300 | F1501 | UMATILLA HATCHERY | | JGM | 6.28 | 81 |

| PROJ NUM: | RPA: | PROJECT TITLE: | ONGOING WO 94 FUNDS: | COTR: | AREA OF INTEREST: | PAGE: |
|-----------|-------------------------|--|----------------------|-------|-------------------|---------|
| 8403300 | F2106 | UMATILLA HATCHERY | | JGM | | 81 |
| 8403306 | F1501 | UMATILLA HATCHERY - WATER SUPPLY | | JGM | 6.2B | 81 |
| 8403306 | F2106 | UMATILLA HATCHERY - WATER SUPPLY | | JGM | 6.2B | 81 |
| 6406200 | F1501 | COORDINATION OF TROUT CREEK HABITAT RESTORATION | | SML | 6.2A | 65 |
| 8503800 | F1501 | COLVILLE HATCHERY | | MLB | 8 | 160 |
| 6506200 | F1119 | PASSAGE IMPROVEMENT EVALUATION | | LGS | 6.2C.2 (6.4) | 101,121 |
| 8507100 | F1501 O U | T H FORK JOHN DAY RIVER, MAINSTEM / IZEE FALLS | | SML | 6.2A | 69 |
| 6509000 | FIIPM | CLERK-TYPIST SERVICES | | BAB | | |
| 6604500 | F2108 | CLE ELUM SOCKEYE STUDY | | LGS | 6.2B | 76 |
| 8605000 | F1203 | EVALUATE STURGEON PHYSICAL HABITAT REQUIREMENTS | | REW | 8 | 163 |
| 6607500 | F1501 | LITTLE NACHES PASSAGE | | DAN | 6.2A | 71 |
| 6607900 | F1501 | FIFTEENMILE CREEK | | ACT | 6.2A | 63 |
| 8607901 | F1501 | FIFTEENMILE CREEK - PHASE IV-V-ODFW | | ACT | 6.4 | 115 |
| 6611600 | FIIPM | FISH AND WILDLIFE PROGRAM ASSISTANCE EFFORT | | CC | 3.6F.11 (3.6F.12) | 3 5 |
| 8612400 | F1501 | INSP SERV FOR LITTLE FALL CREEK PASS RE:86-090 | | DAN | 6.2A | 63 |
| 6704700 | F1202 | Unknown | | CG | 3.3B.3 | 21 |
| 6709900 | F1202 | Funded through SOR | | c c | 3.6F.11 (3.6F.12) | 3 5 |
| 8710000 | F1501 | UMATILLA HABITAT IMPROVEMENT | | JAB | 6.4 | 120 |
| 6710001 | F1501 | UMATILLA HABITAT IMPROVEMENT/ CTUIR | | JAB | 6.4 | 120 |
| 8710002 | F1501 | UMATILLA HABITAT IMPROVEMENT / ODFW | | JAB | 6.4 | 121 |
| 8712700 | F1101 | FISH PASSAGE CENTER AND SMOLT MONITORING PROGRAM | | GJ | 3.6F.10 | 35 |
| 6740100 | F1101 | TRAVEL TIME AND SURVIVAL SMOLT PHYSIOLOGY | X | PHP | 3.2 | 20 |
| 6740700 | Power Marketing Program | Part of SOR | | c c | 3.6F.11 | 35 |
| 8741300 | FIIPM | FISH AND WILDLIFE TASK ORDER AGREEMENT | X | PHP | 7.3 | 146 |

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|-----------|-------|---|----------------------|-------|-------------------|----------|
| 8741302 | F1101 | ANAL OF HISTRIC DATA FOR JUVENILE/ADULT SALM PROD | | PHP | 7.3 | 143 |
| 8801500 | F1107 | FUND STUDIES TO DEFINE RANGE IN NEEDS OF SNAKE RIVER FALL CHINOOK | | DW | 6.3B.3 | 111 |
| 8802200 | F1110 | UMATILLA RIVER BASIN TRAP AND HAUL PROGRAM | | JGM | 4 | 44 |
| 8803400 | F2108 | OVERHEAD COSTS FOR E - YAKIMA HATCHERY | | TJC | | |
| 8803600 | F2601 | OVERHEAD COSTS FOR E - CAPITAL PROJ | | TJC | | |
| 8803700 | F2601 | OVERHEAD COSTS FOR M - CAPITAL PROJ | | TJC | | |
| 8805300 | F2114 | NE ORE SPRING CHINOOK OUTPLANTING/FACILITY | | JGM | 6.2B | 80 |
| 8805301 | F2612 | NE ORE OUTPLNTG FACILITIES MSTA PLN - NEZ PERCE | | JAB | 6.2B | 80 |
| 8805302 | F2612 | NE ORE OUTPLNTG FACILITIES MSTR PLN - CTUIR | | JAB | 6.2B | 80 |
| 8805303 | F2612 | HOOD RV OUTPLNTG FACILITIES MSTR PLN - WARM SP TRB | | JAB | 6.2B | 80 |
| 8905304 | F2612 | NE ORE OUTPLNTG FACILITIES MSTR PLN - ODFW | | JAB | 6.2B | 80 |
| 8806300 | F1204 | MONITOR & EVAL IMPROV PRJCTS - LK ROOSEVELT | | CDC | 3.6F.11(8.0) | 164 (35) |
| 8906400 | F1206 | EXPRMNTL STURGEON HTCH& KOOTENAI WH STURG INVST | | REW | 8 | 161 |
| 8906500 | F1206 | KOOTENAI WHITE STURGEON INVST/EXPRMNTL CULTURE | | REW | 8 | 161 |
| 6610801 | FIIPM | COORDINATED INFORMATION SYSTEM (CIS) | | KLB | 7.6 | 149 |
| 9811500 | F1501 | YAKIMA HATCHERY - CONSTRUCTION | | MEN | 6.2B | 79 |
| 9812000 | F2108 | YAKIMA NATURAL PRODUCTION & ENHANCEMENT PROGRAM | | LGS | 6.2C | 95 |
| 9812600 | F2107 | Nez Perce Technical Support | X | SL | 6.2C | 94 |
| 6813000 | F11PM | OVERHEAD COSTS FOR A - LEGAL STAFF SUPPORT | | CHR | | |
| 8815200 | F1113 | IHN ETIOLOGY | X | RAM | 8 | 165 |
| 88 15600 | F1113 | DUCK VALLEY FISH STOCKING | | SB | 8 | 166 |
| 8816000 | F1114 | BIOENGR EVAL OF RETROFITTED OXY SUPPLMNTN (ODFW) | | TSV | 6.2B | 83 |
| 8816300 | F1113 | EFFECTS OF CODED-WIRE TAG ON SPRING CHINOOK | | RAM | 6.2D | 104 |
| 9902401 | F1110 | EVAL UMATILLA BASIN PRJ -3-MILE/WEID CANAL SCR | | JAB | 7.2 | 139 |

| PROJ NUM: | RPA: | PROJECT TITLE: | ONGOING WO 94 FUNDS: | COTR: | AREA OF INTEREST: | PAGE: |
|-----------|-------|--|----------------------|-------|-------------------|--------|
| 8902700 | F1110 | POWER/REPAY O&M FOR USBR CPR PUMPING PROJ | | JGM | 6.4 | 116 |
| 8902701 | F1110 | STANFIELD WATER RELEASE | x | JM | 6.4 | 116 |
| 8902900 | F1113 | PROPAGATION IN PELTON DAM | | JAB | 6.2C | 97 |
| 8902901 | F1113 | PELTON DAM LADDER PRODUCTION | | JAB | 6.2C | 97 |
| 8903000 | F1113 | EFFECTS OF ACCLIMATION | | RAM | 6.28 | 83 |
| 8903200 | F1113 | ERYTHROMYCIN REGISTRATION | | RAM | 6.28 | 84 |
| 8903300 | FIIPM | OVERHEAD (OTH OBJ) | | CHR | | |
| 8903400 | FIIPM | OVERHEAD (EMPLOYEE DEVELOPMENT-TRAINING) | | CHR | | |
| 8904600 | F1113 | SMOLT QUALITY ASSESSMENT OF SPRING CHINOOK | | RAM | 3.6 | 30 |
| 8905200 | F2301 | MONTANA WILDLIFE TRUST | | RLW | 9 | 171 |
| 8905400 | F1113 | RESEARCH TO ID EFFECTIVE ANTIFUNGAL COMPOUNDS | x | RAM | 6.2B | 97 |
| 8906200 | FIIPM | IPP COORDINATOR/SRG SUPPORT (IPP) | | MJS | 7.1 | 138 |
| 8906500 | F1121 | ANN CD WIRE TAG PROG- MISSING PROD OR/WA (USFWS) | | JAB | 5.4C (6.28) | 52,93 |
| 8906600 | F1121 | ANN CD WIRE TAG PROG- MISSING PROD WA HTCH (WDF) | | JAB | 5.4C (6.28) | 52,85 |
| 8906900 | F1121 | ANN CD WIRE TAG PROG- MISSING PROD OR HTC (ODFW) | | JAB | 5.4C (6.28) | 52, 85 |
| 8907201 | FIIPM | SCIENTIFIC REVIEW GROUP SUPPORT - DOE (IPP) | | MJS | 7.1 | 138 |
| 8908102 | F1113 | Erythrocytic Inclusion Body Syndrome | x | RAM | 6.28 | 86 |
| 8908200 | F2108 | YAKIMA HATCHERY EXPERIMENTAL DESIGN - WDF | | LGS | 6.28 | 79 |
| 8908900 | F2108 | YAKIMA/KLICKITAT RADIO TELEMETRY STUDY | | LGS | 6.2C | 95 |
| 8909100 | F1301 | OVERHEAD COSTS FOR M - WILDLIFE PROGRAM | | RLW | | |
| 8909600 | F1114 | GENETIC MONT/EVAL PROG FOR SALM/STLHD | | TSV | 6.2C (6.2A.9) | 73, 98 |
| 8909700 | F1114 | EVAL OF SUPPLMNTG IMNAHA RV SUM STLHD W/ HTC ST | | TSV | 6.2C | 98 |
| 8909800 | F1114 | EVAL OF SUMMLMTG SALMON/CLRWTR RV WI HATCH ST | | TSV | 6.2C | 99 |
| 8909601 | F1114 | SALM SUPPLE STUDIES IN ID RV - USFWS | | TSV | 6.2C | 99 |

| PROJ NUM: | RPA: | PROJECT TITLE: | ONGOING WO 94 FUNDS: | COTR: | AREA OF INTEREST: | PAGE: |
|-----------|-------|--|----------------------|-------|-------------------|-------|
| 8909802 | F1114 | SALMON SUPPLE STUDIES IN ID RV - NEZ PERCE TRB | | TSV | 6.2C | 99 |
| 8909803 | F1114 | SALMON SUPPLE IN ID RIVERS - SHOSHONE-BANNUCK TRB | | TSV | 6.2C | 99 |
| 8910400 | F1124 | HISTORICAL DATABASE | x | MS | 7.6 | 150 |
| 8910500 | F2108 | YAKIMA - SPECIES INTERACTION STUDY | | LGS | 6.2C | 95 |
| 8910600 | F1110 | OVERHEAD COSTS FOR E - UMATILLA PASSAGE EXP RPA | | JGM | | |
| 8910700 | FIIOI | EPIDEMIOLOGICAL SURVIVAL METHOD | | PHP | 6.6 | 30 |
| 8910900 | FIIOI | COLUMBIA RIVER SALMON PASSAGE MODEL | | DRA | 7.3 | 143 |
| 8910801 | FIIOI | PARTICIPATION IN ANAL METHODS COORD/DOC CRITFC | | DRA | 7.3 | 144 |
| 8910802 | FIIOI | PARTICIPATION IN ANAL METHODS COORD/DOC ODFW | | DRA | 7.3 | 144 |
| 8910803 | FIIOI | PARTICIPATION IN ANAL METHODS COORD/DOC IDFG | | DRA | 7.3 | 144 |
| 8910804 | FIIOI | PARTICIPATION IN ANAL METHODS COORD/DOC WDF | | DRA | 7.3 | 144 |
| 8910805 | FIIOI | PARTICIPATION IN ANAL METHODS COORD/DOC PSMFC | | DRA | 7.3 | 144 |
| 9000500 | F2106 | UMATILLA HATCHERY - MONITORING/EVAL PRJCTS | | JAB | 6.28 | 92 |
| 9000501 | F1121 | UMATILLA BASIN NATURAL PRODUCTION M&E | | JAB | 6.2B | 82 |
| 9001800 | F1204 | HABITAT IMPROVEMENT PROJECTS - LAKE ROOSEVELT | | SML | 8 | 161 |
| 9002402 | F1121 | LAW ENFORCEMENT OF DEPLETED SALMON STOCKS | | scv | 5.5C.2 | 53 |
| 9004400 | F1202 | COEUR D'ALENE FISHERY INVESTIGATION | | RJA | 8 | 160 |
| 9005200 | F1114 | PERF/STOCK PROD IMPACTS OF HATCHERY SUPPL | | TSV | 6.2C | 99 |
| 9005500 | F1114 | EFFECTIVENESS OF SUPPLEMENTATION STRATEGIES SUMMER STEALHEAD ID. | x | TV | 6.2C | 100 |
| 9005800 | F2108 | YAKIMA HATCHERY - PROJECT LEADER FUNCTION | | TJC | 6.1 | 56 |
| 9006100 | F1121 | FUNGAL INFECTION: SPRING/SUMMER CHINOOK SALMON | | REW | 6.28 | 95 |
| 9006400 | F2108 | KLICKITAT RIVER MONITORING | | LGS | 6.2C | 95 |
| 9006500 | F2108 | CHANDLER JUVENILE TRAP CALIBRATION | | LGS | 6.2C | 96 |
| 9006900 | F2108 | YAKIMA HATCHERY - FINAL DESIGN | | MEN | 6.2B | 79 |

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|-----------|-------|--|----------------------|-------|----------------------------|--------------|
| 9007100 | F2108 | YAKIMA RIVER SMOLT LOSS EVALUATION | | LGS | 6.4 | 116 |
| 9007200 | F2108 | YAKIMA COMPUTER INFORMATION SYSTEM | | MEN | 7.6 | 149 |
| 9007400 | F2108 | YAKIMA MONITORING AND EVALUATION PROGRAM | X | MEN | 7.2 | 139 |
| 9007700 | F1122 | SQUAWFISH MANAGEMENT (RE: 89-028) | | WCM | 3.8 (3.8B.1) | 39 (41) |
| 9007800 | F1122 | SQUAWFISH MANAGEMENT (SUPPORT) | | WCM | 3.8 | 40 |
| 9008000 | F11PM | COLUMBIA BASIN PIT-TAG INFORMATION SYSTEM (PTAGIS) | | JAB | 3.2 | 23 |
| 9009200 | F1301 | CONFORTH RANCH -OPTION | | JLD | 9 | 173 |
| 9009300 | F1121 | GENETIC ANALYSES OF ONCORHYNCHUS NERKA (ESA) | | REW | 6.3A.1 (6.6) | 111 (130) |
| 9101400 | F2106 | UMATILLA SATELLITES - PLNG,SITING,DESIGN,CNSTR | | JGM | 6.2C | 96 |
| 9101700 | F1101 | Lower Granite Reservoir Migration Study | X | PP | 3.6 (3.9.11) | 31 (42) |
| 9101900 | F1201 | HUNGRY HORSE FISHERIES MITIGATION - COORDINATION | | RAM | 8 | 162 |
| 9101903 | F1201 | HUNGRY HORSE DAM FISHERIES MITIGATION HABITAT IMPROVEMENT | | RAM | 8 | 162 |
| 9101904 | F1201 | KOKANEE PRODUCTION AT CRESTON NFH | | RAM | 8 | 162 |
| 9102200 | F1201 | IMPLE OF ELISA-BASED SEGREG OF ADLT CHNK FOR BKD | | RAM | 6.28 | 84 |
| 9102800 | F1101 | PIT TAGGING WILD CHINOOK | X | PHP | 3.2, 3.6F.7 | 21 (35) |
| 9102900 | F1121 | EARLY LIFE HISTORY OF FALL CHIN IN COL RV (ESA) | | DLW | 4.1.12B (6.2A , 6.3B.3, 5) | 59 (45, 111) |
| 9104000 | F2115 | BONNEVILLE DAM JUVENILE FISH SAMPLING FACILITY | | SML | 3.6F.7 (3.7, 8) | 37.35 |
| 9104100 | F1101 | NON-TREATY STORAGE COMPENSATION (NTSA) | X | DMD | 3.2 | 21 |
| 9104500 | F2108 | ADULT TRAP PRE-DESIGN | X | MEN | 6.4 | 121 |
| 9104600 | F1501 | SPOKANE TRIBAL (GALBR SPRGS) HATCHERY-O&M | | MLB | 8 | 160 |
| 9104700 | F1501 | SHERMAN CREEK HATCHERY - O&M | | MLB | 8 | 161 |
| 9104900 | F2108 | EVALUATION OF ENVIRONMENTAL IMPACTS OF THE YAKIMA PRODUCTION | X | MEN | 6.1 | 57 |
| 9105000 | F11PM | MISC PROGRAM SUPPORT INCL OFFSITE ROOM RENTALS | | s c v | | |
| 9105100 | F1121 | ANALYSIS OF REL OF RIVERFLOW TO TRAVEL TIME (ESA) | | PHP | 6.28 | 86 |

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| 9105500 | F2108 | SUPPLEMENTATION FISH QUALITY (YAKIMA) | | LGS | 6.2C | 96 |
| 9105700 | F2113 | YAKIMA PHASE 2 SCREEN FABRICATION | | MEN | 6.4 | 115 |
| 9105900 | F2108 | HABITAT INVENTORY/FOOD ABUNDANCE DATA COLLECTION | | LGS | 6.4 | 116 |
| 9106000 | F1301 | PEND OREILLE WETLANDS | | JD | 9 | 171 |
| 9106100 | F1301 | TRACY ROCK SHARP TAIL GROUSE | | JD | 9 | 172, 175 |
| 9106200 | F1301 | BLUE CREEK WINTER RANGE | | JD | 9 | 172, 175 |
| 9106300 | Unassigned | PALISADES BALD EAGLE/ S FORK SNAKE RIVER | | RW | 9 | 174 |
| 9106400 | F2117 | PIT TAG FACILITIES | | WCM | 3.6F.8 (3.7) | 35 (37) |
| 9106600 | Unassigned | ICE HARBOR LOWER GRANITE FISH TRAPPING IMPROVEMENTS | x | JPM | 6.4 | 122 |
| 9106700 | F1101 | IDAHO WATER RENTAL - RESIDENT F&W IMPACTS | | DLW | 3.3 | 26 |
| 9107100 | F1121 | SNAKE RIVER SOCKEYE SALMON HABITAT AND LIMNOLOGIC RESEARCH | | JCG | 6.3A.1 (6.6) | 111,131 |
| 9107200 | F1121 | IDAHO SOCKEYE SALMON RESEARCH AND RECOVERY | | JCG | 6.3A.1 (6.6) | 111, 132 |
| 9107300 | F1121 | IDAHO NATURAL PRODUCTION MONITORING/EVAL 83-7 (ESA) | | SWB | 6.2A | 61 |
| 9107500 | F2113 | YAKIMA PHASE II SCREENS - CONSTRUCTION | | MEN | 6.4 | 115 |
| 9107800 | F1301 | BURLINGTON BOTTOMS - PHASE I | | CDC | 9 | 171 |
| 9200500 | F2108 | EVALUATION OF YAKIMA HATCHERY | | MEN | 7.2 | 140 |
| 9200900 | F1501 | YAKIMA SCREENS - PHASE II - O & M | | DAN | 6.28 (6.4) | 79, 115 |
| 9201000 | F1202 | FORT HALL BOTTOMS HABITAT ENHANCEMENT SHOSHONE/BANNOCK TRIBES | x | SB | 6.4 | 166 |
| 9201400 | F2108 | YAKIMA HABITAT ASSESSMENT AND IMPROVEMENT | | LGS | 6.4 | 117 |
| 9201500 | F2116 | DRYDEN SCREENS DESIGN AND CONSTRUCTION | x | MEN | 6.4 | 121 |
| 9201900 | F2108 | SCIENTIFIC SVCE FOR SUPPLEMENTATION RESEARCH | | TSV | 6.2C (6.2C.1) | 94, 101 |
| 9202100 | F2108 | EXPERIMENTAL DESIGN DEVELOPMENT - CWU | | LGS | 6.2C | 96 |
| 9202200 | F1121 | WILD SMOLT BEHAVIOR/PHYSIOLOGY (ESA) | | TSV | 6.2A | 60 |
| 9202400 | F1121 | HARVEST ENFORCEMENT PROGRAM | | s c v | 5.5 (5.5C.2) | 53 |

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| 9202403 | F1121 | HARVEST ENFORCEMENT PROGRAM | | SCV | 5.5C.2 | 53 |
| 9202404 | F1121 | LAW ENFORCEMENT OF DEPLETED SALMON STOCKS | | SCV | 5.5C.2 | 53 |
| 9202405 | F1121 | LAW ENFORCEMENT OF DEPLETED SALMON STOCKS | | SCV | 5.5C.2 | 53 |
| 9202406 | F1121 | HARVEST ENFORCEMENT PROGRAM | | SCV | 5.5C.2 | 53 |
| 9202500 | F1121 | STARBUCK PASSAGE IMPROVEMENT | X | JGM | 4.1.16 | 44 (45) |
| 9202600 | F1124 | GRANDE RONDE MODEL WATERSHED PLANNING AND IMPLEMENTATION | | MS | 6.5 | 126 |
| 9202601 | F1124 | GRAND RONDE MODEL WATERSHED | | MAS | 6.5A.2 (6.5B.1) | 129 |
| 9202602 | F1124 | WASHINGTON MWS | | MAS | 6.5 (6.5A.2, 6.5B.1) | 129 |
| 9202603 | F1124 | MODEL WATERSHED STUDIES - LEMHI RIVER BASIN | | MAS | 6.5 (6.5A.2, 6.5B.1) | 128, 129 |
| 9202800 | F2117 | REGIONAL FISH SCREENING OVERSIGHT COMMITTEE | | TJC | 6.4 (6.6C.1) | 117, 135 |
| 9203200 | F11PM | LIFE CYCLE MODEL DEVEL/APPLIC TO SSP IN SNAKE RV | | MAS | 7.3 | 145 |
| 9203500 | F1121 | SCOPE GENETIC STOCK DATABASE FOR COLUMBIA RIVER STOCKS | | DW | 5.48 | 52 |
| 9204000 | F1121 | REDFISH LAKE SOCKEYE BROODSTOCK REARING/RESEARCH | | JCG | 6.6 | 132 |
| 9204100 | F1121 | FISH PASSAGE EVALUATIONS | | WCM | 4 | 44 |
| 9204200 | F1121 | FUND SNAKE RIVER EXPERIMENT PROJECT | | JLG | 6.3A | 111 |
| 9204300 | F1121 | INTEGRATED HATCHERY OPERATIONS TEAM (EIP) | | JAB | 6.2B.4, 7, 8, 9, 11, 12.13 | 57 (91) |
| 9204500 | F2601 | Phase 2 Screen Design and Construction | X | MEN | 3.7 | 37 |
| 9204600 | F1121 | EVALUATION OF INTERDAM ADULT LOSSES | X | DLW | 4.1.9 (4.1.12c, 6.3B.3, 4) | 45 (111) |
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| 9205900 | F1301 | AMAZON BASIN/EUGENE WETLANDS - PHASE I | | RLW | 9 | 171 |
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| 9206200 | F1301 | LOWER YAKIMA VALLEY WETLANDS RIPARIAN | | JD | 9 | 173, 175 |
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| 9207300 | F1121 | DEVELOPMENT OF LASER-MARKING SALMONIDS | | JAB | 3.6F.7, 6.2B18, 6.2D | 35, 92, 104 |
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| 9303300 | F2119 | S FK SALMON RIVER ANADROMOUS FISH ENHANCEMENT | | SML | 6.2A | 60 |
| 9303400 | F2119 | ANTIMONY MINE RESTORATION | | SML | 6.2A | 60 |
| 9303500 | F2119 | RED RIVER MEADOW | | SML | 6.4 | 118 |
| 9303600 | F1501 | HAYSFORK GLORYHOLE | | SML | 6.4 | 116 |
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| 9304400 | F1101 | EDF WATER ACQUISITION PILOT PROJECT | | DMD | 3.2 (3.3, 6.6A.10, 6.6B.4, 6.4B.5) | 27, 135 |
| 9304500 | F2119 | BUCK HOLLOW WATERSHED ENHANCEMENT (ODFW) | | SWB | 6.4 | 116 |
| 9305500 | F1101 | WATER PURCHASE ACQUISITION/LEASE FEE/PURCHASE OPT | | DMD | 3.3 | 27 |
| 9305600 | F1124 | ASSESSMENT OF CAPTIVE SALMONID BROODSTOCK TECH | | JAB | 6.2G.1 | 106 |
| 9305600 | F1301 | WASHINGTON COALITION MITIGATION AGREEMENT | | RLW | 9 | 175 |
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| 9306700 | F1124 | COMPREHENSIVE ENVIRONMENTAL ANALYSIS OF PRODUCTION (CEA) | | TC | 6.2E2 | 105 |
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| 9401100 | F1124 | COMPREHENSIVE ANALYSIS OF PRODUCTION | | TJC | 6.28 (6.2E.1, 2) | 88,105 |
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| 8300600 | F1101 | SMOLT MARKING - USFWS | | JAB | 6.2B (6.2B.17) | 78 (92) |
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| 9104100 | FIIOI | NON-TREATY STORAGE COMPENSATION (NTSA) | X | DMD | 3.2 | 21 |
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| 8909800 | F1114 | EVAL OF SUMMLMTG SALMON/CLRWTR RV W/ HATCH ST | | TSV | 6.2C | 99 |
| 8909801 | F1114 | SALM SUPPLE STUDIES IN ID RV - USFWS | | TSV | 6.2C | 99 |
| 8909802 | F1114 | SALMON SUPPLE STUDIES IN ID RV - NEZ PERCE TRB | | TSV | 6.2C | 99 |
| 8909803 | F1114 | SALMON SUPPLE IN ID RIVERS - SHOSHONE-BANNOCK TRB | | TSV | 6.2C | 99 |
| 9005200 | F1114 | PERF/STOCK PROD IMPACTS OF HATCHERY SUPPL | | TSV | 6.2C | 99 |
| 9005500 | F1114 | EFFECTIVENESS OF SUPPLEMENTATION STRATEGIES SUMMER STEALHEAD ID. | x | TV | 6.2C | 100 |
| 9401600 | F1114 | SUPPLEMENTATION PROJECTS | | TSV | 6.2C.3 | 101 |

F1119 - YAKIMA RIVER BASIN

| | | | | | | |
|---------|-------|--------------------------------|--|-----|--------------|----------|
| 8506200 | F1119 | PASSAGE IMPROVEMENT EVALUATION | | LGS | 6.2C.2 (6.4) | 101, 121 |
|---------|-------|--------------------------------|--|-----|--------------|----------|

F1121 - ESA IMPLEMENTATION

| | | | | | | |
|---------|-------|--|--|-----|---------------------------|--------------|
| 8906500 | F1121 | ANN CD WIRE TAG PROG-MISSING PROD OR/WA (USFWS) | | JAB | 5.4C (6.2B) | 52, 83 |
| 8906600 | F1121 | ANN CD WIRE TAG PROG-MISSING PROD WA HTCH (WDF) | | JAB | 5.4C (6.2B) | 52, 85 |
| 8906900 | F1121 | ANN CD WIRE TAG PROG-MISSING PROD OR HTC (ODFW) | | JAB | 5.4C (6.2B) | 52, 85 |
| 9000501 | F1121 | UMATILLA BASIN NATURAL PRODUCTION M&E | | JAB | 6.2B | 82 |
| 9002402 | F1121 | LAW ENFORCEMENT OF DEPLETED SALMON STOCKS | | SCV | 5.5C.2 | 53 |
| 9006100 | F1121 | FUNGAL INFECTION: SPRING/SUMMER CHINOOK SALMON | | REW | 6.2B | 85 |
| 9009300 | F1121 | GENETIC ANALYSES OF ONCORHYNCHUS NERKA (ESA) | | REW | 6.3A.1 (6.6) | 111 (130) |
| 9102900 | F1121 | EARLY LIFE HISTORY OF FALL CHIN IN COL RV (ESA) | | DLW | 4.1.12B (6.2A, 6.3B.3, 5) | 59 (45, 111) |
| 9105100 | F1121 | ANALYSIS OF REL OF RIVERFLOW TO TRAVEL TIME (ESA) | | PHP | 6.2B | 86 |
| 9107100 | F1121 | SNAKE RIVER SOCKEYE SALMON HABITAT AND LIMNOLOGIC RESEARCH | | JCG | 6.3A.1 (6.6) | 111,131 |
| 9107200 | F1121 | IDAHO SOCKEYE SALMON RESEARCH AND RECOVERY | | JCG | 6.3A.1 (6.6) | 111, 132 |
| 9107300 | F1121 | IDAHO NATURAL PRODUCTION MONITORING/EVAL 83-7 (ESA) | | SWB | 6.2A | 61 |
| 9202200 | F1121 | WILD SMOLT BEHAVIOR/PHYSIOLOGY (ESA) | | TSV | 6.2A | 60 |

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| 9202400 | F1121 | HARVEST ENFORCEMENT PROGRAM | | SCV | 5.5 (5.5C.2) | 53 |
| 9202401 | F1121 | HARVEST ENFORCEMENT PROGRAM | | SCV | 5.5C.2 | 53 |
| 9202403 | F1121 | HARVEST ENFORCEMENT PROGRAM | | SCV | 5.5C.2 | 53 |
| 9202404 | F1121 | LAW ENFORCEMENT OF DEPLETED SALMON STOCKS | | SCV | 5.5C.2 | 53 |
| 9202405 | F1121 | LAW ENFORCEMENT OF DEPLETED SALMON STOCKS | | SCV | 5.5C.2 | 53 |
| 9202406 | F1121 | HARVEST ENFORCEMENT PROGRAM | | SCV | 5.5C.2 | 53 |
| 9202500 | F1121 | STARBUCK PASSAGE IMPROVEMENT | x | JGM | 4.1.16 | 44 (45) |
| 9203500 | F1121 | SCOPE GENETIC STOCK DATABASE FOR COLUMBIA RIVER STOCKS | | DW | 5.4B | 52 |
| 9204000 | F1121 | REDFISH LAKE SOCKEYE BROODSTOCK REARING/RESEARCH | | JCG | 6.6 | 132 |
| 9204100 | F1121 | FISH PASSAGE EVALUATIONS | | WCM | 4 | 44 |
| 9204200 | F1121 | FUND SNAKE RIVER EXPERIMENT PROJECT | | JLG | 6.3A | 111 |
| 9204300 | F1121 | INTEGRATED HATCHERY OPERATIONS TEAM (EIP) | | JAB | 6.2B.4, 7, 8, 9, 11. 12.13 | 57 (91) |
| 9204600 | F1121 | EVALUATION OF INTERDAM ADULT LOSSES | x | DLW | 4.1.9 (4.1.12c, 6.3B.3, 4) | 45 (111) |
| 9205300 | F1121 | Ringold Hatchery Water Rights | | MEN | 6.28 | a6 |
| 9205500 | F1121 | EVALUATE FEASIBILITY OF USING VIDEO BASED COUNTING | | DW | 4.1.10 | 45 |
| 9207300 | F1121 | DEVELOPMENT OF LASER-MARKING SALMONIDS | | JAB | 3.6F.7, 6.2B18, 6.2D | 35, 92, 104 |
| 9207700 | F1121 | YOUNGS BAY TERMINAL FISHERY | x | REW | 5.3 | 49 |
| 9209300 | F1121 | FUND ANALYSIS OF OPORTUNITIES FOR IHOT | | JB | 6.2B.15 | 92 |
| 9300700 | F1121 | GENETIC STOCK IDENTIFICATION EXPANSION PROJECT | | REW | 5.4 (6.4) | 51,122 |
| 9300800 | F1121 | ALLOWABLE GAS SUPERSATURATION AT DAMS | | GRB | 3.6 (3.6F.9) | 31 (35) |
| 9301200 | F1121 | COLUMBIA RIVER/ESTUARY CARRYING CAPACITY STUDY | | JCG | 6.1 (6.1C.1) | 56 (57) |
| 9302400 | F1121 | Survival Rates of Fish | | PP | 3.9.11 | 42 |
| 9306000 | F1121 | COLUMBIA RIVER TERMINAL FISHERIES RESEARCH PROJECT | | SHS | 5.3 | 49 |

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| 9307700 | F1121 | Youngs Bay Terminal Fishery | | SS | 5.3 | 41 |
| F1122 - SQUAWFISH MANAGEMENT PROGRAM | | | | | | |
| 8200300 | F1122 | PREDATION/DEVELOPMENT OF PREY PROTECTION | | WCM | 3.8 (3.8B.2) | 40 (41) |
| 9007700 | F1122 | SQUAWFISH MANAGEMENT (RE: 89-028) | | WCM | 3.8 (3.8B.1) | 39 (41) |
| 9007800 | F1122 | SQUAWFISH MANAGEMENT (SUPPORT) | | WCM | 3.8 | 40 |
| F1124 - NEW AMENDED PROGRAM - PHASE III | | | | | | |
| 8910400 | F1124 | HISTORICAL DATABASE | x | MS | 7.6 | 150 |
| 9202600 | F1124 | GRANDE RONDE MODEL WATERSHED PLANNING AND IMPLEMENTATION | | MS | 6.5 | 126 |
| 9202601 | F1124 | GRAND RONDE MODEL WATERSHED | | MAS | 6.5A.2 (6.5B.1) | 129 |
| 9202602 | F1124 | WASHINGTON MWS | | MAS | 6.5 (6.5A.2, 6.5B.1) | 129 |
| 9202603 | F1124 | MODEL WATERSHED STUDIES - LEMHI RIVER BASIN | | MAS | 6.5 (6.5A.2, 6.5B.1) | 128, 129 |
| 9305600 | F1124 | ASSESSMENT OF CAPTIVE SALMONID BROODSTOCK TECH | | JAB | 6.2G.1 | 108 |
| 9306700 | F1124 | COMPREHENSIVE ENVIRONMENTAL ANALYSIS OF PRODUCTION (CEA) | | TC | 6.2E2 | 105 |
| 9307000 | F1124 | GRANDE RONDE RADIO TELEMETRY TRACKING | | MAS | 7.6.1 | 151 |
| 9401100 | F1124 | COMPREHENSIVE ANALYSIS OF PRODUCTION | | TJC | 6.2B (6.2E.1, 2) | 88, 105 |
| F11PM - PROGRAM SUPPORT COSTS | | | | | | |
| 8509000 | F11PM | CLERK-TYPIST SERVICES | | BAB | | |
| 8611800 | F11PM | FISH AND WILDLIFE PROGRAM ASSISTANCE EFFORT | | CC | 3.6F.11 (3.6F.12) | 35 |
| 8741300 | F11PM | FISH AND WILDLIFE TASK ORDER AGREEMENT | x | PHP | 7.3 | 146 |
| 8810801 | F11PM | COORDINATED INFORMATION SYSTEM (CIS) | | KLB | 7.6 | 149 |
| 8813000 | FIIPM | OVERHEAD COSTS FOR A - LEGAL STAFF SUPPORT | | CHR | | |
| 8903300 | FIIPM | OVERHEAD (OTH OBJ) | | CHR | | |
| a903400 | FIIPM | OVERHEAD (EMPLOYEE DEVELOPMENT-TRAINING) | | CHR | | |
| 8906200 | FIIPM | IPP COORDINATOR/SRG SUPPORT (IPP) | | MJS | 7.1 | 138 |

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| 8907201 | F11PM | SCIENTIFIC REVIEW GROUP SUPPORT - DOE (IPP) | | MJS | 7.1 | 138 |
| 9008000 | F11PM | COLUMBIA BASIN PIT-TAG INFORMATION SYSTEM (PTAGIS) | | JAB | 3.2 | 23 |
| 9105000 | F11PM | MISC PROGRAM SUPPORT INCL OFFSITE ROOM RENTALS | | SCV | | |
| 9203200 | F11PM | LIFE CYCLE MODEL DEVEL/APPLIC TO SSP IN SNAKE RV | | MAS | 7.3 | 145 |
| 9206500 | F11PM | F&W PUBLIC EDUCATION PROJECT | | WCM | 6.5 | 127 |
| 9207100 | F11PM | ASSESS TECH TO IMPROVE MEASRMNT CAPABILITIES (M&E) | x | PHP | 3.7B.7 (7.2) | 140 (38) |
| 9301100 | F11PM | REGIONAL HABITAT EDUCATION SUPPORT | | SML | 6.5 | 127 |
| 9302000 | F11PM | ADP SUPPORT FOR PMIS DEVELOPMENT | | KEH | 7.3 (7.7) | 146, 151 |
| 9302200 | F11PM | OVERHEAD COSTS FOR E - PROGRAM SUPPORT COSTS | | CHR | | |
| 9303700 | F11PM | COST EFF ANALYSIS, MODEL ENHANCMT & SUPPORT-RFF | | KLB | 7.2E.1 (7.3) | 141, 145 |
| 9400300 | F11PM | OVERHEAD (PERS/TRVL) - FY 1994 | | CHR | | |
| 9401300 | F11PM | ANNUAL PROJECTS REVIEW | | GRB | 7.5 | 147 |

F1201 - RESIDENT FISH - MONTANA

| | | | | | | |
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| 8346700 | F1201 | LIBBY RESERVOIR LEVELS | | REW | 9 | 163 |
| 9101900 | F1201 | HUNGRY HORSE FISHERIES MITIGATION - COORDINATION | | RAM | 9 | 162 |
| 9101903 | F1201 | HUNGRY HORSE DAM FISHERIES MITIGATION HABITAT IMPROVEMENT | | RAM | 9 | 162 |
| 9101904 | F1201 | KOKANEE PRODUCTION AT CRESTON NFH | | RAM | 9 | 162 |
| 9102200 | F1201 | IMPLE OF ELISA-BASED SEGREG OF ADLT CHNK FOR BKD | | RAM | 6.28 | 94 |
| 9401000 | F1201 | HUNGRY HORSE MITIGATION - EXCESSIVE WITHDRAWAL | | RJA | 9 | 164 |

F1202 - RESIDENT FISH - IDAHO

| | | | | | | |
|---------|-------|---|---|-----|-------------------|-----|
| 9704700 | F1202 | Unknown | | CG | 3.3B.3 | 21 |
| 9709900 | F1202 | Funded through SOR | | c c | 3.6F.11 (3.6F.12) | 35 |
| 9004400 | F1202 | COEUR D'ALENE FISHERY INVESTIGATION | | RJA | 8 | 160 |
| 9201000 | F1202 | FORT HALL BOTTOMS HABITAT ENHANCEMENT SHOSHONE/BANNOCK TRIBES | x | SB | 8 | 166 |

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| 9400400 | F1202 | CABINET GORGE HATCHERY IMPROVEMENTS | | REW | 8 | 162 |
| F1203 - STURGEON PROJECTS | | | | | | |
| 8605000 | F1203 | EVALUATE STURGEON PHYSICAL HABITAT REQUIREMENTS | | REW | 8 | 163 |
| F1204 - RESIDENT FISH - WASHINGTON | | | | | | |
| 8806300 | F1204 | MONITOR & EVAL IMPROV PRJCTS - LK ROOSEVELT | | CDC | 3.6F.11(8.0) | 164 (35) |
| 9001800 | F1204 | HABITAT IMPROVEMENT PROJECTS - LAKE ROOSEVELT | | SML | 8 | 161 |
| F1206 - STURGEON PROJECTS (ESA) | | | | | | |
| 8806400 | F1206 | EXPRMNTL STURGEON HTCH& KOOTENAI WH STURG INVST | | REW | 8 | 161 |
| 8806500 | F1206 | KOOTENAI WHITE STURGEON INVST/EXPRMNTL CULTURE | | REW | 8 | 161 |
| 9302700 | F1206 | DEVELOPMENT of BREEDING PLANS FOR THREATENED FISH POPULATIONS IN KOOTENAI | X | REW | 8 | 165 |
| 9401200 | F1206 | KOOTENAI RIVER WHITE STURGEON - M&E | | REW | 8 | 162 |
| F1207 - NEW AMENDED PROGRAM - PHASE IV | | | | | | |
| 9400600 | F1207 | NEW AMENDED PROGRAM - PHASE IV | | RJA | 8.0 (9.0) | 166, 171 |
| F1301 - WILDLIFE PROGRAM - EXPENSE | | | | | | |
| 8909100 | F1301 | OVERHEAD COSTS FOR M - WILDLIFE PROGRAM | | RLW | | |
| 9009200 | F1301 | CONFORTH RANCH - OPTION | | JLD | 9 | 173 |
| 9106000 | F1301 | PEND OREILLE WETLANDS | | JD | 9 | 171 |
| 9106100 | F1301 | TRACY ROCK SHARP TAIL GROUSE | | JD | 9 | 172, 175 |
| 9106200 | F1301 | BLUE CREEK WINTER RANGE | | JD | 9 | 172, 175 |
| 9107800 | F1301 | BURLINGTON BOTTOMS - PHASE I | | CDC | 9 | 171 |
| 9204700 | F1301 | PEREGRINE FALCON REINTRODUCTION | | JD | 9 | 172, 175 |
| 9204800 | F1301 | HELL'S GATE BIG GAME WINTER RANGE | | JD | 9 | 172, 175 |
| 9204900 | F1301 | VANCOUVER LOWLANDS | | JD | 9 | 173, 175 |
| 9205900 | F1301 | AMAZON BASIN/EUGENE WETLANDS - PHASE I | | RLW | 9 | 171 |
| 9206000 | F1301 | CAMAS PRAIRIE | | CC | 9 | 174 |

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| 9206100 | F1301 | PACK RIVER | | CC | 9 | 175 |
| 9206200 | F1301 | LOWER YAKIMA VALLEY WETLANDS RIPARIAN | | JD | 9 | 173, 175 |
| 9206800 | F1301 | WESTERN POND TURTLE | | RW | 9 | 174 |
| 9206900 | F1301 | CRAIG MOUNTAIN INTEIM MANAGEMENT | | JD | 9 | 174 |
| 9300900 | F1301 | PYGMY RABBIT | | JD | 9 | 172, 175 |
| 9305800 | F1301 | WASHINGTON COALITION MITIGATION AGREEMENT | | RLW | 9 | 175 |
| 9306300 | F1301 | WASHINGTON PROJECT COORDINATION | | JDH | 9 | 174 |

F1501 O&M PROGRAM

| | | | | | | |
|---------|-------|--|--|-----|------|---------|
| 8110800 | F1501 | WARM SPRINGS HABITAT / PROD POTENTIAL ASSESSMENT | | SML | 6.2A | 63 |
| 8335900 | F1501 | BEAR VALLEY / YANKEE FK / EAST FK HABITAT IMP | | SML | 6.2A | 71 |
| 8343500 | F1501 | BONIFER/MINTHORN RELEASE & COLLECTION FACILITIES | | JAB | 6.4 | 80, 116 |
| 8343600 | F1501 | UMATILLA PASSAGE O&M | | JGM | 6.2A | 111 |
| 8400800 | F1501 | NORTH FORK JOHN DAY HABITAT IMPROVEMENT | | ACT | 6.2A | 65 |
| 8400900 | F1501 | JOSEPH CREEK, GRANDE RONDE RIVER, OREGON (USFS) | | SML | 6.2A | 70 |
| 8401100 | F1501 | COLLAWASH RIVER FALLS PASSAGE SUB-PROJECT | | ACT | 6.2A | 62 |
| 8402100 | F1501 | MAINSTEM, MIDDLE FORK, JOHN DAY RIVER | | SML | 6.2A | 67 |
| 8402200 | F1501 | MAINSTEM AND UPPER JOHN DAY RIVER | | SML | 6.2A | 69 |
| 8402300 | F1501 | CAMAS CREEK, IDAHO | | DAN | 6.2A | 71 |
| 8402400 | F1501 | MARSH / ELK / UPPER SALMON RIVER, IDAHO | | SML | 6.2A | 72 |
| 8402500 | F1501 | JOSEPH CREEK, GRANDE RONDE RIVER, OREGON (ODFW) | | SML | 6.2A | 70 |
| 8403300 | F1501 | UMATILLA HATCHERY | | JGM | 6.2B | 81 |
| 8403306 | F1501 | UMATILLA HATCHERY - WATER SUPPLY | | JGM | 6.2B | 81 |
| 8406200 | F1501 | COORDINATION OF TROUT CREEK HABITAT RESTORATION | | SML | 6.2A | 65 |

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| 8503800 | F1501 | COLVILLE HATCHERY | | MLB | 8 | 160 |
| 8507100 | F1501 | SOUTH FORK JOHN DAY RIVER, MAINSTEM / IZEE FALLS | | SML | 6.2A | 69 |
| 8607500 | F1501 | LITTLE NACHES PASSAGE | | DAN | 6.2A | 71 |
| 8607900 | F1501 | FIFTEENMILE CREEK | | ACT | 6.2A | 63 |
| 8607901 | F1501 | FIFTEENMILE CREEK - PHASE IV-V-ODFW | | ACT | 6.4 | 115 |
| 8612400 | F1501 | INSP SERV FOR LITTLE FALL CREEK PASS RE:86-090 | | DAN | 6.2A | 63 |
| 8710000 | F1501 | UMATILLA HABITAT IMPROVEMENT | | JAB | 6.4 | 120 |
| 8710001 | F1501 | UMATILLA HABITAT IMPROVEMENT / CTUIR | | JAB | 6.4 | 120 |
| 8710002 | F1501 | UMATILLA HABITAT IMPROVEMENT / ODFW | | JAB | 6.4 | 121 |
| 8811500 | F1501 | YAKIMA HATCHERY - CONSTRUCTION | | MEN | 6.2B | 78 |
| 9104600 | F1501 | SPOKANE TRIBAL (GALBR SPRGS) HATCHERY - O&M | | MLB | 8 | 160 |
| 9104700 | F1501 | SHERMAN CREEK HATCHERY - O&M | | MLB | 8 | 161 |
| 9200900 | F1501 | YAKIMA SCREENS - PHASE II - O & M | | DAN | 6.2B (6.4) | 79, 115 |
| 9300300 | F1501 | SHERMAN CREEK BYPASS VISITORS' CENTER | | DAN | 8 | 163 |
| 9303200 | F1501 | UMATILLA RIVER BASIN ANADROMOUS FISH PROJECT | | JGM | 6.4 (6.4B.5) | 120 |
| 9303600 | F1501 | HAYSFORK GLORYHOLE | | SML | 6.4 | 118 |
| 9303800 | F1501 | N FK JOHN DAY ANADR FISH HABITAT ENHCMNT - USFS | | ACT | 6.2A | 65 |
| 9303900 | F1501 | JOHN DAY FISH HABITAT IMPROVEMENT - ODFW | | ACT | 6.4 | 117 |
| 9304000 | F1501 | FIFTEENMILE CREEK HABITAT IMPROVEMENT | | ACT | 6.2A | 63 |
| 9304200 | F1501 | GRANDE RONDE FISH HABITAT IMPROVEMENT | | ACT | 6.4 | 117 |
| F2106 - UMATILLA HATCHERY | | | | | | |
| 8403300 | F2106 | UMATILLA HATCHERY | | JGM | | 81 |
| 8403306 | F2106 | UMATILLA HATCHERY - WATER SUPPLY | | JGM | 6.2B | 81 |

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| 9000500 | F2106 | UMATILLA HATCHERY - MONITORING/EVAL PRJCTS | | JAB | 6.2B | 82 |
| 9101400 | F2106 | UMATILLA SATELLITES - PLNG,SITING,DESIGN,CNSTR | | JGM | 6.2C | 96 |
| F2107 - NEZ PERCE HATCHERY | | | | | | |
| 8335000 | F2107 | NEZ PERCE TRIBAL HATCHERY | | SML | 6.2C | 97 |
| 8812600 | F2107 | Nez Perce Technical Support | x | SL | 6.2C | 94 |
| F2108 - YAKIMA HATCHERY | | | | | | |
| 8604500 | F2108 | CLE ELUM SOCKEYE STUDY | | LGS | 6.2B | 78 |
| 8803400 | F2108 | OVERHEAD COSTS FOR E - YAKIMA HATCHERY | | TJC | | |
| 8812000 | F2108 | YAKIMA NATURAL PRODUCTION & ENHANCEMENT PROGRAM | | LGS | 6.2C | 95 |
| 8908200 | F2108 | YAKIMA HATCHERY EXPERIMENTAL DESIGN - WDF | | LGS | 6.2B | 79 |
| 8908900 | F2108 | YAKIMA/KLICKITAT RADIO TELEMETRY STUDY | | LGS | 6.2C | 95 |
| 8910500 | F2108 | YAKIMA - SPECIES INTERACTION STUDY | | LGS | 6.2C | 95 |
| 9005800 | F2108 | YAKIMA HATCHERY - PROJECT LEADER FUNCTION | | TJC | 6.1 | 66 |
| 9006400 | F2108 | KLICKITAT RIVER MONITORING | | LGS | 6.2C | 95 |
| 9006500 | F2108 | CHANDLER JUVENILE TRAP CALIBRATION | | LGS | 6.2C | 96 |
| 9006900 | F2108 | YAKIMA HATCHERY - FINAL DESIGN | | MEN | 6.2B | 79 |
| 9007100 | F2108 | YAKIMA RIVER SMOLT LOSS EVALUATION | | LGS | 6.4 | 116 |
| 9007200 | F2108 | YAKIMA COMPUTER INFORMATION SYSTEM | | MEN | 7.6 | 149 |
| 9007400 | F2108 | YAKIMA MONITORING AND EVALUATION PROGRAM | x | MEN | 7.2 | 139 |
| 9104500 | F2108 | ADULT TRAP PRE-DESIGN | x | MEN | 6.4 | 121 |
| 9104800 | F2108 | EVALUATION OF ENVIRONMENTAL IMPACTS OF THE YAKIMA PRODUCTION | x | MEN | 6.1 | 57 |
| 9105500 | F2108 | SUPPLEMENTATION FISH QUALITY (YAKIMA) | | LGS | 6.2C | 96 |
| 9105900 | F2108 | HABITAT INVENTORY/FOOD ABUNDANCE DATA COLLECTION | | LGS | 6.4 | 116 |
| 9200500 | F2108 | EVALUATION OF YAKIMA HATCHERY | | MEN | 7.2 | 140 |

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| 9201400 | F2108 | YAKIMA HABITAT ASSESSMENT AND IMPROVEMENT | | LGS | 6.4 | 117 |
| 9201800 | F2108 | SCIENTIFIC SVCE FOR SUPPLEMENTATION RESEARCH | | TSV | 6.2C (6.2C.1) | 94, 101 |
| 9202100 | F2108 | EXPERIMENTAL DESIGN DEVELOPMENT - CWU | | LGS | 6.2C | 96 |
| F2113 - YAKIMA SCREENS | | | | | | |
| 9105700 | F2113 | YAKIMA PHASE 2 SCREEN FABRICATION | | MEN | 6.4 | 115 |
| 9107500 | F2113 | YAKIMA PHASE II SCREENS - CONSTRUCTION | | MEN | 6.4 | 115 |
| F2114 - NE OREGON HATCHERY | | | | | | |
| 8805300 | F2114 | NE ORE SPRING CHINOOK OUTPLANTING/FACILITY | | JGM | 6.2B | 80 |
| F2115 - BONNEVILLE FISH SAMPLING FACILITY | | | | | | |
| 9104000 | F2115 | BONNEVILLE DAM JUVENILE FISH SAMPLING FACILITY | | SML | 3.6F.7 (3.7, 8) | 37, 35 |
| F2116 - DRYDEN DAM FISH SCREENS | | | | | | |
| 9201500 | F2116 | DRYDEN SCREENS DESIGN AND CONSTRUCTION | x | MEN | 6.4 | 121 |
| F2117 - ESA IMPLEMENTATION - CAPITAL | | | | | | |
| 9106400 | F2117 | PIT TAG FACILITIES | | WCM | 3.6F.8 (3.7) | 35 (37) |
| 9202800 | F2117 | REGIONAL FISH SCREENING OVERSIGHT COMMITTEE | | TJC | 6.4 (6.6C.1) | 117, 135 |
| 9207800 | F2117 | IDAHO FISH SCREEN SHOP | x | TC | 6.4 | 122 |
| 9306200 | F2117 | UPPER SALMON RIVER ANADROMOUS FISH PASSAGE | | DAN | 6.5 | 125 |
| 9306600 | F2117 | OREGON FISH SCREEN SHOP | | JGM | 6.4 | 122 |
| 9400900 | F2117 | PORTABLE TRAP (EIP) | x | JGM | 6.2G.5 | 108 |
| 9401500 | F2117 | IDAHO FISH SCREENING IMPROVEMENT | | DAN | 6.4 | 123 |
| F2119 - NEW AMENDED PROGRAM - PHASE III (CAPITAL) | | | | | | |
| 9301400 | F2119 | NEW AMENDED PROGRAM PHASE III (CAPITAL) | | TJC | 6.2B | 87 |
| 9303000 | F2119 | BUCK HOLLOW WATERSHED ENHANCEMENT (SWCD) | | SWB | 6.4 (6.4B.5) | 118 |
| 9303300 | F2119 | S FK SALMON RIVER ANADROMOUS FISH ENHANCEMENT | | SML | 6.2A | 60 |
| 9303400 | F2119 | ANTIMONY MINE RESTORATION | | SML | 6.2A | 60 |
| 9303500 | F2119 | RED RIVER MEADOW | | SML | 6.4 | 118 |

| PROJ NUM: | RPA: | PROJECT TITLE: | ONGOING WO 94 FUNDS: | COTR: | AREA OF INTEREST: | PAGE: |
|--|-------------------------|---|----------------------|-------|-------------------|----------|
| 9304100 | F2119 | CLACKAMAS RIVER FISH HABITAT & RIPARIAN | | ACT | 6.2A | 72 |
| 9304500 | F2119 | BUCK HOLLOW WATERSHED ENHANCEMENT (ODFW) | | SWB | 6.4 | 118 |
| F2130 - HOOD RIVER PRODUCTION PROJECT (NEOH) | | | | | | |
| 9301900 | F2130 | DESIGN/CONSTRUCT POWERDALE DAM FACILITIES (ODFW) | | JGM | 6.4 | 121 |
| F2301 - WILDLIFE TRUSTS | | | | | | |
| 8905200 | F2301 | MONTANA WILDLIFE TRUST | | RLW | 9 | 171 |
| 9205700 | F2301 | DWORSHAK WILDLIFE MITIGATION TRUST | | RLW | 9 | 173 |
| F2601 - PRE-ENGINEERING DESIGN | | | | | | |
| 8803600 | F2601 | OVERHEAD COSTS FOR E - CAPITAL PROJ | | TJC | | |
| 8803700 | F2601 | OVERHEAD COSTS FOR M - CAPITAL PROJ | | TJC | | |
| 9204500 | F2601 | Phase 2 Screen Design and Construction | x | MEN | 3.7 | 37 |
| F2612 - PRE-ENGINEERING DESIGN - NE OREGON HATCHERY | | | | | | |
| 8805301 | F2612 | NE ORE OUTPLNTG FACILITIES MSTR PLN - NEZ PERCE | | JAB | 6.2B | 80 |
| 8805302 | F2612 | NE ORE OUTPLNTG FACILITIES MSTR PLN - CTUIR | | JAB | 6.2B | 80 |
| 8805303 | F2612 | HOOD RV OUTPLNTG FACILITIES MSTR PLN - WARM SP TRB | | JAB | 6.2B | 80 |
| 8805304 | F2612 | NE ORE OUTPLNTG FACILITIES MSTR PLN - ODFW | | JAB | 6.2B | 80 |
| F2615 - PRE-ENGINEERING - HUNGRY HORSE HATCHERIES | | | | | | |
| 9301600 | F2615 | HUNGRY HORSE RESIDENT FISH HATCHERIES | | FWH | 8 | 164 |
| 8740700 | | | | | | |
| 8740700 | Power Marketing Program | Part of SOR | | CC | 3.6F.11 | 35 |
| 8346500 | | | | | | |
| 8346500 | Power Marketing RPA | PART OF SOR | | CC | 3.6F.11 (8.0) | (35) 166 |
| 9106300 | | | | | | |
| 9106300 | Unassigned | PALISADES BALD EAGLE/ S FORK SNAKE RIVER | | RW | 9 | 174 |
| 9106600 | | | | | | |
| 9106600 | Unassigned | ICE HARBOR LOWER GRANITE FISH TRAPPING IMPROVEMENTS | x | JPM | 6.4 | 122 |
| 9202402 | | | | | | |
| 9202402 | Unassigned | HARVEST ENFORCEMNT PROGRAM | | SCV | 5.5CS | 53 |

| PROJ NUM: | RPA: | PROJECT TITLE: | ONGOING WO 94 FUNDS: | COTR: | AREA OF INTEREST: | PAGE: |
|-----------|------------|---|----------------------|-------|-------------------|-------|
| 9307000 | Unassigned | GRANDE RONDE RADIO TELEMETRY TRACKING | | MAS | 6.5 | 126 |
| 9401700 | Unassigned | IDAHO MODEL WATERSHED HABITAT PROJECT | | DAN | 6.4 | 118 |
| 9401800 | Unassigned | WASHINGTON MODEL WATERSHED HABITAT PROJECT | | MEN | 6.4 | 119 |
| 9402300 | Unassigned | HARVEST PLANNING | | SV | 5.3A.1, 5.3B1 | 50 |
| 9402600 | Unassigned | PACIFIC LAMPREY | | DAN | 6.2G9 | 108 |
| 9402700 | Unassigned | GRAND RONDE MODEL WATERSHED HABITAT PROJECT | | ACT | 6.4 | 119 |
| SS101 | Unassigned | EXPENSES OF FISHERY MANAGERS DEVELOPMENT OF REBUILDING ELEMENTS | | JEL | 2.3.2 | 14 |
| SS102 | Unassigned | SNAKE RIVER FLOW EVALUATION | | JEL | 3.3A.5 | 27 |
| SS103 | Unassigned | SNAKE RIVER FLOW EVALUATION | | JEL | 3.3B.8 | 27 |
| SS106 | Unassigned | TERMINAL HARVEST FISHERIES IN THE TRIBUTARIES | | JEL | 5.3C.1 | 50 |
| SS107 | Unassigned | WILD AND NATURAL SPAWNING POPULATION | | JEL | 6.2A | 73 |
| SS108 | Unassigned | WILD AND NATURAL SPAWNING POPULATION | | JEL | 6.2A | 73 |
| SS109 | Unassigned | WILD AND NATURAL SPAWNING POPULATION | | JEL | 6.2A | 73 |
| SS110 | Unassigned | SUBREGIONAL PLANNING PROCESS | | JEL | 6.1B1 | 57 |
| SS111 | Unassigned | INPUT ASSESSMENT OF COLUMBIA RIVER HATCHERIES | | JEL | 6.2B.2 | 91 |
| SS112 | Unassigned | INDEPENDENT AUDIT OF HATCHERY PERFORMANCE | | JEL | 6.2B13 | 91 |
| SS113 | Unassigned | ANALYSIS OF TRENDS IN HATCHERY SURVIVAL | | JEL | 6.2B14 | 92 |
| SS114 | Unassigned | SHARED FINDING OF WILLAMETTE RIVER SPRING CHINOOK MARKING | | JEL | 6.2B19 | 92 |
| SS115 | Unassigned | SNAKE RIVER SPAWNING AND REARING HABITAT (UPPER CLEARWATER) | | JEL | 6.3B5 | 111 |
| SS116 | Unassigned | CAPTIVE BROODSTOCK DEMONSTRATION | | JEL | 6.2G.2 | 108 |
| SS117 | Unassigned | RINGOLD HATCHERY | | JEL | 6.2G8 | 108 |
| SS118 | Unassigned | PORTABLE COLLECTION ACTIVITIES | | JEL | 6.2G6 | 108 |
| SS120 | Unassigned | MINAM AND WENAHA RIVERS FACILITIES | | JEL | 6.3c1 | 111 |

| PROJ NUM: | RPA: | PROJECT TITLE: | ONGOING WO 94 FUNDS: | COTR: | AREA OF INTEREST: | PAGE: |
|-----------|------------|-------------------------------|----------------------|-------|-------------------|-------|
| SS121 | Unassigned | INDEPENDENT SCIENTIFIC GROUPS | | JEL | 7.2B.1 | 141 |

Projects numbered with SS-101 through SS - 121 will be given project numbers and RPA numbers when FY94 funding is identified.

Appendix B - Acronyms Used in the AIWP

| <u>Acronym</u> | <u>Complete Title</u> |
|----------------|--|
| | Pacific Northwest Electric Power Planning and Conservation Act |
| AHTT | Ad Hoc Technical Team |
| AIWP | Annual Implementation Work Plan |
| ASCS | Agricultural Stabiiation and Conservation Service |
| BIA | Bureau of Indian Affairs |
| BCWD | Bacterial Cold Water Disease |
| BKD | Bacterial Kidney Disease |
| BLM | Bureau of Land Management |
| BOR | Bureau of Reclamation |
| BPA | Bonneville Power Administration |
| BPNL | Battelle Pacific Northwest Laboratory |
| CBFWA | Columbia Basii Fish and Wildlife Authority |
| C-E | Cost-effectiveness |
| CCT | Confederated Colville Tribes |
| CIS | Coordinated Information System |
| council | Northwest Power Planning Council |
| CRB | Columbia River Basin |
| CRITFC | Columbia River Inter-Tribal Fish Commission |
| CRSP | Columbia River Salmon Passage |
| CSKT | Confederated Salish-Kootenai Tribes |
| CTUIR | Confederated Tribes of the Umatilla Indian Reservation |
| CTWSIR | Confederated Tribes of the Warm Springs Indian Reservation |
| CWU | Central Washington University |
| CY | Calendar Year |
| DNA | Deoxyribonucleic Acid |
| DOE | Department of Energy |
| EIBS | Erythrocytic Inclusion Body Syndrome |
| EIP | Early Implementation Package |
| EIS | Environmental Impact Statement |
| ELISA | Enzyme-Linked Immunosorbent Assay |
| EPA | Environmental Protection Agency |
| EPRI | Electric Power Research Institute |
| ESA | Endangered Species Act |
| FCRPS | Federal Columbia River Power System) |
| FDA | Food and Drug Administration |
| FDTWG | Fish Disease Technical Work Croup |
| FONSI | Finding of No Significant Impact |
| FY | Fiscal Year |
| HEP | Habitat Evaluation Procedure |
| HETWG | Hatcherv Effectiveness Technical Work Group |
| HU | Habitat Unit |
| ICFWRU | Idaho Cooperative Fish and Wildlife Research Unit |

| <u>Acronym</u> | <u>Complete Title</u> |
|----------------|--|
| IDFG | Idaho Department of Fish and Game |
| IFIM | I nstream Flow Incremental Methodology |
| IHN | Infectious H ematopoietic N ecrosis |
| IHOT | Integrated Hatchery Operations Team |
| IPN | Infectious Pancreatic Necrosis |
| IPP | Implementation Planning Process |
| IRB | Internal Review Budget |
| ISP | Integrated System Plan |
| KCFS | Thousand cubic feet per second |
| KIT | K alispel Indian Tribe |
| MAF | M illion acre-feet |
| MDFWP | Montana Department of Fish, Wildlife and Parks |
| MEG | S ystem Monitoring and Evaluation Work G roup |
| MOA | M emorandum of A greement |
| MOU | Memorandum of U nderstanding |
| mtDNA | Mitochondrial DNA |
| M/WBTWG | Reservoir Mortality and Water Budget Effectiveness Technical Work Group |
| NED | Northwest Environmental Database |
| NEPA | National Environmental Policy Act |
| NF | National Forest |
| NFH | National Fish Hatchery |
| NMFS | National Marine Fisheries Service |
| NPT | Nez P erce Tribe |
| ODFW | Oregon Department of F ish and Wildlife |
| ODSP | Oregon Department of State Police |
| OHSU | Oregon Health Sciences University |
| o s u | Oregon State University |
| OWRD | Oregon Water Resources Department |
| PIT | Passive Integrated Transponder |
| PMIS | Program Management I nformation System |
| PNUCC | Pacific Northwest Utilities Conference Committee |
| PNWFHPC | Pacific Northwest Fish Health Protection Committee |
| PNWRS | Pacific Northwest Research Station |
| PRG | Policy Review Group |
| Program | Columbia River Basin Fish and Wildlife Program |
| PSMFC | Pacific States M arine Fisheries Commission |
| RFF | Resources for the Future |
| RM/WBE | Reservoir Mortality/Water Budget Effectiveness |
| RPA | Request for Project Authorization |
| SCS | Soil Conservation Service |
| SMEP | System Monitoring and Evaluation Program |
| SOR | System Operation Review |
| SPG | System and S ubbasin Planning Group |

| <u>Acronym</u> | <u>Complete Title</u> |
|----------------|---|
| SPM | System Planning Model |
| SPOC | System Planning Oversight Committee |
| SPT | Shoshone Paiute Tribe |
| SRG | Scientific Review Group |
| STWG | Supplementation Technical Work Group |
| TBA | To Be Announced |
| TNC | The Nature Conservancy |
| TO | Task Order |
| TWG | Technical Work Group |
| UCUT | Upper Columbia United Tribes |
| UI | University of Idaho |
| UM | University of Montana |
| URB | Umatilla River Basin |
| URBFC | Upriver Bright Fall Chinook |
| USACE | U.S. Army Corps of Engineers |
| USBR | U.S. Bureau of Reclamation |
| USFS | U.S. Forest Service |
| USFWS | U.S. Fish and Wildlife Service |
| u w | University of Washington |
| WDF | Washington Department of Fisheries |
| WDW | Washington Department of Wildlife |
| WEID | West Extension Irrigation District |
| Work Plan | Annual Implementation Work Plan |
| w s u | Washington State University |
| YIN | Yakima Indian Nation |

Appendix C - Responses to Comments on the Draft FY 1994 AIWP

BPA sent the draft AIWP to the Council, interested parties and the public for comments. This appendix contains specific comments from the Council and BPA's responses to the Council's comments. This appendix also contains a summary of other comment BPA received on the Draft AIWP and BPA's responses to the comments.

Public Involvement

BPA prepared a Fact Sheet that contained background information, a summary of the draft AIWP, and BPA personnel to contact. Also included with the Fact Sheet was a comment sheet with questions for reviewers to use to make comment. The public comment period of the draft AIWP ran from August 18 through September 17, 1993.

Comments and Responses

The Council's comments are identified below. BPA's responses to specific comment follow.

1. General

The final plan should include a list of non-program projects which Bonneville proposes to fund and a list of unfunded program measures. Also, the list of concluded projects needs more explicit findings or results.

RESPONSE:

Funded, non-program measures are listed in Appendix F. The project index by RPA in Appendix A is also a useful tool. For example, ESA projects are listed under the following RPAs: FE1 121, FE1 122, FE1206, and FE21 17. A list of completed projects is in Appendix D. Additional information on these projects can be obtained from the indicated project officer.

2. Implementation of the Program

A contingency plan to implement phase four measures is needed.

RESPONSE:

Between now and 1996, BPA will develop an implementation plan for Phase IV. This plan will outline how Phase IV will be implemented in stages over the 10 years from 1996 - 2006. This process is consistent with the Council's request for the assessment of current information and cost effectiveness of new initiatives before the BPA commits to project funding.

3. Submit Ongoing Projects to Scoping Groups Review Prior to Funding Renewal

The NPPC recommends that BPA conduct a special review of ongoing contracts prior to renewal of funding in fiscal year 1994, and that these reviews could be conducted by IPP Scoping Groups. This review would address project design and performance, degree of integration with other projects, and the ability to produce data for evaluation and conclusions, and be included in the Coordinate Information System (CIS).

RESPONSE:

This recommendation has been made by several commentors including several participating groups in the Policy Review Group. At the October 21, 1993 PRG meeting, 7 criteria were developed and recommended to BPA to be applied to the review of ongoing projects. BPA is now considering the most efficient methods to accommodate these recommendations. BPA now funds over 260 ongoing projects. It is not practical or feasible to expect the Scoping Groups to review each of these before BPA proceeds with renewal or funding of those projects in the current fiscal year. However, BPA agrees with the wisdom of developing a means of conducting an annual review of ongoing projects. The BPA and CBFWA IPP Coordinators are working with the PRG to develop criteria and a mechanism to complete an annual review of ongoing projects.

4. Assess Current Information, Research Needs and Potential Costs of New Program Initiatives Before Funding Specific Projects

In many of the program measures, the initial evaluation of needs and alternative approaches is an important safeguard to excessive or misdirected expenditures. Evaluation should be completed before funding specific projects. Attention to this sequence of program measures should provide more efficient use of program funds.

RESPONSE:

BPA agrees that an evaluation of needs, alternative approaches, expected results, and costs is needed to make the Council's Program efficient. Evaluations of projects at the pre-funding level should require projections of costs and benefits, identification of critical uncertainties, experimental design to address uncertainties, and establishment of links between project actions and sub-basin and system-level strategies.

BPA intends to call for strategic cost-effectiveness analysis at the sub-basin level in the context of sub-regional planning. It is BPA's intent to work with local entities to identify and study alternative (sub-basin) plans that address Council and Recovery Team goals, objectives, and targets, as proposed in Section 6.1, *Strategy for Salmon*.

5. Defer Public Education Projects

Funding public education projects from the fish and wildlife division budget is much lower priority than implementing program measures.

RESPONSE:

BPA enlists the help of the public to preserve, protect, and enhance fish and wildlife. Education of the public as ongoing efforts, thus laying the groundwork for complex concepts, is valid. The education effort proactively and comprehensively answers the question “Where did the money go?” Further, by providing educational materials to schools we help focus and stimulate students to think about how they interact with the environment and the net effect it has on fish and wildlife.

6. Suggestions for Improvements in the Annual Implementation Work Plan

Identify actions by other federal agencies, identify other Bonneville activities **funded** from outside of the fish and wildlife division budget, keep current on project descriptions, objectives, and results, and include in future annual work plans citations of the annual reports from each project and any other published reports. Also, include brief abstracts of the results from projects.

RESPONSE:

The current AIWP substantive content is based on the directions specified in the Fish and Wildlife Program. BPA would have no objection to including discussion of related federal actions especially those funded by BPA, or the System Operations Review. It should be recognized, however, that these inclusions would be in addition to the material outlined in the 1987 Program language.

Maintaining current description of project contracts is a goal BPA shares with the Council. BPA Contracting Officer Technical Representatives strive to accomplish this goal.

The BPA and CBFWA IPP Coordinators worked diligently during development of the FY 1994 AIWP to reformat the document to improve its accuracy and usefulness. Council staff participated in this effort and made several constructive and helpful recommendations. BPA is committed to continuing this work plan improvement effort during the production of the FY 95 AIWP. The Coordinators have begun by providing a schedule of activities to the PRG which will strive to put the process and resulting work plan on the nominal IPP schedule for the first time since inception of the process.

7. Recommended Text Changes

Changes were made in the text.

8. Section 2 - Framework and Goals

Proceed quickly to fund the development of a program framework and to convene the necessary agencies and tribes to set a work plan for accomplishing these tasks.

RESPONSE:

BPA has developed a concept which appears to capture the intent of the Council's expanded IPP. The concept has been reviewed at staff level with PNUCC, US Forest Service, CBFWA, and the Council. The concept has also been presented to the full Council. The concept has received favorable response on all occasions. Taking the concept to a developed strategy is the next challenge. BPA is committed to this pursuit.

9. Section 3 Juvenile Migration

PIT research PITAGIS program should be reviewed by the appropriate scoping group to assure that they will respond to current priorities.

RESPONSE:

Bonneville agrees that Pit Tag research and the PITAGIS data base should be reviewed, as they are useful tools available to managers to evaluate results of actions. This review would be appropriately undertaken by the Artificial Propagation and/or Natural Propagation Scoping groups. However, the funding level for satellite facilities (integration) does not appear to be at a level to respond to current priorities for the data.

9. Continued

Future work plans could include summaries of coordinated operation plans and their contributions to juvenile survival improvements.

RESPONSE:

Providing summaries of project contributions to juvenile survival improvements is a good idea, but the AIWP is not the only place to summarize results of studies. We intend to additionally keep the Council informed about new smolt survival data and any associations that may be drawn with flow operations.

Providing summaries of project contributions to juvenile survival improvements is a good idea, but we question whether the AIWP is the appropriate place to summarize results of studies. Through avenues other than the AIWP, we intend to keep the Council informed about new smolt survival data and any associations that may be drawn with flow operations.

9. Continued

BPA should be prepared to evaluate flow augmentation if implemented in 1994.

RESPONSE:

Ongoing projects are attempting to provide independent evaluations of the effectiveness of Snake River flow augmentation measures in delivering spring and summer flows, although there is significant resistance from some

state and Federal agencies in Idaho. We agree with the Council that evaluating the effectiveness of delivering flow augmentation water is an important issue.

10. Salmon Harvest

Bonneville is urged to prepare for development of terminal fisheries and selective gear demonstration projects.

The expansion of marking and catch sampling should be reviewed.

Review the need for expanding the genetic stock identification data base.

RESPONSE:

A terminal fisheries project is currently under development and has been funded (S. Smith, Project Manager). A selective harvest project has been approved for funding in 1994 (S. Vigg, Project Manager). The selective harvest project is planned for implementation in three phases: (1) feasibility and potential for harvest reform, (2) pilot demonstration field study, and (3) large-scale commercial and sport fishery implementation.

The implementation of Measure 5.4C Item 1 & 2 in the *Strategy for Salmon*, expansion of marking and catch sampling, is being done through projects 82-013; 83-006; 89-065; 89-066 and 89-069. BPA could form a review team with BPA, NPPC, Agencies and Tribes to make a presentation to Council.

BPA agrees to coordinate a meeting between fish managers and BPA staff to review the need for expanding the genetic stock identification **data** base.

11. Coordinated Habitat and Production

Council urges the formation of subregional teams.

RESPONSE:

BPA intends to pursue the concept of subregional planning **and** team formation during FY 1994.

11. Continued

Review the development and application of a method for population vulnerability analysis, and review of report prepared for Bonneville by John Emlen, "Population Vulnerability of the Snake River Chinook Salmon."

RESPONSE:

Activity related to Measure 6.2A.9, Population Vulnerability Analyses has or is occurring under a number of different projects. These projects include the genetics monitoring program (89-096), the Yakima Fisheries Project

(92-018 and 85-062), and Dr. John Emlen's paper, "Population Vulnerability of the Snake River Chinook Salmon," (93-013). These activities will be referred to the appropriate scoping groups for their review for applicability to the program measure. Dr. Emlen's report is available for review by the Council's experts in genetics.

11. Continued

Arrange for an early discussion of Northeast Oregon Hatchery.

RESPONSE:

BPA, NPPC staff, ODFW and Nez Perce - Umatilla and Warm Springs Tribes will present to the Council meeting in February the recommendation that the master plans for Imnaha, Grande Ronde, Walla Walla, and Umatilla supplement be postponed until ESA decisions are made. However, the Hood River baseline data is actively being pursued through projects 88-053-03 and 88-053-04.

11. Continued

Reconsider early termination of Projects 91-3 1 Life Cycle of IHN Virus and 89-9 1 Erythrocytic Inclusion Body Syndrome (EIBS) Research.

RESPONSE:

Considering the lower priority of fish health research as compared to other Program areas, past PRG recommendations for reducing expenditures for fish health, and limited availability of funds, BPA cannot extend these two projects at this time.

The contractor for "Life Cycle of IHN Virus" completed over 80 percent of tasks initiated. Significant progress has been made to date toward immunochemistry and antibody assays for IHN detection. A summary report will be prepared with FY 1993 carry-over funds, and the project will terminate only 6 months earlier than originally planned.

The contractor for EIBS Research has completed over 80 percent of the tasks proposed. Vertical transmission studies are the only major component not slated for completion. This project was originally ranked low in priority in FY 1992 by BPA in consultation with the IPP Artificial Production Scoping Group. This project will terminate 1 year earlier than originally planned and a summary report will be prepared.

11. Continued

Independent hatchery audits are important and should be scheduled,

RESPONSE:

Bonneville agrees that hatchery audits are an important part of the IHOT process and will plan for their implementation **after** hatchery performance standards are completely developed. Performance standards will be submitted to the Council by June 1994 as part of the overall IHOT product which also includes implementation and operating guidelines for the regional hatcheries.

11. Continued

The Snake River Fall Chinook Habitat Study is not discussed in the AIWP. Council wishes to discuss preparations to implement this measure.

RESPONSE:

One result of recent discussions with the Council was an agreement to fund this study. BPA plans to **fund** the Nez Perce Tribe's proposal entitled "Upper Clearwater River Study: Assessing Summer and Fall Chinook Salmon **Spawning**, Incubation, Growth, and **Outmigration** Timing."

11. Continued

Contracts for supplementation research should be reviewed by the appropriate scoping group. BPA should maintain flexibility to initiate experimental projects in the Snake River Basin.

RESPONSE:

Continuing supplementation projects undergo continuous review and assessment for appropriateness in terms of testing supplementation, progress and compliance with experimental designs, and relationship and impacts on weak and listed fish stocks. BPA maintains flexibility for initiation of experimental projects in the Snake River Basin and discussions on this issue have been occurring with the fishery managers in Idaho.

11. Continued

Council believes a status review of the Pacific lamprey is necessary to evaluate tribal concerns that the species may be declining.

RESPONSE:

Discussions between Council and BPA staffs regarding the Pacific lamprey measure have concluded. BPA has determined that the most efficient means to accomplish the requested population status review is to for BPA staff biologists to conduct a basic literature review and expert interview process. The results of this effort will be reported to the Council as soon as it is completed.

11. Continued

The final AIWP should clarify BPA's intent regarding tributary screening work actually intended for FY 1996.

RESPONSE:

BPA is committed to initiating screen construction activities as soon as possible. Screen shops are being constructed in Idaho and Oregon and are expected to be completed in 1994. Meanwhile, BPA is funding screen construction in the State of Washington and has funded the Washington Department of Fisheries to build portable screens for installation in Oregon and Idaho tributaries. All three state facilities should be operational by late 1994 with funding from BPA, NMFS, USFS, and the states. A fast-track schedule for completion of the high priority work is expected to be through the year 2000.

12. Coordinated Implementation, Monitoring and Evaluation

Formation of the Independent Scientific Group is essential. The Council hopes BPA can expand the role of the SRG to include the ISG.

RESPONSE:

Bonneville has been participating in a series of meetings discussing the purpose, formation, responsibilities, and function of the ISG. In mid-summer of 1993 BPA requested the SRG investigate the measure language and recommend possibilities, advantages, and draw backs of various actions. Bonneville intends to continue pursuit of the ISG formation. These efforts will be associated with BPA's continuing efforts regarding the expanded IPP, sub regional planning and other related measures in the Phase III amendments to the Fish and Wildlife Program

12. Continued

BPA should consider the long-term effects on effective Program monitoring of restricting Coordinated Information System (CIS) funding.

RESPONSE:

BPA recognizes the progress made by CIS during the past year, and we agree that FY 1994 is a critical time for CIS. BPA supports CIS and recognizes the system is ready to be very successful. CIS is currently funded at over 95 percent of the level of funding received last year. BPA intends to solicit CIS cost-sharing from NMFS and USFWS, as both agencies have expressed interest in and support for CIS. No decisions have been made regarding additional funds for FY 94.

12. Continued

BPA should seek an independent review of non-Program monitoring and modeling efforts.

RESPONSE:

Non-Program monitoring and modeling projects are critical to BPA statutory requirements for performing impact and mitigation analyses under the Endangered Species Act and the National Environmental Policy Act. In addition to meeting these non-Program requirements, monitoring and modeling projects provide significant contributions to cost and biological effectiveness analyses required for regional planning and implementation of the Fish and Wildlife Program under statutory requirements of the Northwest Power Planning and Conservation Act. The benefits and cost savings resulting from these monitoring and modeling efforts have substantially outweighed their costs. To date, several independent reviews of our modeling efforts have been performed and one is currently ongoing through Oak Ridge National Laboratories.

13. Resident Fish

BPA acted prematurely in terminating the Duck Valley and Fort Hall Bottoms projects. Program terminations should wait until completion of Council determinations on resident **fish** substitution.

RESPONSE:

The Fort Hall Bottoms Project involved stream habitat enhancement of selected tributaries on the **Shoshone-Bannock** Reservation. Carry-over funds will allow the Tribe to complete the current work, including preparation of a summary report, by **the** end of the calendar year.

The Duck Valley Resident Fish Enhancement Project is on-going through October 1994. A subsequent request to stock **fish** in the Owyhee River was rejected because it was outside the scope of the agreement.

The Public Power Council's comments are identified below. BPA's responses to specific comments follow.

1. This year's AIWP is an improvement over previous **years** in a number of respects, including the fact that it is easier to read and follow. A fundamental concern exists over the need to improve the accountability of Bonneville-funded projects.

RESPONSE:

BPA recognizes the need to improve accountability for all projects it funds. Under BPA's Competitiveness Project, BPA is looking at how to "reinvent" its implementation of fish and wildlife projects. Accountability for project results is one of the most important issues being reviewed in this process. (Public involvement in the development of BPA's Strategic Action Plans [**10-Year Plans**] for fish and wildlife will be encouraged and is where **the** issue of accountability may be further discussed.)

2. Additional comments on the **AIWP** are:

it is difficult to evaluate program measures without reports of their progress;
a review of ongoing contracts is needed;
lower **priority** projects should be reexamined for incorporation into other projects;
future **AIWPs** should incorporate citations of the annual reports from each project and any other published reports, and include abstracts of the results of projects; and
peer accountability **in** the preparation of workplans is needed to improve the quality of the work plans.

RESPONSE:

BPA, aware that information on the progress of projects **is vital**, is acting on the recommendation to review ongoing projects. To that end, the PRG recently developed a questionnaire and sent it to all fish and wildlife contractors. Pursuant to the IPP, Scoping Groups will use this information to review and evaluate each project, and then provide their review to the PRG. BPA will then prioritize all ongoing projects in collaboration with **the** PRG, thus beginning the development of a draft AIWP for FY 1995.

In that the **AIWP** is a plan for upcoming FY activities, its purpose, rather than provide information available in annual reports, is to identify which projects are to be implemented in the agency's Division of Fish and Wildlife. The recommendation, however, that information be compiled relative to ongoing projects, including, for example, annual reports, abstracts of results, and **other** published reports, is a sound suggestion.

Peer accountability through Peer Review of Fish and Wildlife Program Projects is currently being addressed by the Scientific Review Group, and will begin in 1994. The SRG has addressed two facets of this problem, (1) peer review of proposals before they are funded as part of the AIWP, and (2) peer review of ongoing projects to determine if their quality justifies their remaining in the AIWP. The SRG endorses peer review at both stages. A guide for proposal preparation that facilitates peer review is now being used by BPA. A guide for peer review of ongoing projects is in **draft** form and will be available from the SRG in February 1994.

The draft process for project peer review includes selection of a review team of 3-5 technical peers based on their background relevant to the project; team review of all reports; papers and manuscripts that have resulted from the work; review of the work in relation to the project proposal, relevant Power Council and BPA goals and objectives, and standard evaluation criteria; a site visit to the research facility; and preparation of a written evaluation report. The written report produced by the review team will be distributed to BPA, CBFWA, staff of the reviewed project, and the SRG, and would generally include general observations, results of standard evaluation criteria, results of analysis of special issues not covered by standard criteria, identifications of problems, and recommendations for actions. The application of this information will facilitate the attainment and maintenance of a high level of technical quality in the Fish and Wildlife Program, and ensure agency funds are used wisely and efficiently toward meeting the goals and objectives of the program and the individual project.

3. Recommend that BPA take immediate steps to integrate monitoring and evaluation standards and standards of performance into each contract.

RESPONSE:

BPA is in the process of developing monitoring and evaluation components for its fish and wildlife projects. The Wildlife component of the program, by its nature of mitigating through defined acreages, is easier to monitor and evaluate compared to the multi-faceted fish program. BPA is considering project M&E components which could include the identification of: species present before, during, and after project implementation; collective and associated benefits of the project; cost effectiveness and adaptive management; linkages between project outcomes to overall Program goals; standardized measurement methodologies; comparability and consistency with other programs; and standards to address species richness and diversity that reflect both losses and/or current regional and societal needs.

Oregon Trout's comments are identified below. BPA's responses to specific comments follow.

1. Recommends that all funding for ongoing and new hatchery projects be delayed until 1996 in order to provide the funding capability for wild and natural production measures in the Council's Strategy for Salmon. The region is being held to a new, higher, standard - the protection of natural populations of native salmonids. Hatcheries have value as enhancement tools to increase fish for harvest, but they are no longer a priority given the number of stocks at risk of eventual extinction in the Columbia River.

RESPONSE:

BPA recognizes the issue raised by the recommendation is central to the discussion over recovery of stocks listed under the Endangered Species Act and to weak stock management. Funds will continue to be forecasted for artificial production facilities that are ongoing. Decisions on the implementation of new production facilities will incorporate the results of the Comprehensive Environmental Analysis (CEA), which is a contract the U.S. Fish and Wildlife Service has funded with CBFWA. The CEA is to review the interaction and impact of fish hatcheries on naturally spawning anadromous fish in the Columbia River Basin. It is anticipated that if the CEA develops recommendations that affect the planning or construction of ongoing projects, BPA will consider the data as part of its overall project management responsibilities.

2. Recommends that BPA begin planning funding in FY 1994 for the following 9 projects listed in the Council's *Strategy for* Salmon:

6.2A(1): Complete a proposed plan for conserving genetic diversity within and among Columbia River Basin salmon and steelhead stocks.

6.2A(2): Develop technical proposals for the improved conservation of biodiversity.

6.2A(3): Bonneville fund and design a study to identify wild and naturally spawning salmon and steelhead populations in the Columbia River.

6.2A(4): Fishery agencies develop and submit to the Council a proposed program to collect information on wild and naturally spawning populations.

6.2A(5): Bonneville develop a program to monitor all wild and naturally spawning salmon and steelhead populations and establish index populations.

6.2A(6): Fishery managers develop a conservation policy for wild and naturally spawning salmon and steelhead for Council review.

6.2A(7): Fishery managers establish a comprehensive wild and naturally spawning salmon populations conservation program.

6.2A(8): Develop a plan for a biodiversity institute.

6.2A(9): Develop a population vulnerability analysis.

The highest priority project should be to fund the inventory of biological diversity of salmon and steelhead within the Columbia River Basin.

RESPONSE:

Salmon Strategy Measures 6.2A(3), 6.2A(5) and 6.2A(9) were addressed in recent discussions with Power Council staff. It is recognized that activities in Yakima Basin projects are closely related to technical requirements of these measures. However, the Yakima program is considered more detailed and complex than what is needed to meet the intent of these measures. This matter is being referred to the appropriate Scoping Group to review and **re-focus** the efforts to be funded by BPA. If these activities require additional '94 funds, BPA will make them available through increased flexibility and funding efficiencies. Salmon Strategy Measures 6.2A(1), 6.2A(2), 6.2A(4), 6.2A(6), 6.2A(7), and 6.2A(8) identify entities other than BPA to address these measures.

Western Montana Electrical Generating and Transmission Cooperative's comments are identified below. BPA's responses to specific comments follow.

1. The Scientific Review Group (SRG) in its 1993 report on "critical uncertainties" cut through ten years of political rhetoric and posed questions which should have been answered in the early years of the implementation of the Council's Fish and Wildlife Program BPA and the Council should make use of the SRG recommendations to screen future project proposals and to structure the program to eliminate inappropriate expenditures.

RESPONSE:

BPA is working with the Council, the Columbia Basin Fish and Wildlife Authority, and other organizations that are part of the IPP to better incorporate the SRG recommendations in the implementation process. Discussions will continue during 1994 to develop an "expanded" IPP as called for in the *Strategy for Salmon*. The development of an independent scientific review group is also part of these discussions,

2. Western Montana Electrical Generating and Transmission Cooperative is encouraged that BPA is funding an evaluation of the relationship of flows and velocity with smolt survival, and maintain it is essential the region have results of these studies before making large **funding** commitments related to drawdown.

RESPONSE:

BPA believes that sound biological data on the relationship of flows and velocity with smolt survival is critical information for decision makers in the region. Toward that end, in 1994, BPA is funding field research on survival of hatchery and wild spring/summer chinook in the Lower Snake River, and the development of statistical methods to analyze PIT tag data in order to determine the relationship between smolt survival and environmental factors, including flow.

The Direct Services Industries, Inc. comments are identified below. BPA's responses to specific comments follow.

1. BPA has limited funds to spend on fish and wildlife measures and therefore delineating program priorities and instituting project "bio-cost effectiveness" is critical. For each project BPA should identify expected biological productivity and fund only those that clearly demonstrate that their benefits outweigh their costs or are the least cost alternative for achieving the defined biological objective.

2. Cost sharing opportunities should be maximized to improve the commitment to and implementation of the Council's Fish and Wildlife Program measures by non-BPA fish and wildlife partners.

3. No funding should be available for projects not directly related to mitigating the Federal Columbia River Power System (FCRPS).

4. BPA should not give a high priority to funding educational programs.

5. AU fish and wildlife activities funded or reimbursed by BPA should be subjected to the IPP and documented in the AIWP.

RESPONSE:

Under the Competitiveness Project, BPA is pursuing the means to make the fish and wildlife activities it funds results-oriented. Part of this effort will include the use of cost effectiveness in selecting projects for implementation. The development of this and other aspects of the new approach to implementation of the BPA's fish and wildlife activities, including cost sharing, will occur in the development of Strategic Actions Plans and BPA's Business Plan through the summer of 1994.

BPA recognizes that there is debate over the priority of offsite mitigation projects when compared to projects that directly affect the FCRPS. BPA anticipates pursuing this debate in the development of a strategic action plan for its fish and wildlife activities. The relative importance of the education activities funded by BPA will also be part of the discussion on priorities during the development of the strategic action plan. BPA has stated a strong commitment to educational activities. The current activities reflected in the AIWP are consistent with this commitment.

BPA supports the idea that all projects it funds or reimburses should be reviewed and acted upon by the IPP and included in the AIWP. As part of the development of the strategic action plan, BPA plans to examine how to incorporate all the various activities it funds or reimburses into a common implementation planning format.

6. There is limited availability of the information generated by research projects funded by BPA. The AIWP should specify that all computerized data assembled and developed in each research project be made publicly available.

RESPONSE:

BPA agrees that information generated by research projects funded by BPA should be available to the public. To that end BPA has established a Computerized Information System (CIS). The goal of CIS is to provide access to technical information, research, and data related to anadromous fish. CIS contains two elements: the Anadromous Fish Information System provides access to available data, and the Anadromous Fish Research System provides references to reports, people, and other information sources. The current version of CIS is available from Stan Allen, (503) 650-5400.

7. The ~~draft~~ AIWP does not provide a rigorous conceptual framework for identifying key uncertainties as a prerequisite for ~~defining~~ research priorities. Research priorities should be founded on a scientific peer review process. Research goals should be identified and competitive proposals to meet those goals should be solicited from the scientific community. The present system does not allow for sufficient scientific analysis of either research or implementation measures.

RESPONSE:

The purpose of the AIWP is to display, annually, the agency's plans for Program implementation. A better forum for discussion, debate, and framing of research priorities is the IPP Scientific Review Group (SRG). Over a year ago BPA requested the SRG thoroughly review the Council Program, past implementation, and identify the critical technical uncertainties which exist. The SRG provided a report to BPA in January 1993, with their findings. As a follow-up, BPA has requested that each IPP Scoping Group (SG) consider the SRG critical uncertainties and develop a list of critical, technical uncertainties relative to each SG's area of expertise. BPA plans to continue pursuit of the technical issues of Program implementation and the prioritization of research needs through the mechanisms established in the IPP, namely, the SRG and SGs.

8. The DSI letter included comments on over twenty specific projects. These comments are being reviewed by management and passed on to the appropriate staff person (Contractor Officer's Technical Representative) responsible for the project for consideration.

Don Samuelson, Fisheries Instructor, Grays Harbor College, Aberdeen, Washington, comments are identified below. BPA's responses to specific comments follow.

1. Over the last 20 years million of dollars have been spent to save the fish runs of the Columbia River without success. Because the region has chosen to utilize the water of the Columbia River for hydro production, irrigation, transportation, recreation, etc., and not for fish, why not write off salmon runs and spend the huge amounts of money on watersheds and other subbasins within the region that can be saved for salmon?

2. The Endangered Species Act is of critical importance as the "protector" of salmon (and other form of plants and animals) within the basin and mainstem flows are a key to salmon survival. Acknowledging these concerns, the writer suggests the funds could be divided among the states in the region who, in turn, could allocate the funds to restoration and enhancement efforts in watersheds that will make a difference for salmon.

RESPONSE:

The idea that BPA should invest in actions that will produce the results of increasing numbers of weak stocks of adult salmon is an underlying strategy in the reinvention of BPA's fish and wildlife implementation activities. The idea to "transfer" to the states some portion of the annual expense for fish and wildlife through the means of a "trust" or other financial instrument will also be examined through BPA's program reinvention effort.

The reinvention activity is scheduled to occur during the spring and summer of 1994 and is tied to the development of BPA's Business Plan. The Business Plan development process will have opportunities for public involvement

Appendix D - Projects Completed in FY 1993

The following projects were completed during FY 1993.

| Project Number | Project Title | Project Officer |
|----------------|---|-----------------|
| 83-313 | Pen Rearing of Upriver Fall Chinook Salmon - USFWS | A. Ruger |
| 83-415 | Alturas Lake Creek and Upper Salmon River Flow Augmentation - USFS/Sawtooth NF | s. Levy |
| 84-33-3 | Umatilla Hatchery Tribal Fish Culture Training Program - CTUIR | J. Marcotte |
| 84-5 | Red River Subproject | S. Levy |
| 84-5 | Crooked River Subproject | S. Levy |
| 84-62 | Trout Creek Riparian Enhancement | S. Levy |
| 85-087 | Anadromous Fish Planning and Implementation Decision Support System - RFF | K. Beale |
| 85-339 | Kokanee Stock Status and Contribution of Cabinet Gorge Hatchery, Lake Pend Oreille, Idaho - IDFG | R. Westerhof |
| 85-87-I | Anadromous Fish Planning and Implementation Decision Support System - RFF | K. Beale |
| 88-123 | Yakima Hatchery Coordination-Roza Irrigation District. | M. Nelson |
| 88-15 | Mainstem Clearwater River Study: Assessment for Salmonid Spawning, Incubation, and Rearing - NPT | J. Gislason |
| 88-43 | Libby Wildlife Habitat Enhancement - USFS | R. Walker |
| 88-62 | Spokane Tribal Fish Hatchery | S. Levy |
| 89-31 | Control of Bacterial Kidney Disease (BKD) via Segregation of Adult Spring Chinook and Summer Chinook with Enzyme-Linked Immunosorbent Assay (ELISA) - OSU | R. Morinaka |
| 89-81-2 | Erythrocytic Inclusion Body Syndrome (EIBS) Research - OSU | R. Morinaka |
| 89-81-3 | Modeling Optimized Hatchery Production - OSU | R. Austin |
| 90-49 | Libby/Hungry Horse Wildlife Project - MDFWP | R. Walker |
| 90-53 | Southeast Washington Species Interaction Study - WDW | T. Vogel |
| 90-53 | Southeast Washington Species Interaction Study - WDW | T. Vogel |
| 91-15 | Development of Stream Habitat Improvement Standards - BPNL | R. Austin |
| 91-27 | Feasibility Study - Hatchery Production Above Hells Canyon | F. Holm |
| 91-64 | Little Goose/Lower Monumental PIT-Tag Facility - USACE | W. Maslen |
| 91-65 | Umatilla Fall Chinook Marking Program | J. Bauer |
| 91-69 | Technical Assistance Consultants | S. Levy |
| 92-035 | Genetic Variation in DNA of Coho Salmon from the Lower Columbia River - UM | D. Watkins |
| 92-066 | Marking Hatchery Salmon | J. Bauer |
| 92-35 | Genetic Variation in DNA of Coho Salmon from the Lower Columbia River - UM | D. Watkins |

Appendix E - Projects Canceled for FY 1994

To meet budget requirements, BPA canceled several projects that were funded in FY 1993. The following projects were canceled for FY 1994.

Project 89-20 Airlift Fabrication

This project has been completed.

Project 90-60 Bypass Evaluation

No work has been funded under this project.

Project 91-17 **Factors** Affecting Survival on **Juvenile** Wild Spring/
Summer Chinook Above Lower Granite Dam

Phase I Research Plan completed August 1993; Phase II work occurring under Project 93-029 and Corps funded Juvenile Migration Study (see Table 8).

Project 92-10 Habitat Enhancement - Fort Hall Bottoms

Carryover funds will allow Shoshone-Bannock Tribe. to complete work.

Project 91-23 Ectoparasite Research

Project 91-25 Ceratomyxa shasta Research

Project 91-26 Bacterial Coldwater Disease

Project 91-31 IHN Vaccine

The four projects above are fish health research projects.

Project 88-152 Life Cycle of IHN Virus

Project is 80% complete; will terminate 6 months early.

Project 89-81-02 Erythrocytic Inclusion Body Syndrome (EIBS)
Research

Project is 80% complete; will terminate 1 year early.

Project 89-54-01 Antifungal Research

Phase II will be deferred until adequate funding is forecast, potentially FY 1996 or later.

Appendix F - Non-Program, Internal Support Projects

BPA's Division of Fish and Wildlife will also conduct activities not included in the Council's Program. Activities include coordination of the IPP, technical assistance to the Division of Fish and Wildlife, and other activities. Projects are listed below. See Appendix A to find where these projects are described in the AIWP.

| | |
|--|---|
| Project 93-037 | Cost Effectiveness Analysis, Model Enhancement and Support - RFF |
| Project 86-118 | Fish and Wildlife Task Order Agreement - BPNL |
| Project 87-413 | Fish and Wildlife Task Order Agreement, Fisheries Technical Assistance - UW |
| Project 89-62 | Implementation Planning Process (IPP) Coordination - PSMFC |
| Project 89-72-1 | Scientific Review Group (SRG) Support - DOE |
| Project 89-108 | Columbia River Salmon Passage Model - UW |
| Project 91-41 | Non-Treaty Storage Compensation - Idaho Power Company |
| Project 83-465 Project 87-407 | System Operation Review |
| Project 91-67 | Idaho Water Rental Pilot Project - Feasibility/Coordination Study - Resident Fish and Wildlife - IDFG |
| Project 89-062 | Columbia Basin Fish and Wildlife Authority Program Planning and Coordination - PSMFC |
| Project 92-32 | Life Cycle Model Development and Application to System and Subbasin Planning in the Snake River Basin - USFS/Intermountain Research Station |
| Project 93-11 Project 92-065 | Public Education - Fish and Wildlife Habitat |



BPA's Fish and Wildlife Program Final Annual Implementation Work Plan, FY 1994

Issue 2, February 1994

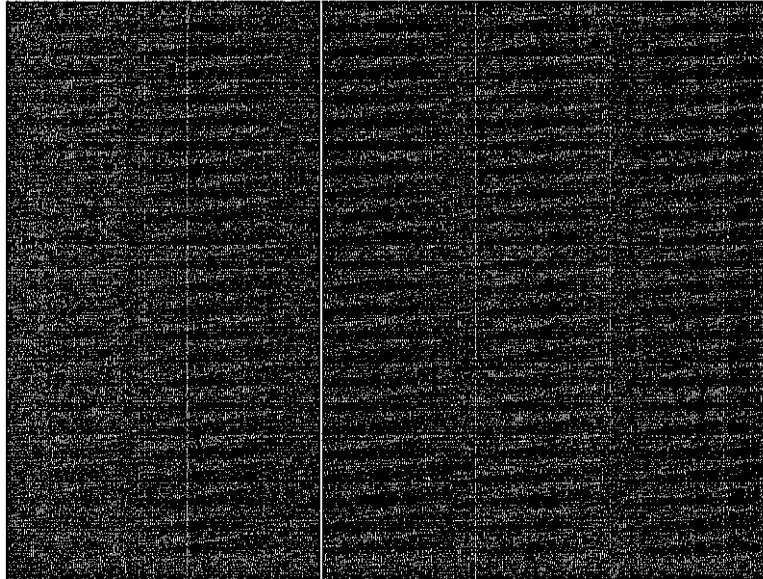
Bonneville
Power Administration

The Annual Implementation Work Plan as prepared in collaboration with the Columbia Basin Fish and Wildlife Authority, Northwest Power Planning Council staff, utilities, state fish and wildlife agencies, Tribes, environmental groups and other interested parties. In addition, over 30 comments were received, on the draft AIWP and are summarized in the appendix. We would like to take this opportunity to thank everyone who took the time to comment and all those who have contributed to the development of this year's plan.

This information sheet marks the fifth edition of Bonneville Power Administration's Annual Implementation Work Plan. The purpose of the AIWP is to describe BPA's implementation of the Council's Columbia River Basin Fish and Wildlife Program and the Strategy for Salmon. This year's AIWP reflects BPA's continued support of the Council's program.



*Director, Division of
Fish and Wildlife*



Highlights

- **Background**
- **Changes**
- **Comments**
- **What happens next?**

Background

The Columbia River Basin Fish and Wildlife Program was developed by the Northwest Power Planning Council. The purpose of the program is to guide the Bonneville Power Administration and other federal agencies in carrying out their responsibilities to protect, mitigate and enhance fish and wildlife in the Columbia River Basin. As part of revising this program, the **Council developed a Strategy for Salmon** to address endangered and threatened species.

Each year, EPA develops an annual work plan for implementing its responsibilities under the fish and wildlife program. A draft AIWP was distributed for comment in August. Approximately 30 comments were received and are summarized in the appendix. In addition, there have been ongoing discussions between the Council, the Columbia Basin Fish and Wildlife Authority, and BPA which have resulted in changes to the draft.

Changes

There have been two significant changes to the AIWP since the draft document was issued in August. The first of these is that Appendix C, Strategy for Salmon Measures Not Scheduled for FY 1994 Funding, has been dropped. At the time the draft AIWP was distributed there was some uncertainty regarding the scheduling of implementation of certain measures in the *Strategy for Salmon*. In the draft AIWP, measures not scheduled for funding were listed in Appendix C. These uncertainties have been resolved and BPA will fund all measures ready for implementation in the *Strategy for Salmon* for 1994.

The Bonneville Power Administration markets and transmits electric power that is generated primarily at 30 federal dams and one non-federal nuclear plant in the Columbia River Basin. BPA sells power at wholesale, mainly to Northwest public and private utilities and to electricity-intensive industries such as aluminum companies, BPA also pays for fish and wildlife projects that offset damage caused by the federal power system.

The Pacific Northwest Power Planning Council was established by Congress to develop a program to protect and enhance the Columbia Basin's fish and wildlife and prepare a regional power plan that provides a reliable electricity supply at the lowest cost. For further information, see Pacific Northwest Electric Power Planning and Conservation Act --Public Law 96-501 or call the Council: (800) 222.3355.

The second significant change is reflected in the planned budget for FY 1994. Due to '93 carry-over funds, the total direct program funding for fish and wildlife has been increased from \$80.4 million to \$97 million. Because it took longer than expected to complete negotiations over significant wildlife mitigation actions, BPA was unable to obligate \$6.6 million in FY 1993 that had been approved as part of the budget for that year. This obligation authority has been added to funding that is available for wildlife during FY 1994. The **\$87** million figure, therefore, does not represent an actual increase in the FY 1994 budget for wildlife but reflects a carry-over of FY 1993 funds.

Direct program funding for the proposed **AIWP** for FY 1994 includes the following:

| | <i>(\$ in millions/</i> |
|---------------------------------|-------------------------|
| Anadromous fish expensed costs | \$38.6 |
| Anadromous fish capital costs | 20.6 |
| Resident fish expensed costs | 4.3 |
| Wildlife expensed costs | 6.2 |
| Wildlife trusts | 11.8 |
| Operation and maintenance costs | 4.5 |
| Pre-engineering design | 1.0 |
| TOTAL | \$87.0 |

These costs reflect only program expenditures and do not include lost revenue resulting from river operations for fish. While it is a reduction in program growth, it does not represent a cut in the actual program level. Funds for Phase IV of the Council's program are included under the category of resident fish expensed costs and cover early planning and environmental analysis activities.

Purpose

The **AIWP** reflects goals expressed in the Council's 1967 Program Action Plan to provide a solid, timely and focused basis for budgeting and program planning. Development of a method for prioritizing and sequencing the implementation of measures from both the 1987 program and the Strategy for Salmon was a major part of preparing the AIWP. Another purpose of the document is to provide a means to judge the progress and success of program implementation activities. This is addressed throughout the **AIWP** in over 200 individual project descriptions.

The decision regarding which projects to propose for funding in FY 1994 was based on guidelines (criteria) established by the Policy Review Group at the beginning of the Implementation Planning Process, through which the **AIWP** is developed. The Policy Review Group is made up of senior-level representatives from CBFWA, BPA, the Council, utilities, state fish and wildlife agencies, Tribes, environmental groups and other interested parties.

Comments

BPA received a number of comments on the draft AIWP. These are printed in their entirety followed by a response to each

one in Appendix C of the **AIWP**. Some representative comments with responses touching on key issues are given below in abbreviated form.

1. The Public Power Council commented that a fundamental concern exists over the need to improve the accountability of Bonneville-funded projects.

RESPONSE: BPA recognizes the need to improve accountability for all projects it funds. Under **BPA's** Competitiveness Project, BPA is looking at how to "reinvent" its implementation of fish and wildlife projects. Accountability for project results is one of the most important issues being reviewed in this process. Public involvement in the development of **BPA's** Strategic Action Plans for fish and wildlife will be encouraged and will allow opportunities for discussing accountability.

2. The Council commented that it is difficult to evaluate program measures without progress reports; a review of ongoing contracts is needed; and peer accountability is needed in the preparation of work plans to improve their quality.

RESPONSE: BPA acknowledges that information **on** the progress of projects is vital and is acting on the recommendation to review ongoing projects. The Policy Review Group recently sent a questionnaire to all fish and wildlife contractors. This information will be used to review and evaluate each project. BPA will then prioritize all ongoing projects in collaboration with the Policy Review Group as part of the preparation of a draft **AIWP** for FY 1995.

Peer accountability through peer review of fish and wildlife program projects is currently being addressed by the Scientific Review Group and will begin in 1994. The Scientific Review Group has endorsed peer review of proposals before they are funded and of ongoing projects to determine if their quality justifies continued funding. Guides for proposal preparation that facilitate peer review and for review of ongoing projects are now **being** used by BPA.

3. The Council also recommended that BPA take immediate steps to integrate monitoring and evaluation standards and standards for performance into each contract.

RESPONSE: BPA is in the process of developing monitoring and evaluation components for its fish and wildlife projects. It is considering monitoring and evaluation components which could include the identification of species before, during and after project implementation; cost-effectiveness and adaptive **management; linkages between project outcomes and overall program goals; and standardized methods of measurement.**

4. Oregon Trout recommended that funding for ongoing and new hatchery projects be delayed until 1996 in order to provide the funding capability for wild and natural production measures in the Council's Strategy for Salmon. Hatcheries have value as enhancement tools to increase fish harvest but are no **longer a** priority because of the number of stocks at risk of eventual extinction in the Columbia River.

RESPONSE: BPA recognizes the issue raised by the recommendation **is central to the discussion over recovery of stocks** listed under the Endangered Species Act and to weak stock

Guidelines

The Policy Review Group established the following guidelines (criteria) for proposing projects for funding:

- **Implement the strategy for. Salmon.**
- **Assure projects yield verifiable results.**
- Focus on weak or listed stocks and species.
- **Emphasize fish productivity and survival.**
- **Encourage wildlife funding through wildlife trusts.**
- **Implement resident fish substitution efforts.**
- **Eliminate duplication of projects.**

Contacts

For further information on the AIWP, You may call:

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**Document request
number:**
(800) 622-4520

management. Funds will continue to be forecasted for artificial production facilities that are ongoing. Decisions on the implementation of new production facilities will incorporate the results of the Comprehensive Environmental Analysis, a contract the U.S. Fish and Wildlife Service has funded with CBFWA. The purpose of the CEA is to review the interaction and impact of fish hatcheries on naturally spawning **anadromous** fish in the Columbia River Basin. If the CEA develops recommendations that affect **the** planning or construction of ongoing projects, BPA will consider the data as part of its overall project management responsibilities.

5. Western Montana Electrical Generating and Transmission Cooperative commented that BPA and the Council should make use of the Scientific Review Group's 1993 report on critical uncertainties which recommended that project proposals be screened and the overall program structured to eliminate inappropriate expenditures.

RESPONSE: BPA is working with the Council, CBFWA and other organizations that are part of the Implementation Planning Process to better incorporate the Scientific Review Group's recommendations in the implementation process. Discussions will continue during 1994 to develop an expanded Implementation Planning Process as called for in the Strategy for Salmon.

6. Comments from Direct Services Industries, Inc. stressed a need for "bio-cost-effectiveness" in view of limited BPA funds for fish and wildlife measures. It also encouraged maximum use of cost sharing opportunities to improve the commitment to the Council's program by non-BPA fish and wildlife partners.

RESPONSE: Under the Competitiveness Project, BPA is pursuing the means to make the fish and wildlife activities it funds results-oriented. Part of this effort will include the use of cost-effectiveness in selecting projects for implementation. The development of this and other aspects of the new approach to implementation of **BPA's** fish and wildlife activities, including cost sharing, will occur in the development of Strategic Actions Plans and **BPA's** Business Plan through the summer of 1994.

What Happens Next?

The **Implementation** Planning Process is an annual activity in which BPA, in collaboration with CBFWA, plans its implementation of the program. In July 1993, the Scientific Review Group, composed of senior-level scientists from the Northwest and other regions of the country, prepared an evaluation **report on** program implementation. This report provides important technical recommendations for use in planning FY 1995 program implementation. Planning for FY 1995 implementation begins in spring 1994.