

Annual Report

Fiscal Year 1998

Lower Snake River Compensation Plan Office

Boise, Idaho

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TABLE OF CONTENTS

	PAGE
INTRODUCTION	1
HIGHLIGHTS FOR FY1998	2
FY1998 LSRCF PROGRAM SUMMARY	4
OPERATIONS AND MAINTENANCE	4
Clearwater Anadromous FH - Idaho	4
Magic Valley FH - Idaho	6
McCall FH - Idaho	6
Sawtooth FH - Idaho	7
Irrigon/Wallowa FH - Oregon	9
Lookingglass FH - Oregon	9
Lyons Ferry/Tucannon FH - Washington	11
Pittsburg Landing, Big Canyon, and Captain John Rapids Acclimation Sites. ...	12
Dworshak NFH Expansion	13
Hagerman NFH	13
EVALUATION STUDIES	13
Idaho Department of Fish and Game	15
Oregon Department of Fish and Wildlife	16
Washington Department of Fish and Wildlife Salmon	18
Nez Perce Tribe	20
Confederated Tribes of the Umatilla Indian Reservation	21
Fish and Wildlife Service – Idaho Fisheries Resources Office	21
FWS COOPERATIVE PROGRAMS	21
OTHER COOPERATIVE PROGRAMS	22
CORPS CONSTRUCTION ACTIVITIES	22
FUTURE OUTLOOK	23
STAFFING	25
MEETINGS ATTENDED IN FY1998	25
TRAINING	28
AVAILABLE REPORTS	29

LIST OF TABLES AND FIGURES

	PAGE
TABLE 1. LOWER SNAKE RIVER COMPENSATION PLAN ACTIVITIES FOR 1998	57
TABLE 2. PERTINENT DATA FOR LOWER SNAKE RIVER FISH AND WILDLIFE COMPENSATION PLAN FISH HATCHERY FACILITIES	58
TABLE 3. HATCHERY OR TRAP RACK RETURNS TO LSRCP HATCHERIES OPERATING IN 1998	59
FIGURE 1. LOCATION OF LSRCP FACILITIES	60
OPERATIONS/MAINTENANCE COST DATA	61
PUBLIC RELATIONS	64
REPORT OF STATION PERSONNEL	65
FIGURE 1	60

INTRODUCTION

The Lower Snake River Compensation Plan Office was established with the closing of the Boise Area Office in September 1982. The Office's primary responsibility is to administer U.S. Fish and Wildlife Service (FWS) operations and maintenance funds (O&M) for cooperator fisheries operations under the Lower Snake River Fish and Wildlife Compensation Plan (LSRCP).

The LSRCP was authorized by the Water Resources Development Act of 1976 (90 Stat. 2917) to replace fish and wildlife losses caused by the construction and operation of Ice Harbor, Lower Monumental, Little Goose, and Lower Granite Lock and Dam projects on the lower 150 miles of the Snake River in Washington and Idaho. The plan described fish hatchery developments as well as improvements to the dams and powerplants to improve smolt passage.

Construction responsibility for the LSRCP was assigned to the Walla Walla District, U.S. Army Corps of Engineers (Corps), while responsibility for fish hatchery O&M funding was to be accomplished by "one of the Federal fisheries agencies." The question of O&M funding was settled in 1977 with the signing of an interagency agreement by the Corps, National Marine Fisheries Service (NMFS), and FWS; it stated that the FWS would budget for and administer O&M funds for LSRCP fish hatchery programs (responsibility for administration and O&M for fish passage and wildlife programs remains with the Corps).

Public Law 99-662, approved November 17, 1986, modified the Water Resources Development Act of 1976 in accordance with recommendations contained in a report from the Chief of Engineers, dated March 6, 1985. The Chief's 1985 report confirmed the 1977 NMFS/FWS agreement on Page 2, Section 4.d with a directive which stated: "The U.S. Fish and Wildlife Service should be designated to fund the operation and maintenance of all fish rearing facilities." Regarding ownership of property, the 1985 Report stated in Section 5.3: "Transfer of jurisdiction over all Compensation Plan fish hatcheries, appurtenant facilities and lands to the U.S. Fish and Wildlife Service for operation, maintenance, and replacement shall occur upon completion of construction by the Corps of Engineers." The Corps is transferring fee title of LSRCP hatcheries and associated satellite facilities to the FWS as they are completed and fully operational. Ownership of many hatcheries and satellites has been transferred to the FWS.

The Corps' estimated cost for construction of the authorized LSRCP off-project fisheries facilities (hatcheries and related satellite facilities) is \$177 million; the FWS costs for annual O&M now exceed \$12 million. All anadromous fisheries compensation and most resident fisheries compensation are allocated to project power costs and are reimbursed to the U.S. Treasury with interest by the Bonneville Power Administration (BPA) from power revenues.

The LSRCP legislation authorized what was believed to be sufficient anadromous fish hatcheries and associated trapping and holding facilities to produce enough smolts to return 18,300 fall chinook adults, 58,700 spring and summer chinook adults, and 55,100 steelhead adults back to the project area, and sufficient resident fish hatcheries and stream enhancement projects to produce 93,000 pounds of trout annually to replace lost resident sport fisheries in Washington and

Idaho. The program required expansion or construction of 11 hatcheries and 12 satellite facilities in Idaho, Oregon, and Washington. Idaho Department of Fish and Game (IDFG) operates four hatcheries, Oregon Department of Fish and Wildlife (ODFW) operates three hatcheries, Washington Department of Fish and Wildlife (WDFW), formerly Washington Department of Wildlife and Washington Department of Fisheries, operates three hatcheries, and FWS two hatcheries. The Pittsburg Landing, Big Canyon, and Captain John Rapids Acclimation Facilities, authorized by a Congressional add-on to the Corps LSRCP Program, were completed in 1996, 1997, and 1998 respectively and are operated by the Nez Perce Tribe (NPT).

HIGHLIGHTS FOR FY1998

LSRCP facilities continue to produce and release salmon, steelhead and resident trout as part of their mitigation responsibility. In Fiscal Year (FY)1998, 11,225,231 salmon, steelhead and rainbow trout weighing 1,556,201 pounds were released from LSRCP facilities. The numbers, pounds of fish produced, release sites, and sizes were adjusted again in 1998 to reduce impacts on listed species.

The 1997-98 steelhead run above Lower Granite Dam was 86,680 fish compared to previous years totals of 86,898, 79,321, 47,147, 97,000, 113,000, and 59,604. The run was comprised mostly of hatchery releases in 1996, 1997, and 1998. Returns of both salmon and steelhead were higher coast wide, and like many programs, the LSRCP portion is close to the adult steelhead mitigation goal of 55,100 steelhead adults back to the project area. There were sport and tribal fisheries on LSRCP steelhead returns in Oregon, Washington, and Idaho in FY1998. In 1998 approximately 5,903,133 steelhead fingerlings and smolts (1,195,806 lbs) were released from LSRCP hatcheries compared to a release of approximately 6.33 million from these facilities in 1997. Magic Valley Fish Hatchery (FH) alone released 1,658,825 steelhead smolts this year weighing 370,850 pounds.

Considerable LSRCP staff time in FY1998 was spent on Endangered Species Act (ESA) consultations and modifications of biological assessments of hatchery production and release actions on listed Snake River spring/summer and fall chinook, sockeye salmon, Columbia River salmonids, and bull trout. Fish hatchery production was and will continue to be adjusted where appropriate to meet ESA requirements.

The LSRCP staff and cooperators entered into the fourth year of captive broodstock programs in Oregon and Idaho. These programs were measures initiated with LSRCP program funding to conserve listed salmon stocks for future mitigation sources. Due to the lack of a LSRCP budget increase to cover costs associated with ESA related activities in FY1998, LSRCP cooperators applied for and obtained direct funding from BPA to continue the programs. Without a LSRCP budget increase to cover costs associated with these programs, all future program approval and funding for the captive programs will fall under the Northwest Power Planning Council's (NWPPC) prioritization process.

A Chinook Technical Oversight Committee (TOC) was initiated in FY1997 to address technical issues dealing with the chinook captive broodstock programs. The Chinook TOC was modeled after the existing Sockeye TOC and meets every other month.

In February 1998 the FWS and its state and tribal cooperators conducted a status review of the program. The goal was to inform regional decision makers, the public, and scientists of the purpose, status, and options of the LSRCP Program in order to promote informed decisions on the future program direction. LSRCP-funded fisheries scientists summarized the status and future plans of the programs. Two panels, one of seven independent scientists and another of seven stakeholders, provided assessments throughout and at the end of the review.

The LSRCP fisheries scientists reported that, although chinook hatchery programs were far short of meeting their compensation goals, viable populations were being maintained. They described steelhead programs of non-local stocks that were generally doing well but would likely require significant changes in light of listings under the ESA. Although most acknowledged little data were available for natural spawning steelhead stocks, they believed most natural salmon and steelhead populations were at very low levels and declining.

The science panelists noted that hatcheries cannot solve the problem of declining stocks, many natural populations will be extinct in 20 years, and system-wide changes are needed to restore salmon. The stakeholder panelists concluded that the migration corridor survival must improve to save salmon, we may have to intervene to save some populations before improvements can occur, the agencies must disclose their plans to change the LSRCP Program from compensation to conservation, we must make it clear that we are losing our fish, and the main problem (in the words of one panelist) is the hydrosystem – “plain and simple.” A proceeding of the Symposium has been prepared and distributed to all interested parties and individuals and is currently available upon treatment.

The LSRCP Office prepared a draft FWS/BPA direct funding agreement which, if finalized and signed in 1999, would allow the LSRCP Program to be directly funded by the BPA starting with FY2000. Such an agreement would result in the first significant funding increase for LSRCP O&M and M&E activities since 1991. The Corps' and Bureau of Reclamation's reimbursable programs are already funded through direct funding agreements signed over the past two years. Without a direct funding agreement, the LSRCP budget in FY2000 will remain at the 1998 level.

LSRCP staff and our agency and tribal cooperators worked with NMFS in 1998 to renegotiate the Columbia River Fish Management Plan (CRFMP). Subbasin workshops were sponsored by NMFS to estimate the population status and trend of each species, define the management objectives (by agency/tribe), and list proposed actions. The process is very important because it will determine how the LSRCP and all other Columbia River Production Programs will be implemented for the next CRFMP period (the current plan lasted 10 years). The two federal agencies were directed by negotiators to “flesh out” their plan for presentation to the entire CRFMF negotiations team; our so-called FED-1 Plan will be provided to them in late-January 1999.

The LSRCP staff once again played a leadership role in planning and implementing the *IDAHO SALMON AND STEELHEAD DAYS*. The event occurred on September 9-11, 1998 and consisted of three student days and one evening of activities. About 2,500 4th grade students along with hundreds of teachers and parents from SW Idaho attended to learn about the biology of Idaho's anadromous fish resource. An evening barbecue with entertainment and education activities was new for 1998 and was attended by over 500 people – mostly adults. The entire staff of the LSRCP Office helped put on the event.

FY 1998 LSRCP PROGRAM SUMMARY

A total of \$12,563,127 was obligated for LSRCP programs in FY1998 (\$952,127 from carryover funds). This total included:

- \$7,870,919 to three state cooperators for hatchery operations and maintenance and pathology,
- \$2,093,242 to five state and tribal cooperators for monitoring and evaluation studies and ESA requirements,
- \$1,283,000 to six FWS projects for operations, fish health, monitoring, and evaluations,
- \$376,863 for Boise LSRCP Office management and coordination,
- \$899,103 to the Regional Office and FWS for administrative and financial accounting costs, and
- \$40,000 to ODFW for flood damage (not part of FY1998 LSRCP appropriations).

A total of 11,225,231 salmon, steelhead and rainbow trout weighing 1,556,201 pounds were stocked from LSRCP facilities in FY1998 (Table 1).

OPERATIONS AND MAINTENANCE

A total of \$8,940,919 was obligated to WDFW, ODFW, and IDFG or transferred to Dworshak NFH, Hagerman NFH, and Dworshak Fish Health Center (DFHC) for operation and maintenance and fish health monitoring of 11 hatcheries, 14 associated satellite facilities, and a fish health lab (Table 1). Below are brief summaries of hatchery operation and maintenance activities in FY1998. Tables 1, 2, and 3 provide additional data on funds obligated, fish stocked, productions targets, construction costs, and hatchery/trap returns.

Clearwater Anadromous Fish Hatchery - Idaho

Clearwater Fish Hatchery was the last of the 12 hatcheries to be completed under the Corps' LSRCP construction program. The hatchery, operated by the IDFG and is located across the North Fork of the Clearwater River from Dworshak NFH, is designed to produce (with its three satellites) 1,369,500 spring chinook smolts weighing 91,300 pounds and 2,500,000 steelhead smolts weighing 350,000 pounds. The adult return goals for the program are 11,915 spring chinook salmon and 14,000 steelhead to the Snake River basin.

The Clearwater FH is located on land (17.5 acres) purchased by the Corps in 1989. Construction of Clearwater FH began in August 1989 and was completed by the end of 1991. The water

supply line was tested in November 1991, and steelhead eggs from Dworshak NFH and rainbow trout for resident fisheries program were supplied to Clearwater in 1992 for the first rearing cycle.

The Clearwater FH receives its entire water supply from Dworshak Reservoir via two pipes. The primary (and largest) line takes water from just below the reservoir's surface while a secondary (smaller) line receives cold water from an intake deep below the water surface. A distribution tank near the hatchery allows mixing of the water from the two lines to select proper temperatures for various uses at Clearwater FH and also provides a water supply line to Dworshak NFH.

Three satellite fish facilities are associated with the hatchery: Red River, completed in November 1986; Powell, completed in the summer of 1989; and Crooked River, completed in the spring of 1990. Red River, Crooked River and Powell are now being operated as rearing, release, and trapping facilities using fish from Clearwater FH.

Red River trapped 90 spring chinook (22 wild and 68 hatchery origin) in 1998 compared to 280 in 1997 and 62 in 1996. Thirty six fish were released in Red River to spawn naturally. Crooked River was operational for the ninth year of trapping; a total of 277 spring chinook (42 wild and 235 hatchery origin) were trapped and 79 were released to spawn naturally in Crooked River. This compares to a Crooked River return of 1,034 in 1997 and 299 spring chinook trapped in 1996. In 1997, Red River and Crooked River stocks were combined to make the South Fork Clearwater stock due to straying of hatchery chinook between the two drainages. A total of 84 females were spawned resulting in 330,054 green eggs.

IDFG research initiated adult chinook trapping on Crooked Fork Creek (Lochsa tributary) in 1998 to assess hatchery strays into the tributary. A total of 21 hatchery fish (included in the Powell trap total) were transported to Powell facility for spawning. The Powell trap, on the Lochsa River, trapped a total of 541 spring chinook (22 wild and 519 hatchery origin) with 43 released to spawn naturally. This compares to 718 in 1997 and only 186 fish trapped at Powell in 1996. Two hundred twenty six females were spawned resulting in 897,993 green eggs.

Two steelhead (1 wild male and 1 wild female) were trapped at the Crooked River trap in 1998, and both were released above the weir. No steelhead were trapped at Red River. Traps at both sites were pulled frequently due to high flows and debris.

Clearwater FH released the remaining Selway River captive broodstock program spring chinook adults in September, 1998. A total of 22 adults (10.5 lbs per fish) were transported by the Nez Perce Tribe to the Magruder Corridor of the Selway River to spawn naturally. In addition, the remaining smolts (8,892 at 37.5 fpp) were released by helicopter in the Magruder Corridor in April.

A total of 814,949 Brood Year (BY)1996 chinook smolts weighing 56,891 pounds were released from Red River and Powell satellite facilities, Hells Canyon, and into the Selway River from March to April 1998. A total of 697,791 BY1997 North Fork Clearwater strain steelhead smolts weighing 116,570 pounds were released into Clear Creek and the South Fork Clearwater River in

April, 1998, In addition 4,497 BY1997 N.F. Clearwater strain steelhead (737 lbs) were released into the South Fork Red River for supplementation studies in April.

The Clearwater FH is currently holding approximately 2.057 million BY1997 spring chinook fingerlings (0.7 million for the Nez Perce Tribe) and 598,938 BY1998 steelhead fingerlings for production and release from the hatchery and satellite facilities in 1999. In addition approximately 1.58 million BY1998 spring chinook eggs are on hand for transfer or release in 1999 and 2000.

Magic Valley Fish Hatchery - Idaho

Magic Valley FH is located on the Snake River near Filer, Idaho, and is operated by IDFG. It was completed in August 1987 and is designed to produce 2,000,000 steelhead smolts weighing 291,500 pounds annually. The return goal for Magic Valley FH is 11,660 adults back to the Snake River basin.

The hatchery was constructed on a commercial hatchery site that was purchased by the Corps in March 1981. Steelhead have been produced for the Magic Valley program since 1982. Until 1985, fish were produced onsite in a commercial facility; however, with the start of construction, fish production was transferred to unused raceways at Hagerman NFH (approximately 255,000 steelhead smolts were reared at Hagerman in 1986 for the Magic Valley program). Sawtooth FH and the East Fork Salmon River satellite serve as the juvenile release and adult trapping sites for the hatchery program.

Magic Valley FH completed its eleventh rearing season in 1998, and released 655,465 Dworshak "B" (148,400 lbs), 301,500 East Fork Salmon River "B" (64,200 lbs), 291,625 Pahsimeroi "A" (69,300 lbs), and 410,225 Sawtooth "A" (89,000 lbs) strain BY1997 steelhead smolts in April and May 1998. The releases were distributed between the East Fork of the Salmon River, lower Salmon River, Slate Creek, and the Salmon River. Magic Valley currently has 2,061,287 BY1998 steelhead fingerlings on hand for release in 1999.

McCall Fish Hatchery - Idaho

Operated by IDFG, McCall FH was completed in 1981 and is located along the North Fork Payette River near McCall, Idaho. The program's adult trapping facility and the smolt release site are located on the South Fork of the Salmon River near Warm Lake (salmon do not have access to the Payette River system). McCall FH is designed to produce 1,000,000 summer chinook smolts weighing 61,300 pounds. McCall FH is the only LSRCP summer chinook facility and its adult return goal is 8,000 adults to the Snake River basin. McCall FH also has a concurrent federally-approved trout production program which is funded entirely by the IDFG.

The hatchery achieved considerable success with its summer chinook program from 1986 through 1993, ranging from 939 to 2,848 fish trapped each year. Typical of the lower chinook runs throughout the basin, McCall's returns decreased in 1994 and 1995 to only 517 and 408 fish. In 1996 and 1997, 1,199 (461 adults and 738 jacks) and 3,659 (3,614 adults and 45 jacks) summer

chinook were trapped respectively at the South Fork Salmon weir. In 1998 a total of 974 (898 adults and 76 jacks) summer chinook were trapped at the South Fork facility. Three hundred one females were spawned producing 1,433,237 green eggs. A total of 314 fish were released above the weir to spawn naturally in 1998. A total of 34 females and 20 males were transported, held, and spawned at the South Fork facility from the Nez Perce Tribal trap on Johnson Creek. Thirty two Johnson Creek females were spawned producing 115,870 green eggs.

The McCall FH staff released 393,872 BY1996 summer chinook salmon smolts weighing 22,507 pounds in the South Fork Salmon River in March and April 1998. This is slightly above one third the hatchery's release target of 1,000,000 smolts. McCall currently has 1,019,346 (reserve) and 161,291 (supplementation) BY1997 summer chinook fingerlings on hand for release in 1999, and 1,589,107 BY1998 eggs on hand for release in 1999 and 2000 in the South Fork Salmon River and Johnson Creek.

Sawtooth Fish Hatchery - Idaho

Sawtooth FH, located on the upper Salmon River near Stanley, was completed in January 1985 and is operated by IDFG. In addition to its primary mission of rearing 2,235,000 spring chinook salmon smolts weighing 149,000 pounds and trapping steelhead ("A" strain) for Hagerman NFH and Magic Valley FH, the staff operates a major satellite facility on the East Fork of the Salmon River. The satellite traps adult spring chinook for Sawtooth FH and steelhead ("B" strain) for Hagerman and Magic Valley and also serves as a direct stream release site. The program's goal for returns back to the Snake River basin is 19,455 adults.

A total of 768 steelhead returned to the Sawtooth trap in 1998 compared to 1,243, 553, 532 and 338 trapped in 1997, 1996, 1995 and 1994 respectively. The East Fork satellite facility trapped 27 steelhead, compared to 149 in 1997, 54 in 1996, 38 in 1995, and 73 in 1994. The third year of steelhead trapping at Slate Creek produced 5 steelhead trapped in 1998 compared to 13 and 38 steelhead trapped in 1997 and 1996. A total of 246 females were spawned from Sawtooth and 3 females from the East Fork Salmon resulting in 1,116,350 green eggs from Sawtooth, and 11,550 green eggs from the East Fork Salmon sites.

An acclimation/release pond was constructed on Squaw Creek in the fall of 1997. The pond was stocked with steelhead smolts in the spring of 1998 to initiate a volitional release program. Of the 52,800 smolts planted into the pond, an estimated 37,431 smolts migrated into the Salmon River. The remaining 15,369 smolts were transported to other non-anadromous sites or left in the pond for resident trout angling. In future years the pond will also be used as an adult steelhead trapping site with first returns expected in the year 2000.

Sawtooth FH shipped a total of 726,300 BY1998 Sawtooth steelhead eggs to Hagerman NFH, 597,000 BY1998 Pahsimeroi and 7,700 BY1998 East Fork "B"-run steelhead eggs to Magic Valley FH for rearing and release in 1998. In addition a total of 844,200 Pahsimeroi and Sawtooth eggs were shipped to the Shoshone Bannock Tribe for their streamside incubators, and 1,416,800 Pahsimeroi eggs were shipped to Niagara Springs FH.

Spring chinook trapping at Sawtooth FH produced a total of 153 adult and jacks in 1998 compared to 254 in 1997, 156 in 1996, 37 in 1995, 96 in 1994 and 587 in 1993. The East Fork trap was not operated for spring chinook broodstock in 1998. Numbers of chinook trapped in 1998 were lower than last year and continue to remain well below goals established for those facilities. As part of ESA Section 10 conditions for operation, the hatchery staff released 92 spring chinook above the Sawtooth weir (compared to 112 in 1997, 94 in 1996 and 20 in 1995). Twenty seven females were spawned from Sawtooth FH returns resulting in 129,593 green eggs.

A total of 43,161 BY1996 chinook supplementation smolts (3091 lbs) were released into the Salmon River at the hatchery weir in April. Sawtooth currently has a total of 224,901 BY1997 chinook (9,778 lbs) on hand for release in 1999 and 127,064 BY1998 chinook eggs/fry on hand for release in 2000.

This year marked the 4th year of a captive rearing program for the Lemhi River, East Fork Salmon River, and West Fork of the Yankee Fork Salmon River. The strategy of the program is to prevent cohort collapse of the specific target populations by providing 20 pairs of captive reared adult spawners back to the natural environment on an annual basis. In the fall 1998, parr were once again collected from the West Fork Yankee Fork and Lemhi River. No parr were collected in the fall 1998 in the East Fork Salmon River. All fish collected are reared initially at Sawtooth FH, transferred to Eagle FH, and then split between Eagle and Manchester. The progeny of these broodstock will be raised at Eagle FH for subsequent release as mature adults back into their rivers of origin.

The 1998 was the second year of captive spring chinook outplants with the release of maturing BY1994 and 1995 fish. A total of 54 BY1994 females and 18 BY1995 male were outplanted to the Lemhi River and 35 BY1994 females and 9 BY1994 males were outplanted to the West Fork Yankee Fork. Twenty three fish from the Lemhi River outplant group were released into Bear Valley Creek, a tributary to the Lemhi River. Because of demographic risks no adults were released into the East Fork Salmon River in 1998. While the releases were considered successful, there was an observed higher than desired incidence of pre-spawning mortality in both the Lemhi and West Fork Yankee Fork release groups.

Spawning of captive spring chinook occurred in September, 1998 and resulted in over 50,000 green eggs from 33 females. Spawn crosses were prioritized to maintain and increase genetic diversity of the populations and resulted in the production of 126 unique sub-families. In cooperation with the Shoshone Bannock Tribes (SBT), over 30,000 eyed-eggs produced from the hatchery investigations were planted in streamside incubators.

In addition to the LSRCP program, the State cooperates with the SBT, BPA, NMFS, and other agencies in a FWS-approved sockeye salmon restoration project at Sawtooth FH. The project is funded by BPA and is an effort to recover the endangered sockeye run. In 1995 a catchable trout holding and distribution program was instituted to stock local waters; that project was funded entirely by IDFG.

Irrigon/Wallowa Hatcheries - Oregon

Irrigon FH located on the Columbia River near Umatilla, Oregon; is operated by the ODFW and was completed in October 1985. Collector wells designed for 25,000 gallons per minute (gpm) supply water for the entire program of 1,677,000 steelhead smolts weighing 279,600 pounds. Irrigon FH's return goal is 11,200 adults back to the Snake River basin.

An expansion of ODFW's Wallowa State Hatchery was completed in May 1985; it serves as a final rearing, acclimation, and release site for about 600,000 steelhead smolts from Irrigon FH and has facilities for steelhead trapping and spawning. In 1998 a total of 1,374 steelhead (768 females and 606 males) returned to the Wallowa FH. A total of 582 females were spawned from Wallowa and Big Canyon steelhead returns resulting in 2,883,300 green eggs.

Two other advanced rearing and trapping sites, which are satellites of the Irrigon FH, were operational in 1992. Big Canyon satellite is located at the mouth of Deer Creek on the Wallowa River. It was completed in April 1987 and is capable of holding and releasing 225,000 smolts. One thousand two hundred thirty six adult steelhead (744 females and 492 males) returned to Big Canyon satellite in 1998. A total of 55 adult steelhead (27 females and 28 males) were released to spawn naturally.

The Little Sheep Creek satellite station in the Imnaha basin is used as an advanced rearing pond and release site for 250,000 steelhead smolts reared at Irrigon FH. The satellite was completed and became operational in August 1987. In 1998, 719 steelhead (449 females and 270 males) returned to the Little Sheep Creek trap with 141 (90 females and 51 males) released to spawn naturally. Three hundred fifty females were spawned producing 1,598,340 green eggs.

Releases for 1998 of Irrigon-reared fish totaled 1,501,124 BY1997 steelhead weighing 313,771 pounds. This included releases from Irrigon's satellites Big Canyon, Little Sheep Creek, Wallowa and Imnaha as well as various direct stream releases throughout the Grande Ronde basin. This number is similar to last year due in part to requirements under ESA to lessen impacts on listed salmon. Irrigon currently has 1,660,107 BY1998 Wallowa and 364,399 BY1998 Imnaha steelhead and 61,155 BY1998 unmarked Rapid River spring chinook on hand.

In 1996 the Corps installed an oxygen supplementation system at Irrigon to offset the effect of reduced well water production from its Raney well system. Instead of the 25,000 gpm the wells were only producing about 20,000 gpm.

Lookingglass Fish Hatchery - Oregon

This hatchery is located on Lookingglass Creek north of Elgin, Oregon, and was completed in November 1982. It is operated by the ODFW and is designed to produce 1.4 million spring chinook smolts weighing 69,600 pounds. Two satellites, Big Canyon Creek (discussed above) and a renovation of Oregon's Imnaha trapping site, which was completed in 1989, are part of the

hatchery program. The Snake River basin return goal for the Lookingglass FH program is 9,070 adults.

Adult spring chinook trapping at the Imnaha River trap totaled 383 (163 females and 220 males) compared to 471 fish collected in 1997 with (207 females and 264 males). Two hundred ten chinook (95 females and 115 males) were released to spawn naturally. In 1998 all Rapid River stock spring chinook returning to Lookingglass FH (31 females and 28 males) and collected at Lower Granite Dam (212) were transported to the South Fork Walla Walla facility (CTUIR). A total of 71,712 BY 1998 green eggs were taken from 17 unmarked Rapid River females and are being incubated and reared at Irrigon FH. These fish are scheduled to be released into Lookingglass Creek. In 1998 all eggs from marked Rapid River fish were transferred directly to Idaho for incubation, rearing, and release by the Nez Perce Tribe to accommodate the indigenous brood program at Lookingglass FH.

The second year of the endemic brood program was initiated in the upper Grande Ronde River, Catherine Creek, and Lostine River in June 1998. Temporary weirs were installed and a total of 33 spring chinook were collected in the upper Grande Ronde River (23 released to spawn naturally), 28 collected in the Catherine Creek weir (20 released), and 21 collected at the Lostine River weir (18 released). A total of 10 upper Grande Ronde River (6 females and 4 males), 8 Catherine Creek (4 females and 4 males), and 3 Lostine River spring chinook (2 females and 1 male) were transported and held at Lookingglass FH as potential broodstock. It was determined that return numbers were insufficient to initiate an endemic program on any of the three populations in 1998 and all surviving fish were returned to their streams of origin in July.

A total of 338,416 BY 1996 Rapid River stock spring chinook smolts (17,149 lbs) and 7,230 BY 1997 Rapid River stock spring chinook fry (48 lbs) were released into Lookingglass Creek in April and July 1998 respectively. An additional 93,127 Imnaha River stock spring chinook smolts (4,794 lbs) were released into the Imnaha River in April 1998. Lookingglass FH currently has a total of 106,669 BY 1997 Imnaha fingerlings (5,740 lbs) for a 15 fish/lb release, 89,084 BY 1997 fingerlings (3,487 lbs) for a 25 fish/lb release, 312,886 BY 1997 Rapid River fingerlings (13,382 lbs), 185,095 BY 1998 Imnaha eggs, and 12,054 BY 1997 Lostine River stock eggs on hand.

This year marked the 4th year of the captive broodstock program for the Lostine River, Catherine Creek, and the upper Grande Ronde River. A total of 1,500 wild spring chinook parr were collected from the Lostine River (500 parr), Catherine Creek (500 parr), and the upper Grande Ronde River (500 parr) in 1998. This compares to 1,496 collected in all three tributaries in 1997, 979 collected from the Lostine River and Catherine Creek in 1996 and 1,107 collected in the three tributaries in 1995. This is part of a conservation program to maintain various chinook populations for ultimate use in recovery of listed stocks under ESA and to enable the LSRCP to return to their mitigation responsibilities in the future. All are reared initially at Lookingglass FH and then transferred to either the Manchester facility (salt water) in Washington or Bonneville FH (freshwater) in Oregon for rearing to maturation. The progeny of these broodstock will be raised at Lookingglass FH for subsequent release as smolts back into their rivers of origin.

Lyons Ferry/Tucannon Fish Hatchery Complex - Washington

Located at the confluence of the Palouse and Snake rivers, the Lyons Ferry facility is two hatcheries in one. Phase I, completed in November 1983, was formally operated by WDW. It is designed to produce 1,169,500 steelhead trout smolts weighing 116,400 pounds and 45,000 pounds of rainbow trout. Its adult return goal to the basin is 4,656.

Phase II of Lyons Ferry facility was completed in November 1984 and was formally operated by WDF. It is designed to produce 9,162,000 fall chinook smolts weighing 101,800 pounds, and 132,000 spring chinook smolts weighing 8,800 pounds. Lyons Ferry FH's adult salmon return goals are 18,300 fall chinook and 1,148 spring chinook to the basin. Recently, the State of Washington combined WDW and WDF into a single agency, Washington Department of Fish and Wildlife (WDFW). These two facilities along with Tucannon FH are now under one complex manager and operated as a unit.

A renovation of Tucannon State Fish Hatchery was completed in November 1984 to rear an additional 41,000 pounds of rainbow trout for WDW and to serve as an adult trapping and smolt release site for their Tucannon River spring chinook program. The remaining 7,000 pounds of rainbow trout production stipulated in the compensation plan (the total requirement is 93,000 pounds) is to come from stream enhancement structures funded by the Corps. These structures were constructed by WDW in the early 1980's.

The hatcheries along with the Phase I (steelhead) satellite facilities at Cottonwood Creek, Dayton Pond, and Curl Lake were completed from 1983 to 1986. The two fall chinook adult holding ponds at Lyons Ferry FH were found to be unmanageable and were rehabilitated by the Corps in 1993. Each pond were divided into two units by construction of a dividing wall down the center, providing much more versatility for handling and sorting adults. Additional office space at the Lyons Ferry steelhead facility was constructed in 1992 by adding 400 square feet onto the administration building. This work was done by the WDFW personnel. The road to the Marmes pump site, which was originally constructed with large cobbles was smoothed and graded by hatchery personnel.

Spring chinook returns to the Tucannon trap and weir totaled 93 in 1998 compared to 259 in 1997, 135 in 1996, 40 in 1995, and 73 in 1994. Two adults and 1 jack were released above the weir to spawn naturally. Seventy three adults and 13 jacks were retained for spawning and produced 161,019 green eggs. A total of 75,419 BY1996 Tucannon spring chinook (4,728 lbs) were released into the Tucannon River in March and April 1998. There are currently about 25,343 BY1997 Tucannon River chinook (724 lbs), and 160,447 BY1997 Spokane rainbow trout (17,841 lbs) on hand for release in 1999.

This year adult fall chinook were trapped at the Lyons Ferry FH and at Lower Granite and transported to Lyons Ferry FH for holding and spawning. A total of 1,194 fall chinook voluntarily entered the hatchery in 1998 compared to 1,311 in 1997, 2,256 in 1996, 956 in 1995, 972 in 1994 and 1,332 in 1993. An additional 920 were captured at Lower Granite Dam

compared to 293 in 1997, 703 in 1996, and 327 in 1995. A total of 1,451,823 green eggs were collected in FY1998, only from known Lyons Ferry fall chinook. A considerable effort was necessary during spawning to ensure that only Snake River fall chinook adults were used for broodstock. All coded wire tags were read before spawning to ensure that the Snake River genetic stock is maintained. Strays from programs outside the basin were inadvertently used prior to 1990. The new concerted effort to spawn only Snake River stocks with each other is of particular importance because the fall chinook are listed as endangered under the ESA. All eggs from strays identified at spawning (221,159 eyed eggs) were shipped out of basin to another WDFW facility. Lyons Ferry currently has 1,017,062 BY1997 fall chinook (29,159 lbs) on hand for release in 1999.

Because of the potential for large numbers of stray steelhead that return to the Lyons Ferry ladder in the fall (when it remains open for fall chinook returns) all trapped steelhead are checked for Lyons Ferry brands. In FY1998, 5,947 steelhead returned to the hatchery compared to 5,598 in 1997, 5,920 in 1996 and 4,009 in 1995. A total of 1,460,967 green eggs were taken from the 279 females spawned. Four thousand one hundred eleven steelhead were released to spawn naturally. Approximately 643,468 BY1998 Lyons Ferry stock steelhead (34,643 lbs) remain on hand for release in 1999. In addition a total of 450 Wallowa stock steelhead were trapped at the Cottonwood Creek satellite facility compared to 224 in 1997, 430 in 1996, and 460 in 1995. One hundred seventy three females were spawned for the WDFW program, resulting in 868,973 green eggs. About 387,421 fingerlings (10,513 lbs) are on hand for rearing and release in 1999.

In 1998 Lyons Ferry FH released a total of 418,992 BY1996 fall chinook smolts (41,484 lbs) into the Snake River at Lyons Ferry. In addition, a total of 351,849 BY1996 smolts (29,147 lbs) and 88,519 BY1997 fingerlings (597 lbs) were transferred to acclimation sites and research projects respectively for release. A total of 75,419 BY1996 Tucannon spring chinook (4,728 lbs) were released into the Tucannon River as smolts.

A total of 806,268 steelhead smolts weighing 154,408 lbs and 203,943 steelhead fingerlings weighing 8,567 lbs were released from Lyons Ferry FH, hauled to Cottonwood acclimation pond, or trucked directly to streams. Lyons Ferry and Tucannon FH's combined, reared and released 451,912 catchable (8 to 9 inch) and sub-legal rainbow trout for Washington lakes and streams and the Idaho Program weighing 83,428 pounds.

Pittsburg Landing, Big Canyon, and Captain John Rapids Acclimation Sites

As noted above the Pittsburg Landing, Big Canyon, and Captain John fall chinook acclimation and release facilities were completed by the Corps in 1995, 1996, and 1998 respectively and were operated by the NPT in cooperation with WDFW. The facilities receive fall chinook from Lyons Ferry FH for acclimation and release. In 1998, 141,814 BY1996 smolts (14,382 lbs) were released from Pittsburg Landing, 39,919 BY1996 smolts (4,189 lbs) and 21,253 BY1996 fingerlings (707 lbs) were released from Big Canyon, and 133,205 BY1996 smolts (12,246 lbs) were released from Captain John Rapids.

Dworshak National Fish Hatchery Expansion - Idaho

Dworshak NFH is located at the confluence of the North Fork and Clearwater rivers. An expansion of the existing Dworshak NFH steelhead facility for LSRCP spring chinook production was completed by the Corps in November 1982. The FWS facility is designed to produce 1,400,000 spring chinook smolts weighing 70,000 pounds. The adult return goal for Dworshak is 9,135 spring chinook to the Snake River basin. This increased Dworshak's chinook rearing potential by about 20,000 pounds, for a total of 90,000 pounds. This additional rearing effort was shifted to the Clearwater FH in FY1992.

Spring chinook runs in the Clearwater River in 1998 totaled 1,323 fish returning to the Dworshak/Kooskia Complex, compared to 4,807 in 1997, 1,165 in 1996, 165 in 1995 and 305 adults in 1994. In addition there were an estimated 99 Dworshak spring chinook taken in the sport harvest and 182 Dworshak spring chinook taken in the tribal harvest. Total sport and tribal harvest of Kooskia spring chinook is unknown at this time. A total of 588 females were spawned producing 2,040,000 green eggs. The Dworshak Program currently has approximately 1,500,000 BY1998 Dworshak and 540,000 BY1998 Kooskia spring chinook eggs on hand for release in 2000.

In 1998, Dworshak/Kooskia NFH personnel released 973,400 BY1996 spring chinook smolts weighing 43,108 pounds into the North Fork Clearwater River and 76,846 BY1996 spring chinook smolts into Clear Creek from Kooskia NFH.

Hagerman National Fish Hatchery - Idaho

Hagerman NFH, located on a 59°F spring water supply from the Snake River aquifer east of Hagerman, Idaho, was expanded by the Corps to rear 1,400,000 steelhead smolts weighing 340,000 lbs. Hagerman NFH also retained the capacity to produce 100,000 lbs of fish for FWS production commitments for programs other than LSRCP. The expansion was completed in April 1984 and the hatchery, is operated by the FWS. Hagerman NFH has a goal of returning 13,600 adult steelhead to the Snake River basin.

Hagerman NFH received a total of 1,355,318 BY1998 steelhead "A" eggs composed of Sawtooth and Oxbow stocks this year. No Dworshak or East Fork "B" eggs were received.

In April 1998 Hagerman NFH released 1,030,685 BY1997 steelhead smolts weighing 230,903 pounds into the Little Salmon River, Salmon River at Sawtooth FH, and to acclimation ponds at Sawtooth FH. Hagerman currently has 713,249 BY1998 Sawtooth stock (27,775 lbs) and 410,726 Pahsimeroi stock (19,694 lbs) on hand.

MONITORING AND EVALUATIONS

In 1998 \$2,201,526 was obligated for monitoring and evaluation studies to IDFG, ODFW, WDFW, FWS Idaho Fishery Resource Office (IFRO), and the NPT and Confederated

Umatilla Tribes (CTUIR). Below is an overview of the FY1998 evaluation program followed by a synopsis of state, tribal, and the FWS IFRO programs. Results of LSRCP-funded evaluation studies are available in our cooperator's annual reports; a listing of reports is found in the *Available Reports* Section below.

Program Overview

The Evaluation Study Committee (ESC) is an eight-member workgroup consisting of the LSRCP Office evaluation studies coordinator and a single representative from each cooperating agency and tribe: IDFG, ODFW, WDFW, FWS-IFRO, NPT, CTUIR, and SBT. Each year since 1985 the group has met for an annual program review and issue discussion meeting; and, in addition, several partial committee meetings are held each year to discuss specific topics, such as budget and study proposal modifications. The annual meetings often include additional staff members from each agency/tribe and occasionally visiting experts.

The ESC held no meetings in 1998 because of the work associated with putting on the LSRCP Program Status Review Symposium in February 1998. The evaluation studies coordinators served with LSRCP Office staff as the steering committee for the review and they or their staffs presented most of the 16 oral and 30 poster papers. A synopsis of that review is provided above in the *Highlights of FY1998* section; and, as noted, the Proceedings of the LSRCP Status Review Symposium is referenced below in the *Available Reports* section and available from the LSRCP Office.

The LSRCP Program received a Biological Opinion for 1995-1999 LSRCP Operations (BO) in 1995. Although our overall program remained essentially unchanged, the LSRCP Endangered Species Coordinator, Joe Krakker, along with agency/tribal evaluation biologists dedicated a considerable amount of time preparing and submitting several biological assessments requesting minor changes. The LSRCP Office submitted modifications to the BO to include newly listed steelhead populations (Snake River and Upper Columbia River ESU's) in December 1997 and for releases of excess Imnaha River steelhead in August 1998. The LSRCP Office also initiated consultation with the FWS in October 1998 on listed bull trout in the Columbia River basin.

In 1996 a multi-agency Conservation Program Oversight Team was formed by the LSRCP Office to guide LSRCP efforts to initiate captive brood/rearing programs for conservation of listed stocks. This team continued to function until December 1997 when it achieved its primary goal of coordinating initial development of plans (and permit applications) and implementation of the projects, and determined it was no longer necessary to meet as a group. By FY1998 all funding for the captive programs had been assumed by the BPA through the NWPPCC's Fish and Wildlife Program, making coordination by the LSRCP Office less important. Coordination among the captive programs continues through the Chinook Salmon Technical Oversight Committee. That group is coordinated through and facilitated by BPA and their meetings are held in conjunction with similar meetings of the sockeye TOC.

Idaho Department of Fish and Game

IDFG's LSRCP Fish Hatchery Evaluations-Idaho includes three separate projects--*Hatchery Evaluations*, *Hatchery-Wild Composition of the Idaho Steelhead Harvest*, and *Coded-Wire Tag Analyses*. Idaho's evaluation program goals are to: 1) ensure that accurate and adequate monitoring of hatchery practices occurs so the most cost effective mode of operation for each hatchery is implemented, and 2) determine the LSRCP contribution to fisheries and escapement. Specifically, the *Hatchery Evaluations* studies include monitoring and evaluation of hatchery rearing; size, time, and location of releases; and adult returns. These types of studies are long-term because constant monitoring is required to identify problems before they result in catastrophic fish losses and to determine which hatchery rearing and release practices will result in the best adult returns.

Several evaluation studies initiated in previous years to address specific hatchery problems and needs were continued in 1998. Production groups of salmon from all LSRCP programs were PIT-tagged to determine migration timing and interrogation rates at Snake and Columbia river dams. IDFG collected scales from known chinook hatchery adults (i.e. those tagged as juveniles) and wild fish and used scale patterns to identify hatchery fish for broodstock and other management purposes. Production and test groups were marked (CWT'ed and fin clipped) and returns are used to assess survival rates (by sex and age).

IDFG evaluations and hatchery personnel continued their assessment of natural rearing experiments on chinook at Sawtooth and Clearwater FH's initiated in 1993. They are relying on CWT's and PIT's of BY1992 through BY1994 releases to assess effects of various raceway alterations and other rearing conditions on juvenile and adult survival. The final returns from BY1994 should be in 1999. In October 1997 IDFG attended a NATURES workshop and, based on that workshop and additional coordination with NMFS, began testing NATURES rearing at Sawtooth FH with BY1997 chinook. Volitional release studies at Sawtooth FH and the Crooked River facility occurred in 1994 and 1995, and in 1997 IDFG completed analyses of the PIT tag data associated with the releases. Their findings will be reported in their annual report.

IDFG has completed analyses of detection data from South Fork Salmon River summer chinook salmon time of release studies. In 1998 the IDFG began preparing "environmental cue" data for comparison with detection data and a final report of their findings for their annual report. They also looked at need for additional controlled studies. Also in 1997, IDFG reported results monitoring data compiled to evaluate of the efficacy of outplanting adult summer chinook to historic spawning grounds in the South Fork's Stolle Meadows area. Those extensive monitoring surveys were not continued in 1998.

A steelhead size-at-release experiment (Salmon River releases from Hagerman NFH) designed to identify the optimum size with the greatest survival and lowest residualism was completed with adult returns in 1995 and a final report was completed in 1998. Steelhead acclimation studies continued as adults returned from acclimated (21 days) and control groups reared at Hagerman NFH and released at Sawtooth FH. IDFG evaluation personnel designed and implemented a

volitional release study for an acclimation pond on Squaw Creek whose construction was funded by NMFS.

In late 1984, Idaho began an angler survey to assess the LSRCP contribution to Idaho's steelhead fishery, estimate the total escapement of LSRCP fish, recover information on marked fish, and obtain data for managing the fishery while protecting wild stocks. In 1998 pre- and in-season run projections were provided. This survey is also the major means of recovering adult steelhead tagged as fingerlings under other evaluation studies. These efforts were funded through 1998 and will be continued annually (at some level) until compensation goals have been met, and periodically thereafter. In 1997 a similar survey effort was conducted to monitor a fishery on hatchery-reared adult chinook salmon produced at two LSRCP facilities, McCall FH and Dworshak NFH; a final report was completed on those chinook fisheries in 1998.

The process of reading tags and analyzing marks was first funded in 1992 as part of the evaluation study, whereas actual marking costs remain a part of each hatchery's budget. In 1998 several hundred tags (many recovered under the Harvest Study described above) from several state and tribal LSRCP programs were removed from fish and decoded at IDFG's Lewiston lab.

Oregon Department of Fish and Wildlife

ODFW's evaluation program includes: 1) monitoring and evaluating hatchery practices; 2) investigating size, time, and location of release of hatchery-reared juveniles; 3) marking activities (CWTing, branding); 4) assisting with disease monitoring efforts; 5) determining the LSRCP contribution to Oregon's steelhead fishery; 6) determining the effects on natural spawning populations; and 7) determining the success of maintaining the genetic integrity of native wild stocks potentially effected by the LSRCP program. In addition to coordinating evaluation studies, the principal LSRCP investigator in Oregon also coordinates broodstock selection, egg-taking programs, and outplanting of juveniles with ODFW's regional personnel. The following paragraphs describe specific studies *beyond* the routine juvenile rearing, adult return, spawning ground, and ESA monitoring and reporting duties.

ODFW compared the influence of size-at-release (4 versus 5 per pound) on survival to adult of summer steelhead released at Wallowa FH. BY's 1986 through 1990 were tested, the last adults returned in 1995, and harvest information was finalized in 1996. In 1997, data were summarized, statistics were completed, and report preparation was initiated.

In 1996, ODFW completed its sixth release of acclimated versus direct stream releases of steelhead at Little Sheep and Big Canyon creeks. Similar studies at Wallowa FH were completed with the release of smolts in 1991. Adult return data from previous releases were compiled and assessed in 1997. The last returns resulting from size at release studies at Wallowa FH were in 1994 and the results of that study are in the final stages of report preparation. The last returns from the Big Canyon and Little Sheep releases will arrive in 2000.

ODFW began pilot studies in FY1996 with BY1995 fish to compare smolt-to-adult survival and juvenile outmigration performance of summer steelhead smolts released volitionally with standard

releases. These efforts are an offshoot of ODFW's 1991 through 1995 studies to monitor the characteristics and interaction of residual steelhead on listed natural chinook in several NE Oregon streams, determine strategies to reduce the number of residual steelhead, and develop a strategy to implement new steelhead management plans. Field studies associated with this pilot project will continue with ODFW's effort to characterize yearly variation in the relative abundance of juvenile residual steelhead in index areas and to describe the characteristics of steelhead which residualize. Detailed volitional studies began with the release of BY1996 fish in 1997 and will be completed with the BY1998 releases from Wallowa FH and the Big Canyon facility in 1999.

In 1997 ODFW began monitoring natural spawning of summer steelhead in NE Oregon and assessing the relationship between anadromous and resident forms of *O. mykiss* and the effort was continued in 1998. With this effort, ODFW hopes to learn more about the fate of hatchery adults that escape to their river of release but are not caught and do not return to a trap. Findings from this and the next study will help determine if endemic anadromous populations can be derived from local resident populations.

In 1998, ODFW initiated studies to determine the relationship between anadromous and resident forms of *O. mykiss* in NE Oregon. Hatchery studies will compare migration timing and survival of various crosses among and between anadromous and resident forms using BY1998 adults. In the natural environment in 1997 and 1998, lineage of juvenile *O. mykiss* was examined using strontium and calcium levels in the otoliths of anadromous and resident mature adults and juvenile migrants.

Chinook acclimation versus direct stream release studies, initiated at the Imnaha facility with BY1990 progeny releases, continued with releases of BY1993 juveniles in 1995. Data from adult returns were collected and analyzed; the five-year-olds from BY1993 returned in 1998.

Spring chinook size at release (25 vs 15 fpp) experiments were initiated with BY1988 Imnaha fish and, with the exception of BY1993 releases, were continued with releases of BY1996 smolts in 1998. The last size at release experiments from Lookingglass FH (Rapid River stock) occurred in 1992. Outmigration timing and survival and adult return rates of past releases are currently being compiled and evaluated for both Imnaha and Rapid River stocks.

Although a density experiment using Rapid River stock chinook reared at 50 percent of normal densities was not continued with releases in 1995 or 1996, collection of adults released as juveniles in 1993 and 1994 continued at Lookingglass FH. A similar study was initiated in 1995 using BY1994 Imnaha stock at Lookingglass FH to compare rearing densities from 1/4 to 1/8 of normal. Although this effort continued in 1998 with releases of BY1996 fish, full production will prevent tests from continuing with the 1997 brood. Adults were collected in 1998 from releases in 1996 and 1997.

An exercise study was conducted in 1994 - 1996 using Rapid River brood. Adults from those studies were collected in 1998 and data are being compiled and analyzed.

In 1990 a study was initiated to develop a discriminate function model based on scale growth patterns to allow identification of hatchery and wild-origin adult salmon at Lower Granite Dam and points above (e.g. hatchery racks, spawning grounds). This effort was continued in FY1998.

ODFW, CTUIR, and NPT personnel continued their collaborative effort to collect juvenile spring chinook salmon from three Oregon streams and maintain the captive propagation program initiated in 1995. As noted above, ODFW evaluation personnel joined other LSRCP cooperators in 1996 to form a technical committee for dealing with LSRCP-funded captive propagation efforts and formed a local integrated team to serve the coordination needs for the effort in Oregon. ODFW evaluation personnel took the lead on monitoring and evaluating the Oregon captive populations in 1995 and continued this effort in 1998, participating in state/NMFS/tribal chinook technical meetings held in conjunction with a sockeye TOC meeting.

Washington Department of Fish and Wildlife

WDFW's evaluations of fall and spring chinook are combined under one multiple-objective study including: 1) monitoring and evaluation of hatchery practices, juvenile outputs, adult returns (including homing studies), and contribution to fisheries; 2) time, size, and location of release (including acclimation) studies; and 3) evaluation of effects of hatchery releases on naturally producing chinook stocks (including parr density monitoring and spawning ground counts). Because the hatchery stocks are comprised entirely of endemic fall and spring chinook stocks, special attention is being paid to quantifying and monitoring genetic variables in each population. The following paragraphs summarize some of WDFW's efforts in 1998 *beyond* their ongoing fish culture monitoring programs and ESA monitoring and reporting duties.

WDFW evaluation and hatchery staffs continued efforts to ensure that fall chinook broodstocks retained at Lyons Ferry FH contain no non-endemic fish by identifying the origin of fall chinook broodstock captured at Lower Granite Dam and returning to the hatchery ladder. All Lyons Ferry FH fall chinook releases are being marked so Lyons Ferry origin adults can be identified in future returns.

WDFW continued their ongoing efforts to determine smolt outmigration timing and relative survival from Lyons Ferry (fall chinook) and Tucannon (spring chinook) FH's. Their fall chinook efforts were expanded in 1996 and continued in 1998 to include monitoring and evaluating outplants from the Pittsburg Landing, Big Canyon (Clearwater), and Captain John Rapids facilities. The first adult returns from the Pittsburg outplants occurred in 1998. The evaluation of these sites is a joint WDFW/FWS/NPT effort funded by BPA and will likely continue for several years at other sites.

A study was initiated in 1993 to evaluate the effectiveness of outplanting spring chinook adults and presmolts to increase spawner density in the upper Tucannon River. In 1996 all adults were collected at the Tucannon River weir and retained for hatchery spawning and rearing; therefore, no adults were outplanted above the weir. A larger run in 1997 allowed outplanting of radioed adults, which were monitored through the spawning season. Direct stream fingerling releases were evaluated in the fall of 1994; and, in the spring 1996, yearling juveniles were released from

portable acclimation ponds above Tucannon FH, directly into the river above Tucannon FH, and from the Tucannon FH ponds using a volitional release strategy. In 1997 and 1998 juveniles were released from Tucannon FH, Curl Lake, and (a small release) into the river at Curl Lake. Juvenile migration success and adult survival of all release strategies are being compared using PIT tagged juveniles and CWT'ed adult returns.

All hatchery-reared Tucannon River spring chinook up to and including BY1993 were used to conduct a controlled mating study. WDFW is attempting to determine if there are measurable genetic or survival differences between progeny of hatchery x hatchery and natural x natural single pair matings. WDFW will continue to monitor adult returns from the study years to determine smolt-to-adult returns. The last BY1993 adults should return in 1998.

Other studies initiated in previous years and continued in 1998 included 1) documenting juvenile spring and fall chinook rearing, releases, outmigration timing (both in the Tucannon River and downstream for spring chinook), and relative survival; 2) determining the extent and cause of prespawning mortalities of adult spring chinook; 3) estimating production and migration timing of naturally-produced Tucannon River spring chinook; 4) collecting spring and fall chinook stock profile data (meristic, morphometric, electrophoretic monitoring); and 6) evaluating success of cryopreserving spring and fall chinook milt. WDFW evaluation personnel assisted in designing a captive broodstock program for Tucannon spring chinook for submission to the NW Power Planning Council for funding under the Fish and Wildlife Program.

WDFW's Steelhead Evaluation Study - includes objectives for evaluating both the steelhead and resident trout hatchery programs, with the steelhead objectives having the highest priority and requiring the most funding. The hatchery evaluations and related field studies at Lyons Ferry and Tucannon FH's have been underway since 1983 when the steelhead and trout production programs were initiated. The 1998 objectives continued the directions initiated in 1990 regarding developing new broodstocks, improving hatchery management practices, and modifying juvenile steelhead release strategies.

As noted above, development of endemic steelhead broodstocks is a recent goal of the program which should help reduce residualism and improve homing to the rivers of release. WDFW captured wild broodstock on the Tucannon River in 1992 and 1993 for rearing, release, and comparison to existing hatchery broods during migration (with PIT tags) and at adult return. No adults were collected in 1994 or 1995 when efforts to trap adults in Cummings Creek (a Tucannon River tributary) failed due to high flows. Although a similar program was delayed for Touchet River in 1992, the logistics of trapping and handling fish were tested there in 1993, 1994 and again in 1995. In 1996 flood problems eliminated any attempts and no fish were trapped in 1997. In 1998 WDFW monitored adult steelhead returns to the Tucannon weir and implanted 20-30 radio tags in hatchery and wild adults to monitor hatchery-wild spawning interactions.

Other studies initiated in previous years and continued in 1998 included: 1) estimating percent residualism of hatchery steelhead in the Tucannon and Touchet rivers; 2) estimating adult returns to fisheries, Lower Granite Dam, Lyons Ferry FH, and tributary spawning areas; 3) collecting

baseline genetic information on wild steelhead populations; and 4) estimating naturally-reared juvenile population densities in index streams effected by LSRCP programs.

Nez Perce Tribe

The Nez Perce Tribe (NPT) initiated their Nez Perce Tribe LSRCP Evaluation Study in 1986 and continued it in 1998 to develop tribal stocking and outplanting priorities; monitor tribal harvest; evaluate effects of hatchery plants on native production; assist IDFG, ODFW, and FWS in their evaluation studies; and collect and preserve adult male chinook salmon sperm plasm. NPT evaluation personnel joined the LSRCP Office and other LSRCP cooperators in 1996 to form the CONSPOT for dealing with LSRCP-funded captive propagation efforts and, with the Oregon co-managers, formed a local team to serve the coordination needs for the captive program in Oregon. This effort continued until early 1997 when the CONSPOT determined regular meetings were not needed. The NPT participate in the 1998 Snake River spring/summer chinook TOC meetings facilitated by BPA.

In 1997 the NPT began a new study to monitor and evaluate releases of fall chinook from two new LSRCP facilities, Pittsburg Landing and Big Canyon on the Clearwater River. Captain John Rapids, completed in late 1997, was added to the study program in 1998. The objectives of the study are to compare pre-lease and release conditions, post-release behavior, migration timing, and survival of yearling fall chinook released at Pittsburg Landing, Big Canyon, Captain Johns Rapids, and Lyons Ferry FH. Because the NPT now operates the Pittsburg Landing, Big Canyon, and Captain John Rapids facilities, their study efforts now include solving fish culture problems and monitoring and evaluating the implementation and success of their overall program. Contribution and distribution of adult returns and smolt-to-adult survivals are being monitored and compared in cooperation with WDFW and FWS investigators. Starting in 1998 most of monitoring and evaluation and all of the operations and maintenance costs were funded under the NWPPC's Fish and Wildlife Program.

The Tribe's major field activities in 1998 involved the long term Imnaha River study. NPT continues to use two rotary screw traps in the Imnaha River to capture and PIT tag juvenile chinook. The Imnaha River study objectives in 1998 were to 1) determine the outmigration timing, travel time and recapture rate of spring migrating natural and LSRCP FH-produced chinook salmon and steelhead from the lower Imnaha River trap through the Snake River to Lower Granite Dam and 2) determine and compare timing, travel time, and recapture rates at Lower Granite Dam and other dams of natural chinook salmon that overwinter in the Snake River versus those that overwinter in the Imnaha River.

Other studies initiated in previous years and continued in 1998 included coordinating planning, evaluation studies, and management recommendations; monitoring tribal chinook harvest of LSRCP stocks; conducting chinook salmon spawning ground surveys in selected streams; collecting and preserving male chinook gametes in Snake River tributaries using cryopreservation techniques; and monitoring the abundance of juvenile chinook and steelhead in stocked and unstocked streams.

Confederated Tribes of the Umatilla Indian Reservation

The Confederated Tribes of the Umatilla Indian Reservations (CTUIR) became cooperators in the LSRCP Program for the first time in FY1987. The CTUIR biologist assigned to the LSRCP program continues to be supervised by the LSRCP ODFW research coordinator because of the close coordination required for their joint studies in Oregon. In 1991 CTUIR initiated a program to evaluate the success of reestablishing a naturally reproducing population of spring chinook in Lookingglass Creek. A study plan was drafted in FY1992 and continued to undergo review and revision in 1993. The field program was initiated in 1992 with the release of Lookingglass FH/Rapid River stock above the weir and the monitoring of their movements and spawning effort.

The Lookingglass Creek study objectives in 1998 were to: 1) determine the reproductive success of Rapid River adults released to spawn naturally in Lookingglass Creek, 2) investigate the survival between early life stages of spring chinook within Lookingglass Creek, 3) estimate the survival rate of naturally-produced migrants to returning adult, 4) assess the relative growth and behavior of the Rapid River stock salmon in Lookingglass Creek, and 5) assess aspects of ecological interactions between naturally-produced chinook and their biotic and abiotic environment. Forty-nine pairs of adults and about 7,200 Lookingglass-reared juveniles were released above the Lookingglass weir in 1997. The latter were used to determine the best size, weight, and condition factor for juvenile releases and to assess the effects of PIT tagging. The tribes monitored and evaluated these releases and helped remove the spawned-out adults to reduce disease concerns. In 1998 no adults were released due to disease concerns and only eggs from unmarked adults were retained for release as parr in 1999.

Fish and Wildlife Service -- Idaho Fisheries Resources Office

The IFRO was funded by the LSRCP program in FY1998 to conduct hatchery monitoring and evaluation studies at Dworshak and Hagerman NFH's. IFRO's on-hatchery program is similar to those conducted by the state agencies and tribes and is closely coordinated with IDFG and the NPT. Their study, Evaluation and Technical Coordination for FWS LSRCP Hatchery Programs, is a long-term effort designed to: 1) define and solve cultural and management problems affecting LSRCP success (adult returns), 2) provide intra- and interagency coordination, 3) determine fishery contribution and escapements of Dworshak and Hagerman NFH's LSRCP programs, and 4) aid the NFH's with the development and maintenance of a database system for hatchery management. The IFRO's LSRCP-funded studies are summarized in their annual report.

FISH AND WILDLIFE SERVICE COOPERATIVE PROGRAMS

The LSRCP Office obligated \$152,500 to three other FWS programs which helped the LSRCP Program accomplish its FY1998 mission. The Dworshak Fish Health Center receives LSRCP funds for diagnostic activities at Dworshak and Hagerman NFH's and for health monitoring coordination among State and Federally-operated LSRCP hatcheries. Additional monies were obligated in 1996 and 1997 so the Center could assist the WDFW and NPT with their health monitoring for the fall chinook outplanting program to Pittsburg Landing, Captain

Johns Rapids, and Big Canyon (Clearwater). The funding for that monitoring program was not provided by the LSRCP Program in 1998.

FY1998 monies were obligated to FWS's Office of the Columbia River Coordinator for their assistance to the LSRCP Office on regional issues, particularly with regard to those relating to the CRFMP renegotiations. Funding was also provided to Abernathy Salmon Technology Center for their assistance to the LSRCP Program on regional planning and gene conservation issues.

O **OTHER COOPERATIVE PROGRAMS**

The LSRCP Office works closely with all our cooperators to ensure that our programs compliment and sometimes supplement other anadromous fish programs they might be involved in. For example, the ODFW and IDFG have BPA-funded, Fish and Wildlife Program projects which must be closely integrated with LSRCP programs because of joint use of facilities (rearing space), people, and equipment. These include the captive brood and rearing programs in Oregon and Idaho, the Grande Ronde endemic stock programs in Oregon, IDFG's supplementation (ISS) studies, the Umatilla Hatchery, and the Redfish Lake sockeye salmon propagation program. The complexity of integrating these types of programs is becoming more and more difficult.

The LSRCP Office also works cooperatively with the states to implement a number of resident trout programs at no cost to the program. ODFW utilizes several raceways at Irrigon FH to temporarily hold catchable rainbow trout for release in eastern Oregon. IDFG uses Sawtooth and Clearwater FH's to act as distribution points for catchable trout stocking in surrounding waters, and in addition, McCall and Clearwater FH's rear resident trout for part of their life cycle. And lastly, cooperative agreements are in place with all State agencies for the temporary loan of equipment and vehicles between programs.

C **CORPS CONSTRUCTION ACTIVITIES**

The U.S. Army Corps of Engineers (Corps), Walla Walla District completed most cleanup items in the remaining facilities to be transferred in FY1999. Some operational problems still remain at Captain John Rapids and Big Canyon Creek (Clearwater) fall chinook acclimation facilities and negotiations are currently being conducted to correct these problems. Preacquisition contaminants surveys were completed at Lookingglass, Lyons Ferry, Tucannon and Magic Valley Fish Hatcheries and several acclimation satellite facilities in FY1997. No contaminant problems were noted, but the Service has been reluctant to accept transfer of these facilities because of our underground storage tank campaign. The Service has worked out a mutually agreeable arrangement with the Corps to correct deficiencies at all facilities to bring them into compliance this year. Requests for transfer for several facilities remain in the Secretary's Office and we have agreed to accept transfer based on our negotiations with the Corps. Underground storage tanks (UST's) that the Service is requiring all facilities to replace is currently being accomplished by the Corps and the Service.

The Corps's 1995 budget allocated \$5.0 million to their LSRCP construction program to build the chinook salmon acclimation facilities. After assessing the various options, the money was

obligated to construction of fall chinook facilities for Nez Perce Tribal programs. Over the next three years, two temporary acclimation facilities consisting of 20-foot circular tanks and associated plumbing were put into operation. The first site, Pittsburg Landing on the Snake River approximately 40 miles below Hells Canyon Dam (on U.S. Forest Service land), began operation in 1996. A second site was completed in early 1997 on Nez Perce land at Big Canyon Creek for the Clearwater River near the town of Peck. Land was obtained by the Corps to build an earthen, lined pond adjacent to the Snake River below the Grande Ronde River (Captain John Rapids site) and that facility acclimated and released fish in spring 1998 (see Figure 1).

The Service, CTUIR, NPT, and ODFW have been working with the Corps in an attempt to obtain pathogen-free water through ozonation or underground water sources at Lookingglass FH. To date the estimates for ozonation have been extremely high and alternatives are still being explored. Once all additional construction has been completed the Corps will be required to transfer these facilities to the FWS LSRCP program. The Corps installed an oxygen supplementation system at Irrigon FH to offset the lack of sufficient water from its Raney well. The well was designed to produce 25,000 gpm and is only producing 20,000 gpm. With drawdown testing of John Day Reservoir this year, well water from the Raney well will definitely be affected and use of the recently installed oxygen supplementation system will be required.

FUTURE OUTLOOK

The LSRCP Program is now approximately 18 years old and is fully underway. The Corps has in most cases done a good job in constructing and equipping LSRCP hatcheries and satellites facilities and, where problems have been experienced, the Corps has been willing to make the necessary repairs and changes in an attempt to help them reach their full capability. With the exception of the new fall chinook acclimation facilities, the Corps has completed most clean up contracts and is in the process of transferring facilities to the Service. We have recommended acceptance of these transfers based upon decisions and agreements reached with the Corps through our negotiations.

Although steelhead returns in 1997 and 1998 were higher coast wide and close to meeting our goals for the LSRCP mitigation program, getting steelhead to return back at the right time and to the right place still remains a problem in some areas. The listing of Snake River and upper Columbia River steelhead required initiation of consultations in FY1998 on all LSRCP funded actions. How current and future LSRCP steelhead programs are affected will be determined during the ongoing consultation period with NMFS, but significant program changes in the coming years are likely.

Even though LSRCP hatchery chinook returns are higher than those of listed (naturally-produced) fall and spring/summer chinook, we are still experiencing difficulties in achieving programmed hatchery rates of return. Rearing and release strategies are continuing to be fine tuned and we hope the changes will improve this situation. Most LSRCP chinook facilities are now operating, and are likely to continue operating, under Section 10 enhancement and/or research permits under the ESA.

The LSRCP will continue efforts to maintain non-listed chinook salmon, steelhead, and rainbow trout programs under Section 7 of the ESA for future compensation options. However, as endemic stocks are developed, many of our non-local stocks will likely be phased out and replaced with local populations.

Three years ago the LSRCP began funding cooperators for six captive rearing/broodstock programs in Oregon and Idaho as gene conservation measures to assist in recovery when mainstem passage problems were cited and to use those stocks as future broodstock sources for mitigation. As noted above, those programs are now funded by the BPA through the NWPPC's Fish and Wildlife Program. The LSRCP Office will continue to participate in the technical teams to address ongoing captive broodstock issues and other ESA issues as needed.

Hatchery monitoring and evaluation programs are being improved, redesigned, and refined each year to assist hatcheries in providing the best rate of return of released hatchery smolts. We substantially increased funding for this phase of the LSRCP program in BY1993 and continued funding will be needed for an adequate hatchery evaluation program which ensures protection and enhancement of naturally reproducing populations.

The LSRCP is still a relatively new program and we are optimistic that with normal precipitation, snow packs, etc. return rates of hatchery-reared steelhead which may exceed model predictions. The chinook salmon return rates and adult returns to the basin are currently much below the level anticipated and used to design the LSRCP facilities. Minor improvements in adult chinook return rates are expected with changes in production release strategies, increased disease treatment and prevention, and improvements in smolt emigration. Captive broodstock efforts, if successful, will develop critical culture expertise needed in the immediate future for conservation of listed Snake River species. If regional managers can implement measures that significantly increase the system productivity of listed populations, then these efforts may be used in the future to assist in recovery and also as a brood source for LSRCP mitigation programs.

The LSRCP Office, with the cooperation of the BPA staff, hopes to complete an agreement to allow BPA to directly fund the LSRCP program beginning in FY2000. A schedule has been drafted to complete this effort by July 1999. The agreement will allow the first increase in funding since 1991 when the LSRCP began relying on carryover funds to handle additional annual funding needs.

During FY1999 the LSRCP Office and its cooperators will continue to work with Columbia River basin co-managers to renegotiate the CRFMP. Although many current programs and perhaps some new programs will emphasize conservation of populations, the LSRCP will continue to attempt to compensate for losses associated with construction and operation of the Lower Snake River dams.

STAFFING

A total of 5.0 permanent full time (FTE) staff years are now being utilized for operation of the LSRCP Office. One FTE, the Cooperative Agreement Assistant position, was filled during FY1998.

LSRCP Boise Office employees as of September 30, 1998

Edouard J. Crateau, LSRCP Coordinator, GM-13

Daniel M. Herrig, Evaluation Study Coordinator, GS-12

Joseph J. Krakker, Fishery Biologist, GS-11

Tammy A. Froscher, Secretary, GS-6

Margaret M. Anderson, Cooperative Agreement Assistant, GS-6

MEETINGS ATTENDED IN FY1998

- 10/1-2/97 Section 7 consultation review for steelhead with all LSRCP cooperators, Boise, Ed, Dan, Joe
- 10/8/97 Federal property inventory at Magic Valley FH, Tammy
- 10/8-9/97 Natures workshop - Port Ludlow, WA, Ed, Dan, Joe
- 10/14-15/97 Hatchery managers meeting, Columbia Rivers Eco-region, Pendleton, OR, Ed
- 10/29/97 Briefing on LSRCP and BPA direct funding with NWPPC, Idaho Falls, ID, Ed
- 10/30/97 Endemic production programs, with ODFW, NMFS, NPPC, USFWS, BPA, CTUIR, NPT, Portland, OR, Joe
- 10/14-17/97 Federal property inventory at Clearwater FH, Tammy
- 11/3-5/97 Federal property inventories at McCall FH and Sawtooth FH, Tammy
- 11/3-7/97 Genetics workshop, Boise, ID, Joe
- 11/05/97 Captive broodstock TOC meeting, with all cooperators, Boise, ID, Ed
- 11/06/97 Corps, ODFW meeting regarding Lookingglass water treatment ozonation system, Walla Walla, WA, Ed
- 11/17/97 Annual operation plan meeting with ODFW, NPT, CTUIR, in La Grande, OR, Ed
- 11/18/97 Dworshak coordination meeting, Ahsahka, ID, Ed
- 11/20/97 Met with Bill Shake and Dan Diggs regarding LSRCP programs, at LSRCP Office, Ed
- 12/3-4/97 Fish culture conference, Glenden Beach, OD, Ed, Dan
- 12/05/97 Hatchery project leaders meeting with Shake, Diggs, Forner, at Portland, OR, Ed
- 12/16/97 Meeting with IDFG to discuss PATH process, Boise, ID, Dan
- 12/19/97 Meeting with Virgil Moore, IDFG and Mike Fields and Rayola Jacobson, NWPP in Boise, ID, Ed
- 01/5-6/98 Evaluation coordination meeting with states, tribes at Deer Flat NWR in Nampa, ID, Ed, Dan, Joe
- 01/8-9/98 Meeting on Imnaha steelhead and chinook program with ODFW and NPT in Enterprise, OR, Joe
- 01/12-15/98 Fisheries Project Leaders Meeting, Reno, NV, Dan
- 02/3-5/98 LSRCP Symposium, Boise, ID, Ed, Dan, Joe, Tammy

02/9/98 Meet with Rocky Barker, Idaho Statesman, Boise, ID, Ed
02/9/98 Grande Ronde endemic spring chinook planning meeting with ODFW, CTUIR and NPT in La Grande, OR, Joe
02/18/98 Outplant meeting with FWS in Orofino, ID, Joe
2/19/98 Hagerman NFH coordination meeting with FWS, IDFG and SBT in Hagerman, ID, Dan, Joe
02/23/98 Bull trout Section 7 meeting, with federal land management agencies, in Boise, ID, Joe
02/25/98 Salmon and Steelhead Days work group meeting, Boise, ID, Ed, Dan
02/25/98 Chinook TOC meeting, Boise, ID, Dan
02/26/98 Meet with ODFW, Corps, NPT regarding Irrigon hatchery transfer, Ed
02/26-28/98 Idaho Chapter AFS meeting in Idaho Falls, ID, Dan, Joe
03/2/98 EEO training in Boise, ID, Ed, Dan, Joe, Tammy
03/10/98 Review 1998 evaluation studies SOW with WDFW evaluation personnel in Dayton, WA, Dan
03/11-12/98 Columbia River Management Plan, steelhead listing assessments with RO personnel and Dworshak Complex staff at Dworshak NFH, Ed, Dan, Joe
03/19/98 Captive brood research and projects in Idaho and Oregon with NWPPC, ODFW, NMFS, Tribal personnel, CRITFC, IDFG in Portland, OR, Dan
03/20/98 Imnaha, Little Sheep dispute update with Don Campton, and Dan Diggs on conference call, Ed, Dan, Joe
03/23/98 Imnaha, Little Sheep issue update, with Campton metapublication paper, conference call, Ed, Dan, Joe
03/23/98 Salmon and steelhead days planning meeting in Boise, ID, Dan
03/25/98 Meet with Richard Carlton, Corps, Walla Walla, District regarding hatchery transfer, Boise, ID, Ed
03/26/98 Dworshak NFH coordination meeting at Dworshak NFH with IDFG, NPT and FWS, Ed
04/1-2/98 Conservation hatchery concept meeting, Dan Diggs, Don Campton, Bill Miller, Howard Burge, Boise, ID, Ed, Dan, Joe
04/10/98 Location of a permanent fall chinook acclimation facility at Pittsburg Landing with Forest Service, NPT, Ed
04/14-15/98 Yakima program review in Toppinish, WA, Dan, Joe
04/20-21/98 Conservation hatchery concept meeting with FWS, NMFS in Boise, ID, Ed
04/20-22/98 CRFMP strategy meeting with NMFS, FWS, Joe, Dan
04/23/98 Grande Ronde endemic broodstock plan with ODFW, NPT conference call, Joe
04/24/98 Hillside Jr. High career day presentations, Joe
04/28/98 AOP implementation and development of plans with NPT, Umatilla and WDFW in Dayton, WA, Ed
04-28-29/98 Implementation of Tribal Trust Secretarial Order with the ESA with FWS, NMFS, NW Indian Tribes in Portland, OR, Dan
05/01/98 Fisheries marketing document preparation with Mike Stemple, Columbus Brown, Steve Klein in Denver, CO, Ed
05/4-5/98 ECO Team Meeting with FWS ECO team in Richland, WA, Ed

05/5/98 Attend NMFS hearing, Boise, ID, Dan

05/6/98 Chinook TOC meeting with ODFW, IDFG, NMFS, University of Idaho in Manchester, WA, Joe

05/7-8/98 Renegotiation of the Columbia River Fish Management Plan with US vs. Oregon Core Group in Portland, OR, Dan, Joe

05/12/98 Captain John Rapids acclimation site problem assessment, in Lewiston, ID, Ed

05/13/98 Nez Perce Tribe Fish propagation funding, IDFG, Boise, ID, Ed

05/15/98 Coordination meeting with Tom Rogers, Virgil Moore, Steve Yundt at IDFG headquarters in Boise, ID, Ed

05/17/98 Under ground storage tank removal and replacement meeting with Corps in Walla Walla, WA, Ed

05/20-22/98 Complex environmental negotiation training, in W. Virginia, Joe

05/26/98 McCall FH construction, Johnson creek project, with NPT, IDFG at McCall, ID, ED

05/28/98 Under ground storage tank removal and replacement, with WDFW, FWS in Portland, OR, Ed

06/01/98 CRFMP fish production orientation session, with federal, states, tribes in Portland, OR, Dan, Joe

06/02/98 Clearwater FH transfer meeting, with IDFG, Corps in Orofino, ID, Ed

06/02/98 Salmon and steelhead days meeting, Boise, ID, Dan

06/03/98 Conference call on NPPC staff responses to questions regarding three step process review of Grande Ronde endemic chinook supplementation programs, Joe

06/03/98 Johnson Creek project with IDFG, NPT at McCall, ID, Ed

06/05/98 Conference call with federal parties regarding CRFMP renegotiation meetings, Joe

06/10-12/98 CRFMP negotiations for Tucannon River and mainstem Snake, FWS, NMFS, IDFG, NPT, CTUIR in Lewiston, ID, Ed, Dan, Joe

06/16-17/98 Renegotiation of CRFMP for Imnaha and Grande Ronde basins with ODFW, NPT, CTUIR, WDFW and CRITFC in LaGrande, OR, Dan, Joe

06/22-24/98 CRFMP negotiations for Salmon River, FWS, NMFS, IDFG, NPT, CTUIR in Boise, ID, Dan

06/30-7/1/98 Renegotiation of CRFMP for Clearwater Basin with IDFG, NPT, SBT, FWS in Lewiston, ID, Dan

07/15/98 1999-2000 budget meeting with IDFG in Boise, ID, Ed

07/21/98 Salmon and Steelhead Days work group meeting in Boise, ID, Ed

07/23-24/98 Hatchery operations, maintenance needs, new projects, with Curt Schilling and hatchery staff at Sawtooth FH, Ed

08/12-13/98 CRFMP meeting in Seattle, WA, Dan, Joe

08/13/98 Computer meeting with Snake River Basin office, Tammy

08/14/98 Salmon and steelhead days meeting, Dan

08/17-18/98 FIS and FONS formulation work group meeting, in Washington, D.C., Ed

08/20/98 Salmon and steelhead days meeting, Dan

08/21/98 Visited South Fork satellite facility and watched spawning, Margaret, Tammy

8/24/98 Met with Jamie Clark and Anne Bagley at Boise and participated in briefing at Deer Flat NWR, LSRCP Staff

8/25/98 Toured South Fork trap with Kenworthy, Miller, Anne Bagley and Joan Jewett, Ed, Dan, Joe

08/28/98 BPA direct funding meetings, with BPA, Boise, ID, Ed

09/01/98 Assisted NPT with Cryopreservation of South Fork summer chinook, Idaho, Dan

09/1-2/98 BPA Direct funding work group meeting with BPA, ODFW, Corps, NMFS, NWPPC, Portland, OR, Ed

09/03/98 Salmon and steelhead days meeting, Boise, ID Dan

09/04/98 Johnson Creek project McCall reconstruction with NPT, IDFG, at McCall, ID, Ed

09/8/98 Salmon and steelhead days work group meeting with FWS, IDFG, USFS, BPA, BOR in Boise, ID, Ed, Dan

09/8/98 Tribal programs and LSRCP coordination with NPT and IDFG in McCall, ID, Ed

9/8-11/98 Spawning ground surveys with ODFW in La Grande, OR, Joe

09/9-11/98 Salmon and steelhead days festival in Boise, ID, Ed, Dan, Tammy, Margaret

09/14-15/98 CRFMP renegotiations with NMFS and FWS in Portland, OR, Dan, Joe

09/14-18/98 Ed IMPACT training, NTC, W. Virginia, Ed

09/24/98 Lookingglass FH program review and determination of capacity and future program capability with ODFW, NPT, CTUIR and Montgomery Consulting at LSRCP Office, Ed, Joe

09/29/98 Fall chinook acclimation facilities problems with Corps, NPT and BPA in Walla Walla, WA, Ed

TRAINING

Ed Croteau

EEO/Diversity/Sexual Harassment Prevention Training 3/2-3/98
Impact Project Leaders Training 9/14-19/98

Dan Herrig

EEO/Diversity/Sexual Harassment Prevention Training 3/2-3/98
WordPerfect 8 6/15/98
Fish Genetics 7/13-17/98

Joseph Krakker

Fish Genetics 11/3-7/97
EEO/diversity/Sexual Harassment Prevention Training 3/2-3/98
Complex Environmental Negotiations 5/20-22/98
WordPerfect 8 6/15/98

Margaret Anderson

Paradox Budget Tracking System 2/3-6/98
Federal Financial System 3/3-5/98
Administrative Training 3/31-4/2/98
WordPerfect 8 6/15/98
To Switch or Not to Switch CSRS to FERS 6/29-30/98

Tammy Froscher

Paradox Budget Tracking System 10/20-24/98

EEO/Diversity/Sexual Harassment Prevention Training 3/2-3/98

Simplified Acquisition Procedures/Pre-Printed Forms Systems 4/14-16/98

WordPerfect 8 6/15/98

To Switch or not to Switch CSRS to FERS 7/9-10/98

Survival Skills for Office Professionals 8/3-7/98

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TABLE 1. LOWER SNAKE RIVER COMPENSATION PLAN ACTIVITIES FOR FY 1998

INSTALLATION/PROGRAM	FUNDING LEVELS	SPECIES	TYPE	FISH RELEASED																																																	
				NUMBERS	POUNDS																																																
STATE OF IDAHO																																																					
McCALL FH and SOUTH FORK SATELLITE	\$362,166	SUCS	SMOLTS	393,872	22,507																																																
SAWTOOTH FH and EAST FORK SATELLITE	\$635,511	SUCS	FRY	288,469	3,792																																																
MAGIC VALLEY FH	\$711,156	SPCS	SMOLTS	43,161	3,091																																																
CLEARWATER FH and SATELLITE FACILITIES	\$1,153,756	STT	SMOLTS	621,861	138,142																																																
FISH MARKING	\$250,891	STT	SMOLTS	1,658,825	370,850																																																
IDFG EVALUATIONS	\$553,739	SPCS	SMOLTS	1,813,390	105,353																																																
IDFG ESA COORDINATOR	\$39,716	STT	SMOLTS	702,288	117,307																																																
EAGLE LAB	\$337,036																																																				
STATE OF OREGON																																																					
LOOKINGGLASS FH and IMNAHA SATELLITE	\$771,527	SPCS	FRY	7,230	48																																																
IRRIGON/WALLOWA FH and LITTLE SHEEP/BIG CANYON	\$1,164,968	SPCS	SMOLTS	431,543	17,197																																																
FLOOD DAMAGE	\$40,000	STT	SMOLTS	1,501,124	313,771																																																
ODFW EVALUATIONS	\$516,755																																																				
ODFW PATHOLOGY LAB	\$111,430																																																				
STATE OF WASHINGTON																																																					
LYONS FERRY FH	\$2,108,160	SPCS	SMOLTS	75,419	4,728																																																
		FCS	FINGERLING	109,772	1,304																																																
		FCS	SMOLTS	733,930	72,301																																																
		STT	SMOLTS	806,268	154,408																																																
		STT	FINGERLING	203,943	8,567																																																
		RBT	FINGERLING	206,232	4,288																																																
TUCANNON FH	\$264,318	RBT	CATCHABLE	123,561	42,365																																																
FLOOD DAMAGE		RBT	CATCHABLE	122,119	36,775																																																
WDFW EVALUATIONS	\$485,032																																																				
TRIBAL PROGRAMS																																																					
CTUIR EVALUATIONS	\$190,000																																																				
NEZ PERCE EVALUATIONS	\$308,000																																																				
NPT BIG CANYON O&M	\$0	(FISH REARED AT LYONS FERRY)																																																			
NPT CAPT. JOHN O&M	\$0	(FISH REARED AT LYONS FERRY)																																																			
NPT PITTSBURG O&M	\$0	(FISH REARED AT LYONS FERRY)																																																			
FISH AND WILDLIFE SERVICE																																																					
HAGERMAN NFH	\$614,000	STT	SMOLTS	408,824	92,761																																																
DWORSHAK NFH	\$328,500	SPCS	SMOLTS	973,400	46,646																																																
DWORSHAK FHC	\$87,500																																																				
COLUMBIA RIVER COORD.	\$80,000																																																				
IDAHO FRO EVALUATIONS	\$148,000																																																				
ABERNATHY SCTC	\$25,000																																																				
ICFWRU ERYTHRO STUDY	\$0																																																				
PIT TAGS	\$0																																																				
REGIONAL OFFICE	\$899,103																																																				
LSRCP MANAGEMENT/COORD.	\$376,863																																																				
TOTAL OBLIGATED	\$12,563,127																																																				
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RBT=RAINBOW TROUT, FCS=FULL CHINOOK, SPCS=SPRING CHINOOK, SUCS=SUMMER CHINOOK, STT=STEELHEAD

Table 2. Pertinent Data for Lower Snake River Fish and Wildlife Compensation Plan Fish Hatchery Facilities.

Hatchery (Operator) ^a	Fish Type	Pound	Total Cost (\$1,000)	Satellite Facilities	Date of Completion
Lookingglass (ODFW)	Spring Chinook	69,600	\$ 8,993	Big Canyon Ck. Imnaha	Nov. 82
			\$ 2,763		Apr. 87
			\$ 1,525		Jul. 89
Irrigon/Wallowa (ODFW)	Steelhead	279,600	\$15,646	(Wallowa) ^b Little Sheep Ck (Big Canyon Ck)	Oct. 85
			\$ 3,230		May 85
			\$ 2,545		Aug. 87
Lyons Ferry:			\$31,831 ^c		
Phase I (WDW)	Steelhead	116,400		Cottonwood Dayton Pond Tucannon FH Curl Lake	Nov. 83
	Trout	45,000			
Phase II (WDF)	Trout	41,000	\$ 801	Cottonwood Dayton Pond Tucannon FH Curl Lake	Feb. 85
			\$ 1,182		Oct. 86
			\$ 4,235		Nov. 84
Phase II (WDF)	Fall Chinook	101,800	\$ 230	Curl Lake	Feb. 85
	Spring Chinook	8,800			Nov. 84
Sawtooth (IDFG)	Spring Chinook	149,000	\$13,543	E.Fk. Salmon R.	Jan. 85
			\$ 2,067		Nov. 83
Dworshak (FWS)	Spring Chinook	70,000	\$ 2,234		Nov. 82
Clearwater (IDFG)	Steelhead	350,000	\$37,128	Red River Crooked River Powell	Dec. 91
			\$ 1,651		Nov. 86
			\$ 2,054		May 90
Clearwater (IDFG)	Spring Chinook	91,300	\$ 2,320	Powell	Aug. 89
Magic Valley (IDFG)	Steelhead	291,500	\$19,520	(Sawtooth) (East Fork)	Aug. 87
Hagerman (FWS)	Steelhead	340,000	\$ 9,801	(Sawtooth) (East Fork)	Apr. 84
McCall (IDFG)	Summer Chinook	61,300	\$ 5,741	S.Fk. Salmon R.	Sep. 81
			\$ 1,149		Jul. 80
Eagle Lab (IDFG)	Disease Diagnostic		\$ 1,300		Apr. 89

^a ODFW - Oregon Department of Fish and Wildlife

WDFW - Washington Department of Wildlife

WDFW - Washington Department of Fisheries

IDFG - Idaho Department of Fish and Game

FWS - U.S. Fish and Wildlife Service

^b Parentheses used when dual-use hatchery/satellite is listed a second or third time.

^c Total cost of Lyons Ferry Phases I and II

Table 3. Hatchery or trap rack returns to LSRCP hatcheries operating in 1997 and 1998.

Species/Hatchery	Hatchery/Trap Adults	Returns Jacks
Summer Chinook		
McCall FH/South Fork	898	76
Spring Chinook		
Clearwater FH ¹	905	3
Sawtooth FH	149	4
East Fork Trap	na	na
Lookingglass FH ²	249	27
Imnaha Trap	300	83
Big Canyon Trap	0	0
Grande Ronde River ³	33	
Lostine River ³	21	
Catherine Creek ³	28	
Dworshak NFH ⁴	1,311	12
Tucannon FH	63	30
Fall Chinook		
Lyons Ferry FH ⁵	1,229	885
Steelhead Trout		
Irrigon FH:		
Wallowa FH	1,374	
Little Sheep Trap	719	
Big Canyon Trap	1,236	
Lyons Ferry FH	5,947	
Cottonwood Creek Trap, WA	720	
Hagerman NFH/Magic Valley FH ⁶	800	
Crooked River Trap, ID	2	
Red River Trap, ID	0	

- ¹ Returns to Powell, Red River and Crooked River traps only.
- ² Includes those trapped at Lower Granite Dam and at the Lookingglass FH trap.
- ³ Endemic broodstock program.
- ⁴ Dworshak and Kooskia returns.
- ⁵ Includes ladder returns plus Lower Granite trapping (including strays).
- ⁶ Includes returns to East Fork, Slate Ck., and Sawtooth FH racks.

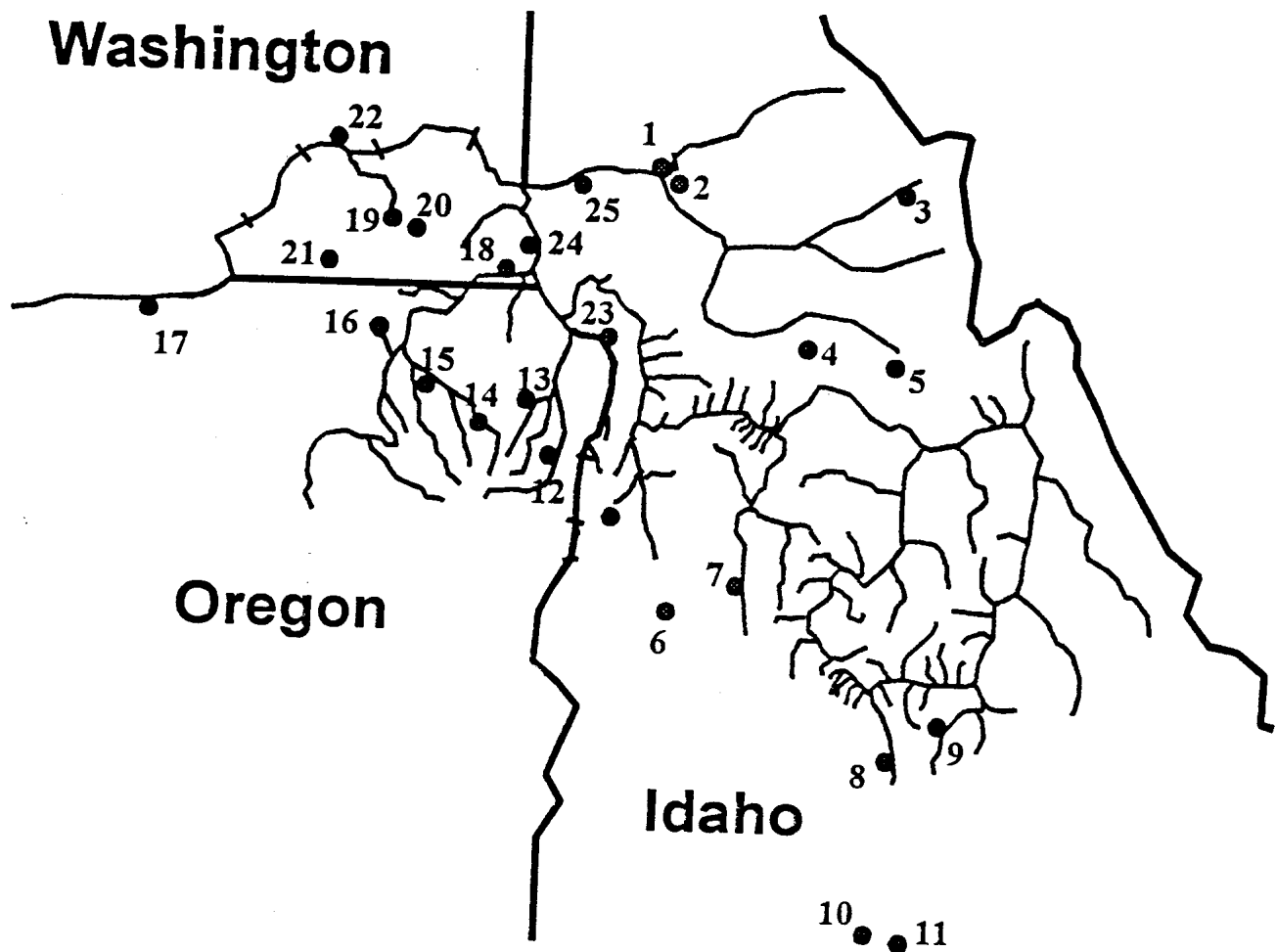


Figure 1. Location of LSRCP facilities

Idaho Department of Fish and Game

- 1. Clearwater Fish Hatchery (FH)
- 3. Powell Satellite Facility (SF)
- 4. Crooked River SF
- 5. Red River SF
- 6. McCall FH
- 7. South Fork Salmon River SF
- 8. Sawtooth FH
- 9. East Fork SF
- 11. Magic Valley FH

Nez Perce Tribe

- 23. Pittsburg Landing SF
- 24. Captain Johns SF
- 25. Big Canyon SF

Oregon Department of Fish and Wildlife

- 12. Imnaha SF
- 13. Little Sheep Creek SF
- 14. Wallowa FH SF
- 15. Big Canyon SF
- 16. Lookingglass FH
- 17. Irrigon FH

Washington Department of Fish and Wildlife

- 18. Cottonwood Creek SF
- 19. Tucannon FH SF
- 20. Curl Lake SF
- 21. Dayton Pond SF
- 22. Lyons Ferry FH (salmon and trout)

Fish and Wildlife Service

- 2. Dworshak NFH Expansion
- 10. Hagerman NFH