

COLUMBIA RIVER BASIN  
FISH AND WILDLIFE PROGRAM  
ANNUAL IMPLEMENTATION WORK PLAN  
FOR FISCAL YEAR 1990

BY

DIVISION OF FISH AND WILDLIFE  
BONNEVILLE POWER ADMINISTRATION  
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# EXECUTIVE SUMMARY

The Columbia River Basin Fish and Wildlife Program Annual Implementation Work Plan (AIWP) for Fiscal Year (FY) 1990 presents Bonneville Power Administration's plans for implementing the Columbia River Basin Fish and Wildlife Program (Program) in FY 1990. The AIWP focuses on individual Action Items found in the 1987 Program for which Bonneville Power Administration (BPA) has determined that it has authority and responsibility to implement. Each of the entries in the AIWP includes objectives, background, and progress to date in achieving those objectives, and a summary of plans for implementation in FY 1990. Most Action Items are implemented through one or more BPA-funded projects. Each Action Item entry is followed by a list of completed, ongoing, and planned projects, along with objectives, results, schedules, and milestones for each project.

In October 1988, BPA and the Columbia Basin Fish and Wildlife Authority (CBFWA) initiated a collaborative and cooperative Implementation Planning Process (IPP) which provided opportunities in FY 1989 for the agencies and Tribes to be involved in planning the implementation of the Program in FY 1990. This planning process contributed to the development of this year's draft AIWP. The joint BPA/CBFWA IPP will continue. During FY 1990, when FY 1991 implementation will be planned, the Scientific Review Group (SRG), will be available to participate in the IPP. A major effort during FY 1990 will be to bring the SRG and the Policy Review Group (PRG) to maturity and to synchronize implementation planning with the prescribed IPP schedule.

The FY 1990 AIWP emphasizes continuation of 137 Program projects, tasks, or task orders, most of which involve protection, mitigation, or enhancement of anadromous fishery resources. The FY 1990 AIWP also describes 36 new Program projects or tasks that are planned to start in FY 1990. However, a number of these FY 1990 new projects were still under review by the PRG as the AIWP went to press. The new projects still under review have been noted in Table 2, New FY 1990 Program Projects, and in the text of the AIWP.

These continuing and new activities in FY 1990 are summarized briefly by Program or technical area:

Mainstem Passage: BPA-funded projects will continue to support the smolt marking and monitoring program, the Fish Passage Center, and management of the Water Budget (pp. 31-39). BPA will continue to implement seven projects in the Reservoir Mortality and Water Budget Effectiveness Research Area of Emphasis (pp. 118-122), as agreed upon through ad hoc negotiation with the fishery agencies and Tribes. Three new research Area of Emphasis projects (pp. 122-123) are expected to begin in FY 1990.

Artificial Propagation: The aim of this Program area is primarily to investigate ways to increase the quality and quantity of fish produced in hatcheries. In FY 1990, BPA will continue to implement 17 ongoing Hatchery Effectiveness and Fish Disease Technical Work Group (TWG) Five-Year Work Plan research projects (pp. 124-136). Other continuing hatchery effectiveness/fish health projects include development and

recording of fish health data (p. 145) and research on bacterial kidney disease (p. 103).

Eight projects are listed as FY 1990 new-starts: design, construction, and evaluation of temporary John Day acclimation facilities (p. 77), a hatchery production data base (p. 146), a hatchery water quality survey (p. 146), one research project from the Fish Disease TWG Five-Year Work Plan (p. 127), and four projects from the Hatchery Effectiveness TWG Five-Year Work Plan (pp. 137-138).

Natural Propagation: A total of 32 ongoing habitat and tributary passage projects in Section 703(c)(1) of the Program will continue or be completed (pp. 45-67). These projects, located throughout Oregon, Idaho, and Washington, emphasize enhancement of anadromous fish spawning and rearing habitat and improvement of passage conditions, with the goal of increasing production of naturally spawning stocks. A natural production data base project (p. 148) is expected to start in FY 1990.

Supplementation: Four supplementation research projects from the Supplementation TWG Five-Year Work Plan (pp. 139-141) are expected to continue in FY 1990. Five new supplementation research projects may start in FY 1990 (pp. 142-143). The goal of supplementation research is to improve programs for supplementing natural production areas with stocked fish, whether from hatchery or wild stocks, and to assess the potential of supplementation to increase natural production.

Resident Fish: The resident fish projects begun in FY 1989 or before (pp. 158-185) will continue, as will the sturgeon studies being carried out throughout the Basin (p. 176). Two new projects will be added to the resident fish program during FY 1990: a stream survey and hatchery project on the Coeur D'Alene Reservation (p. 160) and habitat improvements at Lake Roosevelt tributaries (p. 164).

Wildlife: BPA will complete wildlife loss assessments for Federal Columbia River Power System (FCRPS) facilities (p. 194) and will continue funding mitigation plans (p. 200). Wildlife mitigation efforts for Libby and Hungry Horse dams in Montana will continue (pp. 202-211), along with implementation of a long-term mitigation agreement for these facilities (p. 212). Four new wildlife projects are expected to start in FY 1990 (pp. 202, 203, 207, and 215). One "conditional" wildlife project (p. 196) may start if the specified conditions are met.

Major Projects: This category includes major hatchery construction, passage improvement, and habitat enhancement projects implemented by BPA's Fish and Wildlife Project Management Branch. During FY 1990, construction of the Galbraith Springs kokanee hatchery on Lake Roosevelt will begin (p. 162). Development of the Master Plan for the artificial production facility or facilities to be located in northeastern Oregon (p. 89) will continue. Yakima and Klickitat Hatchery final design and eight other tasks associated with the Yakima/Klickitat production project (pp. 83-85) are expected to start. Construction of the Umatilla Hatchery (p. 93) and

preliminary design of the Nez Perce Low-Capital Propagation Facilities (p. 97) are scheduled to begin, and operation and maintenance of the completed Colville Hatchery (p. 158) will continue. A project to provide power for Umatilla River water exchange (p. 74) and a Umatilla Hatchery satellite siting study (p. 95) are planned to start in FY 1990.

Planning Activities: BPA will continue to fund and participate in the four Research Areas of Emphasis Technical Work Groups (p. 112). BPA will also participate in the Council-managed System and Subbasin Planning and System Monitoring and Evaluation programs (pp. 24-25). The IPP will continue to guide BPA's Program implementation in FY 1990 (pp. 22-23). BPA will continue to fund the CBFWA's TWG and IPP Coordinator positions to aid these efforts.

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# I. INTRODUCTION

## General

The Columbia River Basin Fish and Wildlife Program (Program) was developed by the Northwest Power Planning Council (Council) in accordance with Public Law 96-501, the Pacific Northwest Electric Power Planning and Conservation Act (Act). The purpose of the Program is to guide the Bonneville Power Administration (BPA) and other Federal agencies in carrying out their responsibilities to protect, mitigate, and enhance fish and wildlife of the Columbia River Basin. The Act explicitly gives BPA the authority and responsibility to use the BPA fund for these ends, to the extent that fish and wildlife are affected by the development and operation of hydroelectric generation in the Columbia River Basin. This document presents BPA's plans for implementing the Program during Fiscal Year (FY) 1990.

The Columbia River Basin Fish and Wildlife Program Annual Implementation Work Plan (AIWP) reflects the primary goals of the Council's Action Plan (Section 1400 of the Program): to provide a solid, timely, and focused basis for budgeting and planning. In addition, the AIWP provides a means to judge progress and the success of Program implementation. The FY 1990 AIWP also follows the outline developed by the Policy Review Group (PRG) during Step 1 of initial cycle of the Implementation Planning Process (IPP), which is described in Section III. A number of new FY 1990 projects were still under review by the PRG as the AIWP went to press. These projects have been noted in Table 2, New FY 1990 Program Projects, and in the text of the AIWP.

This AIWP has been organized and written to meet the specific needs of Program Action Items 10.1-10.3. The AIWP includes schedules with key milestones for FY 1990 and beyond, and addresses the Action Items assigned to BPA in Section 1400 of the 1987 Program.

All BPA-funded Program projects discussed in the FY 1990 AIWP are listed in Tables 1 and 2 according to their status as of September 30, 1989. Table 1 (pp. 3-14) lists completed, ongoing, and deferred projects. Table 2 (pp. 15-18) lists all projects which BPA plans to fund as "new" projects in FY 1990. "Ongoing" status indicates that the project started in FY 1989 or before, and that it is expected to continue in FY 1990. "Deferred" means that BPA implementation has been postponed to FY 1991 or later. "Completed" indicates completion during FY 1989. "New" denotes projects that BPA plans to start in FY 1990.

One new FY 1990 project was included in the draft FY 1990 AIWP as a "conditional" project, as a result of PRG recommendations at the May 25, 1989, PRG meeting. If specified conditions are met, BPA will begin to implement the project in FY 1990.

Section VII describes BPA's non-Program, internal support projects. These projects were not subject to review by the PRG and have been included in the AIWP to help the PRG and the public to better understand what BPA is doing.

## FY 1990 AIWP

The FY 1990 AIWP continues to focus on individual Program Action Items. Each

Action Item entry is accompanied by the relevant Program measure language (or abstract), a statement of BPA's objectives in implementing the Action Item, a discussion of background and progress to date, and a summary of implementation plans for FY 1990 to accomplish the Action Item.

The AIWP also presents plans for individual project implementation. Project level reporting has been condensed to tabular form wherever possible. Tables are subdivided into:

- I. Completed Projects
- II. FY 1989 Ongoing Projects
- III. Deferred Projects (if applicable)
- IV. New Projects (including "conditional" new projects)

Within each of these four categories, appropriate information is provided, e.g., Project Number, Project Title, Date Completed, Results/Conclusions, Project Status, Schedule and Milestones, Anticipated Start Date, Reason for Deferral, and Project Officer.

#### Abbreviations Used

The FY 1990 AIWP uses many abbreviations to identify various agencies, organizations, and technical terms. Table 3 (pp. 19-20) lists the full name of each group or the technical term and the corresponding abbreviation used in the AIWP.

## TABLE 1. ONGOING, DEFERRED, AND COMPLETED PROGRAM PROJECTS

### PROJECT STATUS DEFINITIONS:

ONGOING = BPA was implementing project as of September 30, 1989, and project is expected to continue in FY 90.

**DEFERRED** = BPA implementation has been postponed to a future fiscal year beyond FY 90.

COMPLETED = Project completed in FY 89. (Projects completed before FY **89** are not listed in the FY 90 **AIWP**.)

TABLE 1  
FY 1990 WORK PLAN PROJECTS

ONGOING, DEFERRED, AND COMPLETED PROJECTS

ACTION ITEM	TECHNICAL SUBJECT	PROJECT NUMBER	STATUS	TITLE
2.1	WATER BUDGET MANAGEMENT	<b>87-127</b> 87-127-1	ONGOING ONGOING	SMOLT MONITORING <b>AND</b> WATER BUDGET PROGRAM SMOLT MONITORING/SPILL
2.2	SMOLT MONITORING	83-323 <b>84-14</b> 84-14-1 87-40 1 <b>89-20</b>	ONGOING ONGOING ONGOING ONGOING ONGOING	SMOLT CONDITION AND ARRIVAL TIMING AT LOWER GRANITE SMOLT MONITORING AT FEDERAL DAMS SMOLT MONITORING/SPILL SMOLT SURVIVAL <b>AND</b> TRAVEL TIME AIRLIFT FABRICATION
---	RESEARCH	NONE	(PROJECTS 82-3 <b>AND</b> 82-12 NOW LISTED UNDER ACTION ITEM 6.2)	
3.1	CONDUIT <b>DESIGN</b>	NONE		
4.1	ELLENSBURG SCREENS	87-47	ONGOING	ELLENSBURG SCREENS CONSTRUCTION
4.2	HABITAT AND PASSAGE IMPROVE- MENT PROJECTS	81-108 83-7 83-359 <b>83-415</b> 83-436 84-5 84-6 84-B <b>84-9</b> 84-11 84-21 84-22 <b>84-23</b> <b>84-24</b>	ONGOING ONGOING ONGOING ONGOING ONGOING ONGOING ONGOING ONGOING ONGOING ONGOING ONGOING ONGOING ONGOING ONGOING	WARM SPRINGS HABITAT IMPROVEMENT IDAHO HABITAT EVALUATION/IMPROVEMENT PROJECTS SALMON RIVER HABITAT ENHANCEMENT ALTURAS LAKE THREE MILE DAM PASSAGE IMPROVEMENTS CLEARWATER RIVER <b>SUBBASIN</b> CLEARWATER HABITAT ENHANCEMENT JOHN DAY RIVER <b>SUBBASIN</b> GRANDE <b>RONDE</b> RIVER <b>SUBBASIN</b> <b>WILLAMETTE/CLACKAMAS</b> RIVER <b>SUBBASIN</b> MAINSTEM, <b>MIDDLE</b> FORK, JOHN DAY RIVER MIDDLE FORK <b>&amp;</b> TRIBUTARIES, JOHN DAY RIVER <b>CAMAS</b> CREEK, IDAHO MARSH, ELK, UPPER SALMON RIVER, IDAHO

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TABLE 1 (cont.)  
 FY 1990 WORK PLAN PROJECTS

ONGOING, DEFERRED, AND COMPLETED PROJECTS

ACTION ITEM	TECHNICAL SUBJECT	PROJECT NUMBER	STATUS	TITLE
4.2	HABITAT AND PASSAGE IMPROVE- MENT PROJECTS (cont.)	84-25	ONGOING	GRAND RONDE HABITAT IMPROVEMENT PROJECT
		<b>84-28</b>	ONGOING	LEMHI RIVER REHABILITATION, IDAHO
		84-29	DEFERRED	PANTHER CREEK, IDAHO, HABITAT REHABILITATION
		<b>84-62</b>	ONGOING	TROUT CREEK HABITAT IMPROVEMENT
		85-71	ONGOING	SOUTH FORK JOHN DAY RIVER & IZEE FALLS FEASIBILITY STUDY
		86-75	ONGOING	LITTLE NACHES RIVER PASSAGE
		86-79	ONGOING	FIFTEENMILE CREEK BASIN HABITAT IMPROVEMENT
		<b>86-124</b>	ONGOING	LITTLE FALL CREEK PASSAGE FACILITIES MAINTENANCE
		87-100	ONGOING	UMATILLA HABITAT IMPROVEMENT - USFS
		87-100-l	ONGOING	UMATILLA HABITAT IMPROVEMENT - CTUIR
		87-100-z	ONGOING	UMATILLA HABITAT IMPROVEMENT - ODFW
		<b>87-104</b>	ONGOING	PASSAGE IMPROVEMENTS AT <b>WESTLAND</b> DIVERSION
		87-104-l	ONGOING	PASSAGE IMPROVEMENTS AT STANFIELD DIVERSION
		87-112	ONGOING	DROFINO CREEK PASSAGE
		87-l <b>13</b>	DEFERRED	HABITAT EVALUATION AND MONITORING/OREGON
		87-114	DEFERRED	HABITAT EVALUATION AND MONITORING/WASHINGTON
		87-115	DEFERRED	GRANOE RONDE MONITORING
		87-416	ONGOING	MAXWELL DIVERSION IMPROVEMENT
		87-416-1	ONGOING	COLD SPRINGS DIVERSION IMPROVEMENT
		87-416-2	COMPLETED	<b>WESTLAND</b> HYDRAULIC REVIEW
		88-22	ONGOING	UMATILLA BASIN TRAP AND HAUL
		88-50	COMPLETED	<b>WEID</b> MAIN CANAL PUMPING
		88-116	ONGOING	TROUT CREEK O & M
89-24-l	ONGOING	UMATILLA BASIN PASSAGE FACILITY EVALUATION		
4.3	ROZA	<b>NONE</b>		
4.4	PROSSER			

TABLE 1 (cont.)  
 FY 1990 WORK PLAN PROJECTS

ONGOING, DEFERRED, AND COMPLETED PROJECTS

ACTION ITEM	TECHNICAL SUBJECT	PROJECT NUMBER	STATUS	TITLE
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		86-91	COMPLETED	PREDESIGN FOR YAKIMA BASIN FISH PASSAGE
		86-112	ONGDING	<b>TOPPENISH/WESTSIDE/ELLENSBURG</b> SCREEN FABRICATION
		89-90	ONGOING	YAKINA PASSAGE PHASE 2 SCREENS PREDESIGN
4.6	UMATILLA RIVER WATER EXCHANGE	NONE	(SEE TABLE 2 FOR NEW PROJECT)	
4.6.1	UMATILLA NON-STRUCTURAL WATER MEASURES	NONE		
4.14.1	JOHN DAY ACCLIMATION	83-313	<b>ONGOING</b>	NET PEN REARING OF FALL CHINOOK SALMON
4.15.1	YAKIMA HATCHERY (Tasks)	86-45	ONGOING	YAKIMA HATCHERY - CLE ELUM PROJECT
		88-115	ONGOING	<b>YAKIMA/KLICKITAT</b> HATCHERY DESIGN AND CONSTRUCTION
		88-120	ONGOING	YAKIMA AND KLICKITAT NATURAL/ARTIFICIAL PRODUCTION PROGRAM
		88-123	ONGOING	YAKIMA HATCHERY COORDINATION - RDZA
		88-149	ONGOING	YAKIMA HATCHERY WATER ANALYSIS
		88-167	ONGOING	YAKINA HATCHERY ECONOMIC STUDY
		89-42	ONGOING	KLICKITAT HATCHERY PRE-ENGINEERING
		89-43	ONGOING	YAKINA HATCHERY PRE-ENGINEERING
		89-82	ONGOING	YAKIMA HATCHERY EXPERIMENTAL DESIGN-WDF
		89-83	ONGOING	YAKINA HATCHERY EXPERIMENTAL DESIGN-WOW
		89-89	ONGOING	<b>YAKIMA/KLICKITAT</b> RADIOTELEMETRY STUDY
		89-100	ONGOING	TECHNICAL WRITER
		89-105	ONGOING	SPECIES INTERACTION STUDY

TABLE 1 (cont.)  
 FY 1990 WORK PLAN PROJECTS

ONGOING, DEFERRED, AND COMPLETED PROJECTS

ACTION ITEM	TECHNICAL SUBJECT	PROJECT NUMBER	STATUS	TITLE
	LOW-CAPITAL PRODUCTION FACILITIES	83-364	COMPLETED	EVALUATION OF A LOW-CAPITAL SALMON PRODUCTION FACILITY
4.16.1- 4.16.2	NORTHEAST OREGON SPRING CHINOOK	88-53	ONGOING	NORTHEASTERN OREGON ARTIFICIAL PRODUCTION FACILITIES
4.17.1	UMATILLA RELEASE AND COLLECTION	83-435	ONGOING	<b>MINTHORN</b> AND BDNIFER SPRINGS ACCLIMATION FACILITIES
4.17.2	UMATILLA HATCHERY	84-33 84-33-2 84-33-3 <b>87-415</b>	ONGOING COMPLETED ONGOING ONGOING	UMATILLA HATCHERY ANALYSIS <b>OF</b> 02 MICHIGAN REARING STRATEGIES UMATILLA HATCHERY TRIBAL FISH CULTURE TRAINING UMATILLA HATCHERY MASTER PLAN
4.17.3	NEZ PERCE HATCHERY	83-350 88-126	ONGOING ONGOING	NEZ PERCE LOW-CAPITAL PRODUCTION FACILITIES NEZ PERCE TECHNICAL SUPPORT
4.17.4	CLEARWATER STUDY	88-15	ONGOING	<b>MAINSTEM</b> CLEARWATER RIVER STUDY
- - - -	IMPROVED HATCHERY EFFECTIVENESS (Action Item 34.23 in 1984 Program)	83-312 83-363 84-43 84-45 84-46 84-945 87-403	ONGOING ONGOING ONGOING COMPLETED COMPLETED COMPLETED ONGOING	EPIDEMIOLOGY AND CONTROL <b>OF</b> INFECTIOUS DISEASES DEVELOPMENT OF DIETS FOR ENHANCED SURVIVAL OF SALMON EVALUATION <b>OF</b> A SUBUNIT VACCINE AGAINST INFECTIOUS HEMATOPOIETIC NECROSIS EFFECT OF NUTRITION ON IMMUNE RESPONSES OF SALMON DEVELOPMENT OF A VACCINE <b>FOR</b> BACTERIAL KIDNEY DISEASE EFFECT <b>OF</b> NUTRITION ON IMMUNE RESPONSES OF SALMON REGIONAL FISH DISEASE LABORATORY

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TABLE 1 (cont.)  
 FY 1990 WORK PLAN PROJECTS

ONGOING, DEFERRED, AND COMPLETED PROJECTS

ACTION ITEM	TECHNICAL SUBJECT	PROJECT NUMBER	STATUS	TITLE
4.17.5	WILLAMETTE RIVER SPRING CHINOOK	NONE		
4.17.6	<b>PELTON</b> DAM	89-29	ONGOING	PROPAGATION IN <b>PELTON</b> DAM LADDER
4.21	UPPER COLUMBIA HATCHERY RELEASE	NONE		
5.1	KNOWN STOCK ELECTROPHORESIS	NONE		
6.1	TECHNICAL WORK GROUPS	87-307	ONGOING	RESEARCH AREA OF EMPHASIS TECHNICAL WORK GROUPS
6.2	RESEARCH AREAS OF EMPHASIS			
	<u>RES. MORT/WB</u>	82-3	ONGOING	MAGNITUDE/DYNAMICS OF PREDATOR-CAUSED MORTALITY ON JUVENILE SALMONIDS
		82-12	ONGOING	PREDATION INDEX AND WAYS OF REDUCING <b>SALMONID</b> LOSSES TO PREDATION
		83-319	ONGOING	PIT TAG RESEARCH
		87-413-1	ONGOING	FISH SURVIVAL AND <b>SMOLT</b> PHYSIOLOGY/BEHAVIOR WORKSHOPS
		87-413-Z	ONGOING	ANALYSIS OF HISTORIC <b>DATA</b> FOR ADULT AND JUVENILE SALMONIDS
		88-134	ONGOING	MENARY COLLECTION EFFICIENCY
		88-141	ONGOING	USE OF ADVANCED PHOTOPERIOD TO ACCELERATE SMOLTIFICATION

**TABLE 1 (cont.)**  
 FY 1990 WORK PLAN PROJECTS

ONGOING, DEFERRED, AND COMPLETED PROJECTS

ACTION ITEM	TECHNICAL SUBJECT	PROJECT NUMBER	STATUS	TITLE
	<u>FISH DISEASE</u>	88-152	ONGOING	INFECTIOUS HEMATOPOIETIC NECROSIS VIRUS RESEARCH
		89-3 1	ONGOING	CONTROL OF BACTERIAL KIDNEY DISEASE
		89-32	ONGOING	REGISTRATION OF ERYTHROMYCIN
		89-40	ONGOING	ANALYTICAL METHODS FOR MALACHITE GREEN
		89-54	ONGOING	RESEARCH ON ANTIFUNGAL COMPOUNDS
		89-81-2	ONGOING	ERYTHROCYTIC INCLUSION <b>BODY</b> SYNDROME ETIOLOGY
	<u>HATCHERY EFE</u>	86-118	ONGOING (TASK ORDER 9)	WORKSHOP - VOLITIONAL AND SERIAL RELEASES
		88-159	COMPLETED	BEHAVIOR OF JUVENILE SALMONIDS IN COLUMBIA RIVER ESTUARY
		88-160	ONGOING	BIO-ENGINEERING EVALUATION OF OXYGEN SUPPLEMENTATION
		88-160-Z	ONGOING	ENGINEERING CONSULTATION/ASSISTANCE ON PROJECT 88-160
		88-163	ONGOING	EFFECTS OF CODED WIRE TAGGING ON SPRING CHINOOK
		89-30	ONGOING	EVALUATION OF PRE-RELEASE TEMPERATURE ACCLIMATION
		89-45	ONGOING	ASSESS ANADROMOUS PRODUCTION CAPACITY IN COLUMBIA BASIN
		89-46	ONGOING	SPRING CHINOOK <b>SMOLT</b> QUALITY ASSESSMENT
		89-66	ONGOING	CWT EVALUATION OF MISSING HATCHERY GROUPS, WA--WDF
		89-69	ONGOING	CWT EVALUATION OF MISSING HATCHERY GROUPS, OR--ODFW
		89-81-3	ONGOING	MODELING OPTIMIZED HATCHERY PRODUCTION
		89-81-4	ONGOING	SURVEY OF RESEARCH AND RESEARCH IMPLEMENTATION

W

TABLE 1 (cont.)  
 FY 1990 WORK PLAN PROJECTS

ONGOING, DEFERRED, AND COMPLETED PROJECTS

ACTION ITEM	TECHNICAL SUBJECT	PROJECT NUMBER	STATUS	TITLE
	<u>WPPLEMENTATION</u>	88-100	ONGOING	ANALYSIS OF PAST & PRESENT SALMON AND STEELHEAD SUPPLEMENTATION GENETIC MONITORING AND EVALUATION PROGRAM FOR SUPPLEMENTED POPULATIONS OF SALMON AND STEELHEAD IN THE COLUMBIA BASIN EFFECTIVENESS OF SUPPLEMENTING IMNAHA RIVER STEELHEAD WITH HATCHERY <b>SMOLTS</b> AND EFFECTS ON NATURAL PRODUCTION PERFORMANCE. GENETIC CHARACTERISTICS, AND LIFE HISTORY CHANGES EFFECTIVENESS OF SUPPLEMENTATION STRATEGIES AND ASSESSMENT OF INTERACTIONS BETWEEN HATCHERY FISH AND NATURAL FISH IN SALMON AND CLEARWATER BASINS
		89-96	ONGOING	
		89-97	ONGOING	
		89-98	ONGOING	
6.3	HATCHERY DATA BASE	86-13	ONGOING	FISH HEALTH MONITORING IN WASHINGTON - WDG FISH HEALTH MONITORING IN WASHINGTON - WOF FISH HEALTH MONITORING IN IDAHO FISH HEALTH MONITORING IN OREGON FISH HEALTH MONITORING - <b>USFWS</b>
		86-54	ONGOING	
		87-1 17	ONGOING	
		87-1 18	ONGOING	
		87-119	ONGOING	
6.4	NATURAL PRODUCTION DATA <b>BASE</b>	NONE	(SEE TABLE 2 FOR NEW PROJECT)	
6.5	HIGH PRIORITY PROJECTS	87-42 1	COMPLETED	MALACHITE GREEN REMOVAL FROM HATCHERY EFFLUENT
6.10	SYSTEM MONITORING AND EVALUATION	88-108-1	ONGOING	COORDINATED INFORMATION SYSTEM ( <b>CIS</b> ) EPA/USGS NAPPING SYSTEM FOR CIS HISTORICAL DATA BASE
		88-108-z	ONGOING	
		89-104	ONGOING	
6.12	COORDINATION AND CONSULTATION	NONE		

TABLE 1 (cont.)  
 FY 1990 WORK PLAN PROJECTS

ONGOING, DEFERRED, AND COMPLETED PROJECTS

ACTION ITEM	TECHNICAL SUBJECT	PROJECT NUMBER	STATUS	TITLE
7.1	COLVILLE HATCHERY	85-38 85-38-1	ONGOING COMPLETED	COLVILLE HATCHERY COLVILLE FISH <b>CULTURIST</b> TRAINING
7.2	COEUR O'ALENE	NONE	(SEE TABLE 2 FOR NEW PROJECT)	
7.3	KOKANEE SALMON HATCHERIES	88-62	ONGOING	KOKANEE HATCHERIES
7.4	LAKE ROOSEVELT	88-63	ONGOING	LAKE ROOSEVELT MONITORING PROGRAM
7.5	KOOTENAI INDIAN RESERVATION	88-64	ONGOING	DESIGN/CONSTRUCT/OPERATE STURGEON HATCHERY
7.6	KOOTENAI RIVER	88-65	ONGOING	ASSESS IMPACTS OF WATER LEVEL FLUCTUATIONS
7.7	<b>KALISPEL</b> RESERVATION	88-66	ONGOING	ASSESS FISHERY IMPROVEMENT OPTIONS IN THE PEND OREILLE RIVER
7.10	FUND PROJECTS	<del>88-156</del>	ONGOING	DUCK VALLEY RESIDENT FISH PROJECT
7.11	MONTANA PROJECTS	81-105	ONGOING	KERR/HUNGRY HORSE EFFECTS ON <b>FLATHEAD</b> KOKANEE
7.12	STURGEON	86-50 89-44	ONGOING ONGOING	STURGEON STATUS AND HABITAT REQUIREMENTS <b>COLUMBIA</b> RIVER WHITE <b>STURGEON</b> STUDY
---	<b>PEND</b> OREILLE HATCHERY	85-339	ONGOING	KOKANEE STOCK STATUS AND EVALUATION OF CABINET GORGE HATCHERY

TABLE 1(cont.)  
 FY 1990 WORK PLAN PROJECTS

ONGOING, DEFERRED, AND COMPLETED PROJECTS

ACTION ITEM	TECHNICAL SUBJECT	PROJECT NUMBER	STATUS	TITLE
7.13	KOOTENAI RIVER MATERIALS REMOVAL	NONE		
7.14	DWORSHAK DAM IMPACTS ASSESSMENT	87-99 87-407	ONGOING ONGOING	DWORSHAK DAM IMPACTS <b>ASSESSMENT/KOKANEE/LIMNOLOGY</b> DWORSHAK IMPACTS <b>ASSESSMENT/RAINBOW/SMALLMOUTH BASS</b>
7.15	DRAWOOWN RECOMMENDATIONS	83-465 83-467	ONGOING ONGOING	HUNGRY HORSE RESERVOIR LEVELS <b>LIBBY</b> RESERVOIR LEVELS
1	MITIGATION STATUS REPORTS/ CONSULTATIONS	NONE		CONSULTATIONS AMONG AFFECTED PARTIES SHOULD BEGIN
8.1	LOSS STATEMENTS	88-110 88-12 88-44	COMPLETED ONGOING ONGOING	WILDLIFE HABITAT/LOSS MINIDOKA DAM LOWER COLUMBIA WILDLIFE MITIGATION PLANNING WILDLIFE MITIGATION PLANNING FOR CHIEF JOSEPH DAM
8.2	LOSS STATEMENT CONSULTATIONS	NONE		
8.3	MITIGATION PLANS	88-154	ONGOING	WILDLIFE PROTECTION/ENHANCEMENT OF DWORSHAK DAM
8.4 - 8.7	<b>LIBBY</b> DAM 1987-1991	84-38 84-39 87-55 88-43	ONGOING ONGOING ONGOING ONGOING	URAL-TWEED BIGHORN SHEEP MITIGATION, HABITAT IMPROVEMENT URAL-TWEED BIGHORN SHEEP MITIGATION NW MONTANA WILDLIFE HABITAT ENHANCEMENT LIBBY WILDLIFE HABITAT ENHANCEMENT

TABLE 1 (cont.)  
 FY 1990 WORK PLAN PROJECTS

ONGOING, DEFERRED, AND COMPLETED PROJECTS

ACTION ITEM	TECHNICAL SUBJECT	PROJECT NUMBER	STATUS	TITLE
<b>8.8-</b>	HUNGRY HORSE	<b>87-60</b>	ONGOING	MONTANA EASEMENTS/LAND ACQUISITION
8.10	<b>1987-1991</b>	88-1 13	ONGOING	HUNGRY HORSE WILDLIFE <b>PROTECTION/ENHANCEMENT</b>
		<b>88-147</b>	COMPLETED	MONTANA CONSERVATION EASEMENT
		89-23	ONGOING	MONTANA WILDLIFE HABITAT PROTECTION
<b>8.11</b>	TRUST <b>FUND</b>	<b>89-52</b>	ONGOING	MONTANA WILDLIFE TRUST AGREEMENT
- - -	WILDLIFE MITIGATION	NONE	(SEE TABLE 2 FOR NEW PROJECT)	
<b>G</b> 9.1	CONTINUE TO APPLY PROGRAM SECTIONS 1204 (a), <b>(b)</b> , <b>(c)</b> , AND (e) TO ALL NEW PROJECTS.			
9.3	CUMULATIVE EFFECTS	NONE		
- - -	PROTECTED AREAS	NONE		
9.4	<b>DEMO -</b> TURBINE INTAKE SCREEN	NONE		
<b>10.1-</b> 10.3	EXPENDITURE AND OBLIGATION PLANS AND PROGRAM WORK PLANS. SCHEDULES WITH KEY MILESTONES FOR THE SUBSEQUENT FISCAL YEAR.			
----	PROGRAM-RELATED, NON-MEASURE PROJECTS	79-2 <b>81-1</b> <b>82-13</b> <b>82-16</b>	COMPLETED COMPLETED ONGOING ONGOING	COLUMBIA RIVER HATCHERY CONTRIBUTIONS TO PACIFIC CHINOOK FISHERY JOHN DAY RESERVOIR REQUIREMENTS FOR CHINOOK SALMON CODED-WIRE TAG RECOVERY YAKIMA RIVER SPRING CHINOOK ENHANCEMENT STUDY

TABLE 1 (cont.)  
 FY 1990 WORK PLAN PROJECTS

ONGOING, DEFERRED, AND COMPLETED PROJECTS

ACTION ITEM	TECHNICAL SUBJECT	PROJECT NUMBER	STATUS	TITLE
-----	PROGRAM-RELATED PROJECTS (cont.)	83-6 <b>87-130</b>	ONGOING ONGOING	OPERATION/MAINTENANCE OF BPA FISH TAGGING TRAILER FREEZE-BRAND RECOVERY DATA (MCNARY OAM)

(VS6-PJSP-1518W)

TABLE 2. NEW FY 1990 PROGRAM PROJECTS

TABLE 2  
FY 1990 WORK PLAN PROJECTS

NEW PROJECTS IN FY 1990

<u>ACTION ITEM</u>	TECHNICAL	PROJECT	TITLE
1987	SUBJECT	NUMBER	
PROGRAM			
4.6	UMATILLA WATER EXCHANGE	89-27	PROVIDE POWER FOR USER COLUMBIA RIVER PUMPS
4.14.1	JOHN DAY ACCLIMATION	<b>89-16</b>	TEMPORARY JOHN DAY ACCLIMATION FACILITY
4.15.1	<b>YAKIMA</b> HATCHERY (Tasks)	<b>90-58</b> 90-64 <b>90-65</b> 90-66 90-67 90-68 <b>90-69</b> <b>90-70</b> 90-71 <b>90-72</b>	PROJECT LEADER FUNCTION KLICKITAT RIVER MONITORING JUVENILE MONITORING TRAP CALIBRATION GENETIC GUIDELINE DEVELOPMENT LOWER <b>YAKIMA</b> RIVER SMOLT TRAP DEVELOPMENT ADULT TRAP PREDESIGN YAKIMA HATCHERY FINAL DESIGN KLICKITAT HATCHERY FINAL DESIGN SMOLT LOSS EVALUATION COMPUTER <b>INFORMATION</b> SYSTEM DEVELOPMENT
4.17.2	UMATILLA HATCHERY	<b>90-XXX</b>	UMATILLA SATELLITE FACILITY SITING
6.2	RESEARCH AREAS OF EMPHASIS		
	<u>RES MORT/WB EFE</u>	87-413-4 <b>1/</b>  89-28 89-107	FEASIBILITY OF SATISFYING MODEL ASSUMPTIONS OF THE <b>BURNHAM/ANDERSON</b> FISH SURVIVAL ESTIMATION TECHNIQUE PREDATOR CONTROL EPIDEMIOLOGICAL METHODS FOR QUANTIFYING SURVIVAL RELATIONSHIPS FROM PIT TAG RELEASES OF SMOLTS
	<u>FISH DISEASE</u>	89-81-1 90-46 <b>2/</b>	<b>FUNGAL</b> INFECTIONS OF SPRING AND SUMMER CHINOOK EFFECTS AND CONTROL OF WHIRLING DISEASE

**1/** PRG referred this project to the **M/WBETWG** for further review. As the FY 1990 AIWP went to press, the PRG was still awaiting results of the **M/WBETWG's** review.

**2/** On January 18, 1990, the PRG placed this project in the "contingency" file of projects that may be funded if unspent FY 1990 funds are available. Currently, no funds are available to implement this project in FY 1990.

TABLE 2  
FY 1990 WORK PLAN PROJECTS

NEW PROJECTS IN FY 1990

<u>ACTION ITEM</u>	<u>TECHNICAL</u>	<u>PROJECT</u>	<u>TITLE</u>
<u>1987</u>	<u>SUBJECT</u>	<u>NUMBER</u>	
<u>PROGRAM</u>			
6.2	RESEARCH AREAS OF EMPHASIS (cont.)		
	<u>FISH OISEASE</u> (cont.)	<b>90-47</b> <u>2/</u> 90-48 <u>2/</u> <b>90-57</b> <u>2/</u>	BACTERIAL COLDWATER OISEASE RESEARCH FISH PARASITE RESEARCH CERATOMYXA CONTROL
	<u>HATCHERY EFFECTIVENESS</u>	89-65 89-67 89-68 89-81-6 <u>3/</u> <b>90-XXX</b>	CWT EVALUATION OF MISSING HATCHERY GROUPS, OR/WA--USFWS CWT EVALUATION OF MISSING HATCHERY GROUPS, WA--WDW CWT EVALUATION OF MISSING HATCHERY GROUPS, ID--IDFG HATCHERY GENETIC GUIDELINES EVALUATION OF ALTERNATIVE PROTEIN SOURCES FOR SPRING CHINOOK
	<u>SUPPLEMENTATION</u>	<b>90-52</b> <u>4/</u>  <b>90-53</b> <u>4/</u> <b>90-54</b> <u>4/</u>  <b>90-55</b> <u>4/</u>  90-56 <u>4/</u>	PERFORMANCE/STOCK PRODUCTIVITY IMPACTS OF HATCHERY SUPPLEMENTATION TUCANNON RIVER SPECIES INTERACTION STUDIES EVALUATION OF THE BENEFITS OF ACCLIMATING SPRING CHINOOK SALMON AND SUMMER STEELHEAD SMOLTS IN THE GRANDE RONDE AND IMNAHA RIVER BASINS IMPACTS OF SUPPLEMENTATION ON STOCK <b>PRODUCTIVITY/PERFORMANCE</b> OF SALMON & STEELHEAO IN SALMON RIVER. EVALUATE THE EFFECTIVENESS OF ACCLIMATION FACILITIES TO IMPROVE/INCREASE SURVIVAL OF SUMMER STEELHEAD
6.3	HATCHERY DATA BASE	<b>88-55</b> <b>89-99</b>	HATCHERY PRODUCTION DATA BASE HATCHERY WATER QUALITY SURVEY

2/ On January 18, 1990, the PRG placed this project in the "contingency" file of projects that may funded if unspent FY 1990 funds are available. Currently, **no** funds are available to implement this project in FY 1990.

3/ As the FY 1990 AIWP went to press, BPA understands that the HETWG does not plan to go forward with this project in FY 1990.

4/ As the FY 1990 AIWP went to press, this project was still under review by the PRG.

TABLE 2  
FY 1990 WORK PLAN PROJECTS

NEW PROJECTS IN FY 1990

<u>ACTION ITEM</u>			
1387	TECHNICAL	PROJECT	
PROGRAM	SUBJECT	NUMBER	
6.4	NATURAL PRODUCTION DATA BASE	<b>88-56</b>	NATURAL PRODUCTION <b>DATA</b> BASE
7.2	COEUR <b>D'ALENE</b> RESERVATION	<b>90-44</b>	STREAM SURVEY, HATCHERY, IMPROVEMENTS, AND MONITORING
7.4	LAKE ROOSEVELT	<b>90-18</b>	LAKE ROOSEVELT HABITAT IMPROVEMENT PROJECTS
8.1	LOSS STATEMENTS	<b>90-51</b> (CONDITIONAL PROJECT)	LOWER CLEARWATER AQUATIC MAMMAL STUOY
8.3	MITIGATION PLANS	<b>90-25</b> <b>90-50</b>	LOWER COLUMBIA FACILITIES WILDLIFE MITIGATION PLAN <b>MINIDOKA</b> DAM WILDLIFE MITIGATION PLAN
8.4-8.7	LIBBY DAM	<b>90-49</b>	LIBBY DAM WILDLIFE PROJECT
---	WILDLIFE MITIGATION	<b>90-13</b>	WILDLIFE MITIGATION (OREGON, WASHINGTON, IDAHO)

(VS6-PJSP-0395W)

TABLE 3. ABBREVIATIONS USED IN THE WORK PLAN

Abbreviation	Complete Title
Act	Pacific Northwest Electric Power Planning and Conservation Act
AIWP	Annual Implementation Work Plan
BIA	Bureau of Indian Affairs
BCWD	Bacterial Cold Water Disease
BKD	Bacterial Kidney Disease
BLM	Bureau of Land Management
BPA	Bonneville Power Administration
BPNL	Battelle Pacific Northwest Laboratory
CBFWA	Columbia Basin Fish and Wildlife Authority
C-E	Cost-effectiveness
CCT	Confederated Colville Tribes
CIS	Coordinated Information System
Council	Northwest Power Planning Council
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
DOE	Department of Energy
EIBS	Erythrocytic Inclusion Body Syndrome
ELISA	Enzyme-Linked Immunosorbent Assay
EPA	Environmental Protection Agency
EPRI	Electric Power Research Institute
FCRPS	Federal Columbia River Power System
FDA	Food and Drug Administration
FDTWG	Fish Disease Technical Work Group
FONSI	Finding of No Significant Impact
FY	Fiscal Year
HETWG	Hatchery Effectiveness Technical Work Group
ICFWRU	Idaho Cooperative Fish and Wildlife Research Unit
IDFG	Idaho Department of Fish and Game
IFIM	Instream Flow Incremental Methodology
IHN	Infectious Hematopoietic Necrosis
IPN	Infectious Pancreatic Necrosis
IPP	Implementation Planning Process
IRB	Internal Review Budget
KCFS	Thousand cubic feet per second
KIT	Kalispel Indian Tribe
MAF	Million acre-feet
MDFWP	Montana Department of Fish, Wildlife and Parks
MEG	System Monitoring and Evaluation Work Group
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
M/WBTWG	Reservoir Mortality and Water Budget Effectiveness Technical Work Group

TABLE 3. ABBREVIATIONS USED IN THE WORK PLAN  
(Continued)

Abbreviation	Complete Title
NEPA	National Environmental Policy Act
NF	National Forest
NFH	National Fish Hatchery
NMFS	National Marine Fisheries Service
NPT	Nez Perce Tribe
ODFW	Oregon Department of Fish and Wildlife
OHSU	Oregon Health Sciences University
OSU	Oregon State University
OWRD	Oregon Water Resources Department
PIT	Passive Integrated Transponder
PMFC	Pacific Marine Fisheries Commission
PMIS	Program Management Information 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 Marine 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
SPG	System and Subbasin Planning Group
SPM	System Planning Model
SPOC	System Planning Oversight Committee
SPT	Shoshone Paiute Tribe
SRG	Scientific Review Group
STWG	Supplementation Technical Work Group
TWG	Technical Work Group
TWgG	Technical Working Group
UCUT	Upper Columbia United Tribes
UI	University of Idaho
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
uw	University of Washington
WDF	Washington Department of Fisheries
WDW	Washington Department of Wildlife
WEID	West Extension Irrigation District
Work Plan	Annual Implementation Work Plan
wsu	Washington State University
YIN	Yakima Indian Nation

## II. FY 1990 BPA BUDGET ALLOCATION

BPA's FY 1990 AIWP will continue to emphasize anadromous fish. Major areas of anadromous fish activities include: hydroelectric system operations; fish health, supplementation, and artificial production; enhancement projects in the Yakima and Umatilla River Basins, including construction of the Yakima and Umatilla Hatcheries; and habitat improvement projects located throughout the Columbia River Basin.

The 1987 Council amendments to the Program continue to influence ongoing projects and to add new activities for BPA implementation. These amendments range from specific activities which are ready for implementation to numerous planning activities. BPA has identified, and plans to initiate through the IPP, 38 new projects or tasks during FY 1990 (see Table 2, p. 14). These "new start" activities include anadromous fish propagation facility, mainstem passage, fish disease, hatchery effectiveness, supplementation, resident fish, and wildlife projects.

BPA currently plans to start three new wildlife projects involving mitigation planning and wildlife mitigation at a number of Federal Columbia River hydroelectric projects. Additionally, wildlife mitigation plans for Oregon, Washington, and Idaho are expected to be approved by the Council early in FY 1990. This action should result in several new projects. Hungry Horse and Libby dams mitigation will continue and payment will be made into the "Montana Trust" (Action Item 8.11).

Resident Fish projects will involve stream survey, habitat enhancement, and monitoring on the Coeur D'Alene Reservation. Construction of the Galbraith Springs Hatchery during FY 1990 will enhance fish production at Lake Roosevelt.

The amended Program will continue planning programs that are expected to add new activities for BPA implementation. Technical Work Groups are continuing to develop Five-Year Research Work Plans. The Council's System and Subbasin Planning and System Monitoring and Evaluation Work Groups are continuing their planning efforts, which are expected to result in a significant number of new projects in FY 1991. Limited dollars were available for new fish health protection and hatchery effectiveness projects in FY 1990 due to second-year funding of projects begun in FY 1989.

### III, IMPLEMENTATION PLANNING PROCESS

Background: On October 19, 1988, Bonneville Power Administration (BPA) and the Columbia Basin Fish and Wildlife Authority (CBFWA) signed a letter endorsing the Implementation Planning Process (IPP). The IPP is an annual, sequential, nine-step process by which BPA, in collaboration with the CBFWA, plans its implementation of the Columbia River Basin Fish and Wildlife Program (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) Technical Working Groups (TWG's).

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, U. S. Army Corps of Engineers, utilities, and other interested parties.

The SRG will provide the PRG and BPA with objective scientific/technical advice and recommendations related to implementation of the Program and evaluate implementation progress. Development of the annual evaluation report during Step 9 will be the major task of the SRG. The SRG is comprised of senior-level scientists from the Northwest and other regions of the country.

The TWG's assist BPA with scoping of projects (Step 2), responding to public comments (Step 4), and development of project specifications (Step 5). The IPP TWG's include the four Research Area of Emphasis TWG's, CBFWA standing committees, and other existing TWG's, as available. These TWG's are comprised of the region's technical experts in specific areas of expertise. The IPP provides a process to create additional TWG's 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 TWG's in IPP Steps 2, 4, and 6.

Progress: The PRG was established in late 1988, held its initial meeting in January 1989, and continues to meet as needed to accomplish IPP tasks. With BPA's assistance, an outline of the draft FY 1990 AIWP was developed by the PRG and approved by the PRG in May 1989. The FY 1990 AIWP follows this outline and relies on the project scoping information provided by the TWG's during IPP Step 2. BPA has also established CFWA TWG Coordinator and IPP Coordinator positions to facilitate establishment and functioning of the IPP. Because the IPP is a new and unique program, BPA has conducted, and continues to conduct, educational efforts to familiarize IPP participants with their roles and responsibilities.

Because the initial cycle of the IPP did not begin until January 1989 (rather than in August 1988, as called for in the annual IPP schedule), an abbreviated schedule was followed in an effort to bring the IPP back on the prescribed schedule. Consequently, some IPP activities were accomplished under shortened timeframes, and the PRG did not have an opportunity to provide recommendations on BPA's Fish and Wildlife Program Internal Review Budget (IRB) for FY 1991.

SRG members were selected by the PRG, and the SRG held its first meeting in September 1989. To familiarize SRG members with their role in the IPP and with the Program, an orientation was conducted as part of this meeting. In October 1989, the SRG began reviewing projects and subject areas assigned by the PRG and preparing the annual evaluation report. The PRG has asked the SRG to review the implementation of the Hatchery Effectiveness Research, Fish Disease Research, Supplementation Research, and the Habitat Enhancement Program areas as part of the SRG's initial annual report.

Plans: In FY 1990, 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 second annual IPP cycle, during which FY 1991 implementation will be planned, is expected to begin in January 1990. During Step 1 of the second IPP cycle, the PRG will be able to review and provide recommendations on the FY 1992 IRB. The SRG will continue to meet as needed throughout FY 1990 and is expected to complete its first annual evaluation report by the end of July 1990.

Copies of the complete IPP document and the Terms of Reference for the PRG, SRG, and TWG's, are available from:

Publications Clerk  
Bonneville Power Administration  
Division of Fish and Wildlife - PJ  
P. O. Box 3621  
Portland, OR 97208

## IV. SYSTEM PLANNING ACTIVITIES

BPA actively participates in two Council-managed system planning programs, System and Subbasin Planning and System Monitoring and Evaluation. These two programs will strongly influence future Program direction and will ultimately affect BPA's implementation of the Program, its evaluation and monitoring efforts, and its future Fish and Wildlife Program budget levels. The current status and plans of these two programs are presented below:

### System and Subbasin Planning

Responsibilities: The Council funds the activities of the fish and wildlife agencies and tribes to develop an Integrated System Plan, including 31 separate Subbasin Plans. The fish and wildlife agencies and tribes have organized committees at the system and subbasin levels for completing this task. The system level committee, the System Planning Group (SPG), has been responsible for developing the format for the plans, guiding the subbasin planners, and reviewing draft plans and will develop the Integrated System Plan. The subbasin level committees have been responsible for collecting information and developing drafts of specific Subbasin Plans. The Council has organized another committee at the system level, the System Planning Oversight Committee (SPOC), that has identified and is addressing major issues that have been and will be part of the system planning process.

Progress: System planning is scheduled for completion by June 30, 1990. The Council contract with the fish and wildlife agencies and tribes through the Pacific Marine Fisheries Commission calls for nine products over the life of the planning process. Planning began in September 1987, and several products have been completed to date. These products include the preliminary information report that contains information needed to evaluate the production potential of the subbasins and thereby identify realistic objectives for production, draft Subbasin Plans above Bonneville Dam that include proposed objectives for production, the preliminary system analysis report above Bonneville Dam that analyzes the proposed objectives for consistency, and final Subbasin Plans above Bonneville Dam that include recommended and alternative strategies for meeting the proposed objectives. Products completed below Bonneville Dam include the preliminary information report and draft Subbasin Plans. Drafting of sections of the Integrated System Plan has also begun.

Plans: The Integrated System Plan that will be completed by June 30, 1990 will recommend objectives for salmon and steelhead production in the 31 subbasins of the Columbia River Basin. It also will include recommended strategies for meeting those objectives. This plan, including the 31 Subbasin Plans, will be considered for amendment into the Program in a process that will extend into fall of 1991. The results of that amendment process should provide guidance for funding activities in BPA's implementation of the Fish and Wildlife Program in the 1990's. BPA is participating in the system planning process to assist in the definition of strategies for meeting salmon and steelhead production objectives and to help make the link between the planning process and implementation scheduling in fiscal years beyond 1990. BPA participation in the SPG and the SPOC will continue on a regular monthly basis through the end of the planning process.

## System Monitoring and Evaluation

Responsibilities: The Council's Monitoring and Evaluation Group (MEG) is charged with: formulating a System Monitoring and Evaluation Program (SMEP), maintaining the System Planning Model (SPM), integrating Subbasin Plans, recommending formats for System and Subbasin Plan reports (including habitat capacity, genetic impacts, production, and cost of alternative strategies), developing a Coordinated Information System (CIS), and evaluating and disseminating research results.

Progress: MEG subcommittees have been formed to address: SPM maintenance, genetics, analytical methods, and the CIS. These efforts are underway.

Plans: The Council will prepare a work plan as the basis for direct BPA funding. After the SMEP is adopted by the Council, BPA funding of MEG activities will be formalized as a Program Action Item. MEG will focus on gaining public support for, and eventual adoption of, SMEP, CIS implementation, and System Plan Integration.

Long-Term Role: MEG functions will continue as a result of its role in measuring systemwide progress, monitoring compliance with Program policies, integrating system plans, maintaining the SPM, guiding development and maintenance of the CIS, and evaluating research results for application to Program actions.

## V. FISH AND WILDLIFE DIVISION ORGANIZATION AND STAFF

The Division of fish and Wildlife develops, coordinates, and manages BPA's Fish and Wildlife Program pursuant to the requirements of the Pacific Northwest Power Planning and Conservation Act (Act). The Division was reorganized under BPA's Most Efficient Organization concept in late 1987. As a result, the functions of the Division's branches and sections were redefined. Figure 1 contains a current organization chart for the Division. Branch and section titles and functions are as follows:

### Fisheries Integration Branch

This Branch reviews and analyzes proposed BPA policies, programs, and plans for their consistency with BPA's fish and wildlife obligations under the Act and recommends standards, criteria, policy, or procedures necessary to ensure equitable treatment of fish and wildlife in BPA's decision making process; evaluates hydroelectric operations for fish and wildlife impacts and needs and recommends balanced operations; reviews and analyzes policies, programs, plans, and legislation of external entities to determine their impact on BPA's Fish and Wildlife Program; represents and integrates the biological and Fish and Wildlife Program requirements into the development of agency policy, programs, and plans; and develops and administers research and monitoring contracts directed at resolving fish passage problems at hydroelectric facilities. The Branch represents BPA on the Reservoir Mortality and Water Budget Effectiveness Technical Work Group and manages BPA's implementation of major sections of the Program.

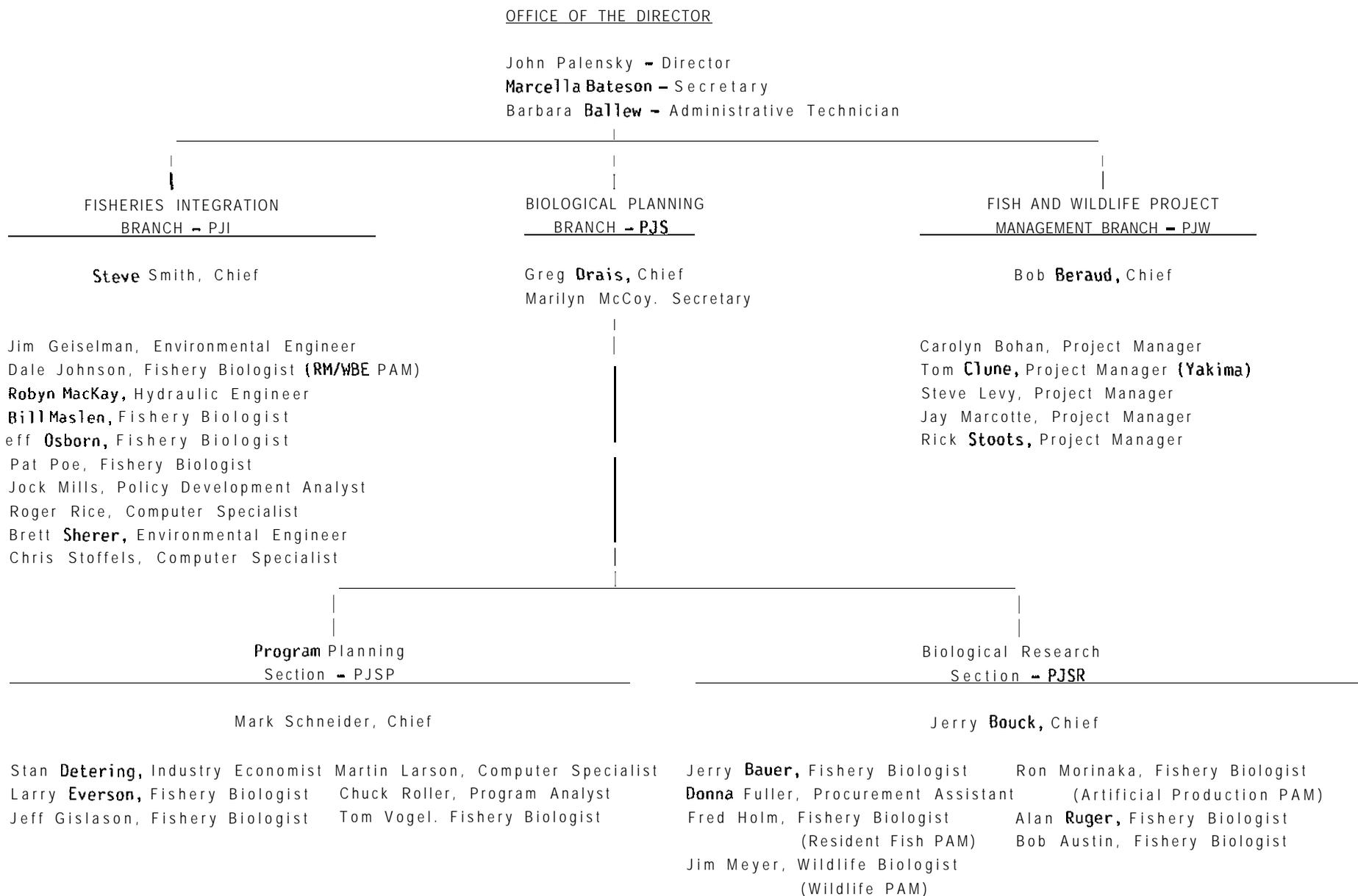
### Biological Planning Branch.

This Branch provides biological/technical expertise to the Division for planning for and implementing the Program. It prepares and monitors the Fish and Wildlife Program budget; develops and maintains the Division's Program Management Information System (PMIS); develops annual implementation work plans; provides cost-effectiveness analysis and determination for funding actions; develops and maintains the fish and wildlife mitigation accounting records; represents BPA on technical planning work groups established by the Council and the CBFWA; and manages BPA's implementation of major sections of the Program.

### Program Planning Section.

The Program Planning Section oversees and provides BPA's representative to: Council TWG's addressing supplementation of wild fish with hatchery fish, System and Subbasin Planning, and System Monitoring and Evaluation. It oversees and coordinates the Implementation Planning Process, develops the Annual Implementation Work Plan and annual budget planning documents, and manages the PMIS. It oversees implementation of areas of the Program dealing with natural production of salmon and steelhead. It develops methods for and oversees the application of cost-effectiveness criteria in the selection of activities to be implemented by BPA and develops and maintains BPA's fish and wildlife mitigation accounting records.

FIGURE 1. ORGANIZATION CHART: DIVISION OF FISH AND WILDLIFE



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### Biological Research Section.

This Section provides biological technical expertise necessary to assist the Division's development of the Program Annual Implementation Work Plan and annual budget planning documents, and to assist in the implementation of complex major projects; serves as BPA's representative to the Council's Hatchery Effectiveness Technical Work Group (HETWG) and Fish Disease Technical Work Group (FDTWG); develops scopes of work and oversees the procurement of projects identified in the annual Work Plan; and serves as COTR for subsequent contracts. It oversees areas of the Program addressing artificial production (including fish health) of salmon and steelhead, resident fish, and wildlife and develops and maintains the Division's official contract and project files.

### Project Management Branch.

The Project Management Branch manages the implementation of fish and wildlife development projects of the Program; provides comprehensive oversight and management of such projects appropriate to their cost, policy precedents, political sensitivity, biological complexity, and associated controversy; formulates and directs the coordination efforts both within BPA and externally with Federal and State agencies, Tribes, utility groups, and the public, to define, develop, and implement proposals; manages the development of the comprehensive long-term operations and maintenance agreements attendant on such projects; and manages and directs the allocation of financial and personnel resources necessary to implement, operate, and maintain capital and expense projects.

This Work Plan refers to four different personnel titles. It is helpful for the reader to understand the responsibilities and authorities of these positions, should questions or comments arise about BPA procurement, projects, or implementation. The positions are:

#### PROJECT MANAGER

Individual assigned working responsibility for the coordinated and timely implementation of one or more "major" projects within the Program. All Project Managers are assigned to the Project Management Branch.

#### PROJECT BIOLOGIST

Biologist who serves as the lead for all biological activities related to a major project. During project implementation, the Project Biologist oversees all biological aspects of the project and provides biological information to the Project Manager.

#### PROGRAM AREA MANAGER (PAM)

Individual who, based on biological expertise and skill, is charged with ensuring the coordinated development and implementation of measures within (and among) specific Program areas: e.g., Resident Fish, Wildlife, and Artificial Production. The PAM is not necessarily the Project Officer or Contracting Officer's Technical Representative (COTR) for all projects in the respective Program area.

## PROJECT OFFICER

Individual responsible for the management of "non-major" projects; often serves as the COTR for any contracts associated with the project. The Project Officer could also have PAM responsibilities.

## CONTRACTING OFFICER'S TECHNICAL REPRESENTATIVE (COTR)

Individual responsible to BPA's Contracting Officer for the development, negotiation, and management of contracts for specific goods and services associated with fulfillment of Program measures.

## VI. PROGRAM PLANS BY ACTION ITEMS

### ANADROMOUS FISH ACTION ITEMS AND TECHNICAL SUBJECTS

2.1 WATER BUDGET MEASURES

- 303(a) 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 kcfs-months (1.19 Maf) at Lower Granite Dam, and used during April 15 through June 15. [Abstract]
- 303(b) EPA 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. [Abstract]
- 303(c) 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. [Abstract]

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 all phases of hydrosystem planning and operation. The Council, therefore, specified that BPA fund two Fish Passage Managers, one for the Tribes and one for the agencies. BPA has funded the operation of the Fish Passage Center and the Fish Passage Data Information System since 1983.

Plans:

BPA plans to continue to fund the operation of the Fish Passage Center, the Fish Passage Managers and support staff, and the Fish Passage Data Information System to benefit the integration of fish and hydrosystem operational requirements, and to provide increased adult returns by using supplemental flows in a timely fashion.

I. COMPLETED PROJECTS

None.

II. FY 1989 ONGOING PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND</u>
87-127	<p><b>Smolt</b> Monitoring and Water Budget Programs - PMFC and CRITFC</p> <p><u>Project Officer:</u> D. Johnson</p> <p><u>Objectives:</u> Fund the operation of the Fish Passage Center and provide Water Budget flows for shaping between April 15 and June 15 to reduce hydrosystem impacts on juvenile outmigrations. (See also Action Item 2.1)</p>	<p><u>Date initiated:</u> February 1987</p> <p><u>Results/Conclusions:</u> BPA funded the operation of the Fish Passage Center and the Fish Passage Data Information System in FY 1989.</p>	<p>1. Continuing: BPA will continue to fund the operation of the Fish Passage Center and the Fish Passage Data Information System and to provide Water Budget flows for shaping annually.</p> <p>2. Continuing: Contractors will guide the smolt monitoring program; they will provide an annual report by November 1 of each year and a smolt monitoring program by December 1 of each year.</p>
87-127-1	<p><b>Smolt</b> Monitoring/Spill</p> <p><u>Project Officer:</u> W. Maslen</p> <p><u>Objectives:</u> Provide monitoring of juvenile <del>salmonid out-</del>migrations at Lower Monumental and Ice Harbor Dams. as provided in the Long-Term 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> <b>Gatewell</b> monitoring was conducted at Lower Monumental Dam for 12 hours/day (a 4 hour/day extension over the ongoing <b>Smolt</b> Monitoring Program). As a result of insufficient lead time prior to the 1989 juvenile fish migrations, monitoring was not conducted at Ice Harbor Dam.</p>	<p>1. FY 1990: Continue <b>gatewell</b> sampling program as per terms of the MOA, including initiation of airlift sampling.</p> <p>2. Continuing: Continue <b>gatewell</b> sampling program for the purpose of spill management, pending installation of bypass.</p>

III. NEW PROJECTS

None.

2.2 SMOLT MONITORING PROGRAM

303(d) 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. [Abstract]

## ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To determine where all major groups of migrating, juvenile hatchery and wild fish are in the hydrosystem. This information is used to implement the Water Budget and communicate spill requests.

Background and Progress to Date:

Starting in the 1970's, spring flows in the Columbia River changed dramatically with the completion of major headwater storage projects. This change helped flood control and power generation, but slowed the travel time of the outmigration. This resulted in increased exposure to predation and increased mortality of the juvenile salmon and steelhead. The Council sought to reduce the mortality associated with the downstream migrations by increasing the 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 numerous key locations throughout the hydrosystem.

## Plans:

BPA plans to continue funding the smolt monitoring program to improve the timely integration of the juvenile salmon and steelhead outmigration with the operation of the hydrosystem.

I. COMPLETED PROJECTS

None.

II. FY 1989 ONGOING PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND</u>
84-14	Monitoring of <b>Downstream</b> Salmon and Steelhead at Federal Hydroelectric Facilities - NMFS  <u>Project Officer:</u> P. Poe  <u>Objectives:</u> To monitor the seaward migration of juvenile salmon and steelhead at McNary, John Oay. and Bonneville Dams as part of the Columbia River <b>Smolt</b> Monitoring Program: to provide daily fish capture and condition <b>data</b> , as well as dam operations and river flow data. to the Fish Passage Center to assist in Water Budget management	<u>Date initiated:</u> March 1984  <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 information for investigating relationships among flows, spill, travel time, <b>smolt</b> condition, and adult production. The 1984-1988 Annual Reports are available: 1989 Annual Report will be available February, 1990.	1. FY 1990: 1989 Annual Report available February 1990.  2. Continuing: Project will continue to be funded as part of the <b>Smolt</b> Monitoring Program. Contractor will provide annual operational reports and recommend changes as needed to the <b>smolt</b> monitoring and schedule facilities.

PROJECT  
NUMBER

TITLE

PROJECT STATUS

SCHEDULE AND MILESTONES  
FOR FY 1990 AND BEYOND

84-14-1

**Smolt** Monitoring/Spill - NMFS

**Project Officer:** W. Maslen

**Objectives:** Provide monitoring of juvenile **salmonid out-** migrations at John Day and The Dalles Dams, as provided in the Long-Term 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.

Date Initiated: 1989

Results/Conclusions: As a result of insufficient lead time prior to the 1989 juvenile fish migrations, **gatewell** monitoring was conducted at The Dalles Dam during the summer migration only, and **no** additional monitoring was conducted at John Day Dam beyond that provided under the terms of the MOA.

1. FY 1990: Continue **gatewell** sampling program as per terms of the MOA, including initiation of **airlift** sampling.

2. Continuing: Continue **gatewell** sampling program for the purpose of spill management, pending installation of bypass.

PROJECT NUMBER	TITLE	PROJECT STATUS	SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND
83-323	<p><b>Smolt</b> Monitoring at the Head of Lower Granite Reservoir and Lower Granite Dam - IOFG</p> <p><u>Project Officer:</u> P. Poe</p> <p><u>Objectives:</u> Monitor arrival time, relative passage index, and condition of juvenile salmon and steelhead into the head of Lower Granite reservoir from Snake River tributaries; operate the Lewiston and Clearwater traps from March 15 to mid-July as part of the Smolt Monitoring Program for Water Budget, fish collection, and transportation management purposes; determine travel time for hatchery chinook, hatchery steelhead, and wild steelhead migrants from the head of Lower Granite Reservoir 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>	<p><u>Date Initiated:</u> January 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 1989 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 condition, and adult production of salmon and steelhead trout stocks produced in the Snake River system. The 1983-1986 Annual Reports are available.</p>	<p>1. FY 1990: EPA will continue to fund Project 83-323 activities as part of the Smolt Monitoring Program.</p> <p>2. Continuing: Project will continue to be funded as part of the Smolt Monitoring Program. contractor will provide annual reports and recommend changes as needed to the smolt monitoring schedule and facilities.</p>
87-401	<p>Assessment of Smolt Condition for Travel Time Analysis - USFWS</p> <p><u>Project Officer:</u> P. Poe</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</p>	<p>1. FY 1990: As part of the Smolt Monitoring Program, continue to collect information on smoltification, level of stress, and fish health during the 1990 outmigration that will assist in separating the effects of environmental and</p>

PROJECT NUMBER	TITLE	PROJECT STATUS	SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND
87-401 cont.	<p><u>Objectives:</u> Collect information on fish stress, 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 <b>Smolt</b> Monitoring Program. Develop a <b>smolt</b> condition index to be used by the Water Budget Managers to guide their day to day operational requests and to monitor daily, annual, and <b>longterm</b> trends in fish quality during outmigration.</p>	<p>into estimates of <b>smolt</b> survival, and travel time. Measurements of parameters used to quantify the extent of <b>smolt</b> development, level of stress, and <b>pre-</b>valence of disease are needed to evaluate how these biological factors are <b>in-</b>fluencing experimental design assumptions in Columbia River <b>mainstem</b> passage <b>juv-</b>enile fish migration studies. The 1987 Annual Report is available; 1988 Annual Report will be available in fall 1989.</p>	<p>biological factors <b>on</b> travel time of <b>smolts</b>. Continue to investigate parameters that may be useful in developing an index of fish quality. Present results and recommendations from <b>in-</b>formation collected during the 1989 <b>outmigration</b> in annual report.</p> <p>2. FY 1990 and beyond: Further development of <b>smolt</b> condition index for yearling chinook, <b>steelhead</b>, and sockeye for real time use that is based upon <b>non-</b>lethal and non-clinical methods.</p>
89-20	<p>Air-lift Fabrication</p> <p><u>Project Officer:</u> W. Maslen</p> <p><u>Objectives:</u> Provide funding for fabrication of airlift fish sampling devices and miscellaneous supporting hardware for Lower Monumental, Ice Harbor, John Day, and The <b>Dalles</b> Dams, as specified in the Long-Term Fish Spill Memorandum of Agreement. This equipment supports monitoring programs specified under projects 84-14-1 and <b>87-127-1</b>.</p>	<p><u>Date Initiated:</u> 1989</p> <p><u>Results/Conclusions:</u> As a result of insufficient lead time prior to the 1989 juvenile fish outmigration, fabrication of airlift fish sampling devices was deferred, and <b>gatewell</b> dipping was conducted.</p>	<p>Funding the fabrication of airlift fish sampling devices is anticipated for the fall/winter <b>1989/1990</b>.</p>

### III. NEW PROJECTS

None

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RESEARCH  
(Former Action Item 39.1)

403(d)(1) BPA shall continue its existing study and shall fund any further studies necessary to investigate juvenile salmon and steelhead losses to predators while the fish are migrating through the Columbia and Snake river reservoirs. The use of Squoxin for control of squawfish shall be evaluated as part of this study.

TECHNICAL SUBJECT ACTIVITY SUMMARY:

Objectives:

To determine the losses to migrating salmonids in the Columbia and Snake River reservoirs caused by predation from squawfish, walleye, and smallmouth bass and to determine methods to reduce predation.

Background and Progress to Date:

Building dams and impounding water has changed the natural flows of the Columbia and Snake Rivers. These impoundments and changes in flows have resulted in increased populations of resident fish, some of which prey on outmigrating juvenile salmon and steelhead. Research conducted since 1982 has shown that this predation is significant, at least in the John Day reservoir. It has been estimated that approximately 3 million juvenile salmon and steelhead are lost to predation in the John Day reservoir annually; this represents an average of 14 percent of all fish entering the reservoir. Research has also suggested that control, as opposed to eradication, is a viable approach to reducing predation losses. Modeling indicates that a 10 to 20 percent reduction in numbers of squawfish may reduce predation by up to 50 percent. Studies also indicate that prey protection measures may also reduce losses of juvenile salmonids to predation.

Plans:

The ongoing studies (Projects 82-3 and 82-12) are funded into 1990 to refine approaches for indexing predation system-wide, determining predator preference for dead and injured vs. live prey, and developing approaches to predator control, including legal social, economic, and institutional considerations. Future plans include a pilot, test predator control fishery in the John Day reservoir in 1990 and implementation of system-wide indexing to support system-wide predator control beginning in 1991.

Projects:

Project 82-3 and Project 82-12 are now described under Action Item 6.2, Reservoir Mortality and Water Budget Effectiveness Research.

3.1 ALTERNATIVE CONDUIT SYSTEM FOR JUVENILE FISH  
(Test and Evaluate: November 15, 1987; Report January 1988)

- 403(d)(2) Test and evaluate an alternative conduit system for efficiently conveying juvenile fish from hydroelectric powerhouse intakes to the tailwater. This study shall test a design with potential for broad application at dams where turbine intake deflectors are in use or under consideration.

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To test and evaluate alternative conduit systems for bypassing juvenile salmon and steelhead around dams.

Background and Progress to Date:

As juvenile salmon and steelhead migrate downstream past dams, they may be injured by pressurized conduit bypass systems used at most dams. A past study performed by the USACE and Idaho Cooperative Fish and Wildlife Research Unit (ICFWRU) demonstrated that an open flume has potential for minimizing injury to fish. BPA contracted with these two agencies to design and test different types of flumes to help pass fish safely around dams. The project was completed in March 1988. Results were used in the design of the new smolt bypass system at Little Goose Dam.

Plans:

Action Item 3.1 has been completed.

Projects:

None

4.1 ELLENSBURG TOWN DIVERSION DAM FISHWAY AND BYPASS  
 (Design: October 1987)  
 (Construction Completed: October 1989)

803(b)(6) Bonneville shall fund the design and construction of a low flow vertical slot fishway and replacement of obsolete, inefficient juvenile fish screening/bypass facilities at the Ellensburg Town Diversion Dam.

**ACTION ITEM ACTIVITY SUMMARY:**

Objectives:

To fund construction of the Ellensburg Town Diversion Dam fish screens.

Background and Progress to Date:

BPA is funding the construction of the Ellensburg Town fish screens to improve the outmigration of juvenile salmon and steelhead from the Yakima River system. BPA will not fund the proposed fishway because no fishway presently exists, and the Ellensburg Water Company had a pre-Regional Act obligation to fund fishway construction. Construction of the fish screens will be completed by October 1989.

Plans:

See Project 87-47 in the following table.

I. COMPLETED PROJECTS

None.

II. FY 1989 ONGOING PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND</u>
87-47	Ellensburg Screens Construction - USBR  <b><u>Project Manager: T. Clune</u></b>  <u>Objectives</u> Improve fish screen facility on Ellensburg Water Company Canal.	<u>Date initiated:</u> June 1986  <u>Results/Conclusions:</u> Construction began in 1988.	FY 1990: Complete construction by October 1989.

III. NEW PROJECTS

None.

4.2 HABITAT AND PASSAGE IMPROVEMENT PROJECTS  
 (Consult with Project Sponsors on Need; Complete by 1991)

703(c)(1) 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. [Abstract]

**ACTION ITEM ACTIVITY SUMMARY:**

Objectives:

To consult with project sponsors to determine whether projects listed in Action Item 4.2 are needed in the immediate future; to complete them by 1991 if they are needed.

Background and Progress to Date:

On May 7, 1987, BPA sent a letter to all habitat and tributary passage project sponsors to determine whether the listed projects were needed in the immediate future. All project sponsors, except Washington Department of Fisheries (WDF), stated that their listed projects were needed in the immediate future. WDF (June 2, 1987) recommended the following actions:

<u>Subbasin</u>		<u>Project</u>	<u>Recommendation</u>
Yakima	----	Thorpe Mill Screen (USBR Project)	Hold
	87-57	Old Reservation Canal Screen	Delay
	86-65	Snipes/Allen Screen	Delay

A total of 38 BPA-funded habitat and tributary passage improvement projects are listed in Table 4, including 2 completed projects, 32 ongoing projects, and 4 deferred projects. Due to the large number of projects involved in the implementation of Program Measure 703(c)(1), the diversity of activities included, and BPA's continuous implementation support of habitat and passage projects, a table format was developed and used to review BPA implementation in the FY 1987 Work Plan. The same table format has been used in the current Work Plan.

Table 4 covers research projects, evaluation projects, and habitat and passage enhancement projects. The last group is listed by subbasin, beginning with the Willamette/Clackamas River subbasin and proceeding upriver to the Salmon River subbasin. Information presented in the Table includes: the project description, current project status, and contract-effective period.

In FY 1987, BPA developed an Implementation Plan outline for habitat and passage enhancement projects and asked Project Leaders to complete Implementation Plans in FY 1988. BPA funding in FY 1988 was contingent upon completion of plans for all ongoing and new projects. Plans were completed for ongoing projects funded in FY 1988.

These habitat and passage enhancement project Implementation Plans will improve planning and scheduling of implementation efforts and will clearly define the projects. The plans will also enable BPA to accurately determine the funding required for completion of a project. Each completed Implementation Plan contains:

- 1) background information, such as specific project location, existing conditions, fishery resources, land use activities, and limiting factors;
- 2) enhancement techniques and an implementation schedule;
- 3) expected increase in fish production due to the project;
- 4) methods for monitoring physical habitat changes resulting from the project; and
- 5) cost of the project, including total cost and cost by fiscal year.

BPA expects projects to be implemented as planned and scheduled in the Implementation Plans.

Plans:

BPA will continue to implement the projects listed in Action Item 4.2 (if they are needed in the immediate future) and plans to complete most of them by 1991.

Table 4: Habitat Improvement and Passage Enhancement  
Measure 703(c)(1)  
Status Report

PROJECT NUMBER	1/ PO -	2/ PM	TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT TERM	
					START DATE	RENEWAL DATE
I. RESEARCH PROJECTS						
None.						
II. EVALUATION AND MONITORING PROJECTS						
83-7	LBE		Evaluation of Idaho Habitat Improvement Projects - IOFG  <u>Objective:</u> Evaluate the juvenile chinook and steelhead production benefits of habitat and passage improvement projects in the <b>Clearwater</b> and Salmon River basins in order to produce the <b>offsite</b> mitigation record for Idaho.	Field sampling in progress. Annual report completed. Project continuing.	8/15/83	7/1/89
87-113	LEE		Habitat Evaluation and Monitoring/Oregon  <u>Objective:</u> Develop an agreement with the Fish and Wildlife agencies and/or Tribes to monitor the biological effectiveness of projects in Oregon.	Implementation deferred to FY 1990 at the earliest, pending guidance from the MEG.	---	---
87-114	LEE		Habitat Evaluation and Monitoring/Washington  <u>Objective:</u> Develop an agreement with the Fish and Wildlife agencies and/or Tribes to monitor the biological effectiveness of projects in Washington. <b>Tucannon</b> River implementation will require a monitoring program.	Implementation deferred to FY 1990 at the earliest, pending guidance from the MEG.	---	---

PROJECT NUMBER	1/ PO - PM	2/ TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT TERM	
				START DATE	RENEWAL DATE
84-11	RDS	Clackamas/Hood River Habitat Enhancement Program - USFS/Mt. Hood NF		4/1/84	3/31/92
		Fish Creek Evaluation	Evaluation is ongoing.		
		<u>Objective:</u> To evaluate and quantify drainage-wide changes in habitat and smolt production as a result of habitat improvement.			
87-115	LBE	Grande Ronde Monitoring -- NPT	Implementation deferred to FY 1990 at the earliest, pending guidance from the MEG.	---	---
		<u>Objective:</u> Monitor and evaluate habitat improvement projects in the Grande Ronde River Subbasin.			

PROJECT 1/ 2/  
 NUMBER PO - PM TITLE/OBJECTIVE

CONTRACT TERM  
 START RENEWAL  
 DATE DATE

III. PASSAGE AND HABITAT IMPROVEMENT

Willamette River/Clackamas River Subbasin

84-11 ROS Clackamas/Hood River Habitat Enhancement - Mt. Hood NF

4/1/84 3/31/92

Collawash River Falls Passage Subproject

Objective: Construct a **fishway** to correct Collawash Falls passage problems. The falls prevent access to potential spawning and rearing habitat.

Improvement: Structure and passage

Habitat: 10 miles

Species: Spring chinook, winter and summer steelhead, and **coho**

Benefit: Increase of 55,532 **smolts** and 2,957 adults.

Collawash River Drainage Habitat Improvement: Hot Springs Fork Subdrainages Subproject

Objective: Install **instream structures** to improve spawning habitat and effective **cover**.

Improvement: **Instream** structure

Habitat: 10.6 miles

Species: Winter and summer steelhead, spring chinook and **coho** salmon

Benefit: 7,249 **coho smolts**; 2,616 chinook **smolts**; and 4,229 steelhead **smolts**.

FY 1988 activities included completion of Phase I, excavation of the **fishway** channel in the bedrock at the falls. Implementation of Phase II, installation of concrete weirs in the **fishway** channel, will complete the project in September 1989. Final Modification and O&M in 1990/1991.

**Instream** structure construction will continue from 1988 to 1992 to complete 10.6 miles **of** habitat enhancement projects.

PROJECT NUMBER	PO <u>1/</u> <u>2/</u> - PM	TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT TERM	
				START DATE	RENEWAL DATE
84-11 cont.		<p>Lake Branch/West Fork Hood River Improvement Subproject</p> <p><u>Objective:</u> Improve quality of spawning habitat and low-flow rearing habitat.</p> <p><u>Improvement:</u> Instream structure</p> <p><u>Habitat:</u> 10.0 miles</p> <p><u>Species:</u> Summer and winter steelhead, chinook</p> <p>Benefit: 1,309 chinook <b>smolts</b>; 1,748 steelhead smolts</p>	FY 1990/1991 activities include ongoing monitoring and maintenance of past projects.		
		<p>Fish/Wash Creek Habitat Improvement Subproject</p> <p><u>Objective:</u> spawning and rearing habitat for salmon and steelhead through habitat improvement measures.</p> <p><u>Improvement:</u> Instream structure</p> <p><u>Habitat:</u> 4 miles</p> <p><u>Species:</u> Spring chinook, <b>coho</b>, winter and summer steelhead.</p> <p>Benefit: 1,857 steelhead <b>smolts</b>; 1,317 <b>coho</b> smolt.</p>	FY 1990/1991 activities include O & M of past projects. Physical monitoring and evaluation will continue.		
		<p>Lower Oak Grove Fork Habitat Improvement Subproject</p> <p><u>Objective:</u> Improve fish rearing and spawning habitat in the lower 3.8 miles of stream.</p> <p><u>Improvement:</u> Instream structure</p> <p><u>Habitat:</u> 3.8 miles</p> <p>Species: Winter and summer steelhead, chinook and <b>coho</b> salmon</p> <p><u>Benefit:</u> 680 steelhead <b>smolts</b>; 2,536 <b>coho</b> smolts.</p>	FY 1990/1991 activities include <b>de-velopment</b> of 1365 feet of side <b>chan-nels</b> and 2300 feet of mainstream structures to increase rearing habitat.		

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PROJECT NUMBER	1/ PO - PM	2/ TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT TERM	
				START DATE	RENEWAL DATE
84-11 cont.		<p><b>Fifteenmile Creek Basin</b> Habitat Improvement Subproject</p> <p><u>Objective:</u> Improve adult and juvenile fish passage, spawning and rearing habitat, and water quality conditions.</p> <p><u>Improvement:</u> Passage and <b>instream</b> structure</p> <p><u>Habitat:</u> 120 miles (30 mi NFS lands)</p> <p><u>Species:</u> Wild winter steelhead</p>	FY 1990/1991 activities include base-line Basin-wide monitoring in coordination with ODFW. Fifteenmile Creek and <b>Fivemile</b> Creek tasks include implementing approved habitat enhancement projects.		
86-124	ROS	<p>Little Fall Creek Fish Passage - Facilities Maintenance</p> <p><u>Objective:</u> Provide O &amp; M funding for Fish Passage facilities.</p> <p><u>Improvement:</u> structure and passage</p> <p><u>Habitat:</u> 1.4 miles</p> <p><u>Species:</u> Salmon and steelhead</p> <p>Benefit: Potential of adults: Steelhead adults: 543 Spring chinook adults: 256</p>	O&M activities are budgeted through 1992.	7/22/86	9/15/92
<u>Fifteenmile Creek Subbasin</u>					
86-79	CAB	<p>Fifteenmile Creek Habitat Improvement - ODFW</p> <p><u>Objective:</u> Increase wild winter steelhead production to levels which approximate historic maximum <b>run</b> sires.</p> <p><u>Improvement:</u> Passage and <b>instream</b> structure</p> <p><u>Habitat:</u> 120 miles</p> <p><u>Species:</u> Wild winter steelhead</p> <p>Benefit: 11.715 smolts/year</p>	Construction activities started in FY 1987 and will continue through FY 1990.	9/87	3/31/90

PROJECT NUMBER	PO - PM	TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT TERM	
				START DATE	RENEWAL DATE

Deschutes River Subbasin

81-108	RDS	Habitat Quality and <b>Anadromous</b> Fish Production Potential on the Warm Springs Indian Reservation - CTWSIR	Phase I completed in 1982. Phase II completed in FY 1987. Phase III is ongoing: Implementation of habitat enhancement measures is expected to be completed in FY 1989. Evaluation and monitoring of project effectiveness will be completed by 1991. <b>O&amp;M</b> is ongoing.	9/30/81	2/28/90
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Objective: The project consists of three phases:  
I. Survey existing and potential fishery resources on the **Reservation**; II. Identify factors limiting **anadromous** fish production and design appropriate **instream** or riparian enhancement measures to correct limiting factors; and III. Implement measures and evaluate effectiveness.

Species: Summer steelhead and spring chinook.

Beaver Creek Habitat Improvement Subproject

Objective: Construct **instream** structures to provide juvenile salmon and steelhead rearing habitat in **channelized** sections of Beaver Creek. Fence riparian **zone** and rip-rap banks with juniper.

Improvement: **Instream** and riparian

Habitat: 2 miles

Species: Wild spring chinook.

Benefit: 6,750 spring chinook **smolts**.

**Instream** structures completed in **FY 1986**.  
Fencing and juniper rip-rap completed in FY 1989.

Mill Creek Habitat Improvement Subproject

Objective: Construct **instream** structures to provide juvenile salmon and **steelhead** rearing habitat in the Potter's Pond section of Mill Creek. Fence riparian zone.

Improvement: **Instream** and riparian

Habitat: 1 mile

Species: Wild spring chinook and summer steelhead

Benefit: 1,020 spring chinook and **540** summer steelhead **smolts**.

**Instream structures** completed in FY 1987. Fencing completed in **FY 1989**.

PROJECT NUMBER	1/ PO - PM	2/ TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT TERM	
				START DATE	RENEWAL DATE
EI-108 cont.		<p>Shitike Creek Habitat Improvement Subproject</p> <p><u>Objective:</u> Stabilize stream channel, create a low-flow passage channel, develop pool habitat, and provide shading.</p> <p><u>Improvement:</u> <b>Instream</b> and riparian.</p> <p><u>Habitat:</u> 3 miles</p> <p><u>Species:</u> Wild spring chinook and summer steelhead.</p> <p>Benefit: 3,139 spring chinook <b>smolts</b> and 2,642 summer steelhead smolts.</p>	<b>Instream</b> structures completed in FY 1989.		
84-62	OEJ	<p>Trout Creek <b>Riparian</b> Enhancement - OOFW</p> <p><u>Objective:</u> Construct <b>instream</b> and riparian structures to provide juvenile salmon and steelhead rearing habitat and adult spawning habitat,</p> <p><u>Improvement:</u> <b>Instream</b> and riparian.</p> <p><u>Habitat:</u> 9 0 miles</p> <p><u>Species:</u> Steelhead and spring chinook.</p> <p>Benefit: <b>3000 - 4000</b> adult steelhead.</p>	Construction is ongoing and expected to be completed in FY 1990.	9/1/84	9/30/89
88-116	OEJ	<p>Trout Creek O&amp;M</p> <p><u>Objective:</u> To maintain fences and <b>instream</b> structures constructed under Project 84-62.</p>	EPA will continue funding <b>maintenance</b> of Trout Creek habitat <b>improvement</b> structures in FY 1990.	9/88	9/89

PROJECT NUMBER	PO - PM	TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT TERM	
				START DATE	RENEWAL DATE

John Day River Subbasin

84-8	ROS	N. Fork John Day River Habitat Enhancement - USFS/Umatilla NF  Desolation Creek Subproject	FY 1990/1991 activities include construction of pool structures, gravel-retaining sills, and rock deflectors.	4/1/84	3/31/90
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Objective: 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.

Improvement: Instream structure

Habitat: 42 miles

Species: Spring chinook. **summer** steelhead

Benefit: Spring chinook - 4950 **smolts**

Summer steelhead - 2475 **smolts**

		North Fork John Day River Habitat Improvement Subproject	FY 1990/1991 activities include O&M of previous projects.		
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Objective: Increase production of spring chinook through side-channel modification, improve juvenile **rearing** area, improve bank stabilization. increase adult resting areas, and increase amount of **riparian** vegetation.

Improvement: Instream structure

Species: Spring chinook

Benefit: 5,000 **smolts/yr**

PROJECT NUMBER	1/ PO - PM	2/ TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT TERM	
				START DATE	RENEWAL DATE
84-8 (cont.)		<p>Wall Creek System Subproject</p> <p><u>Objective:</u> Improve quality and quantity of juvenile <b>salmonid</b> 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> 7 miles</p> <p><u>Species:</u> Summer steelhead.</p> <p>Benefit: 2,274 summer steelhead <b>smolts</b>.</p>	FY 1990/1991 activities include installation of weirs, adult resting pools, alcove <b>pools</b> , streambank stabilization structures, and riparian vegetation planting. Construction will be completed by 1992.		
		<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>Species: Summer Steelhead</p> <p>Benefit: 175 steelhead <b>smolts</b></p>	FY 1990/1991 activities include construction of pool-creating structures and placement of <b>instream</b> boulders and woody material. Completion expected by 1992.		
		<p>Camas Creek System Subproject</p> <p><u>Objective:</u> Improve quality of juvenile <b>salmonid</b> 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> 1b.5 miles</p> <p>Species: Summer steelhead</p> <p>Benefit: 5,362 summer steelhead <b>smolts</b>.</p>	FY 1990/1991 activities include installation of weirs, adult resting pools, alcove pools, streambank stabilization structures, and riparian vegetation planting. Construction will be completed by 1992.		

PROJECT NUMBER	1/ PO - PM	2/ TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT TERM	
				START DATE	RENEWAL DATE
84-8 (cont.)		<p>Clear/Granite Creeks Subproject</p> <p><u>Objective:</u> Increase the potential of spawning salmon through habitat improvement measures.</p> <p><u>Improvement:</u> Decrease mine waste water pollution.</p> <p><u>Habitat:</u> 12 miles</p> <p><u>Species:</u> Spring chinook</p>	FY 1990/1991 activities include O&M of previous projects.		
84-21	ROS	<p>Mainstem. Middle and North Fork/John Day River - ODFW</p> <p><b>Mainstem John Day River Subproject</b></p> <p><u>Objective:</u> Provide additional rearing habitat for juvenile salmon and steelhead.</p> <p><u>Improvement:</u> <b>Instream</b> structure</p> <p><u>Habitat:</u> 23 miles</p> <p>Species: Spring chinook and Summer steelhead</p> <p>Benefit: Steelhead <b>smolt</b> increase - 344,000; chinook smolt increase - <b>371,000</b> to 996,000</p> <p>Middle Fork John Day River Subproject</p> <p><u>Objective:</u> Provide additional holding <b>areas</b> for adult chinook and steelhead: improve rearing area for juveniles of both species.</p> <p><u>Improvement:</u> <b>Instream</b> structure</p> <p><u>Habitat:</u> 30 miles</p> <p>Species: Spring chinook, summer steelhead</p> <p><u>Benefit:</u> Included in benefits for the <b>Mainstem John Day River</b></p>	<p>Assuming landowner acceptance, proposed FY 1990/1991 activities include construction of <b>instream</b> structures, riparian vegetation planting, and fencing. Completion expected by 1991.</p> <p>Assuming landowner acceptance, proposed FY 1990/1991 activities are riparian fencing and planting along with the construction of <b>in-stream</b> structures. Completion expected by 1992.</p>	6/30/85	5/31/90

PROJECT NUMBER	1/ PO -	2/ PM	TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT TERM	
					START DATE	RENEWAL DATE
84-21 (cont.)			<p>North Fork John Day River Subproject, including Fox Creek</p> <p><u>Objective:</u> Fox Creek - improve steelhead spawning and rearing conditions through increasing riparian vegetation, reducing erosion and sedimentation, and increasing pool areas.</p> <p><u>Improvement:</u> Instream structure</p> <p><u>Habitat:</u> 42 miles</p> <p><u>Species:</u> Spring chinook and steelhead</p> <p>Benefit: Included in benefits for the <b>Mainstem</b> John Day River.</p>	FY 1990/1991 activities include O&M of previous projects.		
			<p>North Fork John Day River Subproject, including Camas Creek</p> <p><u>Objectives:</u> Provide additional rearing habitat for juvenile steelhead.</p> <p><u>Improvement:</u> Instream structure</p> <p><u>Habitat:</u> 5 miles</p> <p>Species: Summer steelhead</p> <p><u>Benefit:</u> Included in benefits for the <b>Mainstem</b> John Day River.</p>	Assuming landowner acceptance, proposed FY 1990/1991 activities <b>included</b> construction of <b>instream</b> structures, riparian vegetation planting and fencing. Completion expected by 1992.		
84-22	RDS		<p>Middle Fork and Tributaries, John Day River- USFS/Malheur NF</p> <p><u>Objective:</u> Increase the quantity, quality, and diversity of pool habitat for juvenile steelhead and chinook salmon.</p> <p><u>Improvement:</u> Instream structure</p> <p><u>Species:</u> Chinook and Steelhead</p> <p><u>Habitat:</u> 6 miles</p>	FY 1990/1991 activities include construction of <b>instream</b> structures, and riparian planting. Completion expected by 1991		

PROJECT NUMBER	1/ PO - PM	2/ TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT TERM	
				START DATE	RENEWAL DATE
85-71	RDS	South Fork John Oay River Habitat Enhancement/Izee Falls Fish Passage - BLM  Izee Falls Subproject  <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 Species: Wild Summer Steelhead Benefit: <b>Benefit:Cost</b> ratio is 5.4:1 <u>Habitat:</u> 81 miles	Contingent on funding and appropriate endorsements, BPA will fund an engineering/biological feasibility study.	9/1/85	3/31/91

Umatilla River Subbasin

83-43b	JGM	Three Mile Dam Passage Improvements - USER  <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> Summer steelhead, spring and fall chinook	Construction of right bank ladder and trap completed winter-fall 1988. Operational shake-out period continued through 1989. Construction of left bank facilities completed July 1988. Operational shake-out period for left bank continued through July 1989. Project-specific monitoring and evaluations are planned to begin FY 1990.	5/1/84	
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PROJECT NUMBER	1/ PO - PM	2/ TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT TERM	
				START DATE	RENEWAL DATE
87-104/ 87-104-1, 87-416-Z	JGM	<p><b>Westland (87-104) and Stanfield (87-104-1) Diversion Improvements - ODFW; Westland Hydraulic Review (87-416-Z) - USER</b></p> <p><u>Objective:</u> Improve passage up and downstream at Westland, and Stanfield irrigation diversion dams by ladder and screen improvements.</p> <p><u>Improvement:</u> Passage</p> <p><u>Species:</u> Summer steelhead, spring and fall chinook</p>	<p><b>Predesign</b> completed. <b>Westland</b> hydraulic review completed. Final Design completed for Westland.</p> <p><u>Schedule:</u></p> <p><b>Westland:</b> Start construction, screen/trap - October 1989. Start construction, ladder - June 1990. All construction complete. <b>Westland - October 1990.</b></p> <p><b>Stanfield:</b> Start final design March 1989, complete Oct. 1990. Start construction: ladder - June 1990. <b>screens - Oct. 1990.</b> All construction complete, Stanfield - June 1991.</p>	1187	<b>Westland</b> <b>10/90</b> <b>Stan-</b> <b>field</b> <b>6/90</b>
87-100	JCG	<p><b>Umatilla River Basin fish Habitat Enhancement - USFS/Umatilla Nf</b></p> <p><u>Objective:</u> <b>Instream</b> and <b>riparian</b> habitat improvement for portions of the Umatilla River and tributaries on the Umatilla National Forest.</p> <p><u>Improvement:</u> <b>Instream</b> structures.</p> <p><u>Habitat:</u> 18 miles</p> <p><u>Species:</u> <b>Summer</b> steelhead and spring chinook. Benefit: (Entire basin) 21,700 summer steelhead and 21,100 spring chinook <b>smolts.</b></p>	<p>FY 1989: Complete South fork Umatilla and <b>mainstem</b> Umatilla River Construction completed at Thomas Creek in FY 1988.</p> <p>FY 1990: Treat <b>6-mile</b> section of Meacham Creek.</p> <p>FY 1991: Complete North Fork Meacham Creek and Pearson Creek.</p>	4/87	3/91

PROJECT NUMBER	1/ PO - PM	2/ TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT TERM	
				START DATE	RENEWAL DATE
87-100-1	JCG	<p><b>Umatilla</b> River Basin Fish Habitat Enhancement - CTUIR</p> <p><u>Objective:</u> <b>Instream</b> and riparian habitat improvement for portions of the Umatilla River and tributaries <b>on</b> the Umatilla Reservation.</p> <p><u>Improvement:</u> Fencing, riparian <b>revegetation, instream structures.</b></p> <p><u>Habitat:</u> 18 miles</p> <p><u>Species:</u> Summer steelhead and spring chinook.</p> <p>Benefit: See Project <b>87-100.</b></p>	<p>FY 1989: Begin Loner Meacham Creek construction.</p> <p>FY 1990: Complete 2 miles at Umatilla River and begin construction <b>on</b> Squaw Creek.</p> <p>FY 1991: Complete construction at Squaw Creek.</p>	7/87	3/91
87-100-2	JCG	<p>Umatilla River Basin Fish Habitat Enhancement - ODFW</p> <p><u>Objectives:</u> <b>Instream</b> and riparian habitat improvement for portions at the Umatilla River and tributaries <b>on</b> privately-owned land.</p> <p><u>Improvement:</u> Fencing, riparian <b>revegetation, instream structures.</b></p> <p><u>Habitat:</u> 18 miles</p> <p><u>Species:</u> Summer steelhead.</p> <p><u>Benefit:</u> See Project <b>87-100</b></p>	<p>FY 1989: Continue work at East Birch Creek that was started in FY 1988 and begin work at Meacham Creek.</p> <p>FY 1990: Complete work at East Birch Creek. continue at Meacham Creek, and begin work at West Birch Creek.</p> <p>FY 1991: Complete work at Meacham Creek. continue at West Birch Creek. and start at North Fork Meacham Creek.</p>	7/87	3/91
88-22	JGM	<p>Umatilla River Basin Trap and Haul - ODFW</p> <p><u>Objective:</u> To provide for passage of adults and smolts under low-flow river conditions</p> <p><u>Improvement:</u> Passage</p> <p><u>Species:</u> <b>Summer</b> steelhead, spring and fall chinook</p>	<p>Design and acquire equipment (trucks, trailers, etc., to be completed February 1989. Trap at Three Mile Oam right bank ladder operational - November 1987. <b>West-</b>land smolt trap operational - Spring 1990. Trap and haul program operational - May 1989.</p>	10/87	5/91

PROJECT NUMBER	1/ PO -	2/ PM	TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT TERM	
					START DATE	RENEWAL DATE
89-24-1	JRB		Passage Facility Evaluation and <b>URB</b> Adult Fish Monitoring <u>Objectives:</u> Evaluate loss of juvenile fish due to passage through or <b>over WEID</b> Canal screens. Monitor passage of adult salmon and <b>steelhead</b> at Three Mile Dam <u>Species:</u> <b>Summer</b> steelhead, spring and fall chinook	Evaluation of <b>WEID</b> Canal <b>screen</b> and adult passage at Three Mile Dam facilities expected to begin in September <b>1989</b> . Intent is to conduct evaluations as planned basin facilities are completed.	9/89	---
87-416 & 87-416-1	JGM		Cold Springs (87-416-1) and Maxwell <b>(87-416)</b> Diversion Improvements: - <b>USBR</b> <u>Objectives:</u> <b>Improve</b> passage up and downstream at Cold Springs and Maxwell diversions. <b>Improvements</b> include <b>fishways</b> and canal screens. <u>Improvement:</u> Passage <u>Species:</u> Summer <b>steelhead</b> , spring and fall chinook.	Maxwell construction complete in March 1989, except for bypass to be completed by July 1989. Project-specific evaluations to begin in 1991. Cold Springs final design complete, June 1999. Start construction Cold Springs screens and ladder, July/August 1989. Also, as part of Cold Springs, an additional weir is to be constructed 1 mile downstream of Three Mile Dam to fix a passage problem remaining from earlier channel modification work. All construction complete, Cold Springs and Maxwell, June 1990.	7/87	9/89
88-50	JGM		<b>WEID</b> Main Canal Pumping (Grant to <b>ODFW</b> ) <u>Objectives:</u> To measure downstream survival of migrating juvenile salmon and to enhance projects for incoming adult spring chinook during spring <b>1988</b> . <u>Improvement:</u> Passage <u>Species:</u> Chinook	<b>WEID</b> pumps were operated in spring <b>1988</b> .	5/88	Complete

PROJECT NUMBER	1/ PO - PM	2/ TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT TERM	
				START DATE	RENEWAL DATE

Grande Ronde River Subbasin

84-9	RDS	Grande Ronde Habitat Improvement Project - USFS/Wallowa-Whitman NF		7/1/84	3/31/92
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Upper Grande Ronde Basin Subproject

Objective: Improve spawning and rearing habitat in the Upper Grande Ronde River.

Improvement: Instream structures

Habitat: 5 3 miles

FY 1990/1991 activities include the construction of **instream** structures, riparian fencing, vegetation planting and monitoring. Completion expected by 1992.

Upper North Fork John Day Basin Subproject

Objective: Improve spawning and rearing habitat in the North Fork John Day River

Habitat: 49 miles

Species: Wild spring chinook and steelhead

FY 1990/1991 activities include the construction of **instream** structures, riparian fencing, vegetation planting, and monitoring. Completion expected by 1992.

Lower Grand Ronde Basin Subproject

Objective: Improve spawning and rearing habitat in the Lower Grande Ronde River.

Habitat: 30 miles

Species: Spring chinook and **summer** steelhead

FY 1990/1991 activities include riparian fencing, construction of **instream** structures, riparian vegetation planting, and monitoring. Completion expected by 1992.

84-25	ROS	Grande Ronde Habitat Improvement Project - ODFW		7/1/84	5/31/90
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Upper Grande Ronde **Subbasin** Subproject

Objective: Improve the quality and quantity of spawning and rearing habitat for salmon and steelhead through habitat improvement activities.

Assuming landowner acceptance proposed FY 1990/1991 activities include **instream structure/streambank** stabilization, riparian fencing and planting. Completion expected by 1992.

PROJECT NUMBER	PO - PM	TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT TERM	
				START DATE	RENEWAL DATE

84-25 (cont.) Joseph Creek **Subbasin** Subproject

Objective: Improve the quality and quantity of spawning and rearing habitat for steelhead through habitat **improvement** activities.

Assuming landowner acceptance. proposed **FY 1990/1991** activities include **instream structure/stream-bank** stabilization, riparian fencing, and planting. Completion expected by 1992.

Yakima River Subbasin

86-75 SML Little **Naches River Passage - USFS/Wenatchee NF**

Objective: 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.

Improvement: Passage, **instream** channel modification, and riparian **revegetation**

Habitat: 18 to 24 miles, depending on species

Species: Spring chinook, **coho**, and steelhead

Benefit: Species # Smolts

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.

10/30/85 12/31/89

PROJECT NUMBER	1/ PO - PM	2/ TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT TERM	
				START DATE	RENEWAL O A T E

Clearwater River Subbasin

84-5	LBE	South Fork Cleat-water River - USFS		1/1/84	1990
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Red River Subproject

Objective: Increase the quantity and improve the quality of spawning and rearing habitat for **anadromous** fish.

Improvement: Instream structure

Habitat: Approximately 20 miles

Species: Spring chinook

Benefit: **Benefit:Cost** ratio is 15:1

USFS has completed construction on Federal land. Construction of fences **is** in progress **on** four private ranches. Completion scheduled for 1990. **O&M** agreement will be required **beyond** 1990 to protect investments. Project funded to completion with **FY** 1987 funds. Final report will summarize project completion.

Crooked River Subproject

Objective: To increase natural **smolt** production potential of salmon and steelhead.

Improvement: Structure 5

Habitat: 17 miles

Species: Chinook and steelhead

Benefit: **Benefit:Cost** ratio is 6.22:1

Completion scheduled for 1990. Project **has** been funded to **comple-**  
**tion** with FY 1987 funds. **Evalua-**  
**tion** and **O&M** scheduled for 1988-1990

84-6	LBE	Clearwater River Habitat Enhancement Improvements - USFS/Clearwater NF		4/1/84	1990
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Lolo Creek Subproject

Objective: Increase the quantity and improve the quality of spawning and rearing habitat for **anadromous** fish.

Improvement: Instream structure

Habitat: 12 miles

Species: Spring chinook and steelhead

Benefit: **Benefit:Cost** ratio is 40:1

Evaluation and monitoring of **physi-**  
**cal** Structures is ongoing. O&M will continue to 1990. Final report **on**  
**all** Clearwater NF projects will be completed in 1990. Project has been funded to completion with FY 1987 funds.

PROJECT NUMBER	1/ PO - PM	2/ TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT TERM	
				START DATE	RENEWAL DATE
84-b (cont.)		<p>Eldorado Creek Subproject</p> <p><u>Objective:</u> Remove rock barriers to correct passage problems resulting from basalt falls and associated high-velocity chutes which prevent access to spawning and rearing habitat above the site.</p> <p><u>Improvement:</u> Instream structure and blasting</p> <p><u>Habitat:</u> 10 miles</p> <p>Species: Steelhead and chinook</p> <p>Benefit: 24,000 chinook and 12,500 steelhead smolts</p>	Project completed		
		<p>Crooked fork Subproject</p> <p><u>Objective:</u> Remove rock barriers to correct passage problems resulting from rack chutes and waterfalls which prevent access to spawning and rearing habitat above the site.</p> <p><u>Improvement:</u> Instream structure</p> <p><u>Habitat:</u> 5.65 miles</p> <p><u>Species:</u> Spring chinook and summer steelhead</p> <p>Benefit: 16,000 chinook and 21,000 steelhead smolts</p>	Project completed.		
87-112	JCG	<p>Orofino Creek Passage - Consultant</p> <p><u>Objective:</u> Construct fish passage facility to correct passage problems resulting From Orofino Falls.</p> <p><u>Improvement:</u> Passage</p> <p><u>Habitat:</u> 62 miles</p> <p><u>Species:</u> Summer steelhead</p> <p><u>Benefit:</u> 12.718 steelhead smolts</p>	<p>A biological/engineering feasibility study was completed in FY1989.</p> <p>The Project TWG requested a review of the cost estimates for the alternatives in the engineering feasibility report and additional conceptual design of lower-cost trap-and-haul facilities. BPA's engineering consultant completed this task in October 1989. Once an alternative is selected. BPA will proceed with NEPA compliance, design, con-</p>	6/24/87	---

PROJECT NUMBER	1/ 2/ PO - PM	TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT TERM	
				START BATE	RENEWAL DATE

87-112  
(cont.)

struction, and evaluation and monitoring, as applicable. Implementation is expected to be completed by FY 1991.

Salmon River Subbasin

84-23 SML Camas Creek, Idaho - USFS/Salmon NF

fencing and revegetation will be completed in FY 1989. Monitoring will continue in FY 1990.

6/29/84 9/01/91

Objective: Improve riparian conditions to increase salmon and steelhead spawning and rearing potential.

Improvement: fencing and riparian revegetation

Habitat: 3 miles

Species: Spring chinook and steelhead

Benefit:

	<u>Smolt</u>	<u>Adults</u>
Steelhead	4,586	76
Chinook	24,570	128

83-359 LBE Salmon River Habitat Enhancement - Shoshone/Bannock Tribe

10/1/83 1/90

Bear Valley Creek Habitat Improvement Subproject

Project construction was completed in FY 1988. Monitoring will continue in FY 1990.

Objective: Enhance habitat degraded by historic mining and dredging operations.

Improvement: Instream structure and riparian enhancement

Species: Wild chinook salmon and summer steelhead

Yankee fork/Jordan Creek/East Fork Salmon River Subproject

Plan/design and NEPA compliance in progress. Construction began in 1987 and was completed for Yankee Fork in FY 1988. East fork NEPA compliance to be completed in 1989. Monitoring will continue in 1990.

Objective: Enhance habitat degraded by historic mining and dredging operations.

Improvement: Instream structure

Habitat: 152 miles

Species: Salmon and steelhead

PROJECT NUMBER	1/ PO - PM	2/ TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT TERM	
				START DATE	RENEWAL DATE
83-415	CAB	<p><b>Alturus</b> Lake Creek and Upper Salmon River Flow Augmentation - <b>USFS/Sawtooth NF</b></p> <p><u>Objective:</u> Enhance natural production of chinook salmon and reestablish sockeye salmon production through Increased streamflow.</p> <p><u>Improvement:</u> <b>Instream</b> structure Species: Chinook and sockeye Benefit: Flow augmentation alternative = <b>benefit:cost</b> ratio of <b>15.5:1</b> to <b>23.4:1</b>; Water right acquisition alternative = <b>18.5:1</b>.</p>	BPA General Counsel is reviewing water rights. Legal issues have been resolved; approach to Federal water right acquisition being explored.	9/30/89	9/30/91
84-24	LBE	<p>Marsh/Elk/Valley/Upper Salmon River, Idaho - <b>USFS/Region 4</b></p> <p><u>Objective:</u> Identify specific <b>reaches</b> of the Upper Salmon River, Marsh and Elk creeks where habitat improvements could lead to increased salmon and steelhead habitat; <b>recommend, for future implementation, measures</b> to improve habitat (e.g., fencing, <b>streambank</b> stabilization and <b>instream</b> structures). Develop a cost-sharing agreement (BPA/USFS) for implementation.</p> <p><u>Improvement:</u> <b>Instream</b> structure <u>Habitat:</u> <b>150</b> miles Species: Steelhead, spring and summer chinook</p>	Plan/inventory phase has been completed. Construction began in 1987. Elk and Lower Bear "alley creeks were given high priority for completion. USFS completed an implementation plan early in <b>FY 1988</b> for completion of all projects. Construction proceeding on Lower Bear Valley Creek, Elk Creek and Upper Salmon River projects.	6/29/84	3/31/90

PROJECT NUMBER	1/ PO - PM	2/ TITLE/OBJECTIVE	PROJECT STATUS	CONTRACT TERM	
				START DATE	RENEWAL DATE
84-28	SML	Lemhi River Rehabilitation - IDFG and Shoshone - Bannock Tribes  <u>Objective:</u> Identify problems, evaluate fishery potential, and recommend alternative methods for rehabilitating salmon and steelhead production in the Lemhi River. <u>Improvement:</u> Passage and flow enhancement <u>Habitat:</u> 62 miles <u>Species:</u> Salmon and steelhead	IDFG and the Shoshone-Bannock Tribes will develop a plan for evaluation of various alternatives to commence in FY 1990.	9/84	---
84-29	LEE	Panther Creek ~ Consultant  <u>Objective:</u> Conduct engineering feasibility and cost analysis for historic mining reclamation to remove toxicity problem for fish passage. Evaluate potential spawning and rearing habitat for anadromous fish and recommend alternatives for habitat improvement measures. <u>Improvement:</u> Passage <u>Habitat:</u> 100 miles <u>Species:</u> Spring chinook and steelhead	BPA funding was deferred pending resolution of legal issues. Private landowner and the Idaho State Attorney General are engaged in a lawsuit over historic mining impact on Panther Creek. The private landowner will not authorize any easement to BPA until the lawsuit is settled with the State. BPA and the agencies/Tribes have consulted with the Idaho State Attorney General's office in FY 1988. Progress is being made toward a legal resolution. Implementation may be reactivated in FY 1990.	8/27/84	---

4.3 ROZA DAM FISH PASSAGE FACILITIES  
 (Juvenile Facilities Completion: March 1, 1987)  
 (Adult Facilities Completion: March 1, 1988)

803(b)(2) BPA shall fund the U.S. Bureau of Reclamation (USBR) to renovate and repair adult and juvenile fish passage facilities at Roza Dam. [Abstract]

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To fund the USBR to renovate and repair adult and juvenile fish passage facilities at Roza Dam.

Background and Progress to Date:

The USBR owns Roza Dam; fish passage facilities have been constructed through Congressional appropriations. The project is one of 20 such passage improvement projects in the Yakima River Basin. Fish screen and ladder improvements were required to protect juvenile fish from being lost in irrigation canals and to enable adult salmon and steelhead to migrate upstream to spawn. The project now provides adequate upstream and downstream fish passage, including adequate passage during periods of reservoir drawdown.

USBR began screen construction in December 1985; facilities and ladder modification construction bids were opened in August 1986. Construction of the facilities was completed in FY 1989.

Plans:

Construction schedule:

<u>Item</u>	<u>Begin Design</u>	<u>Begin Construction</u>	<u>Completion</u>
Screen Structure	12/84	12/85	Completed
Screens	10/84	6/84	Completed
Pumpback	6/85	9/86	Completed
Ladders	6/85	9/86	Completed
Wasteway Barrier	12/84	7/86	Completed

Projects:

No BPA-funded projects

- 4.4 PROSSER DAM FISH PASSAGE FACILITIES  
 (Juvenile Facilities Completion: March 1, 1987)  
 (Adult Facilities Completion: December 1, 1987)

803(b)(3) BPA shall provide funds to the USBR for construction of improvements and additions to Prosser Dam necessary to provide safe, efficient, and timely passage of adult and juvenile fish.  
 [Abstract]

**ACTION ITEM ACTIVITY SUMMARY:**

Objectives:

Provide funds to the USBR for construction of Prosser Dam improvements and additions necessary to provide safe, efficient, and timely passage of adult and juvenile fish.

Background and Progress to Date:

The USBR owns Prosser Dam; fish passage facilities have been constructed through Congressional appropriations. The project is one of 20 such passage improvement projects in the Yakima River Basin. Fish screen and ladder improvements were required to protect juvenile fish adequately from being lost in irrigation canals and to enable adult fish to migrate upstream to spawn.

USBR began screen construction in May 1986. Right bank ladder was completed in May 1986. Left ladder scheduled for completion in FY 1989. Center ladder scheduled for completion in 1990.

Plans:

Construction schedule:

<u>Item</u>	<u>Begin Desiqn</u>	<u>Begin Construction</u>	<u>Completion</u>
Screen Structure	10/84	5/86	Completed
Right Ladder	10/85	10/85	Completed
Left Ladder	6/86	6/87	Completed
Center Ladder	5/85	6/89	1/90
Fish Trap	4/85	9/86	Completed

Projects:

No EPA-funded projects.

- 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.

**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. The BPA, USBR, Bureau of Indian Affairs (BIA), and Washington State are constructing fish screens to direct the young salmon and steelhead back to the Yakima and Naches rivers.

The 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.

See project summaries on following table.

I. COMPLETED PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>DATE COMPLETED</u>	<u>RESULTS/CONCLUSIONS</u>
86-91	Yakima fish Passage Predesign - USBR  <u>Objectives:</u> Perform <b>predesign</b> activities for <b>Yakima</b> Basin fish passage facilities.	October 1988	Predesign evaluations and preliminary engineering have been completed for several passage facilities.

II. FY 1989 ONGOING PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND</u>
86-112	<b>Toppenish/Westside/Ellensburg</b> Screen Fabrication - WDF  <u>Project Manager:</u> T. Clune  <u>Objectives:</u> Fabricate <b>screens</b> for the three projects listed in the title.	<u>Date initiated:</u> October 1985  <u>Results/Conclusions:</u> Screen <b>fabrication</b> in <b>progress</b> .	<b>December</b> 1989: Project will be completed.
85-62	Passage Improvement Evaluations - EPNL  <u>Project Manager:</u> T. Clune  <u>Objectives:</u> Evaluate effectiveness <b>of</b> passage <b>improvement</b> projects.	<u>Date initiated:</u> March 1985  <u>Results/Conclusions:</u> Evaluation is ongoing; results published in <b>BPA</b> annual reports.	Continuing: Evaluation will continue as projects <b>are completed and go on line.</b>

PROJECT  
NUMBER

TITLE

PROJECT STATUS

SCHEDULE AND MILESTONES  
FOR FY 1990 AND BEYOND

89-90

Phase II Screen Predesign –  
USB

Date Initiated: July 1989

FY 1990: Begin predesign.

Results/Conclusions: None at this time.

Project Manager: T. Clune

Objectives: Predesign/NEPA  
of 63 fish screen facilities  
throughout the Yakima Basin.  
Project 88-111, Stevens/Naches/  
Selah Screens, and Project  
86-65, Snipes/Allen Screens.  
have been combined with Project  
89-90.

III. NEW PROJECTS

None.

4.6      WATER EXCHANGE FOR UMATILLA RIVER  
 (Support Beginning Spring 1987)  
 (Report Evaluations: Annually)

703(a)(17)      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 the ODFW and the CTUIR. The Oregon Water Resources Department (OWRD) will certify annually to the Council that the exchanged water will improve instream 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. [Abstract]

**ACTION ITEM ACTIVITY SUMMARY:**

Objectives:

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

Background and Progress to Date:

Federal authorizing legislation prepared by project sponsors was approved in fall 1988. The Council amended the 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.

Plans:

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 a Memorandum of Understanding in the summer 1989 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.

I. COMPLETED PROJECTS

None.

II. FY 1989 ONGOING PROJECTS

None.

III. NEW PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>OBJECTIVES</u>	<u>SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND</u>
89-27	Provide Power for <b>USBR</b> Columbia River <b>Pumps</b>  <u>Project Officer: J. Marcotte</u>	Enhance <b>instream</b> flows in the Umatilla River by exchanging Columbia River water for Umatilla River water.	1. FY 1990: Provide power or reimburse for power costs for interim pumping <b>to</b> Phase I-West Extension pumps.  2. FY 1992: Provide power to Phase I <b>to WEID</b> pumps.  3. FY 1993: Provide power to completed Columbia River pumps.

4.6.1 EVALUATE NON-STRUCTURAL WATER MEASURES IN UMATILLA BASIN  
(Develop Workplan, Report to Council in April 1989)

703(a)(17) BPA, USBR, Council, Oregon Water Resources Department, and other interested parties shall jointly prepare a workplan for an evaluation of non-structural alternatives that may benefit fish and hydropower generation, and whether the combined benefits of such measures can be quantified. [Abstract]

**ACTION ITEM ACTIVITY SUMMARY:**

Objectives:

Identify and evaluate alternative means of providing enhanced plans, other than pumping/exchange projects.

Background and Progress to Date:

This action item has been subsumed by the USBR "Section 213" study, mandated by Public Law 100-557. Section 213 instructs USBR to review Umatilla Project Operations to identify ways to further mitigate fishery losses. This study encompasses so-called "non-structural" measures in the Program such as contracts, conservation, reservoir storage allocation, water deliveries, water rights, and water lease and purchase.

**Plans:**

USBR has lead, with BPA, OWRD, ODFW, Tribes, irrigation districts, and other Federal agencies, in providing review and input. Schedule is:

June 1989 -	Complete river operational model. Complete draft section on WEID District.
September 1989 -	Complete drafts on Westland, Stanfield, Hermiston districts.
November 1989 -	Complete final report and submit to Congress.

Projects

None.

4.14.1 TEMPORARY JOHN DAY ACCLIMATION FACILITY  
(Upon Council Approval, Complete Construction by Spring 1988)

703(f)(2)(B) Upon approval by the Council of the plan, Bonneville shall fund design, construction, and evaluation of the temporary facilities.

**ACTION ITEM ACTIVITY SUMMARY:**

Objectives:

To build and test the effectiveness of acclimation ponds for upriver bright fall chinook salmon from John Day Mitigation Facilities.

Background and Progress to Date:

Acclimation facilities reduce the transportation stress of upriver bright fall chinook transported from John Day Mitigation facilities for release above John Day Dam.

During the first 2 years of the Fish and Wildlife Program, disagreements among affected parties over the location of the acclimation ponds made it difficult for BPA to implement this Measure. When the Council amended the Program in 1984, it provided for: (1) an agency and Tribal plan to be approved before any construction, and (2) an evaluation of temporary acclimation ponds.

In FY 1986, BPA initiated a site survey of 10 candidate acclimation facility sites (Project 86-82) to assist the agencies and Tribes in developing their plan. The joint agency-Tribal work group and the Council have been provided the completion report for the site study completed under Project 86-82. They will select the final site(s) to be used for acclimation.

**Plans:**

BPA plans to fund the design, construction, and evaluation of the John Day Temporary Acclimation ponds, once the Fish and Wildlife agencies and Tribes have developed the acclimation pond plan and the plan has been approved by the Council. BPA will also continue to fund Project 83-313 through completion.

I. COMPLETEO PROJECTS

II. FY 1989 ONGOING PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND</u>
83-313	<p>Pen Rearing of Upriver Fall Chinook Salmon - USFWS</p> <p><u>Project Officer:</u> A. Ruger</p> <p><u>Objectives:</u>To evaluate the effectiveness of rearing Upriver Bright Fall Chinook (URBFC) salmon in net pens.</p>	<p><u>Date initiated:</u> FY 1983</p> <p><u>Results/Conclusions:</u> URBFC salmon can effectively be reared in Columbia River backwaters with net pens. but the actual evaluation of ocean and freshwater contribution and escapement has yet to be <b>completed</b>.</p>	<p>1. Continuing: Contractor will collect and analyze adult return data: BPA will publish preliminary results in the Annual Report.</p> <p>2. 1991: Contractor will collect and analyze adult return data, and prepare final Report. BPA will publish Final Report.</p>

III. NEW PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>OBJECTIVES</u>	<u>SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND</u>
89-16	<p>Design, Construction, and Evaluation of Temporary John Day Acclimation Facilities.</p> <p><u>Project Officer:</u> J. Bauer</p>	<p>Design, construct, and evaluate temporary John Day acclimation facilities.</p>	<p>1. FY 1990: Begin NEPA compliance activities and preliminary design, once the fishery agency and Tribal acclimation pond plan has been completed and the plan has been approved by the Council. Agencies and tribes did not assign a priority to begin in FY 1989.</p> <p>2. The acclimation pond plan is expected to contain a schedule for design, <b>construction</b> and evaluation of the facilities.</p> <p>3. Project has <b>no</b> funds for FY 1990.</p>

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

803(d) 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). [Abstract]

**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.

Background and Progress to Date:

BPA will fund the design, construction, operation, and maintenance of the Yakima outplanting 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 hatchery master plan, and BPA began predesign in November 1987. Predesign is scheduled for completion in April 1990.

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 the applicability of acclimating fall chinook salmon in irrigation canals prior to release. Additional studies will be initiated when defined by the Hatchery experimental design task team. The experimental design team, a component of the Yakima Hatchery Technical Work Group (TWG), will develop objectives for the supplementation program. Projects will be identified by the TWG and implemented to answer questions resulting from the experimental design. All projects are integral to the overall experimental/supplementation program and should not be regarded as separate or distinct studies.

**Plans:**

1. National Environmental Policy Act (NEPA) compliance for hatchery construction is scheduled to be completed in December 1989.
2. BPA will fund design, construction, operation, and maintenance of the hatchery:

Predesign: 11/87 - 3/90  
Final design: 3/90 - 10/91  
Construction: 10/91 - 6/95  
O & M: Begin 3/92 and continue

3. Facility expected to be partially operational in FY 1992

I. COMPLETED PROJECTS

None.

II. FY 1989 ONGOING PROJECTS

<u>PROJECT OR TASK NUMBER</u>	<u>TITLE</u>	<u>STATUS</u>	<u>SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND</u>
86-45	<p>Yakima Hatchery: Cle Elum Study - NMFS</p> <p><u>Project Manager:</u> T. Clune</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 were collected in July 1987/88. Fingerlings being reared. Tests indicate all fish are IHN-negative. Test groups were released in and below Lake Cle Elum in May 1989. Preliminary data being collected at Prosser and John Day Dams. PIT tag detector installed at Prosser juvenile trap.</p>	<ol style="list-style-type: none"> <li>1990: Release 1988 brood year with CWT and PIT tags.</li> <li>Continuing: Evaluate survival of tagged fish. Continue through 1994.</li> </ol>
88-115	<p>Yakima/Klickitat Hatchery Design and Construction</p> <p><u>Project Manager:</u> T. Clune</p> <p><u>Objectives:</u> Complete predesign for Yakima/Klickitat Hatchery.</p>	<p><u>Date Initiated:</u> FY 1988</p> <p><u>Results/Conclusions:</u> Preliminary design program underway.</p>	<p>April 1990: Complete predesign report</p>

PROJECT OR TASK NUMBER	TITLE	STATUS	SCHEDULE AND MILESTONES FOR FY 1989 AND BEYOND
88-120	<p>Yakima and Klickitat Basin Artificial and Natural Production Enhancement Program - YIN</p> <p><u>Project Manager:</u> T. Clune</p> <p><u>Project Biologist:</u> T. Vogel</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. FY 1990: Fund Project Leader to obtain agreement from YIN, WDF, WDW. Participate in TWG and public involvement activities.</p> <p>2. Continue through hatchery <b>construction.</b></p>
88-123	<p>Yakima Hatchery <b>Coordination-Roza</b> Irrigation District.</p> <p><u>Project Manager:</u> T. Clune</p> <p><u>Objectives:</u> Provide for technical assistance from <b>Roza</b> Irrigation District on hatchery project.</p>	<p><u>Date initiated:</u> February 1988</p> <p><u>Results/Conclusions:</u> Good participation and input from irrigation entities.</p>	<p>FY 1990: Participate in public involvement, TWG, and water analysis.</p>

PROJECT OR TASK NUMBER	TITLE	STATUS	SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND
88-149	<p>Yakima Hatchery: Water Analysis - USBR</p> <p><u>Project Manager:</u> T. Clune</p> <p><u>Objectives:</u> To determine water availability, by species and lifestage, for hatchery production.</p>	<p><u>Date Initiated:</u> May 1988</p> <p><u>Results/Conclusions:</u> Begin data collection for water analysis study.</p>	<p>FY 1990: Compile data, perform analysis, and complete report by December 1989.</p>
88-167	<p>Economic Analysis - CWU</p> <p><u>Project Manager:</u> T. Clune</p> <p><u>Objectives:</u> Economic evaluation of hatchery construction and operation.</p>	<p><u>Date Initiated:</u> October 1988</p> <p><u>Results/Conclusions:</u> Draft report submitted May 1989.</p>	<p>1. FY 1989: Begin economic study.</p> <p>2. December 1990: Completed.</p>
89-42	<p>Klickitat Hatchery Pre-Engineering - Consultant</p> <p><u>Project Manager:</u> T. Clune</p> <p><u>Objectives:</u> Conduct preliminary design of Klickitat Hatchery.</p>	<p><u>Date Initiated:</u> December 1988</p> <p><u>Results/Conclusions:</u> Pre-engineering is progressing satisfactorily.</p>	<p>December 1989: Project expected to be completed.</p>
89-43	<p>Yakima Hatchery Pre-engineering-Consultant</p> <p><u>Project Manager:</u> T. Clune</p> <p><u>Objectives:</u> Conduct pre-engineering on Yakima Hatchery Project.</p>	<p><u>Date Initiated:</u> December 1988</p> <p><u>Results/Conclusions:</u> Project progressing satisfactorily.</p>	<p>December 1989: Project expected to be completed.</p>

PROJECT OR TASK NUMBER	TITLE	STATUS	SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND
89-82	Experimental Design - WDF	<u>Date Initiated:</u> June 1989	FY 1990: Refine experimental design.
	<u>Project Manager:</u> T. Clune	<u>Results/Conclusions:</u> None at this time.	
	<u>Objectives:</u> Develop experimental features of Yakima Hatchery Project.		
89-83	Experimental Design - WDW	<u>Date Initiated:</u> June 1989	FY 1990: Refine experimental design.
	<u>Project Manager:</u> T. Clune	<u>Results/Conclusions:</u> None at this time.	
	<u>Objectives:</u> Develop experimental design features of Yakima Hatchery Project.		
89-89	Radiotelemetry Study - NMFS	<u>Date Initiated:</u> June 1989	1. FY 1989: Initiate acquisition.
	<u>Project Manager:</u> T. Clune	<u>Results/Conclusions:</u> None at this time.	2. FY 1990: Begin radio tagging and monitoring.
	<u>Project Biologist:</u> T. Vogel		
	<u>Objectives:</u> Determine the distribution of distinct stocks of Yakima Basin steelhead and spring chinook.		
89-100	Technical Writer - BPNL	<u>Date Initiated:</u> July 1989	1. FY 1989: Technical writing assistance.
	<u>Project Manager:</u> T. Clune	<u>Results/Conclusions:</u> None at this time.	2. FY 1990: Technical writing assistance.
	<u>Objectives:</u> Technical assistance for experimental design and NEPA compliance for hatchery predesign report.		

PROJECT  
OR TASK  
**NUMBER**

TITLE

STATUS

SCHEDULE AND MILESTONES  
FOR FY 1990 AND BEYOND

**89-105** Species Interaction Study - WOW **Projected** to start: September 1989

Project Manager: T. Clune

Project Biologist: T. Vogel

Objectives: Determine the effect of **anadromous** fish production on resident fish.

1. FY 1989: Begin study.

2. FY 1990: Continue study.

III. NEW PROJECTS

PROJECT  
OR TASK  
**NUMBER**

TITLE

OBJECTIVES

SCHEDULE AND MILESTONES  
FOR FY 1990 AND BEYOND

**90-58** Project Leader Function

Project Manager: T. Clune

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.**

FY 1990: Begin project.

**90-64** Klickitat River Monitoring

Project Manager: T. Clune

Project Biologist: T. Vogel

Monitor spring chinook and steelhead **smolts** in the hatchery supplementation program. Coordinate with MEG, and supplementation **TWG's.**

FY 1990: Develop program and initiate monitoring.

**90-65** Juvenile Monitoring Trap Calibration

Project Manager: T. Clune

Project Biologist: T. Vogel

Calibrate **Prosser** smolt trap for **in-**River vs. Canal distribution of **out-**migrating salmon and steelhead.

FY 1990: Conduct calibration studies

PROJECT OR TASK NUMBER	TITLE	OBJECTIVES	SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND
90-66	Genetic Guideline Development  <u>Project Manager:</u> T. Clune  <u>Project Bioloogist:</u> T. Vogel	Develop genetic guidelines for stocks of salmon and steelhead for Yakima Basin supplementation program.	FY 1990: Develop guidelines.
90-67	Lower Yakima River <b>Smolt</b> Trap Development – WDF  <u>Project Manager:</u> T. Clune  <u>Project Biologist:</u> T. Vogel	To develop a smolt trap for the Lower Yakima River to determine distribution of fall chinook juveniles.	FY 1990: Develop trap and begin monitoring.
90-68	Adult Trap Predesign – USBR  <u>Project Manager:</u> T. Clune	Predesign of adult trap facilities for the Yakima Hatchery project.	FY 1990: Begin preliminary design.  FY 1991: Begin final design.
90-69	Yakima Hatchery Final Design  <u>Project Manager:</u> T. Clune	Final design of Yakima Basin Facilities.	FY 1990: Begin final design.  FY 1991: Continue final design.  FY 1992: Complete final design. Begin construction.
90-70	Klickitat Hatchery Final Design  <u>Project Manager:</u> T. Clune	Final Design of Klickitat Basin facilities.	FY 1990: Begin final design.  FY 1992: Complete final design. Begin construction.
90-71	<b>Smolt</b> Loss Evaluation  <u>Project Manager:</u> T. Clune  <u>Project Biologist:</u> T. Vogel	To determine <b>smolt</b> losses below <b>Prosser</b> Dam due to various factors including predation, temperature, and passage conditions.	FY 1990: Begin smolt loss evaluation.

PROJECT  
OR TASK  
**NUMBER**

TITLE

OBJECTIVES

SCHEDULE AND MILESTONES  
FOR FY 1990 AND BEYOND

**90-72**

Computer Information System  
Development

Develop CIS for **Yakima/Klickitat sup-**  
plementation program.

FY 1990: Refine program, coordinate with Basin  
**CIS** program.

Project ~~Manager~~: T. Clune

Project Bioloaist: T. Vogel

# LOW CAPITAL FACILITIES

## ----- LOW-CAPITAL PROPAGATION FACILITIES

703(g)(1) BPA shall provide funds to develop and test low-cost, small scale propagation facilities adaptable to the Columbia Basin locales. [Abstract]

### ACTION ITEM ACTIVITY SUMMARY

#### Objectives:

To define, evaluate, and assess low-capital production facilities

#### Background and Progress to Date:

Low-capital propagation facilities require a smaller water supply than large hatcheries and are readily adaptable to individual drainages, enabling the conservation of gene pools. A low-capital facility evaluation project was begun in 1983 and completed in 1989. The final report for this project (Project 83-364) has been published.

#### Plans:

BPA currently has no further plans for implementing this Action Item, which was deleted from the 1987 Program.

**I. COMPLETED PROJECTS**

<b><u>PROJECT NUMBER</u></b>	<b><u>TITLE</u></b>	<b><u>DATE COMPLETEO</u></b>	<b><u>RESULTS/CONCLUSIONS</u></b>
83-364	<p><b>Evaluation of a Low-Cost Salmon Production Facility - Clatsop Economic Development Committee Fisheries Project</b></p> <p>Project <u>Officer</u>: T. Clune</p> <p><b>Objectives:</b> Evaluate the effectiveness of a low-cost, small-scale salmon propagation facility and a known-stork terminal fishery.</p>	March 1989	<p>The project effectively reared and released salmon that contributed to various fisheries from California to Alaska. The local community was a major provider of funds, services, and equipment to the project. Final report received May 1989.</p>

**II. FY 1989 ONGOING PROJECTS**

None.

**III. NEW PROJECTS**

None

## 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 and elsewhere. The artificial production facilities shall be used to supplement natural production in these rivers.

### ACTION ITEM ACTIVITY SUMMARY:

#### Objectives:

To fund master plan, design, and construction of the Northeastern Oregon salmon and steelhead facilities.

#### Background and Progress to Date:

The fish and wildlife agencies and Tribes expect this facility to provide for outplanting of about 2.3 million to 3.0 million juveniles in the five Oregon rivers identified in the measure. The TWG has been organized and is assisting in the development of the hatchery master plan. BPA has budgeted for implementation.

#### Plans:

The master plan is scheduled to be completed in 1991. When the Council approves the master plan, BPA will proceed with design.

**I. COMPLETED PROJECTS**

None

**II. FY 1989 ONGOING PROJECTS**

<b>PROJECT NUMBER</b>	<b>T I T L E</b>	<b>PROJECT STATUS</b>	<b>SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND</b>
X8-53	<b>Northeastern Oregon Artificial Production Facilities - CTUIR/ CTWSIR/NPT/ODFW</b>  <b>Project Officer: J. Bauer</b>  <b>Objectives: Fund planning, design, construction, operation, maintenance, and evaluation of artificial production facilities to raise chinook and steelhead for enhancement in the Hood, Umatilla, Walla Walla, Grande Ronde, and Imnaha rivers and elsewhere. The artificial production facilities will be used to supplement natural production in these rivers. The fish and wildlife agencies and Tribes expect these facil- ities to provide for outplanting 2.3 to 3.0 million juveniles in the five rivers identified.</b>	<b>Date Initiated: Planning began in FY 1988.</b>  <b>Results/Conclusions: Contract in place to produce a Master Plan and to concep- tually site needed facilities.</b>	<b>1. FY 1990: Complete facilities master plan with production objectives, facility siting, and preliminary cost estimates.</b>  <b>2. FY 1991: Complete master plan and obtain Council approval for final design, and construction</b>

**III. NEW PROJECTS**

None

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

703(f)(1) 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. [Abstract]

**ACTION ITEM ACTIVITY SUMMARY**

Objectives:

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

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 900,000 fall chinook, 500,000 spring chinook, 150,000 coho salmon, and 140,000 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:

EPA 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.

**1. COMPLETED PROJECTS**

None

**II. FY 1989 ONGOING PROJECTS**

<b><u>PROJECT NUMBER</u></b>	<b><u>TITLE</u></b>	<b><u>PROJECT STATUS</u></b>	<b><u>SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND</u></b>
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> FY 1983</p> <p><u>Results/Conclusions:</u> Approximately 15,000 fall chinook, 82,000 spring chinook, 150,000 coho, and 52,000 steelhead juveniles were acclimated and released during FY 1988. No results of the facility evaluation study are available yet.</p>	<ol style="list-style-type: none"><li>1. Continuing: BPA will fund operation, maintenance, and evaluation of the facilities.</li><li>2. Continuing: Contractor will provide an annual operational report and preliminary results of the evaluation study in the Project's annual report.</li><li>3. FY 1993: BPA will publish the final results of the evaluation study in a final report.</li></ol>

**III. NEW PROJECTS**

None.

4.17.2 EXPANDED UMATILLA HATCHERY  
(Fund, upon Council Approval)

703(f)(1)(A) 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.[Abstract]

**ACTION ITEM ACTIVITY SUMMARY:**

Objectives:

To provide an improved contribution of anadromous fish production from the Umatilla River to the Columbia River Basin.

Background and Progress to Date:

The facilities are to produce 290,000 lbs. of salmon and steelhead juveniles for release in the Umatilla Subbasin to enhance natural and hatchery production. Hatchery production may also be used in other subbasins. A secondary purpose of the hatchery is to demonstrate oxygen supplementation technology. BPA began funding hatchery design in FY 1986 and hatchery master planning in FY 1987. The CTUIR and ODFW have been conducting a release program using fish from other hatcheries since 1982, and intend to continue until this hatchery is operational. The final design was completed during 1988 and the Master Plan was approved in October 1989. Agreement was reached in 1988 that the hatchery will be operated by ODFW as a joint facility with Irrigon hatchery and that the Umatilla Tribes will be responsible for preparing the annual operating plan.

The final design estimates revealed that the hatchery will cost more than originally expected. The cost increases are due to design evolution, delays in project implementation, changing site conditions at the well, and water production shortfalls. Costs have risen about \$4.0 million to total \$12.0 million.

Plans:

In FY 1990, BPA plans to fund construction of the hatchery. When the hatchery is completed in 1991, BPA will fund its operation and maintenance. After completion, BPA also expects to evaluate hatchery effectiveness. Planning for satellite facilities will begin in FY 1990, with the need to have one or two additional chinook adult holding facilities on line before the mid-1990's.

I. COMPLETED PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>DATE COMPLETED</u>	<u>RESULTS/CONCLUSIONS</u>
84-33-2	Analysis of O <sub>2</sub> and Michigan Rearing Strategies -Consultant.	FY 1989	Objectives were met. Consultant's input allowed final designs and production scenarios to be fine-tuned.
	<u>Project Officer:</u> J. Marcotte		
	<u>Objectives:</u> To ensure that final designs incorporate accepted standards for Michigan-style oxygen supplementation and rearing techniques and to ensure that proposed operational strategies reflect the capabilities of the hatchery design.		

II. FY 1989 ONGOING PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND</u>
84-33	Umatilla Hatchery - USACE	<u>Date initiated:</u> FY 1986	
	<u>Project Officer:</u> J. Marcotte	<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 and added salmon to production. Council amended program to expand production	<ol style="list-style-type: none"> <li>1. Winter 1989-90: Finalize Operation and Maintenance Agreement.</li> <li>2. Spring 1990: Start construction.</li> <li>3. Summer 1991: Hatchery operational.</li> </ol>
	<u>Objectives:</u> Design and construct the Umatilla Hatchery.		

PROJECT NUMBER	TITLE	PROJECT STATUS	SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND
84-33 cont.		to 290,000 and test efficiency of O <sub>2</sub> supplementation. Final designs completed. Master Plan complete February 1989. Council approved Master Plan in October 1989. Feasibility studies for new chinook holding facilities will be conducted as part of this project.	
87-415	<p>Umatilla Hatchery Master Plan - ODFW</p> <p><u>Project Officer:</u> J. Marcotte</p> <p><u>objectives:</u> Develop a Master Plan to guide hatchery production, management policies, and monitoring and evaluation.</p>	<p><u>Date initiated:</u> June 1987</p> <p><u>Results/Conclusions:</u> This process was coordinated with regional fishery interests and appropriate Council Technical Work Groups. Final plan was submitted to Council for issue paper development in February 1989.</p>	Council approved the Master Plan in October 1989.
84-33-3	<p>Umatilla Hatchery Tribal Fish Culture Training Program - CTUIR</p> <p><u>Project Officer:</u> J. Marcotte</p> <p><u>Objectives:</u> Train up to eight tribal personnel to qualify as Hatchery Technicians-I for employment in Umatilla Hatchery Program facilities.</p>	<p><u>Date Initiated:</u> September 1988</p> <p><u>Results/Conclusions:</u> Training program is progressing satisfactorily.</p>	FY 1990: Training program scheduled for completion.

**III. NEW PROJECTS**

<b><u>PROJECT NUMBER</u></b>	<b><u>TITLE</u></b>	<b><u>OBJECTIVES</u></b>	<b><u>SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND</u></b>
90-XXX	<b>Umtilla Satellite Facility Siting</b>  <b><u>Project Officer:</u> J. Bauer</b>	<b>Locate suitable site(s) for adult holding, juvenile acclimation, and extended rearing as satellites for the Umtilla Hatchery.</b>	<b>FY 1990: Review data from existing satellites to evaluate for future use. Monitor adult returns to enable forecast of date when numbers of adults will be available for brood. That date will determine construction schedule for satellites.</b>

4.17.3 LOW-CAPITAL PROPAGATION FACILITY ON NEZ PERCE RESERVATION  
(Design/Begin Construction by May 1989)

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).

**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 and FY 1989.

Plans:

Preliminary design scheduled to begin in FY 1990, followed by final design and construction. Project completion scheduled for FY 1992.

**I. COMPLETED PROJECTS**

None.

**II. FY 1989 ONGOING PROJECTS**

<b><u>PROJECT NUMBER</u></b>	<b><u>TITLE</u></b>	<b><u>PROJECT STATUS</u></b>	<b><u>SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND</u></b>
83-350	Nez Perce Low-Capital Production Facility - NPT  <b><u>Project Officer:</u></b> S. Levy  <b><u>Objectives:</u></b> Design and construct a low-cost salmon propagation facility on the Nez Perce Reservation.	<b><u>Date initiated:</u></b> FY 1983  <b><u>Results/Conclusions:</u></b> None.	1. FY 1990: Complete preliminary design, including NEPA assessment.  2. FY 1991: Begin final design  3. FY 1992: Complete project, and begin operation and maintenance. Evaluation and monitoring.
88-126	Nez Perce Technical Support - IDFG  <b><u>Project Officer:</u></b> S. Levy  <b><u>Objectives:</u></b> To provide technical support on planning for Nez Perce Hatchery project.	<b><u>Date Initiated:</u></b> January 1988  <b><u>Results/Conclusions:</u></b> None.	On-going technical support will continue through FY 1992.

**III. NEW PROJECTS**

None.

## 4.17.4 HABITAT SURVEY ASSOCIATED WITH ACTION ITEM 4.17.3 (Fund)

703(c)(3) Bonneville shall fund an evaluation of the lower mainstem Clearwater River to study existing habitat and temperature regimes for spawning, incubation, and rearing for salmon and steelhead. Proposals for outplanting from the Nez Perce low-capital propagation facilities [703(g)(2)] will be based on the evaluation. [Abstract]

### ACTION ITEM ACTIVITY SUMMARY:

#### Objectives:

To evaluate the habitat and temperature regimes in the lower mainstem Clearwater River; the evaluation will determine the feasibility of establishing a run of anadromous fish.

#### Background and Progress to Date:

When constructed, a low-capital salmon and steelhead propagation facility (Action Item 4.17.3) on the Nez Perce Reservation will produce fish for outplanting in reservation streams. The mainstem Clearwater River habitat study will try to determine what species can successfully be outplanted in the mainstem Clearwater River and to identify opportunities to enhance existing steelhead rearing. BPA expects that the NPT will use study information to plan production and outplanting strategies for the low-capital facility.

BPA began funding a mainstem Clearwater River habitat study (Project 88-15) in October 1987. The study is progressing satisfactorily.

#### Plans:

BPA will continue with implementation of Project 88-15 (see following table). Upon completion of Project 88-15, the Action Item and measure will be completed: no additional projects are planned.

**I. COMPLETED PROJECTS**

None.

**II. FY 1989 ONGOING PROJECTS**

<b><u>PROJECT NUMBER</u></b>	<b><u>TITLE</u></b>	<b><u>OBJECTIVES</u></b>	<b><u>SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND</u></b>
88-15	<p>Mainstem Clearwater River <b>Study:</b> Assessment for Salmonid Spawning, Incubation, and Rearing - NPT</p> <p><b>Project Officer:</b> J. Gislason</p> <p><b>Objectives:</b> Evaluate the existing anadromous fish habitat and the temperature regime in the lower Clearwater River to determine 1) the feasibility of establishing a run of anadromous species in the lower river, and 2) opportunities for enhancing steelhead rearing.</p>	<p><b>Date Initiated:</b> October 1987</p> <p><b>Results/Conclusions:</b> NPT completed Phase I of the project, a literature review and temperature/flow data analysis, and began implementing Phase II field studies in FY 1989. The Phase I analysis of historical temperature data indicated that Lower Clearwater River temperatures are generally suitable for fall and summer chinook salmon reproduction.</p>	<p>1. FY 1990: Complete quantification of instream habitat using IFIM, continue observation of current use of Lower Clearwater River by juvenile and adult fish, and conduct incubation, rearing, and outmigration timing studies.</p> <p>2. FY 1991: Complete data collection, data analysis, and final report.</p>

**III. NEW PROJECTS**

None.

# HATCHERY EFFECTIVENESS

## IMPROVED HATCHERY EFFECTIVENESS

(Former Action Item 34.23)

Measure 703(e) concerns "Improved Propagation at Existing Facilities" and gives priority to improving and reprogramming propagation at existing facilities, over construction of new facilities. The measure includes: (1) research, development, and demonstration of improved husbandry practices; (2) strategies for and rearing operations aimed at improved operating efficiencies of hatcheries and increased adult returns; (3) genetic stock assessment; (4) improved fish health protection; and (5) developing sensitive and reliable indices of smolt quality and readiness to migrate. [Abstract]

### TECHNICAL SUBJECT ACTIVITY SUMMARY:

#### Objectives:

To identify and fund research, demonstration, or other projects necessary to accomplish improvements in the effectiveness of existing hatcheries.

#### Background and Progress to Date:

The Columbia River Basin has about 54 main hatcheries and about 40 satellite facilities, representing a capital investment worth over \$600 million. These facilities are estimated to produce over 75 percent of the total salmon and steelhead in the basin. Improving hatchery effectiveness will increase total adult fish production and will protect very large public investments. More hatcheries may be needed to achieve Program goals, but their numbers, adverse impacts, and costs will be much lower if the existing hatchery production provides more adults via higher smolt survival, a goal requiring that hatchery fish quality be improved.

Most of the currently funded projects under former Action Item 34.23 continue to concern research on bacterial kidney disease (BKD) or infectious hematopoietic necrosis (IHN) virus. These diseases were rated as the most important disease problems by the FDTWG in its Work Plan. Additional projects are pursuing the identification of the Ceratomyxa shasta life cycle and the role of nutrition in the growth, survival, and immune response of salmon.

In accordance with the 1987 Program, a Hatchery Effectiveness Technical Work Group (HETWG) was formed. The group, composed of experts in hatchery effectiveness, developed a Five-Year Research Work Plan to address the technical needs of the Hatchery Effectiveness Research Area of Emphasis, Section 206(b)(1)(c), and Program Measure 703(e). This plan is discussed under Action Item 6.1 in the Work Plan.

Plans:

BPA plans to continue funding ongoing multiple-year projects begun under former Action Item 34.23, after reviewing their progress. No new projects will be initiated under Action Item 34.23, as it was deleted from the 1987 Program. BPA expects to use TWG's to conduct onsite evaluations of existing projects. BPA will continue to participate in the HETWG process and to rely on the group for expert opinion and collaboration in implementation. (Projects from the HETWG and FDTWG Five-Year Work Plans can be found under Action Item 6.2 in the Work Plan.)

**I. COMPLETED PROJECTS**

<b><u>PROJECT NUMBER</u></b>	<b><u>TITLE</u></b>	<b><u>DATE COMPLETED</u></b>	<b><u>RESULTS/CONCLUSIONS</u></b>
84-45	<p>Effects of Vitamin Nutrition on the Immune Response of Hatchery-Reared Salmonids-USFWS</p> <p><u>Project Officer:</u> A. Ruger</p> <p><u>Objectives:</u> Determine the amounts of selected vitamins required for peak functioning of the immune systems in chinook salmon and for high resistance to infectious diseases. (Vitamins selected: pyridoxine, folic acid, pantothenic acid, riboflavin, vitamin E, and ascorbic acid.)</p>	July 1989	<p>(Preliminary) There are marginal differences in the immunological parameters tested with respect to the vitamin concentrations incorporated into the diets. However, the Abernathy diet can provide greater enhancement of the development of immune responsiveness over that seen with the sem purified diet (Oregon Test Diet).</p>
84-945	<p>Effects of Vitamin Nutrition on the Immune Response of Hatchery-Reared Salmonids - OSU</p> <p><u>Project Officer:</u> A. Ruger</p> <p><u>Objectives:</u> See Project 84-45</p>	July 1989	See Project 84-45.

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>DATE COMPLETED</u>	<u>RESULTS/CONCLUSIONS</u>
84-46	<p>Development of a Vaccine Against BKD in Salmon - OSU</p> <p><u>Project Officer:</u> A. Ruger</p> <p><u>Objectives:</u> Collect and treat fractions of <u>Renibacterium salmoninarum</u> with various agents to promote immune responses. Vaccinate fish with these fractions and challenge with live BKD to determine whether immunity was conveyed.</p>	June 1989	Some fractions have conveyed protection. Most promising prototype vaccine protected about 30% of the fish. Species-related differences in sensitivity to BKD challenge were identified.

## II. FY 1989 ONGOING PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND</u>
83-363	<p>Development of Diets for Enhanced Survival of Salmon - OOFW</p> <p><u>Project Officer:</u> R. Austin</p> <p><u>Objectives:</u> Develop a high-quality, cold-processed animal protein fish diet and evaluate the effect of the diet on survival and return of coho and chinook salmon.</p>	<p><u>Date initiated:</u> 1983</p> <p><u>Results/Conclusions:</u> Preliminary adult recovery data suggest an improved survival for coho salmon fed the test diets. However, recovery data for adult fall chinook salmon showed inconsistent survival, both by broad year and stock (tule and upriver bright). Final Analysis of data from returning adults will be completed in 1991.</p>	<ol style="list-style-type: none"> <li>1. Continuing: Contractor will evaluate the effect of diet on survival and return rate of coded wire-tagged coho and chinook salmon.</li> <li>2. Feed Trials are complete: Collection of coded wire tagged adults will continue through 1990.</li> <li>3. 1991: Recommendations for diet components for enhanced survival will be available; BPA will publish final report.</li> </ol>

**PROJECT  
NUMBER**

**TITLE**

**PROJECT STATUS**

**SCHEDULE AND MILESTONES  
FOR FY 1990 AND BEYOND**

83-312

**Epidemiology and Control of Infectious Diseases of Salmonids in the Columbia River Basin - OSU**

**Project Officer: A. Ruger**

**Objectives: Collect epidemiological information on IHN disease, BKD, and ceratomyxosis relative to Columbia River salmon; investigate ways and means of controlling diseases.**

**Date initiated: May 1983**

**Results/Conclusions: Freshwater clams convey the infectious lifestage of Ceratomyxa shasta. This disease is spreading in the Basin. BKD is highly prevalent in the ocean as well as in freshwater. First sign of infection of C. shasta was 7 days post-exposure in the posterior intestine.**

**1. Project is funded to completion with FY 1987 funds.**

**2. October 31, 1989: Final report and project completion.**

84-43

**Evaluation of a Subunit Vaccine Against IHN Virus - OSU**

**Project Officer: R. Morinaka**

**Objectives: Develop and test a subunit vaccine against IHN virus.**

**Date initiated: July 1984**

**Results/Conclusions: A recombinant DNA vaccine for IHN virus has been prepared and laboratory tested and found to be effective. Large quantities of vaccine have been completed. The USFWS is continuing to field test the vaccine in 1989.**

**1990: Evaluate vaccine in sentinel fish.**

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND</u>
87-403	Regional Fish Disease Lab at Oregon State University - OSU	Date <u>Initiated</u> : August 1987  <u>Results/Conclusions</u> : Construction was completed in May 1989.	1. November 1989: Laboratory operational.  2. Project is funded to completion with FY 1988 funds.
	<u>Project Officer</u> : A. Ruger		
	<u>Objective</u> : Design and construct an expanded facility for research on various aspects of infectious diseases, for testing of anti-microbial agents, for developing and testing of vaccine. for providing biologicals, for improving diagnostic tests, and for providing professional training to fishery scientists.		

### III. NEW PROJECTS

Hatchery Effectiveness research projects in the five-Year Work Plan of the HETWG are listed under Action Item 6.2.

4.17.5 WILLAMETTE BASIN STUDY PLAN  
(Fund; Coordinate with Supplementation Work Plan)

703(h)(2) BPA shall provide funds to study the best method of supplementing natural stocks of spring chinook with hatchery stocks in the Willamette River. [Abstract]

**ACTION ITEM ACTIVITY SUMMARY:**

Objectives:

To fund a study to supplement the Willamette spring chinook runs without adversely affecting natural runs of resident fishery or the genetic integrity of the Columbia Basin fish populations.

Background and Progress to Date:

Supplementation, or outplanting, has been identified by the agencies, Tribes, and the Council as one of the main ways to increase Columbia River salmon and steelhead runs. This project aims to develop the best methods for supplementing spring chinook in the Willamette Basin, in order to develop and maintain maximum sustained yield and to maintain genetic diversity.

Phase I, completed during September 1985, surveyed the literature of outplanting efforts and developed a detailed study design for evaluating possible Willamette Basin strategies. Phase II proposed planting fry, presmolts, and adults in areas with different production potential. The 9-year evaluation would determine which life stage of spring chinook to outplant for maximum survival.

A major review included the study design and the relationship to Section 703(h)(1), the overall work plan for supplementation. Section 703(h)(2) concerns only Willamette Basin spring chinook. The review, completed in FY 1986, concluded that the initial study design viewed outplanting as a potential continuing effort to supplement hatchery production by using hatchery surpluses. However, both Measures 703(h)(1) and 703(h)(2) view outplanting as a temporary means of enhancing natural production or re-establishing natural runs. Rebuilding natural runs was not addressed in the study plan, though it is one of the highest priorities of the Program.

The impacts of outplanting on resident fish will not be answered by this study design. BPA believes, however, that these impacts should be addressed in supplementation research.

Plans:

BPA submitted the study plan to the STWG for review, realizing the relationship with 703(h)(1) that this study should address. Measure 703(h)(2) was not a high priority in the STWG Five-Year Work Plan. However, BPA will develop a work plan and initiate research when and if the STWG determines it is a high priority for achieving the objectives of the Supplementation Research Work Plan.

Projects:

No BPA-funded projects are planned for FY 1990.

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 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.

**ACTION ITEM ACTIVITY SUMMARY:**

Objectives:

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

Background and Progress to Date:

BPA is awaiting development of the master plan by the fisheries agencies and Tribes.

Plans:

When the Council approves the agency and Tribal joint master plan for the Pelton Dam ladder rearing, BPA will form a work group to assist in the completion of this Action Item. The design and construction will follow the recommendation of this work group. When the facility is constructed, an operation and maintenance agreement with the operator will be established.

BPA will fund a project in FY 1989 to produce the Master Plan. When the Council approves the master plan, BPA will proceed with ladder alternatives allowing for production.

**I. COMPLETED PROJECTS**

None

**II. FY 1989 ONGOING PROJECTS**

<b><u>PROJECT NUMBER</u></b>	<b><u>TITLE</u></b>	<b><u>PROJECT STATUS</u></b>	<b><u>SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND</u></b>
89-29	<b>Propagation in Pelton Dam Ladder</b>  <b><u>Project Officer:</u> J. Bauer</b>  <b><u>Objectives:</u></b> 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 to meet program production goals.	<b><u>Date Initiated:</u> September 1989</b>  <b><u>Results/Conclusions:</u> None at this time.</b>	1. <b>FY 1990:</b> After Council approval of the OOFW CTWSIR master plan, BPA will fund rearing of fish in the Pelton Dam fish ladder.  2. <b>FY 1991:</b> Begin rearing spring chinook smolts.  3. <b>FY 1993:</b> First smolt releases.  4. <b>FY 1997:</b> Final report on experiment to determine ladder rearing capacity.

**III. NEW PROJECTS**

None.

4.21 HATCHERY RELEASES IN UPPER COLUMBIA  
(Upon Council Review of Reprogramming Plan, Fund Releases)

703(d)(2) After Council review of the reprogramming plan developed by the fish and wildlife agencies and Indian Tribes, BPA shall provide funds to transfer a portion of the fish from existing lower Columbia River hatcheries to release sites in the upper Columbia River system to assist in restoring naturally spawning stocks, as provided in that plan.

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To implement the reprogramming plan (approved by the Council) to assist in the rebuilding of upriver fish runs.

Background and Progress to Date:

EPA understands that the fishery agencies and Tribes have not submitted the plan to the Council. When the Council has reviewed the plan, BPA will proceed with funding of hatchery releases in the upper Columbia River. BPA still awaits Council review and approval of the plan.

Plans:

Future projects and required funding will be identified after the Council approves the reprogramming plan.

Projects:

No defined projects for FY 1990.

5.1 KNOWN STOCK FISHERIES FIVE-YEAR DEMONSTRATION PROGRAM  
(Co-Fund to Test Electrophoresis: Begin 1985 Ocean Fishing Season or Subsequent Seasons)

- 503(b)(1) The Council supports in-season management of mixed-stock fisheries using electrophoresis to profile the contribution of the different upriver stocks. BPA shall share funding with the fishery management agencies of a five-year program that demonstrates the effectiveness of this technique in profiling the ocean fisheries more accurately and in refining harvest regulations to protect Columbia River stocks. At the conclusion of the five-year program, the fishery management agencies will propose a plan for further action.

**ACTION ITEM ACTIVITY SUMMARY:**

Objectives:

To demonstrate the effectiveness of the electrophoresis technique for profiling the contribution of individual Columbia River stocks in mixed populations.

Background and Progress to Date:

BPA contributed funds to a study to perfect the electrophoresis technique to differentiate fish stocks and to demonstrate its applicability in the Columbia River Basin (Project 79-1). BPA funded further application of this technique (Project 83-451) to determine separate stocks of Columbia Basin anadromous fish. These efforts and those of the fishery management entities have produced a proven electrophoresis technique. This technique is now widely applied in fisheries management and could be applied to profile mixed stock ocean fisheries. The technique may also soon be used to determine whether sturgeon populations in the United States stretches of the Kootenai River are different from those in Canadian waters. BPA therefore believes that further research to improve stock identification methods as part of a hydroelectric mitigation program is unnecessary. Stock identification is now a matter of prescriptive application.

Plans:

BPA has no further plans for this Action Item.

Projects:

None.

6.1 TECHNICAL WORK GROUPS  
(Begin to Fund in FY 1987)

- 206(b)(1) BPA shall focus its funding of salmon and steelhead research in the next five years in the following areas of emphasis:
- 1 Studying water budget effectiveness and reservoir mortality;
  2. Solving disease problems affecting spring and summer chinook;
  3. Exploring methods for substantially increasing and improving hatchery production at existing hatcheries within the next 10 years; and
  4. Improving supplementation techniques.

BPA shall fund technical work groups composed of representatives of the Fish and Wildlife agencies, tribes, hydropower project operators, and BPA, with technical input from other experts, to develop Five-Year Work Plans for each of the areas listed above. [Abstract]

**ACTION ITEM ACTIVITY SUMMARY:**

Objectives:

To fund the establishment of a TWG in each of the four areas of research emphasis and to fund the development of Five-Year Work Plans.

Background and Progress to Date:

BPA funded the establishment of four TWG's in FY 1987. Each has made progress in its tasks:

1. Reservoir Mortality and Water Budget Effectiveness Technical Work Group (M/WBTWG):

The M/WBTWG agreed on four areas of emphasis: survival and flow relationships, predation, smoltification, and dam operations. As opinion was distinctly divided on the focus of survival and flow relationships, two Work Plans were submitted to the Council in September 1987. The fishery agencies/Tribes plan emphasized long-term monitoring to determine the effectiveness of the Water Budget and examination of the mechanisms of reservoir mortality. The BPA/USACE/PNUCC plan emphasized shorter-term survival research and simultaneous research on both the extent and mechanisms involved in reservoir mortality. This latter plan also maintains a basal monitoring program. To date, BPA negotiates and funds research projects. In FY 1990, four new projects will be implemented.

2. Fish Disease Technical Work Group (FDTWG):

The FDTWG submitted a work plan to the Council in September 1987. The plan focused on eight major diseases/pathogens and their biological, economic, and programmatic impact on the Columbia River anadromous fishery resources. Basic information needs were identified and categorized by the level of urgency in relationship to the Fish and Wildlife Program. During 1988, the Council approved the FDTWG's Five-Year Work Plan.

The FDTWG submitted two projects that were awarded by competitive solicitations in FY 1989. They were Project 88-152, "Lifecycle of IHN," and Project 89-32, "The Registration of Erythromycin." Project 89-31, "Control of BKD via ELISA," was awarded non-competitively. Three more projects were advertised competitively via a Program Solicitation in May 1989: Project 89-81-2, "Epizootiology of the Erythrocytic Inclusion Body Syndrome," was awarded to OSU; Project 89-54, "Research on Anti-Fungal Compounds," was awarded non-competitively to the USFWS after no response was received from the Program Solicitation; and Project 90-61, "Fungal Infections of Spring Chinook," which also received no response from the Program Solicitation, was readvertised to a wider audience via professional journals. Four more projects have undergone review by the FDTWG and have been submitted BPA for FY 1990 procurement. An evaluation process is also being developed for use in assessing the adequacy of the ongoing projects and also determining future needs under the Fish Disease area of emphasis. The evaluation process is an important step under the IPP, and the FDTWG will perform its first evaluation of a EPA-funded project in FY 1990. They also have revisited their Five-Year Work Plan to bring it up to date and have resubmitted an updated version to the appropriate parties.

3. Hatchery Effectiveness Technical Work Group (HETWG):

The HETWG developed evaluation criteria and weighting factors for research and demonstration projects. They ranged from increasing survival of salmon and steelhead (5.7 weight) and increasing production (5.2) down to improving evaluation methods (2.4) and basic research (1.0). These criteria were used to prioritize research topics, ranging from husbandry practices to improve survival or production (ranked No. 1) and the meeting of future nutritional needs (no. 2) down to the water quality standards' potential to limit artificial propagation (no. 10) and potential for modifying fish behavior to increase survival (no. 11). Plans were drafted for each topic. The HETWG Work Plan was submitted to the Council in September 1987. The Council adopted this plan in January 1988.

During FY 1989, the HETWG identified 12 research projects that addressed the research needs identified in the Work Plan. These projects have been submitted to procurement or have been ratified and are in progress.

Projects in Process for Procurement:

1. Projects 89-65, 89-67, and 89-68, Annual Coded-Wire Tagging Program - Missing Production Groups
2. Project 90-XXX, Evaluation of Alternative Protein Sources for Spring Chinook (Negotiations in progress with potential awardee)

FY 1989 Projects in Progress:

1. Project 88-163, Effects of Coded-Wire Tagging on the Survival of Spring Chinook Salmon
  2. Project 89-30, Evaluation of Pre-release Temperature Acclimation at "Ground Water" Hatcheries
  3. Project 89-45, Assessment of Anadromous Fish Production Facilities in the Columbia River Drainage
  4. Project 89-46, Smolt Quality Assessment of Spring Chinook
  5. Projects 89-66 and 89-69, Annual Coded-Wire Tagging Program - Missing Production Groups
  6. Project 89-81-3, A Modeling Approach Towards Optimizing Hatchery Production
  7. Project 89-81-4, Survey of Research and Research Implementation
4. Supplementation Technical Work Group (STWG):

During FY 1987, the STWG was formed in accordance with Sections 206(b)(1) and (2) of the Program. The STWG has developed a Five-Year Research Work Plan addressing stock selection, time of release and other factors affecting the success of supplementation activities. The Five-Year Work Plan was submitted to the Council in June 1988. The Council approved the Plan in September 1988 with the provision that they approve all projects in advance of implementation.

The STWG identified six research projects during FY 1989 that addressed the research needs identified in the Work Plan. Three of these projects were developed in sufficient detail for approval and procurement activities to begin. The following three projects were implemented in FY 1989:

1. Project 89-96, A Genetic Monitoring and Evaluation Program for Supplemented Populations of Salmon and Steelhead in the Upper Columbia River Basin.

2. Project 89-97, 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.
3. Project 89-98, Determination of Effectiveness of Supplementation Strategies and Assessment of Interaction Between Supplemental Hatchery Chinook Salmon and Natural Populations in the Salmon, Snake, and Clearwater Rivers in Idaho.

The STWG has identified five projects for possible implementation in FY 1990. These projects will need further development and refinement prior to submittal for approval and procurement. This activity will take place through March of 1990. The STWG will also develop a list of projects and their objectives for potential FY 1991 implementation. This list will be forwarded as a recommendation to the Implementation Planning Process Policy Review Group early in FY 1990.

Plans:

BPA will continue to fund the TWG's through completion of all tasks identified in Section 206(b).

**I. COMPLETED PROJECTS**

None

**II. FY 1989 ONGOING PROJECTS**

<b><u>PROJECT NUMBER</u></b>	<b><u>TITLE</u></b>	<b><u>PROJECT STATUS</u></b>	<b><u>SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND</u></b>
87-307	<b>Areas of Emphasis, Technical Work Groups - PMFC</b>  <b><u>Project Officer:</u> M. Schneider</b>  <b><u>Objectives:</u> To fund Technical Work Groups to develop five-year work plans and perform other tasks listed in Measure 206(b).</b>	<b><u>Date Initiated:</u> FY 1987</b>  <b><u>Results/Conclusions:</u> BPA funded the establishment of four Technical Work Groups (TWG's) in FY 1987. The TWG's submitted five-year research work plans to the Council in 1987 and 1988. In FY 1989, the TWG's began functioning as IPP Technical Working Groups (TWgG's).</b>	<b>The TWG's will assist BPA in the development, evaluation, and review of RFP's, project work statements, and related documents and continue to function as IPP TWgG's.</b>

**III. NEW PROJECTS**

None.

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

404            These measures address BPA funding of research, development,  
703 (e)        and testing of improved fish husbandry practices, rearing  
703(h)        operations, release strategies, stock assessment, fish health  
206(b)        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. Technical Work 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. [Abstract]

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

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. BPA will incorporate the results of the TWG planning into the annual work planning process and will pursue implementation of the research identified and prioritized by the TWG's and approved by the Council.

Background and Progress to Date:

The four TWG's (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 projects from the TWG Five-Year Work Plans in FY 1990.

1. RESERVOIR MORTALITY AND WATER BUDGET EFFECTIVENESS

I. COMPLETED PROJECTS

None

II. FY 1989 ONGOING PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND</u>
82-3	<p>Magnitude and Dynamics of Predator-Caused Mortality on Healthy Juvenile Salmonids in Columbia and Snake River Reservoirs - USFWS</p> <p><u>Project Officer:</u> W Maslen</p> <p><u>Objectives:</u> Develop an index for estimating predation losses of juvenile salmonids throughout the Columbia River basin; describe the relationships among predator-caused mortality on juvenile salmonids and physical and biological variables; and determine the extent of predator-caused mortality on healthy vs. diseased, injured, and dead juvenile salmonids.</p>	<p><u>Date initiated:</u> 1983</p> <p><u>Results/Conclusions:</u> Food habits data for the major fish predators have been analyzed and summarized for the years 1983-1986. Northern squawfish are the most significant fish predator on juvenile salmonids, followed by walleye, channel catfish, and smallmouth bass. The most intensive predation occurs in the boat-restricted zone below McNary Dam in July, when up to 60% of all juvenile salmonids entering John Day Reservoir may be consumed by predators. Annual and final reports are available.</p>	<p>FY 1990: Completion of current project objectives with final report due July 1990</p>

**PROJECT  
NUMBER**

**TITLE**

**PROJECT STATUS**

**SCHEDULE AND MILESTONES  
FOR FY 1990 AND BEYOND**

82-12

**Developing a Predation Index and Evaluating Ways to Reduce Salmonid Losses to Predation in the Columbia River Basin - ODFW**

**Project Officer: W. Maslen**

**Objectives: Develop an index for estimating predation losses of juvenile salmonids throughout the Columbia River basin; describe the relationships among predator-caused mortality on juvenile salmonids and physical and biological variables; and examine the feasibility of developing bounty, commercial, or recreational fisheries on northern squawfish.**

**Date initiated: 1983**

**Results/Conclusions: Distribution, abundance, and population parameters of each species have been examined for the years 1983-1986. Squawfish are the most abundant predator, followed by smallmouth bass, channel catfish, and walleye. Annual reports and final reports are available.**

**FY 1990: Completion of current project objectives with final report due September 1990.**

88-134

**Evaluation of Factors Affecting Collection Efficiency Estimates at McNary Dam - NMFS**

**Project Officer: P. Poe**

**Objectives: Assess potential sources of error associated with estimates of juvenile fish collection efficiency and improve techniques for estimating collection efficiency at McNary Dam. Study will use PIT tags to evaluate effects of fish origin, time of day of release, and the use of guided fish for test fish on collection efficiency results.**

**Date Initiated: May 1988**

**Results/Conclusions: First year of research was completed, and recommended changes for improving the estimating of collection efficiency at McNary Dam were incorporated in second year of the study. The 1988 Annual Report will be available in fall 1989.**

**FY 1990: Project completion: present results and recommendations in Final Project Report, June 1990.**

PROJECT NUMBER	TITLE	PROJECT STATUS	SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND
88-141	<p><b>Biologic. 31 Manipulation of Migration Rate and Recovery Rate - The Use of Advanced Photoperiod to Accelerate Smoltification in Yearling Chinook Salmon - NMFS</b></p> <p><b>Project Officer:</b> W. Maslen</p> <p><b>Objectives:</b> Determine the duration of exposure to advanced photoperiod and temperature (before release from the hatchery) treatments to optimize the migration rate of yearling chinook through the Snake River and improve fish guiding efficiency at dams.</p>	<p><b>Date Initiated:</b> May 1988</p> <p><b>Results/Conclusions:</b> Advanced photoperiod treatment in combination with holding fish in warmer water for a week prior to release from Dworshak Hatchery results in a measurable decrease in travel time to Lower Granite, Little Goose, and McNary Dams. The 1988 Annual Report will be available in fall 1989.</p>	<p>1. FY 1990: 1989 Annual Report available spring 1990.</p> <p>2. FY 1990 and beyond: Anticipate advanced photoperiod and temperature treatment experimentation at additional hatchery sites with evaluation based on data from returning adults.</p>
83-319	<p><b>Passive Integrated Transponder (PIT) Tag Research - NMFS</b></p> <p><b>Project Officer:</b> O. Johnson</p> <p><b>Objectives:</b> Determine the biological feasibility of injecting salmon and steelhead with PIT tags for passage and monitoring research activities.</p>	<p><b>Date initiated:</b> 1983</p> <p><b>Results/Conclusions:</b> All data to date show that there are no biological problems with the PIT tag. The detection systems and monitorings continue to be improved and are working extremely well. Adult chinook salmon with PIT tags have been detected at Lower Granite Dam</p>	<p>1. FY 1990: BPA will fund the project through to completion. Biological studies are essentially complete, and monitoring hardware continues to be developed.</p> <p>2. Continuing: Contractor will finalize biological studies and equipment development and provide evaluation reports annually.</p>

**PROJECT  
NUMBER**

**TITLE**

**PROJECT STATUS**

**SCHEDULE AND MILESTONES  
FOR FY 1990 AND BEYOND**

87-413-1

**Fish Survival and Smolt  
Physiology/Behavior Workshops  
- UW/BPNL**

**Project Officer:** P. Poe

**Objectives:** Through the workshop process:

1. Better define measurements of salmon and steelhead smolt survival and smolt condition.
2. Outline research needs.
3. Present recommendations on how to proceed with future survival and smolt condition research.
4. Provide workshop results as one source of information to assist the Reservoir Mortality and Water Budget Effectiveness Technical Work Group in their development of a 5-year Work Plan for mainstem passage research.

**Date Initiated:** January 1989

**Results/Conclusions:** Proceedings from Smolt Survival Workshop conducted February 1989, will be available fall 1989. Recommendations were made on how to proceed with the next steps in survival studies.

This project combines Project 89-50 "Smoltification/Travel Time Research Methods Development Workshop," and Project 89-51, "Pool Survival Research Method Development Workshop," that were listed in the outline of the draft FY 1990 AIWP.

**FY 1990:** Continue with process directed toward conduct of Smolt Physiology/Behavior Workshop.

87-41X-Z

**Analysis of Historic Data for  
Juvenile and Adult Salmonids  
- UW**

**Project Officer:** P. Poe

**Objectives:** Phase I of this work will assemble a data base of statistically bounded estimate\* of survival from smolt to adult and contribution rates to ocean fisheries for Columbia River salmon and steelhead hatchery stocks based on the

**Date Initiated:** September 1989

**Results/Conclusions:** None at this time.

This project combines Project 89-48, "Review and Synthesize Historical Data," and Project 89-49, "Cohort Method and Analysis," that were listed in the outline of the draft FY 1990 AIWP.

1. **FY 1990:** Perform Phase I tasks: assemble data base of hatchery stock survivals from CWT recoveries; evaluate the probability of determining a change in survival due to factors operating in the fresh water life history stage.

2. **FY 1991:** Proceed with Phase II multivariate analysis if positive results from evaluation of Phase I.

**PROJECT  
NUMBER**

**TITLE**

**PROJECT STATUS**

**SCHEDULE AND MILESTONES  
FOR FY 1990 AND BEYOND**

87-413-2  
cont.

**last 15 years of Coded-Wire tag (CWT) data. Phase II of this research will consist of the analysis of the 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.**

**III. NEW PROJECTS**

**PROJECT  
NUMBER**

**TITLE**

**OBJECTIVES**

**SCHEDULE AND MILESTONES  
FOR FY 1990 AND BEYOND**

89-28

**Predator Control**

Project Officer: W Maslen

1. Determine the significance of predation in Columbia River reservoirs through implementation of indexing of predator abundance and integration with consumption indices.

2. Implement a predator control fishery program in other reservoirs beginning development plan, beginning with a pilot in 1991. M/WBTWG will recommend schedule and test fishery in the John Day Reservoir in 1990.

3. Initiate an evaluation of predator control fishery program M/WBTWG to recommend detailed objectives.

1. FY 1990: Initiate system wide indexing of predators to assess the significance of predation in other reservoirs.

2. FY 1991: Initiate predator control program in other reservoirs beginning development plan, beginning with a pilot in 1991. M/WBTWG will recommend schedule and milestones.

PROJECT NUMBER	TITLE	OBJECTIVES	SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND
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>1. Phase I: Develop epidemiological models and regression estimators, tests of survival relationships, and tests of assumptions and goodness-of-fit statistics. Determine location and number of required PIT-tag facilities.</p> <p>2. Phase II: Develop sample 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>1. FY 1990: Perform Phase I tasks.</p> <p>2. Proceed with Phase II dependent upon the results of Phase I.</p>
<p>[Note: The PRG referred Project 87-413-4 to the M/WBETWG for further review. As the FY 1990 AIWP went to press, the M/WBETWG had not completed this review.]</p>			
87-413-4	<p>Feasibility of Satisfying Model Assumptions of the Burnham and Anderson Fish Survival Estimation Techniques</p> <p><u>Project Officer:</u> P. Poe</p>	<p>To determine the practicability of conducting a survival experiment based on the protocol of Burnham and Anderson which will meet the underlying assumption that all fish of an identifiable class have the same survival and capture probabilities.</p>	<p>FY 1990: Assess ability to conduct survival experiment.</p>

**2. FISH DISEASE**

**I. COMPLETED PROJECTS**

None.

**II. FY 1989 ONGOING PROJECTS**

<b><u>PROJECT NUMBER</u></b>	<b><u>TITLE</u></b>	<b><u>PROJECT STATUS</u></b>	<b><u>SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND</u></b>
88-152	<b>Infectious Hematopoietic Necrosis (IHN) Virus Research - OSU</b>  <b><u>Project Officer:</u> R. Morinaka</b>  <b><u>Objectives:</u></b> 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.	<b><u>Date Initiated:</u> May 1989</b>  <b><u>Results/Conclusions:</u> None at this time.</b>	<b>1. Year 1: Determine the life cycle of IHN virus.</b>  <b>2. Year 2: Identify sources and reservoirs of IHN virus.</b>  <b>3. Year 3: Compare pathogenicity of 10 strains of IHN virus.</b>  <b>4. Year 4: Test sediment and non-salmonid fish for sources of horizontal transmission.</b>

<b>PROJECT NUMBER</b>	<b>TITLE</b>	<b>PROJECT STATUS</b>	<b>SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND</b>
89-31	<b>Control of Bacterial Kidney Disease (BKD) via Segregation of Adult Spring Chinook and Summer Chinook Salmon with Enzyme-Linked Immunosorbent Assay (ELISA) - OSU</b>	<u>Date Initiated:</u> December 1988  <u>Results/Conclusions:</u> None at this time.	Year 2,3,4: Assay juvenile and adult salmon for levels of BKD. Segregate the gametes based upon BKD level. Determine quantitatively the levels of BKD relative to progeny levels.
	<u>Project Officer:</u> R. Morinaka		
	<u>Objectives:</u> 1. Standardize reagents: a) antigen b) monoclonal antibodies 2. Sample experimental fish and quantify BKD levels in experimental and production samples. 3. Determine whether progeny's BKD levels are influenced by the parental BKD level.		
89-32	<b>Registration of Erythromycin -UI</b>	<u>Date Initiated:</u> March 1989  <u>Results/Conclusions:</u> None at this time.	1. FY 1990: Start field trials and dose duration tests.  2. FY 1991: Complete tissue residue studies and clinical field trials.  3. FY 1992: Complete field trials and determine environmental fate.  4. FY 1993: Submit registration package to FDA.
	<u>Project Officer:</u> R. Morinaka		
	<u>Objectives:</u> 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.		

**PROJECT  
NUMBER**

**TITLE**

**PROJECT STATUS**

**SCHEDULE AND MILESTONES  
FOR FY 1990 AND BEYOND**

89-32  
(cont.)

5. Determine levels and dosage for oral and injectable forms of erythromycin.  
6. Determine tissue residues.  
7. Complete registration package for FDA.

89-40

Analytical Methods for Malachite Green - USFWS  
**Date Initiated: December 1988**

**Project Officer:** J. Bauer

**Objectives:** Accurately determine all three forms of malachite green (vernal-leukocarbino) analogs). Define detection limits within 10 ppb or less.

**Results/Conclusions:** Literature search on methods for analysis has been done. The selectivity of High Pressure Liquid chromatography is being investigated.

1. FY 1990: Test existing analytical methods for measuring malachite green analogs in water. Determine if developed method will accurately detect malachite green levels at 10 ppb or less.

2. FY 1991: Prepare final report

89-54

Research to Identify Effective Anti-fungal Agents

**Project Officer:** R. Austin

**Objectives:**

1. Identify and test alternate anti-fungal agents that can safely replace malachite green for the control and treatment of fungal infections on eggs and adult spring and summer chinook.  
2. Evaluate test results and rank order tested agents based on safety and effectiveness on spring and summer chinook eggs and adults.

**Date Initiated: September 1989**

**Results/Conclusions:** None at this time.

1. FY 1990: Identify and test anti-fungal agents.

2. FY 1991: Completion report written summarizing effectiveness and safety of candidate agents.

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND</u>
89-81-Z	Erythrocytic Inclusion Body Syndrome (EIBS) Research  <u>Project Officer:</u> R. Morinaka  <u>Objectives:</u> 1. Determine epirootiology 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.	<u>Date Initiated:</u> September 1989  <u>Results/Conclusions:</u> None at this time.	1. 1990: Determine distribution and susceptibility.  2. 1991: Analyze impact on survival.  3. 1992: Determine effect of water temperature on transmission.

**III. NEW PROJECTS**

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>OBJECTIVES</u>	<u>SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND</u>
89-81-1	Research on Fungal Infections of Spring and Summer Chinook Salmon  <u>Project Officer:</u> A. Ruger	1. Isolate and identify fungi species infecting spring chinook salmon. 2. Develop culture maintenance methods and develop protocol for identifying the isolated fungi species and strains	FY 1990: Start project.

[Note: On January 18, 1990, the PRG placed the following four projects in the "contingency" file of projects that may be funded if unspent FY 1990 funds are available. Currently, no funds are available to implement these projects in FY 1990.1

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>OBJECTIVES</u>	<u>SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND</u>
90-46	Effects and Control of Whirling Disease  <u>Project Officer:</u> R. Mbrinaka	<ol style="list-style-type: none"> <li>1. Determine dose, duration, age, and temperature on whirling disease.</li> <li>2. Research method of control.</li> <li>3. Screen drugs, chemicals, and vaccines for control.</li> </ol>	<p>Year 1: Initiate dose, age and growth effects of pathogen on disease.</p> <p>Year 2: Initiate duration, and temperature effects of pathogen on disease.</p> <p>Year 3: Determine if available water treatments are effective in control of pathogen.</p>
90-47	Bacterial Coldwater Disease (BCWD) Research  <u>Project Officer:</u> R. Mbrinaka	<ol style="list-style-type: none"> <li>1. Screen efficacious therapeutants for BCWD</li> <li>2. Develop serological techniques for rapid identification.</li> <li>3. Conduct demonstration projects to determine effectiveness of certain fish cultural techniques.</li> <li>4. Determine if disease is vertically transmitted.</li> </ol>	<p>Year 1: Initiate review of available drugs/chemicals for control.</p> <p>Year 2: Select strains and seriological techniques to be used.</p> <p>Year 3: Construct vertical transmission studies.</p> <p>Year 4: Determine best preventive measures.</p>
90-48	Fish Parasite Research  <u>Project Officer:</u> R. Mbrinaka	<ol style="list-style-type: none"> <li>1. Review literature to find efficacious chemotherapeutants. Determine life cycle relative to temperature.</li> <li>2. Determine effects of parasite load on sea water acclimation.</li> <li>3. Determine host resistance mechanisms</li> </ol>	<p>Year 1: Review veterinary chemotherapy. Initiate host resistance study.</p> <p>Year 2: Find the effects of parasite load on sea water acclimation. Compare potential new drugs and chemicals with formalin.</p> <p>Year 3: Determine the non-specific and specific immunity mechanisms via acclimation.</p>

**PROJECT  
NUMBER**

**TITLE**

**OBJECTIVES**

**SCHEDULE AND MILESTONES  
FOR FY 1990 AND BEYOND**

90-57

Ceratomyxa shasta Control

**Project Officer:** R. Morinaka

1. Determine if freshwater clams are essential for C. shasta
2. Identify infectious unit.
3. Develop new serological reagents.
4. Determine route of transmission.

1. Expose fish to clams from C. shasta endemic areas.
2. Develop monoclonal antibodies to recognize C. shasta life stages.
3. Test invertebrates, identify infectious stage, and describe.
4. Expose gill, skin, and gut to determine major routes of transmission.

**3. HATCHERY EFFECTIVENESS**

**I. COMPLETED PROJECTS**

<b><u>PROJECT NUMBER</u></b>	<b><u>TITLE</u></b>	<b><u>DATE COMPLETED</u></b>	<b><u>RESULTS/CONCLUSIONS</u></b>
88-159	<p><b>Quality and Behavior of Juvenile Salmonids in the Columbia River Estuary and Nearshore Ocean ~ NMFS.</b></p> <p><b><u>Project Officer:</u> J. Bauer</b></p> <p><b><u>Objectives:</u> This project will use parameters established in previous work and delineate new parameters to prepare (scope) a project plan to investigate the Columbia River estuary and near-shore ocean area to determine the best hatchery production and release strategy according to predicted environmental and "intrinsic" conditions.</b></p>	June 1989	<p><b>A research plan was developed to investigate and identify relationships among smolt quality, migrational behavior, environmental conditions, and survival of juvenile spring chinook salmon in the Columbia River estuary and Nearshore ocean Research Plan was sent to Hatchery Effectiveness TWG and CBFWA for priority assignment for implementation.</b></p>

**II. FY 1989 ONGOING PROJECTS**

<b>PROJECT NUMBER</b>	<b>TITLE</b>	<b>PROJECT STATUS</b>	<b>SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND</b>
86-118 (Task Order 9)	<p><b>Volitional and Serial Release Workshop - BPNL</b></p> <p><b><u>Project Officer:</u> J. Bauer</b></p> <p><b><u>Objectives:</u></b></p> <ol style="list-style-type: none"> <li>1. Review existing standards used for release strategies.</li> <li>2. Identify new approaches, feasibilities, and/or equipment for improving release strategies.</li> <li>3. Agree on standards for future release studies.</li> <li>4. Recommend strategies for use.</li> </ol>	<p><b><u>Date Initiated:</u> September 1989</b></p> <p><b><u>Results/Conclusions:</u> None at this time.</b></p>	<p><b>FY 1990: Workshop scheduled September-October 1989.</b></p> <p><b>Final report with recommendations due June 1990.</b></p>
88-160	<p><b>Bioengineering Evaluation of Retrofitted Supplemental Oxygen for Rearing Spring Chinook - ODFW</b></p> <p><b><u>Project Officer:</u> G. Bouck</b></p> <p><b><u>Objectives:</u></b></p> <ol style="list-style-type: none"> <li>1. Retrofit the Willamette Fish Hatchery.</li> <li>2. Rear spring chinook under experimental conditions: tag fish; monitor fish health/quality.</li> </ol>	<p><b><u>Date Initiated:</u> September 1988</b></p> <p><b><u>Results/Conclusions:</u> None at this time.</b></p>	<ol style="list-style-type: none"> <li>1. September 1989: Complete construction.</li> <li>2. April 1989: Begin migration and residualism studies.</li> <li>3. 1994: Begin recovering and decoding tags from returning adults.</li> <li>4. June 2000: Complete data analysis. Complete final report.</li> </ol>

**PROJECT  
NUMBER**

**TITLE**

**PROJECT STATUS**

**SCHEDULE AND MILESTONES  
FOR FY 1990 AND BEYOND**

88-160  
cont.

3. Determine **impact** of hatchery fish on resident fish.
4. Monitor downstream migration behavior each year.
5. Recover and decode tags for returning adults.
6. Analyze and summarize all data.
7. Transfer technology to user groups.
8. Write final report.

**88-160-Z**    **Engineering Consultation/  
Assistance on Project 88-160  
- Consultant**

Date Initiated: August 1989

Results/Conclusions: None at this time.

Project Officer: G. Bouck

Objectives: Conduct engineering evaluations associated with Project 88-160.

1. August 25, 1989: Complete evaluation of proposed water quality monitoring methods in project operation manual.

2. October 1, 1989: Evaluate and modify oxygen contactor and supply system

3. Draft a plan for engineering evaluation of the project.

4. Continuing: Attend quarterly meetings of steering committee.

88-163

**Effects of Coded-Wire  
Tagging on the Survival  
of Spring Chinook Salmon - WOF**

Date Initiated: January 1, 1989

Results/Conclusions: None at this time.

Project Officer: A. Ruger

1. January 1989: Start project.

2. October 1989: Begin otolith marking.

3. September 1993; Begin sampling

**PROJECT  
NUMBER**

**TITLE**

**PROJECT STATUS**

**SCHEDULE AND MILESTONES  
FOR FY 1990 AND BEYOND**

88-163  
cont.

**Objectives:**

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.

otoliths from adults and coded-wire tags.

4. June 30, 1997: End of project; final report completed.

89-30

**Evaluation of Pre-Release  
Temperature Acclimation at  
"Ground Water" Hatcheries**

**Date Initiated: July 1989**

**Results/Conclusions: None at this time.**

1. July 1, 1989 - June 30, 1990: Feasibility and engineering studies and construction to provide river water to the hatchery site.

**Project Officer: A. Ruger**

**Objectives:**

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 smolts raised in and released directly from a groundwater supplied hatchery to smolts released from the same hatchery following acclimation with the ambient tributary receiving water for a period of time before release.

2. September 1990: Start coded-wire tag fish for 4 years.

3. August 1992: Start sampling coded-wire tags for 5 years.

4. June 30, 1998: Final report and project completion.

PROJECT NUMBER	TITLE	PROJECT STATUS	SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND
89-45	Assess Present Anadromous Production Facilities in the Columbia River Drainage -NMFS	<u>Date Initiated:</u> June 1989  <u>Results/Conclusions:</u> None at this time.	<ol style="list-style-type: none"> <li>1. March 1990: Document current program and capacities of each hatchery.</li> <li>2. May 1990: Prepare data that will relate existing capacities with theoretical capacities of each hatchery.</li> <li>3. June 1990: Provide estimate of each hatchery for expansion.</li> <li>4. July 1990: Final Report completed</li> </ol>
	<u>Project Officer:</u> J. Bauer		
	<u>Objectives:</u> This project will complement completed Project 84-51 in providing accurate existing hatchery capacities, theoretical capacities, and expansion potentials for Columbia River hatcheries.		
89-46	Spring Chinook Smolt Quality Assessment - NMFS	<u>Date Initiated:</u> February 1989  <u>Results/Conclusions:</u> Not available at this time.	<ol style="list-style-type: none"> <li>1. FY 1990: Determine feasibility of developing a physiological model of wild spring chinook smolts; characterize physiological parameters for wild spring chinook in at least three subbasins; begin monitoring in 1990 if feasible.</li> <li>2. FY 1992: Complete monitoring of smolt quality parameters at four hatcheries for three brood years.</li> <li>3. FY 1996: Recovery of adult fish complete: final report written.</li> </ol>
	<u>Project Officer:</u> R. Austin		
	<u>Objectives:</u> <ol style="list-style-type: none"> <li>1. Select and monitor fish quality at four hatcheries.</li> <li>2. Correlate these data with overall survival of the released groups (total contribution).</li> <li>3. Determine suitability of smolt quality indices and other physiological parameters for assessing fish quality and improving hatchery effectiveness.</li> </ol>		

PROJECT NUMBER	TITLE	PROJECT STATUS	SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND
89-66	Coded-Wire Tag Evaluation of Missing Hatchery Groups - WDF	<u>Date Initiated:</u> September 1989	1. FY 1990: Tag 150,000 fall chinook, 100,000 spring chinook, and 200,000 coho with CWI.
	<u>Project Officer:</u> J. Bauer	<u>Results/Conclusions:</u> None at this time.	2. FY 1991: Tag 150,000 fall chinook, 100,000 spring chinook, and 200,000 coho with CWI.
	<u>Objectives:</u>		3. FY 1992: Tag 150,000 fall chinook, 100,000 spring chinook, and 200,000 coho with CWI.
	1. Identify missing production groups of salmon for Columbia River hatcheries.		4. Begin recovery of CWI and decoding.
	2. Recover, decode and record survivability data.		
	3. Evaluate hatchery production programs.		
89-69	Coded-Wire Tag Evaluation of Missing Hatchery Groups - ODFW	<u>Date Initiated:</u> September 1989	1. FY 1990: Tag 75,000 fall chinook, 175,000 spring chinook, and 95,000 coho with CWI.
	<u>Project Officer:</u> J. Bauer	<u>Results/Conclusions:</u> None at this time.	2. FY 1990: Tag 75,000 fall chinook, 175,000 spring chinook, and 95,000 coho with CWI.
	<u>Objectives:</u>		3. FY 1992: Tag 75,000 fall chinook, 175,000 spring chinook, and 95,000 coho with CWI.
	1. Identify missing production groups of salmon for Columbia River hatcheries.		4. Begin recovery of CWI and decoding.
	2. Recover, decode, and record survivability data.		
	3. Evaluate hatchery production programs.		

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND</u>
89-81-3	<p><b>Modeling Optimized Hatchery Production - OSU</b></p> <p><b><u>Project Officer:</u> R. Austin</b></p> <p><b><u>Objectives:</u></b></p> <ol style="list-style-type: none"> <li>1. Develop a computerized model for defining and solving the problems of optimizing hatchery production of anadromous salmonids.</li> <li>2. Test the model by applying to actual hatchery situations.</li> <li>3. Calibrate and apply the model to specific hatcheries.</li> <li>4. Use model as a tool towards optimizing the hatchery production system</li> </ol>	<p><b><u>Date Initiated:</u> September 1989</b></p> <p><b><u>Results/Conclusions:</u> None at this time.</b></p>	<ol style="list-style-type: none"> <li>1. 1990: Model Development</li> <li>2. 1991: Model Testing</li> <li>3. 1992: Model Application</li> </ol>
89-81-4	<p><b>Survey of Research and Research Implementation - Consultant</b></p> <p><b><u>Project Officer:</u> A. Ruger</b></p> <ol style="list-style-type: none"> <li>1. Propose to BPA methods and approaches necessary to survey Pacific Northwest agencies involved in salmon/steelhead research.</li> <li>2. Upon approval conduct survey of projects in progress.</li> <li>3. Report results of unpublished research.</li> <li>4. Determine why research was not implemented.</li> </ol>	<p><b><u>Date Initiated:</u> September 1989</b></p> <p><b><u>Results/Conclusions:</u> None at this time.</b></p>	<ol style="list-style-type: none"> <li>1. Literature and research review. Nine months post-award.</li> <li>2. Agency interviews complete. Ten months post-award.</li> <li>3. Completion report with final recommendations. Eighteen months post-award.</li> </ol>

**III. NEW PROJECTS**

<b>PROJECT NUMBER</b>	<b>TITLE</b>	<b>OBJECTIVES</b>	<b>SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND</b>
89-65	<p>Coded-Wire Tag Evaluation of Missing Hatchery Groups - USFWS</p> <p><u>Project Officer:</u> J. Bauer</p>	<p>1. Identify missing production groups of salmon for Columbia River hatcheries.</p> <p>2. Recover, decode and record survivability data.</p> <p>3. Evaluate hatchery production programs.</p>	<p>1. FY 1990: Tag 100,000 fall chinook, 300,000 spring chinook, and 150,000 coho with coded-wire tags (CWT).</p> <p>2. FY 1991: Tag 100,000 fall chinook, 300,000 spring chinook, and 150,000 coho with CWT.</p> <p>3. FY 1992: Tag 100,000 fall chinook, 300,000 spring chinook, and 150,000 coho with CWT.</p> <p>4. Begin recovery of CWT and decoding.</p>
89-67	<p>Coded-Wire Tag Evaluation of Missing Hatchery Groups - WDW</p> <p><u>Project Officer:</u> J. Bauer</p>	<p>1. Identify missing production groups of steelhead for Columbia River hatcheries.</p> <p>2. Recover, decode and record survivability data.</p> <p>3. Evaluate hatchery production programs.</p>	<p>1. FY 1990: Tag 50,000 steelhead with CWT.</p> <p>2. FY 1991: Tag 50,000 steelhead with CWT</p> <p>3. FY 1992: Tag 50,000 steelhead with CWT.</p> <p>4. Begin recovery of CWT and decoding.</p>
89-68	<p>Coded-Wire Tag Evaluation of Missing Hatchery Groups - IOFG</p> <p><u>Project Officer:</u> J. Bauer</p>	<p>1. Identify missing production groups of salmon and steelhead for Columbia River hatcheries.</p> <p>2. Recover, decode, and record survivability data.</p> <p>3. Evaluate hatchery production programs.</p>	<p>1. FY 1990: Tag 50,000 spring chinook, 50,000 summer chinook, and 50,000 steelhead with CWT.</p> <p>2. FY 1990: Tag 50,000 spring chinook, 50,000 summer chinook, and 50,000 steelhead with CWT.</p> <p>3. FY 1992: Tag 50,000 spring chinook, 50,000 summer chinook, and 50,000 steelhead with CWT.</p> <p>4. Begin recovery of CWT and decoding.</p>

**PROJECT  
NUMBER**

**TITLE**

**OBJECTIVES**

**SCHEDULE AND MILESTONES  
FOR FY 1990 AND BEYOND**

[Note: As the FY 1990 AIWP went to press, BPA understands that the HETWG does not plan to go forward with Project 89-81-6 in FY 1990. 1

89-81-6	<b>Genetic Guidelines for Hatchery Management</b>	<b>1. Identify current genetic guidelines used by respective agencies. 2. Determine if existing guidelines are sound and cite areas that have been overlooked. 3. Recommend genetic guidelines for Columbia Basin hatcheries.</b>	<b>1. Report to include provisional guidelines. Six months post award. 2. Report to include modified provisional guidelines to accommodate identified constraints. Twelve months post award. 3. Report to include final recommended genetic guidelines. Eighteen months post award.</b>
<b><u>Project Officer:</u> A. Ruger</b>			
90-XXX	<b>Evaluation of Alternative Protein Sources for Spring Chinook</b>	<b>1. Propose alternative protein sources as partial or complete replacement of expensive fish meals for spring chinook. 2. Plan and implement full scale feeding trials at selected hatcheries followed by coded wire tagging and evaluation of adult returns. 3. Evaluate the suitability of the tested alternate protein sources, including cost effectiveness, recommendations for improvements, and cite acceptable ingredient levels in production diets for use on a large scale for spring chinook.</b>	<b>1. FY 1990: Evaluation and selection of alternative protein sources for fish meals and formulation of test diets. Feeding trials will begin at selected Columbia River Basin spring chinook hatcheries. 2. FY 1992: Completion of feeding trials. 3. FY 1997: Collection and evaluation of adult returns complete: final report including recommendations for use of tested alternative protein sources in spring chinook production diets.</b>
<b><u>Project Officer:</u> R. Austin</b>			

**4. SUPPLEMENTATION**

**I. COMPLETED PROJECTS**

None

**II. FY 1989 ONGOING PROJECTS**

<b><u>PROJECT NUMBER</u></b>	<b><u>TITLE</u></b>	<b><u>PROJECT STATUS</u></b>	<b><u>SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND</u></b>
88-100	<b>Analysis of Past and Present Salmon and Steelhead Supplementation in the Northwest United States - USFWS</b>	<b><u>Date Initiated:</u> September 1988</b>  <b><u>Results/Conclusions:</u> None at this time. Draft report available January 1990.</b>	<b>April 1990: Final Completion Report available.</b>
	<b><u>Project Officer:</u> T. Vogel</b>		
	<b><u>Objectives:</u></b> <b>1. Summarize and evaluate past and current supplementation of salmon and steelhead</b> <b>2. Develop a qualitative "model" of factors affecting the results of supplementation.</b> <b>3. Develop recommendations for future supplementation needs and future opportunities.</b>		

**PROJECT  
NUMBER**

**TITLE**

**PROJECT STATUS**

**SCHEDULE AND MILESTONES  
FOR FY 1990 AND BEYOND**

89-96

A Genetic Monitoring and Evaluation Program for Supplemental Populations of Salmon and Steelhead in the Upper Columbia River Basin.

Date Initiated: September 1989

Results/Conclusions: None at this time.

Project Officer: T. Vogel

Objectives:

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.

1. September 1989: Start project.

2. September 1992: Evaluate Project and determine desirability to continue.

89-97

Evaluation of the Success of Supplementing Imaha River Summer Steelhead with Hatchery-Reared Smolts and Assessment of the Effect on Natural Production Performance, Life History Characteristics, and Genetic Characteristics.

Date Initiated: September 1989

Results/Conclusions: None at this time.

Project Officer: T. Vogel

Objectives:

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.

1. September 1989: Start Phase 1 of project.

2. September 1990: Review experimental design and management agreements.

3. December 1990: Start Phase II, Experimentation.

**PROJECT  
NUMBER**

TITLE

PROJECT STATUS

**SCHEDULE AND MILESTONES  
FOR FY 1990 AND BEYOND**

89-97  
cont.

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.

89-98

Determination of Effectiveness of Supplementation Strategies and Assessment of Interaction between Supplemental Hatchery Chinook Salmon and Natural Populations in the Salmon, Snake, and Clearwater Rivers in Idaho.

Date Initiated: September 1989

Results/Conclusions: None at this time.

1. September 1989: Start Phase I of project.

2. September 1990: Review experimental design and management agreements.

3. December 1990: Start Phase II, Experimentation

Project Officer: T. Vogel

Objectives:

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.

**III. NEW PROJECTS [As the FY 1990 AIWP went to press. the five new projects listed below were still under review by the PRG.]**

<b>PROJECT NUMBER</b>	<b>TITLE</b>	<b>OBJECTIVES</b>	<b>SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND</b>
90-52	Performance/Stock Productivity Impacts of Hatchery Supplementation.	Develop generically applicable model using appropriate fish stock.	FY 1990: Start project by September 1990 based upon STWG's development of sub-objectives and scope of study.
	<u>Project Officer:</u> T. Vogel		
90-53	Species Interaction as a result of Supplementation including Potential Impacts of Residual Summer Steelhead Smolts.	1. Determine inter-specific and intra-specific competition and predation among spring chinook, summer steelhead, and resident trout.  2. Determine magnitude and impact of residualization on wild stocks and supplementation programs.	FY 1990: Start project by September 1990 based upon STWG's development of sub-objectives and scope of study.
	<u>Project Officer:</u> T. Vogel		
90-54	Evaluation of the Benefits of Acclimating Spring Chinook Salmon and Summer Steelhead Smolts in the Grande Ronde and Imaha River Basins.	1. Compare outmigration performance and smolt-to-adult survival for summer steelhead smolts that are acclimated for 30 days prior to release with smolts that are trucked and released directly into the stream  2. Compare physiological indices of stress and smoltification of acclimated and non-acclimated smolts.	FY 1990: Start project by September 1990 based upon STWG's development of sub-objectives and scope of study.
	<u>Project Officer:</u> T. Vogel		
90-55	Impacts of Supplementation on Stock Productivity/Performance of Spring and Summer Chinook Salmon and Steelhead in the Salmon River.	Evaluate existing Supplementation programs for stock performance characteristics.	FY 1990: Start project by September 1990 based upon STWG's development of sub-objectives and scope of study.
	<u>Project Officer:</u> T. Vogel		

PROJECT  
NUMBER

TITLE

OBJECTIVES

SCHEDULE AND MILESTONES  
FOR FY 1990 AND BEYOND

90-56

Evaluate the Effectiveness of  
Acclimation facilities to  
Improve/Increase Survival of  
Summer Steelhead.

Document the physiological impacts of  
acclimation on summer steelhead smolts  
of different size.

FY 1990: Start project by September 1990  
based upon STWG's development of sub-  
objectives and scope of study.

Project Officer: T. Vogel

6.3 DATA COLLECTION FOR HATCHERY DATA BASE  
(Fund in Response to System Monitoring and Evaluation Work Group Proposals)

206(e)(1) Hatchery Data Base. BPA shall fund collection of Columbia River Basin hatchery data for anadromous fish. Data to be collected, format, and schedules shall be determined by the work group on improving hatchery production (described above), working in conjunction with the work group on system monitoring and evaluation (described above). These data shall include, at a minimum: numbers of returning adults; disposition of returning adults; source and description of brood stock; actions taken to maintain genetic diversity; and size, location, and time of release of juvenile fish. Data collected shall be stored in the Council's anadromous fish data base.

**ACTION ITEM ACTIVITY SUMMARY:**

Objectives:

To develop and implement the Hatchery Data Base.

Background and Progress to Date:

The scoping of the CIS in FY 1989 (Project 88-108-1) provided overall guidance for development of the Hatchery Data Base, as well as the Natural Production Data Base. BPA has already funded six related fish health monitoring projects.

Plans:

BPA plans to start Project 88-55, Hatchery Production Data Base, in early FY 1990. The ongoing fish health monitoring projects will continue in FY 1990; these activities will be coordinated with the MEG to make the gathered fish health data most useful to the Hatchery Data Base.

**I. COMPLETED PROJECTS**

None.

**II. FY 1989 ONGOING PROJECTS**

<b><u>PROJECT NUMBER</u></b>	<b><u>TITLE</u></b>	<b><u>PROJECT STATUS</u></b>	<b><u>SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND</u></b>
86-13	Augmented Fish Health Monitoring in Washington - WDW	<b><u>Date Initiated:</u></b> 87-13: August 1986 87-54: July 1986	1. Continuing: Fund a comprehensive fish health management system through standardized monitoring.
86-54	Augmented Fish Health Monitoring in Washington - WDF	87-117: June 1987 87-118: June 1987 87-119: July 1987	2. Continuing: Define fish culture impediments, including water quality, in the Columbia Basin hatcheries.
87-117	Augmented Fish Health Monitoring in Idaho - IDFG	<b><u>Results/Conclusions:</u></b> Projects have assured consistent fish health data monitoring and reporting in the Columbia Basin anadromous fish hatcheries.	3. Continuing: Ensure compatibility of the data generated by these projects with that of the Artificial and Natural Production Data Bases (Program Measure 204).
87-118	Augmented Fish Health Monitoring in Oregon - ODFW		
87-119	Augmented Fish Health Monitoring - USFWS		

**Project Officer:** R. Morinaka

**Objectives:** Collect data in a systematic, standardized manner and provide a system of rapid storage and retrieval of fish health/production information in the anadromous fish hatcheries of the Columbia River Basin. Begin to develop a documentation and data retrieval system that can be used by persons who are not fish diagnosticians.

III. NEW PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>OBJECTIVES</u>	<u>SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND</u>
88-55	<b>Hatchery Production Data Base</b>  <u>Project Officer:</u> J. Bauer	1. Identify hatchery data elements needed. 2. Describe components of existing hatchery data. 3. Identify and evaluate alternatives for incorporating data into data base.	1. FY 1990: Complete review of existing systems and recommend alternatives for use.  2. FY 1991: Implement program
89-99	<b>Hatchery Water Quality Survey</b>  <u>Project Officer:</u> R. Mbrinaka	Determine if water quality specifically affects the health of the hatchery fish and determine what those effects are.	1. FY 1990: Collect water samples from selected hatcheries.  2. FY 1991: Analyze water quality data and correlate it with fish health parameters currently being monitored under fish health monitoring projects (Projects 86-13, 86-54, 87-117, 87-118, and 87-119).

6.4 DATA COLLECTION FOR NATURAL PRODUCTION DATA BASE  
(Fund in Response to System Monitoring and Evaluation Work Group Proposals)

206(e)(2) Natural Production Data Base. BPA shall fund collection of information on the natural production of anadromous fish in the Columbia River Basin. Data to be collected shall include, at a minimum: adult escapement, redd counts, and juvenile migration for key index streams in the Columbia River Basin. The key index streams shall be consistent with any key index streams identified through the U.S./Canada Pacific Salmon Treaty and other planning processes. Data collected shall be stored in the Council's anadromous fish data base.

**ACTION ITEM ACTIVITY SUMMARY:**

Objectives:

To develop and implement the Natural Production Data Base.

Background and Progress to Date:

The scoping of the CIS in FY 1989 (Project 88-108-1) provided overall guidance for development of the Natural Production Data Base, as well as the Hatchery Production Data Base. IDFG has the lead in coordination and development of the Natural Production Data Base Technical Work Statement by the Council's MEG.

Plans:

Following approval of the Work Statement by the MEG and CBFWA, BPA plans to fund Project 88-56 in early FY 1990.

1. COMPLETED PROJECTS

None.

II. FY 1989 ONGOING PROJECTS

None

III. NEW PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>OBJECTIVES</u>	<u>SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND</u>
88-56	Natural Production Data Base  <u>Project Officer:</u> L. Everson	Work statement under development and CBFWA review.	Schedule for FY 1990 under development

6.5 HIGH PRIORITY PROJECTS IN AREAS OF EMPHASIS  
(Fund Only These in FY 1987)

206(b) This measure directs BPA to focus its funding of salmon and steelhead research in the next five years in the four areas of emphasis. [Abstract]

**ACTION ITEM ACTIVITY SUMMARY:**

Objectives:

To fund only high priority projects in the areas of emphasis during FY 1987.

Background and Progress to Date:

One project, a demonstration of a system for removing malachite green from hatchery effluent (Project 87-421), was identified by the agencies and Tribes as sufficiently important to merit priority funding in FY 1987. The FDTWG strongly supported this project and requested that it be funded immediately. BPA initiated Project 87-421 in FY 1987; the project was completed in FY 1989.

Plans:

Action Item 6.5 has been completed.

**I. COMPLETED PROJECTS**

<b>PROJECT NUMBER</b>	<b>TITLE</b>	<b>DATE COMPLETED</b>	<b>RESULTS/CONCLUSIONS</b>
87-42 1	<b>Malachite Green Removal From Hatchery Effluents - USFWS</b>  <b><u>Project Officer:</u> 3. Bauer</b>  <b><u>Objectives:</u> Demonstrate (in full scale) the removal of malachite green from hatchery effluent; assess the need for it in the Basin; evaluate ways and means to reduce the need for malachite green treatments</b>	January 1989	<b>A filter system of activated carbon was effective for removal of malachite green from treated water in both adult hatchery pond and in incubation water supplies. Efficiency improved when treated water was passed through two filter chambers in series.</b>  <b>Final Report could be edited for reliability with the completion of Project 89-40, "Analytical Methods for Malachite Green."</b>

**II. FY 1989 ONGOING PROJECTS**

None.

**III. NEW PROJECTS**

None.

6.10 SYSTEM MONITORING AND EVALUATION  
(Coordinated Information System)

206(d)(2)(c) The Council's system monitoring and evaluation program will include development of a coordinated information system designed to facilitate effective exchange and dissemination of fisheries data. [Abstract]

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To fund development of the CIS.

Background and Progress to Date:

In FY 1988, BPA began funding Project 88-108-1 to develop the CIS. Projects 88-108-2 and 89-104 began in FY 1989.

Plans:

BPA will continue to fund the three ongoing projects through completion.

**I. COMPLETED PROJECTS**

None

**II. FY 1989 ONGOING PROJECTS**

<b><u>PROJECT NUMBER</u></b>	<b><u>TITLE</u></b>	<b><u>PROJECT STATUS</u></b>	<b><u>SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND</u></b>
88-108-I	<b>Coordinated Information System (CIS) - PMFC</b>  <b><u>Project Officer:</u></b> L. Everson  <b><u>Objectives:</u></b> 1. Select project team 2. Conduct project orientation 3. Complete scoping for CIS development (Phase I) 4. Complete CIS application and prototype development and watershed classification and stock analysis (Phase II) 5. Complete CIS Final Report, Watershed Classification Final Report, and Stock Analysis Report (Phase III)	<b><u>Date Initiated:</u></b> January 1989  <b><u>Results/Conclusions:</u></b> Objectives 1 & 2 are completed. Objective 3, scoping, is in progress. CIS Team has provided guidance for development of stock assessment and the Hatchery and Natural Production Data Bases.	<b>FV 1990: Complete Phase I</b>  <b>FV 1991: Complete Phase II.</b>  <b>FY 1992: Complete Phase III.</b>
88-108-Z	<b>EPA/USGS Mapping System for Coordinated Information System (CIS) - USGS</b>  <b><u>Project Officer:</u></b> T. Pansky  <b><u>Objectives:</u></b> 1. Complete regional digital hydrographic data base at 1:100,000 scale for use in CIS. 2. Enhance current EPA/USGS mapping system	<b><u>Date Initiated:</u></b> October 1989  <b><u>Results/Conclusions:</u></b> None at this time.	<b>1. December 1989: Complete data base for Idaho and Washington.</b> <b>2. October 1990: Complete data base for Oregon and Montana.</b>

**PROJECT  
NUMBER**

**TITLE**

**PROJECT STATUS**

**SCHEDULE AND MILESTONES  
FOR FY 1990 AND BEYOND**

89-104

**Historical Data Base  
- USFS/PNWRS**

**Project Officer: L. Everson**

**Objectives: Archive summaries  
and raw data from original  
Bureau of Fisheries habitat  
surveys of the Columbia River  
and tributaries. Publish  
summaries in book form by sub-  
basin**

**Date Initiated: FV 1989**

**Results/Conclusions: None at this  
time.**

**FY 1990: Microfiche original field notes and  
prepare notes for data base management system**

**FV 1990 to FY 1993: Produce a data base manage-  
ment system for historical stream inventories  
which is integrated with CIS protocols for sub-  
basin stream inventory data. Edit and produce  
Columbia Basin stream inventory for areas above  
and below Bonneville Dam**

**FY 1993: Project scheduled for completion**

**III. NEW PROJECTS**

None

## **COORDINATION ACTION ITEMS**

6.12 CONTINUING COORDINATION AND CONSULTATION  
(By All Federal Project Operators/Regulators)

1203(c) The Federal project operators and regulators shall work with the agencies and Tribes to comply with the consultation/coordination requirements of the Act. The Council expects research planning consultation to occur among agencies, Tribes, and project operators and regulators. The Council will encourage improved coordination of fish and wildlife efforts by consulting with the fish and wildlife agencies, Tribes, project operators and regulators, BPA customers, Federal and state water and land management agencies, irrigation districts, academic experts, and interested citizens groups.  
[Abstract]

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

In conjunction with the Council and the Ad-Hoc Roles Committee of CBFWA, BPA has participated in the development of a formal process through which BPA and the Fish and Wildlife agencies and Tribes jointly plan, and BPA subsequently implements, the Fish and Wildlife Program. This process provides for the involvement of the region's Fish and Wildlife agencies and Tribes at relevant decision-making points and should improve coordination and consistency between BPA's implementation actions and the agencies' and Tribes' existing and future management activities.

Background and Progress to Date:

In early April 1987, BPA staff began meeting with Council staff and an ad-hoc committee of CBFWA. The meetings focused on explaining BPA's process for implementing the Program, from inception through completion. Participants agreed to continue discussion, with a goal of developing a collaborative and cooperative process through which BPA would plan and implement the Program. As a result of these discussions, an Implementation Planning Process (IPP) (see Section III)) was developed.

The IPP was endorsed by the BPA Administrator and the CBFWA Chairman on October 19, 1988. The IPP's Policy Review Group (PRG) was formed in late 1988. In January 1989, the PRG began providing BPA with policy and funding recommendations related to Program implementation. The FY 1990 AIWP follows the outline developed by the PRG during Step 1 of the initial IPP annual cycle

Plans:

BPA plans to continue to use the IPP as a coordination and consultation mechanism and to develop the AIWP.

## RESIDENT FISH ACTION ITEMS AND TECHNICAL SUBJECTS

- 7.1 COLVILLE HATCHERY  
(Complete Construction: March 1989)  
(Fund Operation and Maintenance)

903(g)(1)(A) 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. [Abstract]

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) received the construction contract for the hatchery. The final design for the hatchery was completed in October 1987. Construction began in July 1988.

Plans:

Construction is scheduled to be completed in fall 1989. BPA will fund the operation and maintenance of the facility by the CCT.

**I. COMPLETED PROJECTS**

<b>PROJECT NUMBER</b>	<b>TITLE</b>	<b>DATE COMPLETED</b>	<b>RESULTS/CONCLUSIONS</b>
85-38-I	<b>Colville Tribal Fish Culturist Training Program CCT</b>	<u>Projected Completion:</u> <b>September I, 1989</b>	<b>Iwo individuals were trained to work in the hatchery.</b>
	<b><u>Project Officer:</u> C. Bohan</b>		
	<b><u>Objectives:</u> Six individuals will be trained in the field of fish culture to operate the Colville Tribal Hatchery under the direction of a hatchery manager.</b>		

**II. 'Y, 989 ONGOING PROJECTS**

<b>PROJECT NUMBER</b>	<b>TITLE</b>	<b>PROJECT STATUS</b>	<b>SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND</b>
85-38	<b>Colville Hatchery - CCT</b>	<u>Date initiated:</u> <b>1985</b>	<b>FY 1990: Complete construction of 50,000 pound trout hatchery. Begin funding operation and maintenance.</b>
	<b><u>Project Officer:</u> C. Bohan</b>	<b><u>Results/Conclusions:</u> Design completed in FY 1987. Construction contract initiated July 1988.</b>	
	<b><u>Objectives:</u> Design and construct a resident trout hatchery on the Colville Indian Reservation.</b>		

**III. NEW PROJECTS**

None.

1.2 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) 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 three-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. [Abstract]

## 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:

Not applicable.

## Plans:

BPA plans to fund this Action Item, beginning in FY 1990 with a project to conduct the stream surveys.

**I. COMPLETED PROJECTS**

None.

**II. FY 1989 ONGOING PROJECTS**

None.

**III. NEW PROJECTS**

<b><u>PROJECT NUMBER</u></b>	<b><u>TITLE</u></b>	<b><u>OBJECTIVES</u></b>	<b><u>SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND</u></b>
90-44	<b>Stream Survey, Hatchery, Improvements, and Monitoring on the Coeur D'Alene Reservation</b>  <b><u>Project Officer:</u> F. Holm</b>	<b>1. Survey streams and determine stock status. 2. Assess possibilities for habitat improvement. 3 Construct hatchery. if needed. 4. Monitor results of habitat improvement projects and hatchery supplementation.</b>	<b>1. FY 1990: Begin stream surveys and determine stock status.  2. FY 1991 and beyond: Identify projects to meet objectives 2, 3, and 4.</b>

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) 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 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. [Abstract]

## 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

## Plans:

BPA will complete the final design of the hatcheries, and construction will begin in FY 1990.

**I. COMPLETED PROJECTS**

None.

**II. FY 1989 ONGOING PROJECTS**

<b><u>PROJECT NUMBER</u></b>	<b><u>TITLE</u></b>	<b><u>PROJECT STATUS</u></b>	<b><u>SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND</u></b>
88-62	Kokanee Hatcheries - Galbraith Springs and Sherman Creek  <u>Project Officer:</u> S. Levy  <u>Objectives:</u> Design, construct, and operate kokanee hatcheries.	<u>Date Initiated:</u> FY 1988  <u>Results/Conclusions:</u> None.	FY 1990: Complete final design and Galbraith Springs Hatchery construction.  FY 1991: Complete construction of Sherman Creek facility.

**III. NEW PROJECTS**

None.

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) 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. [Abstract]

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

**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.

Plans:

BPA will fund habitat improvement projects in FY 1990. Annual report on monitoring will be available in December 1989.

**I. COMPLETED PROJECTS**

None

**II. FY 1989 ONGOING PROJECTS**

<b><u>PROJECT NUMBER</u></b>	<b><u>TITLE</u></b>	<b><u>OBJECTIVES</u></b>	<b><u>SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND</u></b>
88-63	<b>Lake Roosevelt Monitoring Program - Spokane Tribe</b>  <b><u>project Officer:</u> F. Holm</b>  <b><u>Objectives:</u></b> <b>1. Determine status of fish stocks in Lake Roosevelt before construction of habitat improvement projects and hatcheries.</b> <b>2. Evaluate contribution of these projects and hatcheries to Lake Roosevelt.</b>	<b><u>Date Initiated:</u> July 1988</b>  <b><u>Results/Conclusions:</u> Available in annual report. December 1989.</b>	<b>1. Continuing: Assess status of stocks in Lake Roosevelt and measure the success of habitat improvement projects and hatcheries.</b>  <b>2. FY 1994: Project scheduled for completion.</b>

**III. NEW PROJECTS**

<b><u>PROJECT NUMBER</u></b>	<b><u>TITLE</u></b>	<b><u>OBJECTIVES</u></b>	<b><u>SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND</u></b>
90-18	<b>Lake Roosevelt Habitat Improvement Projects</b>  <b><u>Project Officer:</u> S. Levy</b>	<b>Facilitate passage of resident fish in Lake Roosevelt tributaries and improve rearing habitat.</b>	<b>FY 1990: Develop Work Plan.</b>  <b>FY 1991 and 1992: Implement improvements.</b>

- 7.5 KOOTENAI INDIAN RESERVATION STURGEON HATCHERY  
 (Fund Design, Construction, Operation, Maintenance of Hatchery: Begin  
 FY 1988)  
 (Fund Evaluation Study)

903(g)(1)(H) 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. [Abstract]

**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 is funded to develop a water supply, design a hatchery, and train personnel in sturgeon culture. Project began in late FY 1988. Ground water is being tested and hatchery under design.

Plans:

BPA has funded project as stated above. Hatchery will be constructed only if Kootenai River broodstock are available, as indicated by Project 88-65 (Action Item 7.6).

**I. COMPLETED PROJECTS**

None

**II. FY 1989 ONGOING PROJECTS**

<b><u>PROJECT NUMBER</u></b>	<b><u>TITLE</u></b>	<b><u>PROJECT STATUS</u></b>	<b><u>SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND</u></b>
88-64	Design, Construct, and Operate a Sturgeon Hatchery on the Kootenai Reservation, Idaho - Kootenai Tribe  <b><u>Project Officer:</u></b> F. Holm  <b><u>Objectives:</u></b> Same as title	<b><u>Date Initiated:</u></b> September 1988  <b><u>Results/Conclusions:</u></b> Ground water is being tested and hatchery is being designed.	FY 1990: Construction will start and be completed

**III. NEW PROJECTS**

None

7.6 STURGEON AND WATER LEVEL FLUCTUATIONS: IDAHO PORTION OF KOOTENAI

(Fund Study to Assess Impacts: Begin FY 1989)

903(g)(1)(I) 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. [Abstract]

## 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 train hatchery personnel. Project began in late FY 1988. Sturgeon have been caught and tagged and are being monitored. It appears that broodstock will be available for spawning in spring of 1990.

## Plans:

BPA will continue to fund this study in FY 1990, with emphasis directed toward obtaining brood fish for the proposed hatchery.

**I. COMPLETED PROJECTS**

None

**II. FY 1989 ONGOING PROJECTS**

<b><u>PROJECT NUMBER</u></b>	<b><u>TITLE</u></b>	<b><u>PROJECT STATUS</u></b>	<b><u>SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND</u></b>
88-65	<b>Assess Impacts of Water Level Fluctuations on Sturgeon in the Kootenai River - IOFG</b>  <b><u>Project Officer:</u> F. Holm</b>  <b><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.</b>	<b><u>Date Initiated:</u> September 1988</b>  <b><u>Results/Conclusions:</u> BPA contracted with IDFG to conduct this study beginning in 1988. Sturgeon are being caught, tagged and monitored. It is likely broodstock for experimental hatchery can be obtained for 1990.</b>	<b>Continuing: Status of sturgeon populations and durability of brood stock will be determined. Eggs will be taken for experimental rearing, Project 88-64.</b>

**III. NEW PROJECTS**

None

7.7 PEND OREILLE RIVER FISHERY IMPROVEMENTS ON KALISPEL RESERVATION  
 (After Council Consultation, Fund Assessment of Improvement  
 Opportunities: Begin FY 1988)

903(g)(1)(G) BPA shall fund an assessment of fishery improvement opportunities in the Pend Oreille River within the boundaries of the Kalispel Indian Reservation. This survey will provide: i) baseline information about existing fish populations and habitat and ii) information on possible means of improving fisheries. Upon completion of the assessments, recommendations for fisheries projects will be submitted to the Council.  
 [Abstract]

**ACTION ITEM ACTIVITY SUMMARY:**

Objectives:

To survey the fish populations in the Pend Oreille River within the boundaries of the Kalispel Reservation. Develop recommendations to improve the fisheries.

Background and Progress to Date:

Project began in February 1988. Baseline data of fish stocks and angler use are in annual report printed in June 1989.

Plans:

BPA will continue to fund this project through completion in FY 1990. At that time, recommendations will be submitted to the Council for fisheries improvement alternatives.

**I. COMPLETED PROJECTS**

None

**II. FY 1989 ONGOING PROJECTS**

<b><u>PROJECT NUMBER</u></b>	<b><u>TITLE</u></b>	<b><u>PROJECT STATUS</u></b>	<b><u>SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND</u></b>
88-66	<b>Assess Fishery Improvement Options in the Pend Oreille River - KIT</b>  <b><u>Project Officer:</u> F. Holm</b>  <b><u>Objectives:</u> Survey fisheries in the Pend Oreille River. Develop recommendations to improve the fisheries.</b>	<b><u>Date Initiated:</u> February 1988</b>  <b><u>Results/Conclusions:</u> Preliminary data is in report printed June 1989.</b>	<b>FY 1990: Project will be completed and recommendations will be made to the Council for fisheries improvement alternatives.</b>

**III. NEW PROJECTS**

7.10 FUND PROJECTS AS PROVIDED IN SECTION 903(g)(2) AND ACTION ITEM 7.8.

903(g)(2)(A)(i) The appropriate party or parties shall fund resident fish projects at the Duck Valley Indian Reservation, as off-site enhancement, to include: (i) annual stocking of catchable and fingerling trout of the appropriate stocks in reservation lakes and streams. [Abstract]

ACTION ITEM ACTIVITY SUMMARY:Objectives:

Develop funding mechanisms and scheduling for resident fish substitution projects above Hells Canyon Dam.

Background and Progress to Date:

BPA has agreed to fund this portion of the Duck Valley measure. Trout were purchased from private growers and stocked in FY 1988 and FY 1989. BPA funded a study to develop alternative means to annual fish stocking to enhance the fisheries of the Reservation and the development of a fisheries management plan.

Plans:

The fisheries management plan will be refined and trout will be purchased in FY 1990.

**I. COMPLETED PROJECTS**

None

**II. FY 1989 ONGOING PROJECTS**

<b><u>PROJECT NUMBER</u></b>	<b><u>TITLE</u></b>	<b><u>PROJECT STATUS</u></b>	<b><u>SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND</u></b>
88-156	<b>Duck Valley Resident Fish Project - SPT</b>  <b><u>Project Officer: F. Holm</u></b>  <b><u>Objective: Purchase rainbow trout to stock waters on Duck Valley Reservation and develop a management plan for reservation waters.</u></b>	<b><u>Date Initiated: FY 1988</u></b>  <b><u>Results/Conclusions: The project funded the purchase of fingerling and catchable rainbow trout for stocking in waters on the Duck Valley Reservation and the development of a fisheries management plan.</u></b>	<b>FY 1990: The fisheries management plan will be refined and trout will be purchased.</b>

**III. NEW PROJECTS**

None.

- 7.11 ONGOING STUDIES IN MONTANA  
(Continue Cooperative Studies; Present Results to Council.  
Submit Recommendations by October 1, 1990.)

- 903 The measures referenced in the Action Item are concerned with the operations of Hungry Horse and Kerr dams and how their operations affect the game fish populations in the Flathead Basin. They also concern the reservoir levels of Hungry Horse and Libby and how these levels affect the game fish population in the reservoirs themselves. Operation procedures are to be recommended and mitigation levels for fish losses determined for effects of the hydroelectric system. [Abstract]

**ACTION ITEM ACTIVITY SUMMARY:**

Objectives:

To determine the effects of reservoir drawdown and flows on resident fish in the Flathead River Basin in order to determine how various reservoir levels affect the fish in Libby and Hungry Horse Reservoirs.

Background and Progress to Date:

These projects have been implemented because the resident fish resources of the Flathead Basin have been severely affected by the construction and operation of Hungry Horse and Kerr dams. In the Kootenai Basin, the resident fish resources have been similarly affected by the construction and operation of Libby Dam. The effects of reservoir drawdown and flows on the kokanee and other game fish are being determined. When projects have been completed, recommendations will be made for hydro operations and seasonal drawdown levels compatible with the needs of the fish. Mitigation plans will be developed for losses that have occurred.

Plans:

The final reports for the projects will be completed in 1989 and 1990; BPA will submit the project results to the Council. Recommendations for future action will be submitted to the Council by October 1, 1990, as called for in the Action Item.

**I. COMPLETED PROJECTS**

None

**II. FY 1989 ONGOING PROJECTS**

<b><u>PROJECT NUMBER</u></b>	<b><u>TITLE</u></b>	<b><u>PROJECT STATUS</u></b>	<b><u>SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND</u></b>
81-105	<b>Effects of Operation of Kerr and Hungry Horse Dams on the Reproductive Success of Kokanee in the Flathead System - MDFWP</b>  <b><u>Project Officer:</u> f. Holm</b>  <b><u>Objectives:</u> To evaluate the operational effects of Kerr and Hungry Horse dams on the reproductive success of kokanee in the Flathead System</b> <b>Detailed objectives are provided in the Project's annual reports.</b>	<b><u>Date initiated:</u> September 1981</b>  <b><u>Results/Conclusions:</u> Recommended flows have been implemented below Hungry Horse Dam to enhance success of kokanee reproduction: they are being evaluated. However, recent investigations of mysid shrimp interactions suggest factors other than river flows will affect kokanee production. For more detailed information, refer to the Project's annual reports: DOE/BP 200, 204, 383, 39641-1, 39641-Z, 39641-3, and 39641-4.</b>	<b>1. FY 1990: The contractor will complete field work in late 1989, analyze data, and prepare report</b>  <b>2. Project is funded through completion in December 1989 with FY 1987 funds.</b>  <b>3. October 1990: Mitigation plan will be submitted to the Council.</b>

**III. NEW PROJECTS**

None

7.12      STURGEON STUDIES  
 (Fund Ongoing Studies)

903(e)(1)      EPA shall fund research to determine the impacts of development and operation of the hydroelectric power system on sturgeon in the Columbia River Basin. These studies may include: 1) habitat requirements; 2) maintenance of genetic integrity; 3) stock assessment; 4) potential for artificial propagation; and, 5) migrating potential. Specific recommendations for the protection, mitigation and enhancement of sturgeon may be submitted to the Council upon completion of these studies.

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To determine the impacts on white sturgeon from the development and operation of the hydropower system. Develop recommendations for the protection, mitigation, and enhancement of white sturgeon.

Background and Progress to Date:

Impacts on white sturgeon from the development and operation of hydropower have not been determined, but there is evidence that the impacts have been substantial. From a series of workshops funded by BPA, a work plan for sturgeon research was developed, followed by a sturgeon research program implementation plan. These were submitted to the Council, as called for by Action Item 7.12. Two projects are currently being funded by BPA. The University of Idaho (UI) study transferred from the University of Washington will determine early life history requirements and the genetic makeup of the stocks throughout the Basin. The other study, a four-agency project to determine the habitat requirements and status of stocks downstream from McNary Dam, is in its third field season.

Plans:

The genetic identification study is being expanded into the Upper Columbia Basin and the Kootenai River areas, where a sturgeon hatchery is proposed. The habitat requirements and stock assessment study has been designed as a 6-year project because of the large study area and the multiple objectives involved.

**I. COMPLETED PROJECTS**

None

**II. FY 1989 ONGOING PROJECTS**

<b><u>PROJECT NUMBER</u></b>	<b><u>TITLE</u></b>	<b><u>PROJECT STATUS</u></b>	<b><u>SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND</u></b>
89-44 Formerly: 83-316	<b>White Sturgeon Early Life History Requirements and Genetics Study - UI</b>  <b><u>Project Officer:</u> F. Holm</b>  <b><u>Objectives:</u></b> 1. Determine whether white sturgeon are represented by genetically distinct stocks. 2. Determine the early life habitat requirements and effects of the hydropower system on the sturgeon habitat.	<b><u>Date initiated:</u> 1984</b>  <b><u>Results/Conclusions:</u></b> Allelic differences have been identified in fish from Lake Roosevelt and the Kootenai River. Additional samples will be taken to verify these differences. Stocks from the lower Columbia appear to be genetically similar. Behavioral patterns and food requirements for young sturgeon have been documented. Annual reports are available.	<b>1990: Project scheduled for completion</b>
86-50	<b>Determine the Status and Habitat Requirements of White Sturgeon Populations in the Columbia River Downstream from McNary Dam - OOFW (WDF, USFWS, and NMFS are subcontractors,</b>  <b><u>Project Officer:</u> F. Holm</b>	<b><u>Date initiated:</u> 1986</b>  <b><u>Results/Conclusions:</u></b> Collection of all age groups of sturgeon has been successful, with even larval sturgeon and eggs being collected in The Dalles Dam pool. Coordination with the work ongoing below Bonneville Dam is excellent. Annual report for 1988-DOE/BP-63584-2 is available.	<b>1. 1990: Study will continue in The Dalles, John Day, and Bonneville Dam pools. More development will continue to identify effects of hydropower on population status and habitat.</b>  <b>2. 1992: Project is scheduled for completion.</b>

**PROJECT  
NUMBER**

**TITLE**

**PROJECT STATUS**

**SCHEDULE AND MILESTONES  
FOR FY 1990 AND BEYOND**

86-50  
cont.

**Objectives: Determine the status and habitat requirements of white sturgeon in the Columbia River downstream from McNary Dam. Detailed objectives and results are described in the Project's annual reports.**

**III. NEW PROJECTS**

**None.**

----- PEND OREILLE HATCHERY (FORMER ACTION ITEM 41.4)

MEASURE LANGUAGE:

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 produces 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 the Washington Water Power Company shared the costs of constructing the facility. The IDFG funds the operation and maintenance of the hatchery. Evaluation activities are continuing.

Plans:

Fund evaluation activities through completion.

**I. COMPLETED PROJECTS**

None

**II. FY 1989 ONGOING PROJECTS**

<b><u>PROJECT NUMBER</u></b>	<b><u>TITLE</u></b>	<b><u>PROJECT STATUS</u></b>	<b><u>SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND</u></b>
85-339	<p><b>Kokanee Stock Status and Contribution of Cabinet Gorge Hatchery, Lake Pend Oreille, Idaho - IOFG</b></p> <p><b><u>Project Officer:</u> F. Holm</b></p> <p><b><u>Objectives:</u> Determine the contribution of the Cabinet Gorge Hatchery to the kokanee fishery in Lake Pend Oreille. Detailed objectives are described in the Project's annual reports.</b></p>	<p><b><u>Date initiated:</u> 1985</b></p> <p><b><u>Results/Conclusions:</u> Kokanee egg takes for the hatchery have been increasing each year. 14.5 million eggs were taken in 1989. Hatchery water problems are being solved; flushing flows from Cabinet Gorge Dam are required to get fingerlings down the Clark Fork River into Lake Pend Oreille. IDFG continues to work with Washington Water Power on this.</b></p> <p><b>The current kokanee population in Pend Oreille is estimated to be 10.2 million, compared to 4.3 million in 1986. The increase is a direct result of the hatchery contribution.</b></p>	<p><b>1. 1990: Additional techniques will be tried to mark kokanee before releases. Water will be requested for flushing flows in July and August 1990. Zooplankton data will be analyzed and results compared to previous years' data and related changes in kokanee densities and growth rates in order to define carrying capacity better. Some plants will be made, using a U.S. Navy barge.</b></p> <p><b>2. Project scheduled for completion in 1990.</b></p>

**III. NEW PROJECTS**

None.

7.13 ACCUMULATED MATERIALS IN KOOTENAI RIVER  
(Initiate Removal)

903(d)(1) BPA shall fund the removal of materials which have accumulated in Kootenai River tributary deltas below Libby Dam as a result of the dam's construction and operation and which interfere with the migration of spawning fish.

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

When necessary, remove materials which have accumulated in Kootenai River tributary deltas and which interfere with fish migration.

Background and Progress to Date:

Not applicable.

Plans:

None at this time.

7.14      IMPACTS OF DWORSHAK DAM  
 (Begin Assessment of Construction and Current Operation Impacts)

903(e)(4)      BPA shall fund a study to assess the impacts of the original construction and current operation of Dworshak Dam on the resident fishery. This study will include the following research concerns of the Nez Perce Tribe: 1) population dynamics of kokanee; 2) reservoir productivity; 3) food habits of rainbow trout; 4) population dynamics and habitat preferences of small mouth bass; and, 5) the status of forage species. This study effort will be coordinated with the Corps. Recommendations detailing specific protection, mitigation and enhancement opportunities, consistent with the requirements of 804(e)(16), may be submitted to the Council.

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To assess the status of resident fish stocks, particularly kokanee; to compare data to that obtained when reservoir was first filled; to determine whether changes are caused by operation of Dworshak Dam.

Background and Progress to Date:

Two projects have been funded to cover the five concerns listed in the Program Measure. IDFG and the NPT are the contractors for the projects. The projects started July 1, 1987.

Plans:

The projects will run for 4 years, at which time IDFG and the NPT may submit recommendations detailing specific protection, mitigation and enhancement plans to the Council.

**I. COMPLETED PROJECTS**

None.

**II. FY 1989 ONGOING PROJECTS**

<b><u>PROJECT NUMBER</u></b>	<b><u>TITLE</u></b>	<b><u>PROJECT STATUS</u></b>	<b><u>SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND</u></b>
87-99	<b>Dworshak Dam Impacts Assessment and Fisheries Investigation - IDFG</b>  <b><u>Project Officer:</u> R. Austin</b>  <b><u>Objectives:</u></b> 1. Assess the status of kokanee stocks in the reservoir 2. Document losses of kokanee through turbines at Dworshak Dam. 3. Assess limnological parameters and evaluate impacts of reservoir management on the zooplankton community and kokanee production.	<b><u>Date initiated:</u> July 1987</b>  <b><u>Results/Conclusions:</u></b> Results are in annual reports dated June 1988 and June 1989. Results are preliminary.	<b>1. FY 1990: Continue baseline data collection. Begin hydroacoustic monitoring of kokanee through turbines at Dworshak Dam</b>  <b>2. Project will last 4 years. Afterward, recommendations will be made to the Council for measures to protect, mitigate, and enhance resident fish in Dworshak Reservoir.</b>
87-407	<b>Dworshak Reservoir Investigation: Trout, Bass and Forage Species - NPT</b>  <b><u>Project Officer:</u> R. Austin</b>  <b><u>Objectives:</u></b> 1. Assess the status of rainbow trout, small mouth bass, and forage species in the reservoir. 2. Assess changes in these populations in relation to reservoir management.	<b><u>Date initiated:</u> July 1987</b>  <b><u>Results/Conclusions:</u></b> Results are in annual reports dated June 1988 and June 1989. Results are preliminary.	<b>1. FY 1990: Continue baseline data collection</b>  <b>2. Project will last 4 years. Afterward, recommendations will be made to the Council for measures to protect, mitigate, and enhance resident fish in Dworshak Reservoir.</b>

**III. NEW PROJECTS**

**None.**

7. 15 ONGOING DRAWDOWN STUDIES  
(Continue Cooperative Studies; Present Results to Council. Submit Recommendations by March 1, 1988.)

903(b)(3-4) 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 flows via 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. [Abstract]

**ACTION ITEM ACTIVITY 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.

**I. COMPLETED PROJECTS**

None

**II. FY 1989 ONGOING PROJECTS**

<b><u>PROJECT NUMBER</u></b>	<b><u>TITLE</u></b>	<b><u>PROJECT STATUS</u></b>	<b><u>SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND</u></b>
83-465	<p><b>Quantification of Hungry Horse Reservoir Levels Needed to Maintain or Enhance Reservoir Fisheries - MDFWP</b></p> <p><b><u>Project Officer:</u> D. Johnson</b></p> <p><b><u>Objectives:</u></b> 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.</p>	<p><b><u>Date Initiated:</u> April 1, 1983</b></p> <p><b><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.</b></p>	<p><b>1. June 30, 1990: Biological model for the reservoir will be completed and runs will be made concurrently with the Systems Analysis Model. The biological model has been critically reviewed and will be improved by researchers at the University of Washington.</b></p>
83-467	<p><b>Quantification of Libby Reservoir Levels Needed to Maintain or Enhance Reservoir Fisheries - MDFWP</b></p> <p><b><u>Project Officer:</u> D. Johnson</b></p> <p><b><u>Objectives:</u></b> 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.</p>	<p><b><u>Date Initiated:</u> April 1, 1983</b></p> <p><b><u>Results/Conclusions:</u> Gill net sampling indicates fluctuations in kokanee numbers. The reservoir model now includes a hydrologic component downstream to Duncan and Corra Linn dams.</b></p>	<p><b>1. June 30, 1990: Biological model for the reservoir will be completed and runs will be made concurrently with the Systems Analysis Model. The biological model has been critically reviewed and will be improved by researchers at the University of Washington.</b></p> <p><b>2. Work on fish entrainment through the Libby Dam penstocks and effects of operations on the river fishery will begin in FY 1990 to increase utility of the reservoir model.</b></p>

III. NEW PROJECTS

None.

## WILDLIFE ACTION ITEMS AND TECHNICAL SUBJECTS

The wildlife section of the Program establishes a process with two objectives: wildlife protection, mitigation, and enhancement planning; and implementation of actions to protect, mitigate, and enhance wildlife affected by development and operation of hydroelectric facilities in the Columbia River Basin. The Council's wildlife mitigation planning and implementation process is outlined in Table 6. This sequential process begins with the review of the status of wildlife mitigation at Columbia River Basin hydroelectric facilities [Measure 1003(b)(1)], proceeds to the development of estimates of wildlife losses, and then to development of recommended actions for the protection, mitigation, or enhancement of wildlife [Measure 1003(b)(3), Mitigation Plans]. Finally, implementation of wildlife protection, mitigation, and enhancement occurs upon amendment of wildlife actions into the Program by the Council.

Note: The Northwest Power Planning Council has entered into an amendment process for wildlife mitigation which is expected to modify the structure of the Wildlife Program.

TABLE 5

## WILDLIFE MITIGATION PLANNING AND IMPLEMENTATION PROCESS

	<u>Action Item</u>	<u>Description</u>	<u>Measure</u>
Step 1	None	Status Reports	1003(b)(1)
Step 2	None	Consultation to discuss need for and direction of further studies.	1003(b)(2)
Step 3	8.1	Fund loss statements when needs are identified.	1003(b)(2), Table 3
Step 4	8.2	Consultations begun on completed loss statements.	1003(b)(3) and (5)
Step 5	8.3	Funding of development of mitigation plans and submission to Council for review and approval.	1003(b)(3) and (5), (d)(1)-(2)
Step 6	8.16	Council review of mitigation plans and amendment of mitigation actions into Program.	1003(b)(3)-(5), (d)(1)-(2)
Step 7	8.5-8.11	Implementation of mitigation actions amended into Program.	1003(b)(4), Table 4

# MITIGATION CONSULTATIONS

----- CONSULTATION ON PRIORITY MITIGATION PROJECTS  
(Consult with Fish and Wildlife Agencies and Tribes on Need for Loss Estimates or Actual Mitigation Projects on Identified Priority Projects).

1003(b)(2) Begin consultations on each hydroelectric project or series of projects, among the appropriate fish and wildlife agencies, Tribes, Federal project operators and regulators, and BPA customers to discuss the need for and direction of further studies. [Abstract]

## ACTION ITEM ACTIVITY SUMMARY:

### Objectives:

To use these consultations to scope the need for and direction of wildlife protection, mitigation, and enhancement planning for the FCRPS hydroelectric facilities. No projects/contracts will be funded by BPA under this Action Item.

### Background and Progress to Date:

The wildlife section of the Program establishes a stepped planning process intended to develop protection, mitigation, and enhancement actions for wildlife affected by the development and operation of hydroelectric facilities in the Columbia River Basin. The purpose of Measure 1003(b)(2) consultations was to assist in identifying the need for and direction of studies to estimate the net hydropower impacts on wildlife and wildlife habitat.

Table 7 outlines the status of these consultations for FCRPS facilities. Consultations have been held on 23 of the 29 FCRPS facilities. Six facilities do not require consultations. Chandler and Roza do not require consultations, as the Washington Department of Wildlife (WDW) and U.S. Fish and Wildlife Service (USFWS) indicated during the status review of these facilities that impacts on wildlife were minor and that further action under the Program was not recommended. The Lower Snake Facilities (Ice Harbor, Lower Monumental, Little Goose, and Lower Granite) do not require consultations to determine the need to fund wildlife impact studies, as these studies have been funded by the USACE.

### Plans:

No 1003(b)(2) consultations proposed in FY 1990.

TABLE 6  
STATUS MEASURE 1003(b)(2) WILDLIFE CONSULTATIONS  
AT FCRPS FACILITIES

<u>Hydro Facility</u>	<u>Status</u>	<u>Outcome</u>
<u>Montana</u>		
Hungry Horse	Held - June 1983	Mitigation planning for this facility was begun before the Program required consultations.
Libby	Held - July 1983	Mitigation planning for this facility was begun before the Program required consultations.
<u>Idaho</u>		
Palisades	Held - June 1984	Loss assessment was funded.
Anderson Ranch	Held - January 1985	
Black Canyon	Held - January 1985	
Boise Diversion	Held - January 1985	
Dworshak	Held - March 1985	
Albeni Falls	Held - April 1987	Combined loss assessment and mitigation plan was funded.
Mini doka	Held - February 1987	Loss assessment was funded.
<u>Washington</u>		
Grand Coulee	Held - April 1985	Loss assessment/mitigation plan was funded.
Chief Joseph	Held - February 1987	Combined loss assessment and mitigation plan was funded.
Lower Snake (Ice Harbor, Lower Monumental, Little Goose, Lower Granite)	None proposed	Loss assessments funded by USACE.
Chandler	None Proposed	
Roza	None Proaosed	

<u>Hydro Facility</u>	<u>Status</u>	<u>Outcome</u>
<u>Oregon</u>		
Willamette		Loss assessments were funded for Willamette facilities.
Cougar	Held - May 1984	
Lookout Point	Held - May 1984	
Dexter	Held - May 1984	
Hills Creek	Held - May 1984	
Green Peter	Held - March 1985	
Foster	Held - March 1985	
Detroit	Held - March 1985	
Big Cliff	Held - March 1985	
<u>Oregon/Washington</u>		
Bonneville	Held - March 1985 - June 1985	Loss assessment was funded.
The Dalles	Held - March 1985 - June 1985	Loss assessment was funded.
John Day	Held - March 1985 - June 1985	
McNary	Held - March 1985 - June 1985	

8.1 LOSS STATEMENTS  
(Fund as Needs are Identified.)

1003(b)(2) If BPA and the Council's wildlife coordinator determine that loss statements would be appropriate, then BPA shall fund studies to develop statements of wildlife and/or habitat losses. These statements shall take into account all existing information pertinent to the project area and shall address both realized and potential positive and negative effects.  
[Abstract]

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To obtain an estimate of the net impacts on wildlife and habitat from development and operation of Columbia River Basin Federal hydroelectric facilities. This information will be used in developing recommendations to protect, mitigate, and enhance wildlife affected by hydro development and operation.

Background and Progress to Date:

The development of the hydroelectric system has caused both adverse and beneficial effects on wildlife and habitat. Action Item 8.1 calls for the funding of studies to identify net impacts on wildlife and wildlife habitat from hydroelectric development and operation. Study information will be used to develop Action Item 8.3: wildlife protection, mitigation, and enhancement plans.

Table 8 outlines the status of loss assessments at FCRPS facilities. Loss assessments have been completed for 18 of the 29 FCRPS facilities. Two facilities (Roza, and Chandler) do not require loss assessments. The U.S. Army Corps of Engineers has funded loss assessments for the Lower Snake facilities.

Plans:

Loss assessments for five facilities initiated in FY 1988 and FY 1989 will continue and be completed in FY 1990. A project to evaluate the effects of altered water temperature and flow level regimes on aquatic mammals in the mainstem Clearwater River will be evaluated for possible funding in FY 1990.

TABLE 7  
STATUS OF ACTION ITEM 8.1 WILDLIFE LOSS STATEMENTS  
AT FCRPS FACILITIES

<u>Hydro Facility</u>	<u>Outcome</u>
<u>Montana</u>	
Hungry Horse	Completed - December 1983
Libby	Completed - December 1983
<u>Idaho</u>	
Palisades	Completed - January 1985
Anderson Ranch	Completed - May 1986
Black Canyon	Completed - May 1986
Boise Diversion	Completed - May 1986
Dworshak	Initiated - June 1987
Minidoka	Completed - March 1989
Albeni Falls	Completed - August 1988
<u>Washington</u>	
Grand Coulee	Completed - August 1986
Chief Joseph	Initiated - September 1988
Ice Harbor	Funded by USACE
Lower Monumental	Funded by USACE
Little Goose	Funded by USACE
Lower Granite	Funded by USACE
Chandler	None Proposed
Roza	None Proposed
<u>Oregon</u>	
Cougar	Completed - July 1985
Lookout Point	Completed - July 1985
Dexter	Completed - July 1985
Hills Creek	Completed - July 1985
Green Peter	Completed - January 1986
Foster	Completed - January 1986
Detroit	Completed - January 1986
Big Cliff	Completed - January 1986
<u>Oregon/Washington</u>	
Bonneville	Completed
The Dalles	Initiated - September 1988
John Day	Initiated - September 1988
McNary	Initiated - September 1988

**I. COMPLETED PROJECTS**

<b>PROJECT NUMBER</b>	<b>TITLE</b>	<b>DATE COMPLETED</b>	<b>RESULTS/CONCLUSIONS</b>
88-110	<p><b>Wildlife and Wildlife Habitat Loss Assessment for Mnidoka Dam in Idaho - IUFG</b></p> <p><b>Project Officer: R. Austin</b></p> <p><b>Objectives:</b></p> <ol style="list-style-type: none"> <li>1 Estimate net effects on wildlife from hydroelectric development and operation.</li> <li>2. Identify current status and management goals/plans for target wildlife.</li> <li>3. Recommend wildlife protection, mitigation, and enhancement goal s.</li> </ol>	<p><b>March 1989</b></p>	<p><b>IOFG completed an assessment of wildlife and wildlife habitat losses for Mnidoka Dam. The report estimates a net loss of 5.374 habitat units with estimated habitat losses including 181 acres of emergent wetlands, 396 acres of scrub shrub wetlands, 3,215 acres of riverine habitat and 7,736 acres of sagebrush grassland. Although some aspects of the dam and reservoir have been positive for waterfowl, impacts occurred to river otter, mule deer, and sage grouse. The report called for development of a mitigation plan which focused on target species that were adversely affected in the study area. For more information, see the Final Project Report: Mnidoka Dam Wildlife Impact Assessment.</b></p>

**II. FY 1989 ONGOING PROJECTS**

<b>PROJECT NUMBER</b>	<b>TITLE</b>	<b>PROJECT STATUS</b>	<b>SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND</b>
88-12	<p><b>Lower Columbia (The Dalles, John Day, McNary) Wildlife Protection, Mitigation, and Enhancement Planning - Wildlife Assessment Phase - USFWS</b></p> <p><b>Project Officer: A. Ruger</b></p>	<p><b>Date Initiated: September 1988</b></p> <p><b>Results/Conclusions: None at this time.</b></p>	<p><b>Schedule will be revised via an agreement modification. Project completion and final report anticipated in summer 1990.</b></p>

PROJECT NUMBER	TITLE	PROJECT STATUS	SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND
88-12 (cont.)	<p><b>Objectives:</b></p> <ol style="list-style-type: none"> <li>1. Estimate net effects on wildlife from hydroelectric development and operation.</li> <li>2. Identify current status and management plans/goals for target wildlife.</li> <li>3. Recommend wildlife protection, mitigation, and enhancement goals</li> </ol>		
88-44	<p><b>Wildlife Protection. Mitigation and Enhancement Plan for Chief Joseph Dam - WDW</b></p> <p><b>Project Officer:</b> A. Ruger</p> <p><b>Objectives:</b> Project implements Action Items 8.1 and 8.3.</p> <ol style="list-style-type: none"> <li>1. Identify pre-construction and current status of wildlife in project area.</li> <li>2. Estimate net effects on wildlife resulting from hydroelectric development operation.</li> <li>3. Develop protection, mitigation, and enhancement goals.</li> <li>4. Recommend protection, mitigation, and enhancement actions.</li> </ol>	<p><b>Date Initiated: September 1988</b></p> <p><b>Results/Conclusions:</b> Project start-up has been delayed. Agreement will be modified to adjust the schedule, and we anticipate inclusion of the Colville Tribe.</p>	<p>Schedule will be revised via an agreement modification. Project completion and final report anticipated in Spring 1991.</p>

**III. NEW PROJECTS (Conditional Project per PRG meeting of 5/25/85)**

<b><u>PROJECT NUMBER</u></b>	<b><u>TITLE</u></b>	<b><u>OBJECTIVES</u></b>	<b><u>SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND</u></b>
90-51	Lower Clearwater Aquatic Mammal Study  <u>Project Officer:</u> J. Meyer	Determine effects of altered water temperature and flow level regimes on aquatic mammals in the mainstem Clearwater River below Oworshak Reservoir.	<p>This is a conditional FY 1990 project and determination of funding will be made by the Policy Review Group pending the following:</p> <ol style="list-style-type: none"><li>1. Completion of the ongoing wildlife study for Oworshak (Project 88-154).</li><li>2. Determination of the need for additional information on aquatic mammals.</li><li>3. Coordination with CBFWA.</li><li>4. Available funds to undertake the study.</li><li>5. Development of detailed scope of work with experimental design.</li></ol>

8.2 LOSS STATEMENT CONSULTATIONS  
(Begin Consultation)

1003(b)(3) Upon completion of the 1003(b)(2) studies, the appropriate fish and wildlife agencies, Tribes, BPA, and project operators for each project shall review the results and discuss the options available to provide wildlife protection, mitigation, and enhancement in accordance with the Northwest Power Act.  
[Abstract]

**ACTION ITEM ACTIVITY SUMMARY:**

Objectives:

To provide a review of Action Item 8.1 loss assessments and to assist in defining the scope and direction for the development of Action Item 8.3 wildlife protection, mitigation, and enhancement plans. No projects/contracts will be funded by BPA in implementing this Action Item.

Background and Progress to Date:

Consultations have been held on 19 of the 29 FCRPS facilities. Consultations are not anticipated for six facilities. Table 9 outlines the status of these consultations.

Plans:

Consultations will be held on four FCRPS facilities in FY 1990. These facilities include Bonneville Dam, The Dalles, John Day, and McNary.

TABLE 8  
STATUS OF ACTION ITEM 8.2 WILDLIFE CONSULTATIONS  
AT FCRPS FACILITIES

<u>Hydro Facility</u>	<u>Status</u>	<u>Outcome</u>
<u>Montana</u>		
Hungry Horse Libby	Held Held	Mitigation planning was begun before the Program required 8.2 consultations. See Action Item 8.3.
<u>Idaho</u>		
Palisades Anderson Ranch Black Canyon	Held - January 1985 Held - August 1986 Held - August 1986	Mitigation plan was funded. See Action Item 8.3.
Boise Diversion	Held - August 1986	Determined it was not effective to fund development of a mitigation plan.
Dworshak	Held - February 1988	Mitigation plan was funded.
Albeni Falls	Held - February 1988	Combined loss assessment and mitigation plan funded.
Mini doka	Held - February 1989	Mitigation plan proposed for funding.
<u>Washington</u>		
Grand Coulee	Held - April 1985	Mitigation plan was funded.
Chief Joseph	Held - February 1987	Combined loss assessment and mitigation plan funded.
Lower Snake (Ice Harbor, Lower Monumental, Little Goose, Lower Granite)	None Proposed	Mitigation planning being conducted by USACE.
Chandler	None Proposed	
Roza	None Proposed	

<u>Hydro Facility</u>	<u>Status</u>	<u>Outcome</u>
<u>Oregon</u>		
Willamette		Mitigation plan was funded.
Cougar	Held - May 1984	
Lookout Point	Held - May 1984	
Dexter	Held - May 1984	
Hills Creek	Held - May 1984	
Green Peter	Held - March 1985	
Foster	Held - March 1985	
Detroit	Held - March 1985	
Big Cliff	Held - March 1985	
<u>Oregon/Washington</u>		
Bonneville	Proposed for FY 1990	
The Dalles	Proposed for FY 1990	
John Day	Proposed for FY 1990	
McNary	Proposed for FY 1990	

8.3 MITIGATION PLANS  
(Fund Development)

1003(b)(3) Based upon these discussions [1003(b)(3) consultations], BPA shall fund the development of mitigation plans for each of these projects. [Abstract]

**ACTION ITEM ACTIVITY SUMMARY:**

Objectives:

To identify target wildlife species for protection, mitigation, and enhancement; to develop protection, mitigation, and enhancement goals; and to recommend actions to achieve these goals for Federal hydroelectric facilities.

Background and Progress to Date:

Action Item 8.3 pertains to the development of wildlife protection, mitigation, and enhancement plans. These plans are to take into account the wildlife impacts identified under Action Item 8.1, and are to complement existing wildlife management plans and goals. Information from Action Item 8.2 consultations is used to develop the scope of these plans. Wildlife protection, mitigation, and enhancement recommendations developed in these plans are submitted to the Council for their consideration for amendment into the Program.

Table 10 outlines the status of mitigation plans at FCRPS facilities. Mitigation plans have been completed for 15 of the 29 FCRPS facilities. Mitigation plans are not anticipated for seven FCRPS facilities (Roza, Chandler, Boise Diversion, and Lower Snake Facilities).

**Plans:**

Mitigation plans are proposed to be initiated for five facilities in FY 1990. Mitigation planning for two facilities is ongoing and will be completed in FY 1990.

TABLE 9  
STATUS OF ACTION ITEM 8.3 WILDLIFE MITIGATION PLANS  
AT FCRPS FACILITIES

<u>Hydro Facility</u>	<u>Outcome</u>
<u>Montana</u>	
Hungry Horse	Completed - January 1985
Libby	Completed - January 1985
<u>Idaho</u>	
Palisades	Completed - November 1986
Anderson Ranch	Completed - June 1987
Black Canyon	Completed - June 1987
Boise Diversion	None proposed
Dworshak	Initiated - September 1988
Minidoka	Proposed for FY 1990
Albeni Falls	Completed - August 1988
<u>Washington</u>	
Grand Coulee	Completed - August 1986
Chief Joseph	Initiated - September 1988
Ice Harbor	None Proposed - Conducted by USACE
Lower Monumental	None Proposed - Conducted by USACE
Little Goose	None Proposed - Conducted by USACE
Lower Granite	None Proposed - Conducted by USACE
Chandler	None proposed
Roza	None proposed
<u>Oregon</u>	
Cougar	
Lookout Point	
Dexter	
Hills Creek	All completed - April 1987
Green Peter	
Foster	
Detroit	
Big Cliff	
<u>Oregon/Washington</u>	
Bonneville	Proposed for FY 1990
The Dalles	Proposed for FY 1990
John Day	Proposed for FY 1990
McNary	Proposed for FY 1990

**I. COMPLETED PROJECTS**

None.

**II. FY 1989 ONGOING PROJECTS**

<b><u>PROJECT NUMBER</u></b>	<b><u>TITLE</u></b>	<b><u>PROJECT STATUS</u></b>	<b><u>SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND</u></b>
88-154	Wildlife Protection, Mitigation, and Enhancement Plan for Dworshak Dam – IOFG  <u>Project Officer:</u> R. Austin	<u>Date Initiated:</u> September 1988  <u>Results/Conclusions:</u> Not available at this time.	1. October 1989: Consultation Meeting.  2. November 1989: Final Report.
	<u>Objectives:</u> 1. Quantify net impacts on target wildlife species from hydroelectric development and operation. 2. Develop protection, mitigation, and enhancement goals. 3. Recommend protection, mitigation, and enhancement actions.		

**III. NEW PROJECTS**

<b><u>PROJECT NUMBER</u></b>	<b><u>TITLE</u></b>	<b><u>OBJECTIVES</u></b>	<b><u>SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND</u></b>
90-50 Formerly: 89-22	Mnidoka Dam Wildlife Mitigation Plan  <u>Project Officer:</u> R. Austin	1. Develop and prioritize specific protection, mitigation, and enhancement goals for wildlife affected by hydro-electric development and operation (e.g. Wildlife Mitigation Plan).  2. Recommend specific protection, mitigation, and enhancement actions.  3. Coordinate project activities with interested/affected parties.	October 1989: Begin development of and negotiations for the project. Project schedule will be developed as part of this activity.

**PROJECT  
NUMBER**

**TITLE**

**OBJECTIVES**

**SCHEDULE AND MILESTONES  
FOR FY 1990 AND BEYOND**

90-25

**Lower Columbia Wildlife  
Mitigation Plan**

Project Officer: J. Meyer

**Develop recommendations for the protection, mitigation, and enhancement of wildlife affected by hydroelectric development and operation of Bonneville, The Dalles, John Day, and McNary Dams. The scope of the project will depend upon results of project 88-12 (see Action Item 8.1) and the loss assessment consultation (see Action Item 8.2).**

**April 1990: Begin development of and negotiations for the project. Project schedule will be developed as part of this activity.**

- a.4 LIBBY DAM MITIGATION  
(Initiate Advance Design for White-Tailed Deer, Mule Deer, Columbia Sharp-Tailed Grouse, and Waterfowl Projects; Continue Implementation and Monitoring of Big Horn Sheep Project: 1987)
- 8.5 LIBBY DAM MITIGATION  
(Continue Advance Design for Deer, Waterfowl, Grouse Projects; Begin Implementation and Monitoring for Mule Deer Project; Continue Implementation and Monitoring of Bighorn Sheep Project: 1988)
- 8.6** LIBBY DAM MITIGATION  
(Begin Implementation and Monitoring for White-Tailed Deer and Waterfowl Projects; Begin Acquisition of Easements for Grouse; Continue Implementation and Monitoring of Mule Deer and Bighorn Sheep Projects: 1989)
- a.7 LIBBY DAM MITIGATION  
(Continue Implementation and Monitoring for White-Tailed Deer, Mule Deer, Bighorn Sheep, and Waterfowl Projects; Continue Acquisition of Easements for Grouse: 1990, 1991)

1003(b)(4) Upon Council review of the mitigation plans developed pursuant to Sections 1003(b)(3) or (5), the Council will amend appropriate portions of the mitigation plans into the Columbia River Basin Fish and Wildlife Program in accordance with Section 1400 of the Program. After mitigation plans are amended into the Program, BPA or the appropriate project operator shall fund implementation as specified in Table 4.

Table 4 calls for BPA to undertake projects to enhance winter range in Northwest Montana to support a target carrying capacity of an additional 1,340 white-tailed deer, 485 mule deer, and 66 bighorn sheep. Table 4 also calls for the protection of 2,462 acres of prairie habitat for Columbia sharp-tailed grouse, and 3,418 acres of wetland habitat in the Flathead Valley.  
[Abstract]

#### ACTION ITEM ACTIVITY SUMMARY:

##### Objectives:

To undertake advance design and then begin implementation of the wildlife mitigation projects for Libby Dam.

##### Background and Progress to Date:

Action Item 8.7 pertains' to the advance design and implementation of wildlife mitigation projects for Libby Dam.

In FY 1987, BPA began advance design for the wildlife habitat improvement and protection projects. In FY 1988, BPA continued advance design and began big game habitat improvement projects. Big Game habitat improvement projects were continued in FY 1989.

Plans:

BPA plans to complete the advance design for easements/acquisitions (habitat protection) projects in FY 1990. Advance design for white-tailed deer and sharp-tailed grouse habitat enhancement/protection will begin in FY 1990. Advance design for a 10-year habitat improvement program on Kootenai National Forest lands will be completed in FY 1990. Enhancement of key big game winter range (mule deer, and bighorn sheep) will also continue in FY 1990.

**I. COMPLETED PROJECTS**

None.

**II. FY 1989 ONGOING PROJECTS**

<b><u>PROJECT NUMBER</u></b>	<b><u>TITLE</u></b>	<b><u>PROJECT STATUS</u></b>	<b><u>SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND</u></b>
87-55	Northwest Montana Wildlife Habitat Enhancement - MDFWP  <u>Project Officer:</u> J. Meyer  <u>Objectives</u> This project undertakes advance design of the habitat enhancement actions for Libby and Hungry Horse Dams. 1. Develop a habitat enhancement plan for elk/mule deer on Flathead National Forest lands. 2. Develop a habitat enhancement plan for mule deer/bighorn sheep on Kootenai National Forest lands.	<u>Date Initiated:</u> September 1987  <u>Results/Conclusions:</u> Not available at this time.	1. April 1990: Draft 10-year enhancement plans 2. June 1990: Final 10-year enhancement plans.
84-38	Ural-Tweed Bighorn Sheep Enhancement - USFS  <u>Projects Officer:</u> J. Meyer  <u>Objectives:</u> Enhance approximately 1,300 acres of sheep range on Kootenai National Forest lands.	<u>Date initiated:</u> September 1984  <u>Results/Conclusions:</u> Final results/conclusions are not available at this time. Preliminary information is available in annual reports: publication numbers DOE/BP 18966-1 and DDE/BP 18966-2.	1. October 1989: Draft completion report. 2. December 1989: Final completion report.

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND</u>
84-39	Ural-Tweed Bighorn Sheep Mitigation - MDFWP  <u>Project Officer:</u> J. Meyer  <u>Objectives:</u> 1. Evaluate the effectiveness of the habitat improvements done under Project 84-38. 2. Outline a program to maintain a viable bighorn sheep population.	<u>Date initiated:</u> September 1984  <u>Results/Conclusions:</u> Final results/conclusions are not available at this time. Preliminary information can be found in annual reports: publication numbers DOE/BP 18966-1 and DOE/BP 18966-2.	1. October 1989: Draft report.  2. December 1989: Final report.
88-43	Libby Wildlife Habitat Enhancement - USFS  <u>Project Officer:</u> J. Meyer  <u>Objectives:</u> Initiate habitat improvement activities on Kootenai National Forest lands for mule deer, and big horn sheep. Treat approximately 1000 acres of key winter range by slashing and prescribed burning.	Not available at this time.	1. October 1988: Begin treatment activities.  2. December 1990: Treatments completed.

### III. NEW PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>OBJECTIVES</u>	<u>SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND</u>
90-49 Formerly 89-21	Libby Dam Wildlife Project  <u>Project Officer:</u> J. Meyer	1. Undertake advanced design activities for white-tailed deer and Columbian sharp-tailed grouse. 2. Gather baseline data on populations and habitat use. 3. Recommend alternative actions for the enhancement and/or protection of white-tailed deer and sharp-tailed grouse.	November 1989: Begin development of project activities and schedule.

- 8.8 HUNGRY HORSE DAM MITIGATION  
(Initiate Advance Design/Begin to Implement Elk/Mule Deer Project; Begin Advanced Design, Interagency Coordination, Site Prioritization, and Appraisals for Black Bear/Grizzly Bear, Waterfowl, Terrestrial Furbearer Projects: 1987.)
- 8.9 HUNGRY HORSE DAM MITIGATION  
(Continue Advance Design Waterfowl, Terrestrial Furbearer, Black Bear/Grizzly Bear Projects; Continue Implementation/Monitoring of Elk/Mule Deer Project: 1988.)
- 8.10 HUNGRY HORSE DAM MITIGATION  
(Begin/Continue Implementation of Waterfowl, Elk/Mule Deer, Black Bear/Grizzly Bear Projects: 1989-1991.)

1003(b)(4) Upon Council review of the mitigation plans developed pursuant to Sections 1003(b)(3) or (5), the Council will amend appropriate portions of the mitigation plans into the Columbia River Basin Fish and Wildlife Program in accordance with Section 1400 of the program. After mitigation plans are amended into the program, BPA or the appropriate project operator shall fund implementation as specified in Table 4. [1004(b)(4)]

Table 4 calls for BPA to undertake projects to enhance winter range in Northwest Montana to support a target carrying capacity of additional 133 elk. Table 4 also calls for the protection of 8,590 acres of riparian habitat for grizzly bears and 1,146 acres of wetland habitat, along with determining the feasibility of protecting 11,050 acres of old-growth timber for terrestrial furbearers. [Abstract]

**ACTION ITEM ACTIVITY SUMMARY:**

Objectives:

To undertake advance design and then begin implementation of the wildlife mitigation projects at Hungry Horse Dam.

Background and Progress to Date:

Action Items 8.8-8.10 pertain to the advance design and implementation of wildlife mitigation for Hungry Horse Dam.

In FY 1987, BPA initiated advance design for the wildlife habitat improvement and protection projects. In FY 1988, BPA continued advance design and began habitat improvement and protection projects. In FY 1989, habitat improvement and protection projects were continued.

Plans:

BPA plans to complete the advance design for easement/acquisitions (habitat protection) projects in FY 1990. Advance design for a 10-year habitat improvement program on Flathead National Forest lands will be continued in FY 1990. Enhancement of key big game winter range (elk) will also continue in FY 1990, along with a project to acquire and develop waterfowl habitat in the Flathead Valley.

**1. COMPLETED PROJECTS**

<b><u>PROJECT NUMBER</u></b>	<b><u>TITLE</u></b>	<b><u>DATE COMPLETED</u></b>	<b><u>RESULTS/CONCLUSIONS</u></b>
88-147	<b>Montana Conservation Easement - USFS</b>  <b><u>Project Officer:</u> J. Meyer</b>  <b><u>Objectives:</u></b> Acquire deeds of conservation easement on approximately 500 acres of key wildlife habitat on the North Fork of the Flathead River.	June 1989	A joint conservation easement was acquired with the Flathead National Forest on approximately 500 acres of grizzly bear and big game habitat on the North Fork of the Flathead River. Also, a management/oversight plan for monitoring the easement area was developed.

**II. FY 1989 ONGOING PROJECTS**

<b><u>PROJECT NUMBER</u></b>	<b><u>TITLE</u></b>	<b><u>PROJECT STATUS</u></b>	<b><u>SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND</u></b>
87-60	<b>Montana Wildlife Easements/Land Acquisitions - MDFWP</b>  <b><u>Project Officer:</u> J. Meyer</b>  <b><u>Objectives:</u></b> This project undertakes advance design for the Libby and Hungry Horse wildlife habitat protection actions. 1. Develop habitat protection plans for the bear, waterfowl, and grouse projects. 2. Develop a feasibility plan for protection of terrestrial furbearer habitat.	Date initiated: September 1987  <b><u>Results/Conclusions:</u></b> Not available at this time.	1. October 1989: Draft report.  2. December 1989: Final report.

**PROJECT  
NUMBER**

**TITLE**

**PROJECT STATUS**

**SCHEDULE AND MILESTONES  
FOR FY 1990 AND BEYOND**

88-1 13

**Hungry Horse Wildlife  
Habitat/Enhancement - USFS**

**Project Officer: J. Meyer**

**Objectives: Begin habitat  
improvement activities on  
Flathead National forest lands  
for elk and mule deer. Treat  
approximately 500 acres of key  
winter range by slashing and  
prescribed burning.**

**Date Initiated: September 1988**

**Results/Conclusions: Treatment  
activities began in October 1988.**

**December 1990: Treatments to be completed.**

89-23

**Montana Wildlife Habitat  
Protection - MDFWP**

**Objectives:**

- 1. Obtain information to  
evaluate and undertake specific  
habitat protections.**
- 2. Provide coordination for  
project actions.**
- 3. Develop management/monitor-  
ing recommendations.**
- 4. Acquire specific habitats  
(To be done by BPA,**

**Date Initiated: September 1989**

**Results/Conclusions: Not available at  
this time.**

**1. October ,989: Information needed to  
evaluate and undertake habitat protection or  
enhancement actions.**

**2. June 1990: Management/Monitoring  
recommendations.**

**3. June 1990: final Report**

**4. October 1989 - June 1990: Acquisition of  
habitats.**

**III. NEW PROJECTS**

**None.**

8.11 INNOVATIVE FUNDING OF HUNGRY HORSE/LIBBY MITIGATION  
(Seek Out Methods, Report to Council by May 1987)

1003(b)(4) Upon Council review of the mitigation plans developed pursuant to Section 1003(b)(3) or (5), the Council will amend appropriate portions of the mitigation plans into the Columbia River Basin Fish and Wildlife Program in accordance with Section 1400 of the Program. After mitigation plans are amended into the Program, BPA or the appropriate project operator shall fund implementation as specified in Table 4.

Table 4 calls for BPA to consult with the Montana Department of Fish, Wildlife, and Parks (MDFWP), the USACE, the USBR, and EPA customers to explore alternative methods, including a trust fund, for financing wildlife mitigation measures at Hungry Horse and Libby dams. [Abstract]

**ACTION ITEM ACTIVITY SUMMARY:**

Objectives:

To negotiate and implement a trust fund as an alternative (cost-effective) method for funding wildlife mitigation for Libby and Hungry Horse dams.

Background and Progress to Date:

BPA and the State of Montana signed a mitigation agreement in December 1988. The agreement establishes a Trust Fund to finance wildlife mitigation for Libby and Hungry Horse Dams.

Plans:

BPA plans to make it's initial payment into the Trust account late in FY 1989 or early FY 1990.

I. COMPLETED PROJECTS

None

II. FY 1989 ONGOING PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT STATUS</u>	<u>SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND</u>
89-52	Montana Wildlife Trust  <u>Project Officer:</u> J. Meyer  <u>Objectives:</u> 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.	<u>Date Initiated:</u> December 1988  <u>Results/Conclusions:</u> Not available at this time.	1. September 1989 - December 1989: Initial payment to Trust Account.  2. Subsequent payments to be made on an annual basis.

III. NEW PROJECTS

None

# WILDLIFE MITIGATION

----- WILDLIFE MITIGATION  
(Oregon, Washington, Idaho)

1003(b)(4) Upon Council review of the mitigation plans developed pursuant to Sections 1003(b)(3) or (5), the Council will amend appropriate portions of the mitigation plans into the Columbia River Basin Fish and Wildlife Program in accordance with Section 1400 of the program. After mitigation plans are amended into the program, BPA or the appropriate project operator shall fund implementation as specified in Table 4.

## ACTION ITEM ACTIVITY SUMMARY:

### Objectives:

To begin advanced design and implementation of wildlife mitigation projects for Federal hydroelectric facilities in the states of Oregon, Washington, and Idaho.

### Background and Progress to Date:

No wildlife mitigation has been implemented in the states of Oregon, Washington, or Idaho. Efforts to date have been directed towards mitigation planning (Action Items 8.1 and 8.3).

The Council is currently considering the adoption of wildlife mitigation actions for Grand Coulee Dam in Washington; for Palisades, Black Canyon, and Anderson Ranch Dams in Idaho; and for the Willamette facilities in Oregon.

### Plans:

BPA will begin wildlife mitigation projects for Federal hydroelectric facilities in Oregon, Washington, and Idaho once the Council amends actions into the Program. Initiation in FY 1990 will depend upon Council action.

**I. COMPLETED PROJECTS**

None.

**II. FY , 989 ONGOING PROJECTS**

None.

**III. NEW PROJECTS**

<b><u>PROJECT NUMBER</u></b>	<b><u>TITLE</u></b>	<b><u>OBJECTIVES</u></b>	<b><u>SCHEDULE AND MILESTONES FDA FY 1990 AND BEYOND</u></b>
90-13	Wildlife Mitigation (Oregon, Washington, Idaho)  <u>Project Officer:</u> J. Meyer	Begin advanced design and implementation of wildlife mitigation projects amended into the program for Federal hydroelectric facilities in Oregon, Washington, and Idaho.	1. Initiation in FY 1990 depends upon Council amending Actions into the Program  2. Initiation is also dependant upon scopes of work being developed and coordinated for Actions amended into the Program

FUTURE HYDROELECTRIC DEVELOPMENT  
ACTION ITEMS AND TECHNICAL SUBJECTS

9.1 APPLICATION OF PROGRAM SECTIONS 1204(a), (b), (c), AND (e) TO NEW PROJECTS

1103 (a-c, e) These measures direct BPA and the hydroelectric project operators and regulators not to license, exempt from license, relicense, propose, recommend, agree to acquire power from, grant billing credits for, or otherwise support any hydroelectric development in the Columbia River Basin without providing for numerous development conditions related to protection of fish and wildlife resources. [Abstract]

**ACTION ITEM ACTIVITY SUMMARY:**

Objectives:

To apply Program Section 1103(a-c, e) to all new hydro projects.

Background and Progress to Date:

BPA is applying these Program sections to the BPA Hydro Options Program.

Plans:

BPA will continue to apply these program sections to the BPA Hydro Options Program and any future hydro development.

Projects:

No BPA-funded projects.

9.3 ASSESSMENT OF CUMULATIVE EFFECTS  
(Complete Study; Develop Methods: June 1987)

1103(b)(2) Develop methods for assessing the cumulative effects of hydroelectric development upon fish and wildlife in the Columbia River Basin.

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To review all pertinent literature on potential cumulative hydroelectric effects, for specific key fish and wildlife species: to analyze existing techniques for assessment of identified cumulative effects: to develop an array of recommended pertinent assessment techniques for a cumulative effects method; and to develop a hypothetical example of a cumulative assessment using the method.

Background and Progress to Date:

Development of a cumulative effects method supported the Council's desire to have all applications or proposals for hydroelectric development reviewed in a consolidated manner. Project 84-41 (completed in 1987) developed a methodology to assess potential cumulative effects.

Plans:

BPA has no plans for further funding

Projects:

No BPA-funded projects.

# PROTECTED AREAS

----- PROTECTED AREAS  
(Former Action Item 35.5)

1103(c)(1) Conduct a study of alternative means for classifying and designating certain streams and wildlife habitat, which should be protected from all future hydroelectric development. The study shall draw from existing information on the hydroelectric potential of such streams, as well as the value of the fish and wildlife resources.

## TECHNICAL SUBJECT ACTIVITY SUMMARY:

### Objectives:

To assess and document the significance of the region's river resources, such as resident fish, wildlife, natural features, cultural features, recreation, and institutional constraints. Findings will form a resource information base for use in Council, BPA, and state hydropower planning.

### Background and Progress to Date:

Recent interest in hydropower energy has intensified public awareness of the potential conflict between hydroelectric development and other river values. This Action Item was to develop a method to evaluate rivers objectively and to establish areas for fish and wildlife protected from hydroelectric development. The Council will designate stream reaches to be protected. The designations will be based on the results of this study and other requirements of the Northwest Power Act. The River Study will also help BPA to forecast power needs reliably and to acquire cost-effective hydropower.

In order to ensure that all relevant river values were considered, BPA assisted the states, Tribes, Federal resource and land management agencies, energy development interests, and interested public to identify significant river values throughout the region. Additional Council studies complemented the Rivers Study, by compiling information in the areas of Native American cultural sites and anadromous fish.

As indicated by the inclusion of protected areas in BPA's Long Term Intertie Access Policy, BPA will continue to support database maintenance.

### Plans:

Action Item has been completed.

### Projects:

No BPA-funded projects.

9.4 TURBINE INTAKE SCREENS  
(Develop New Designs, Complete Tests, Report to Council: January 1989)

1103(d) Bonneville shall fund studies to determine the effectiveness of new designs for turbine intake screens and their suitability for application at small hydroelectric projects.

ACTION ITEM ACTIVITY SUMMARY:

Objectives:

To develop a new standard fish screen which is biologically efficient and cost-effective for hydro developers.

Background and Progress to Date:

Installation and maintenance of currently available screening systems are expensive and must be tailored to the site. Most present screen systems have not been tested sufficiently to be characterized as proven. Existing designs and new designs must be evaluated to determine which designs are biologically and economically efficient. The suitability of screen designs for application at small hydroelectric facilities must also be determined. The intent is to provide acceptable fish screen designs with general applicability for regional hydropower developers.

Plans:

Presently deferred, since BPA's adoption of Protected Areas in its Long-Term Intertie Access Policy provides protection for fish investments through denying access to the Pacific Northwest-Pacific Southwest Intertie to any new hydroelectric projects located in designated Protected Areas of the Columbia River Basin.

Projects

No BPA-funded projects.

WORK AND EXPENDITURE PLAN  
ACTION ITEMS

10.1- EXPENDITURE AND OBLIGATION PLANS  
 10.3 (Submit to Council by September 15 of Each Year. Update and Submit Information Quarterly. Submit Review of Previous Year. Report Expenditures by Measure.)

1203(a,c,d) These measures describe Program implementation by Federal project operators and regulators and BPA, consultation and coordination, and BPA funding of the Program. [Abstract]

**ACTION ITEM ACTIVITY SUMMARY:**

Objectives:

The Annual Implementation Work Plan (AIWP) for FY 1990 describes BPA plans for implementation of the Council's Program and, in particular, the Action Plan. The AIWP is intended to contain:

1. A report on progress to date on each Action Item.
2. A description of the activities to be undertaken under each Action Item, including:
  - a. the objective of each activity, and
  - b. the schedule for each activity, including key decision points and major milestones.

Background and Progress to Date:

Annually since FY 1986, BPA has completed a Program Work Plan and submitted this plan to the Council.

In 1987, BPA began developing a Program Implementation Planning Process (IPP) that would provide an opportunity for the agencies, Tribes, and other interested parties to become more involved in planning the implementation of the Program. Development of this process was completed in 1988, and the IPP (see Section III) was endorsed by the BPA Administrator and the Chairman of the CBFWA on October 19, 1988. The IPP's Policy Review Group (PRG) was formed in late 1988. In January 1989, the PRG began providing BPA with policy and funding recommendations related to Program implementation. The FY 1990 AIWP follows the outline developed by the PRG during Step 1 of the initial IPP annual cycle.

Plans:

The AIWP will continue to be developed through the IPP.

PROGRAM-RELATED, NON-MEASURE PROJECTS

# PROGRAM-RELATED PROJECTS

----- PROGRAM-RELATED PROJECTS

MEASURE LANGUAGE:

Not applicable. These are non-measure projects.

TECHNICAL SUBJECT ACTIVITY SUMMARY:

See individual projects in the following table.

**I. COMPLETED PROJECTS**

<b><u>PROJECT NUMBER</u></b>	<b><u>TITLE</u></b>	<b><u>DATE COMPLETED</u></b>	<b><u>RESULTS/CONCLUSIONS</u></b>
79-2	<p>An Evaluation of the Contribution of Chinook Salmon Reared at Columbia River Hatcheries to the Pacific Salmon Fisheries - NMFS</p> <p><u>Objectives:</u> Determine the distribution, contribution, and value of artificially reared chinook salmon to the Pacific salmon fisheries.</p>	1989	<p>The project documented variation in the contribution of fall chinook salmon from hatcheries throughout the Columbia Basin. Same hatcheries are contributing less than 0.01% total recoveries, i.e. less than 1 fish/10,000 releases. Final Report delayed until December 1989 due to incomplete 1987 and 1988 returns from Alaska and California.</p>
81-1	<p>Flow and Spill Requirements for Juvenile Fall and Summer Chinook Salmon in John Day Reservoir - NMFS</p> <p><u>Objectives:</u> Develop instream summer flow recommendations for subyearling summer migrating chinook.</p>	October 1988	<p>Subyearling chinook do not migrate as actively as yearling chinook and do not respond to flow augmentation up to 380 kcfs in the John Day reservoir.</p>

**II. FY 1989 ONGOING PROJECTS**

<b>PROJECT NUMBER</b>	<b>TITLE</b>	<b>PROJECT STATUS</b>	<b>SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND</b>
82-13	<p><b>Coded Wire Tag/Sampling Program Recovery - PMFC</b></p> <p><b><u>Project Officer:</u></b> W. Maslen</p> <p><b><u>Objectives:</u></b> Support WDF, WDW and ODFW fishery recoveries of coded-wire tagged salmon and steelhead.</p>	<p><b><u>Date initiated:</u></b> 1982</p> <p><b><u>Results/Conclusions:</u></b> Commercial and sport fishery recoveries of coded-wire tagged salmon and steelhead were de-coded, compiled, and reported.</p>	<p><b>Continuing:</b> BPA will continue to fund coded-wire tag recoveries.</p>
82-16	<p><b>Yakima River Spring Chinook Enhancement Study - YIN</b></p> <p><b><u>Project Officer:</u></b> T. Vogel</p> <p><b><u>Objectives:</u></b> Establish methods to rebuild spring chinook salmon runs in the Yakima River while maintaining the genetic components of the naturally reproducing stocks.</p>	<p><b><u>Date Initiated:</u></b> FY 1982</p> <p><b><u>Results/Conclusions:</u></b> Information has been collected on survival and emergence from redds, survival from fry to smolt, and downstream movement of fry. Project annual reports are available.</p>	<p><b>1. Continuing:</b> BPA has funded the project to completion.</p> <p><b>2. March 1991:</b> Project is scheduled for completion: final report will be available.</p>

**PROJECT  
NUMBER**

**TITLE**

**PROJECT STATUS**

**SCHEDULE AND MILESTONES  
FOR FY 1990 AND BEYOND**

83-6

**Operation and Maintenance of  
BPA Fish Marking Trailer - USFWS**

**Project Officer: W Maslen**

**Objectives: Using mobile fish  
marking trailers, conduct  
marking (coded-wire tags, freeze  
brand, and PIT tags) of juvenile  
salmonids throughout the region  
for EPA-funded projects, in-  
cluding the Columbia River Basin  
Smolt Monitoring Program**

**Date initiated: 1983**

**Results/Conclusions: A total of ap-  
proximately 1.5 million fish were marked  
in 1989.**

**Continuing: BPA will continue to fund marking  
of various fish groups for BPA-funded projects.**

87-130

**An Assessment of the Freeze  
Brand Recovery Data for Yearling  
Chinook Salmon at McNary Dam -  
NMFS**

**Project Officer: D. Johnson**

**Objectives: Determine whether  
PIT-tagged and freeze-branded  
yearling chinook and steelhead  
are recovered at different rates  
and identify the sources of  
sampling error.**

**Date initiated: 1987**

**Results/Conclusions: Field data have  
been collected and are being analyzed.**

**1. Continuing: BPA has funded the project  
through to completion.**

**2. Continuing: Contractor will continue to analyze  
the recapture data and complete the final report  
by the end of 1988.**

**III. NEW PROJECTS**

**None.**

## VII, NON-PROGRAM, INTERNAL SUPPORT PROJECTS

This section of the AIWP lists and describes BPA Division of Fish and Wildlife internal support projects. These projects do not implement measures in the Program and were not subject to PRG review as part of the IPP. The projects are included in the AIWP to help the PRG and the public to better understand what BPA is doing.

**I. COMPLETED PROJECTS**

None.

**II. FY 1989 ONGOING PROJECTS**

<b><u>PROJECT NUMBER</u></b>	<b><u>TITLE</u></b>	<b><u>PROJECT STATUS</u></b>	<b><u>SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND</u></b>
85-87-01	<p>Anadromous Fish Mitigation Analysis Assistance - RFF</p> <p><b><u>Project Officer:</u></b> S. Detering</p> <p><b><u>Objectives:</u></b> To provide for technical participation in Council effort to develop Common Analytical Methods and to assist in developing in-house capability for fish modeling with workshops focused on cost-effectiveness (C-E) of mitigation alternatives.</p>	<p><b><u>Date initiated:</u></b> April 1987</p> <p><b><u>Results/Conclusions:</u></b> C-E analysis technical participation in review of Subbasin Plans has provided a format that the Council has decided to use in review of all Subbasin Plans. BPA Fish-Power Modeling Workshops have developed the nucleus for a modeling team within BPA.</p>	<p><b>FY 1990: Complete C-E Analysis Assistance pending initiation of new contract (Project 88-125) and conduct one more Fish-Power Modeling Workshop.</b></p>
86-118	<p>Fish and Wildlife Task Order Agreement - BPNL</p> <p><b><u>Project Officer:</u></b> R. Austin</p> <p><b><u>Objectives:</u></b> To supplement the limited staff and time resources of BPA's Division of Fish and Wildlife with the services of a professional contractor (BPNL), who can provide technical assistance on a wide variety of tasks.</p>	<p><b><u>Date initiated:</u></b> June 1986</p> <p><b><u>Results/Conclusions:</u></b> Numerous task orders have been completed under this master task order agreement, including development of production and cost records, review of the Yakima Hatchery Master Plan, and smolt survival and predator/prey workshops. If the task order implements a Program project, the task order is listed in the AIVP under the appropriate Action Item</p>	<p><b>FY 1990: Continue funding master task order agreement. Initiate individual technical assistance tasks orders as required by BPA staff.</b></p>

**PROJECT  
NUMBER**

**TITLE**

**PROJECT STATUS**

**SCHEDULE AND MILESTONES  
FOR FY 1990 AND BEYOND**

87-307

**Technical Work Group (TWG)  
Coordination - PSMFC**

**Project Officer: J. Gislason**

**Objectives:**

1. Coordinate Council Area of Research Emphasis TWG activities within the TWG's and among the TWG's, as required by the Implementation Planning Process (IPP).
2. Coordinate TWG planning activities with other activities such as MEG and System and Subbasin Planning, as required by the IPP.

**Date Initiated: July, 1987**

**Results/Conclusions: BPA has funded a TWG Coordinator position with the CBFWA through a contract with the PSMFC.**

**FY 1990: BPA will continue to fund the TWG Coordinator position as long as the CBFWA continues to participate in the Council's TWG's.**

87-413

**Fish and Wildlife Task Order  
Agreement, Fisheries Technical  
Assistance - UW**

**Project Officer: D. Johnson**

**Objectives: 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.**

**Date Initiated: September 1987**

**Results/Conclusions: 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.**

**FY 1990: Continue funding master task order agreement. Initiate individual technical assistance task orders as required by BPA staff.**

**PROJECT  
NUMBER**

**TITLE**

**PROJECT STATUS**

**SCHEDULE AND MILESTONES  
FOR FY 1990 AND BEYOND**

87-413-5

**Columbia River Salmon  
Passage Model - UW**

**Project Officer:** O. Johnson

**Objectives:**

1. Replace FISHPASS model.
2. Develop graphical input and output features.
3. Develop Monte Carlo and multi-year analytical capabilities.
4. Integrate database system
5. Develop and calibrate mechanistic submodels.
6. Develop model documentation.
7. Perform model analysis
8. Test statistical models
9. Develop life stage components.
10. Interface cost-effectiveness algorithms.
11. Develop expert system
12. Coordinate with other entities.

**Date Initiated:** 1988

**Results/Conclusions:** Work completed to date: (1) a basic description of the model algorithms; (2) a description of the preliminary sensitivity analysis and model calibration.

1. **Continuing:** The contractor will provide reports regarding all objectives.
2. **Early 1990:** Complete objectives 1, 2, and 3.
3. **Late 1990:** Complete objectives 4, 5, and 6.
4. **1992:** Complete remaining tasks.

89-47

**Technical Assistance  
- Consultant**

**Project Officer:** D. Johnson

**Objectives:**

1. Provide recommendations on fish passage related research and monitoring;
2. Assist in development of research designs.

**Date Initiated:** 1989

**Results/Conclusions:** Various technical recommendations on Water Budget Effectiveness and Reservoir Mortality have been made to BPA.

**Continuing:** Schedule and milestones vary with timing of issues and receipt of proposals.

PROJECT NUMBER	TITLE	PROJECT STATUS	SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND
89-62	<p><b>Implementation Planning Process (IPP) Coordination - PSMFC</b></p> <p><b>Project Officer: J. Gislason</b></p> <p><b>Objectives:</b></p> <ol style="list-style-type: none"> <li>1. Facilitate communication among BPA, CBFWA, Policy Review Group (PRG), Scientific Review Group (SRG), and IPP Technical Working Groups (TWG's).</li> <li>2. Ensure the timely delivery of all PRG, SRG, and TWG work products required by the IPP.</li> <li>3. Administer financial support (time and travel expense reimbursement) of non-Federal SRG scientists.</li> </ol>	<p><b>Date Initiated: May 1989</b></p> <p><b>Results/Conclusions: BPA has funded an IPP Coordinator position with the CBFWA through a contract with the PSMFC. Through this contract, BPA also reimburses most of the SRG members or their employers for the time that the members spend on SRG activities.</b></p>	<p><b>FY 1990: BPA plans to continue funding the IPP Coordination contract.</b></p>
89-72-1	<p><b>Scientific Review Group (SRG) Support - DOE</b></p> <p><b>Project Officer: J. Gislason</b></p> <p><b>Objectives: To provide financial support (time and travel expense reimbursement) for SRG scientist employed by DOE.</b></p>	<p><b>Date Initiated: September 1989</b></p> <p><b>Results/Conclusions: BPA provides financial support for one SRG member through this contract.</b></p>	<p><b>FY 1990: BPA plans to continue funding this contract.</b></p>

III. NEW PROJECTS

<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>OBJECTIVES</u>	<u>SCHEDULE AND MILESTONES FOR FY 1990 AND BEYOND</u>
88-125	<b>Develop Anadromous Fish Decision Support System - RFF</b>  <u>Project Officer:</u> S. Detering	<ol style="list-style-type: none"><li>1. Assist SPG to complete cost-effectiveness (C-E) analysis of alternatives in all Subbasin Plans.</li><li>2. Compare existing and proposed fish passage alternatives with propagation alternatives of Subbasin Plans.</li><li>3. Prepare simplified System Analysis Model for use in C-E analysis of passage alternatives.</li><li>4. Identify direct and opportunity cost of changes in water diversions.</li><li>5. Long Term Complete model components needed for C-E analysis of mitigation issues, including training and assistance needed for use of models by analysts in region.</li></ol>	<p><b>FY 1990: Assist Council in completing C-E analysis of all Subbasin Plans. Prepare multi-stock C-E models.</b></p> <p><b>FY 1991-92: Prepare C-E comparison of all passage and propagation alternatives consistent with BPA passage evaluations. In coordination with the Analytical Methods Work Group, UW's Center for Quantitative Science, and OSU, complete mitigation decision support system models and user guides, and provide user support.</b></p>

(VS6-PJSP-3633W)

# VIII, APPENDIX

LETTERS OF COMMENT ON THE  
DRAFT ANNUAL IMPLEMENTATION WORK PLAN  
FOR FY 1990  
AND BPA RESPONSES TO ISSUES RAISED



Letter Number 1

October 9, 1989

(ISSUES)

Mr. John Palensky  
Bonneville Power Administration  
Division of Fish and Wildlife  
PO Box 3621  
Portland, OR 97208-3621

Dear John,

We have reviewed the 1990 Draft Annual Implementation Work Plan, and provide these comments at your request.

As you may recall, discussions with your staff led to a decision not to press forward in 1989 for a Fish Performance Laboratory proposed jointly by Orean State University and the Oregon Department of Fish and Wildlife. The decision was predicated primarily by the need to have the proposal go through the IPP process. However, it was our impression that there was agreement that the project, or at least the first design stage would be incorporated in the Work Plan to assure it could be funded if and when the decision was made via IPP that it is a viable project. We are unable to find tine project in the Work Plan, and ask that it be included in tine final document. (1)

A second item missing from the work plan involves a study on summer migrants. The Reservoir Mortality TWG agreed that this study and the one proposed by Skalski, Mundy and McConnaha would both be included in the work plan as place savers even though neither had yet been agreed upon by the group. The latter proposal was included in the work plan, but the summer migrant study was not. In keeping with the TWG agreement, this study should also be listed as a place saver. It should be noted that neither study has been agreed upon by the TWG. (2)

Vie are also concerned about the BPA proposal to establish a new model, CRISP, to replace the existing FISHPASS model. Bonneville has requested comments on the proposal, which have been submitted. However, we do not find the proposal in the DAIWP. Does Bonneville not intend to use tine IOP to collect input and recommendation for advancement of this proposai? (3)

Lastly, with the fiscal changes recently described to the Policy (4)  
Review Group, and their anticipated suggested changes in the  
activities sponsored in the Work Plan, it is likely the new budget  
will have some impact on the projects advanced in 1990. We would  
suggest that when these changes have been finalized, the work plan  
be officially amended to assure the document can be utilized in the  
future for evaluation and reference.

Sincerely,

*Larry Korn / for*  
Jack Donaldson

cc: Executive Staff  
FPAC

BPA Responses to Issues Raised by the  
Columbia Basin Fish and Wildlife Authority  
in Letter No. 1

Letter No. 1, Issue No. 1

At the October 31, 1989, Policy Review Group (PRG) meeting, the PRG recommended that the Fish Performance Laboratory project not be included in the FY 90 AIWP and that it should be referred to the appropriate Technical Work Group for review. BPA agreed with this recommendation. The Fish Performance Laboratory project has been placed in a "contingency file" for possible FY 90 funding if unspent funds become available by the mid-point of FY 90 and implementation is approved by the PRG.

Letter No. 1, Issue No. 2

At the October 31, 1989, PRG meeting, the PRG recommended that Summer Migrant project not be included in the FY 90 AIWP and that the project should be referred to the Mainstem Executive Committee for review. BPA agreed with this recommendation. The Summer Migrant project has been placed in a "contingency file" for possible FY 90 funding if unspent funds become available by the mid-point of FY 90 and implementation is approved by the PRG.

Letter No. 1, Issue No. 3

BPA has included descriptions of all its non-Program, internal support projects, including the Columbia River Salmon Passage (CRSP) Model project, in Section VII of the FY 90 AIWP. These projects are described in order to help the PRG members and other interested parties to better understand what BPA is doing.

Letter No. 1, Issue No. 4

BPA has revised the FY 90 AIWP to reflect impacts of the FY 90-91 Fish and Wildlife Program budget reduction on project schedules and milestones. Only three projects required revisions as a result of the budget reduction: Project 83-350, Nez Perce Low-Capital Production Facility; Project 84-33, Umatilla Hatchery; and Project 88-62, Galbraith Springs and Sherman Creek Kokanee Hatcheries.

Northwest Power Planning Council  
 Comments on the Draft Fish and Wildlife Program  
 Annual Implementation Work Plan for FY 1990

(ISSUES)

1. Page 24, IV. System Planning Activities - rewrite this section of the work plan as follows. (1)

Responsibilities: The Council funds the fish and wildlife agencies and tribes activities to develop an integrated system plan, including 31 separate subbasin plans. The fish and wildlife agencies and tribes have organized committees at the system and subbasin levels for completing this task. The system level committee, the System Planning Group, has been responsible for developing the format for the plans, guiding the subbasin planners, reviewing draft plans and will develop the integrated system plan. The subbasin level committees have been responsible for collecting information and developing drafts of specific subbasin plans. The Council has organized another committee at the system level, the System Planning Oversight Committee, that has identified and is addressing major issues that have been and will be part of the system planning process.

Progress: System planning is scheduled for completion by June 30, 1990. The Council contract with the fish and wildlife agencies and tribes through the Pacific Marine Fisheries Commission calls for nine products over the life of the planning process. Planning began in September 1987, and several products have been completed to date. These products include the preliminary information report that contains information needed to evaluate the production potential of the subbasins and thereby identify realistic objectives for production, draft subbasin plans above Bonneville Dam that include proposed objectives for production, the preliminary system analysis report above Bonneville Dam that analyzes the proposed objectives for consistency, and final subbasin plans above Bonneville Dam that include recommended and alternative strategies for meeting the proposed objectives. Products completed below Bonneville Dam include the preliminary information report and draft subbasin plans. Drafting of sections of the integrated system plan also have begun.

Plans: The integrated system plan that will be completed by June 30, 1990 will recommend objectives for salmon and steelhead production in the 31 subbasins of the Columbia River Basin. It also will include recommended strategies for meeting those objectives. This plan, including the 31 subbasin plans, will be considered for amendment into the program in a process that will extend into fall of 1991. The results of that amendment process should provide guidance for funding activities in Bonneville Power Administration's fish and wildlife program in the 1990s. BP.4 is participating in the system planning process to assist in the definition of strategies for meeting salmon and steelhead production objectives and to help make the link between the planning process and implementation scheduling in fiscal years beyond 1990. BPA participation in the SPG and the SPOC will continue on a regular monthly basis through the end of the planning process.

2. Page 87, Northeastern, Oregon Spring Chinook Outplanting Facility - (2)  
Under "Action Item Activities Summary," the background and progress to date states that the fish and wildlife agencies and tribes expect this facility to provide for outplanting of about 2.3-3.0 million spring chinook juveniles. The following page notes under "Objectives" that the production facilities are being designed to raise chinook and steelhead. It goes on to state that the fish and wildlife agencies and tribes expect these facilities to provide for outplanting 2.3-3.0 million juveniles. In the first instance, it should be clarified that spring chinook is not the only species being considered for production at this facility. It is also important to note that the 2.3-3.0 million juveniles is only a guideline for sizing the facility, and the exact size has not been determined to date.

3. Page 110, Known Stock Fisheries 5-Year Demonstration Program - The (3)  
program language states that the emphasis of this electrophoresis testing will be to profile ocean mixed stock fisheries. BPA states the objective for this action item as ~~is~~ known stock demonstration projects to protect wild steelhead. Steelhead are not known to be captured to any degree in mixed stock ocean fisheries. This objective does not seem to fit with the program language for this measure.

BPA Responses to Issues Raised by the  
Northwest Power Planning Council  
in Letter No. 2

Letter No. 2, Issue No. 1

The text has been revised to accomodate the comments. See Action Item 6.10.

Letter No. 2, Issue No. 2

The text has been revised to accomodate the comments. See Action Item 4.16.1-4.16.2.

Letter No. 2, Issue No. 3

The text has been revised to accomodate the comments. See Action Item 5.1.

(VS6-PJSP-3096)

## ADDENDUM

As of January 18, 1990, the projects listed below had been placed in a "contingency file" by the Policy Review Group (PRG). If unspent BPA Fish and Wildlife Program funds are identified in mid-FY 1990, the projects in the contingency file will be considered by the PRG for possible FY 1990 implementation. The projects are not listed in priority order because they have not been prioritized by the PRG.

<u>PROJECT NUMBER</u>	<u>TITLE</u>
90-46 <u>1/</u>	Effects and Control of Whirling Disease
90-47 <u>1/</u>	Bacterial Coldwater Disease
90-48 <u>1/</u>	Fish Parasite Research
90-57 <u>1/</u>	<u>Ceratomyxa shasta</u> Control
90-XXX	Fish Performance Laboratory
90-XXX	Obtaining Representative Samples from Hatchery Fish Populations
90-XXX	Accuracy and Associated Mortality of Hatchery Release Estimates
90-XXX	Early Life History Requirements of Age-0 Chinook Salmon in the Columbia River Basin (Summer Migrant Project)
90-XXX	New wildlife project(s) in addition to those to be proposed for funding under Project 90-13. (No preliminary proposals, proposals, or project descriptions for any of these new FY 1990 projects have been submitted to the PRG.)

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1/ Project was in draft FY 1990 AIWP as a new project. However, on January 18, 1990, the PRG placed the project in the contingency file because funds were not available to implement the project in FY 1990.