LOWER SNAKE RIVER

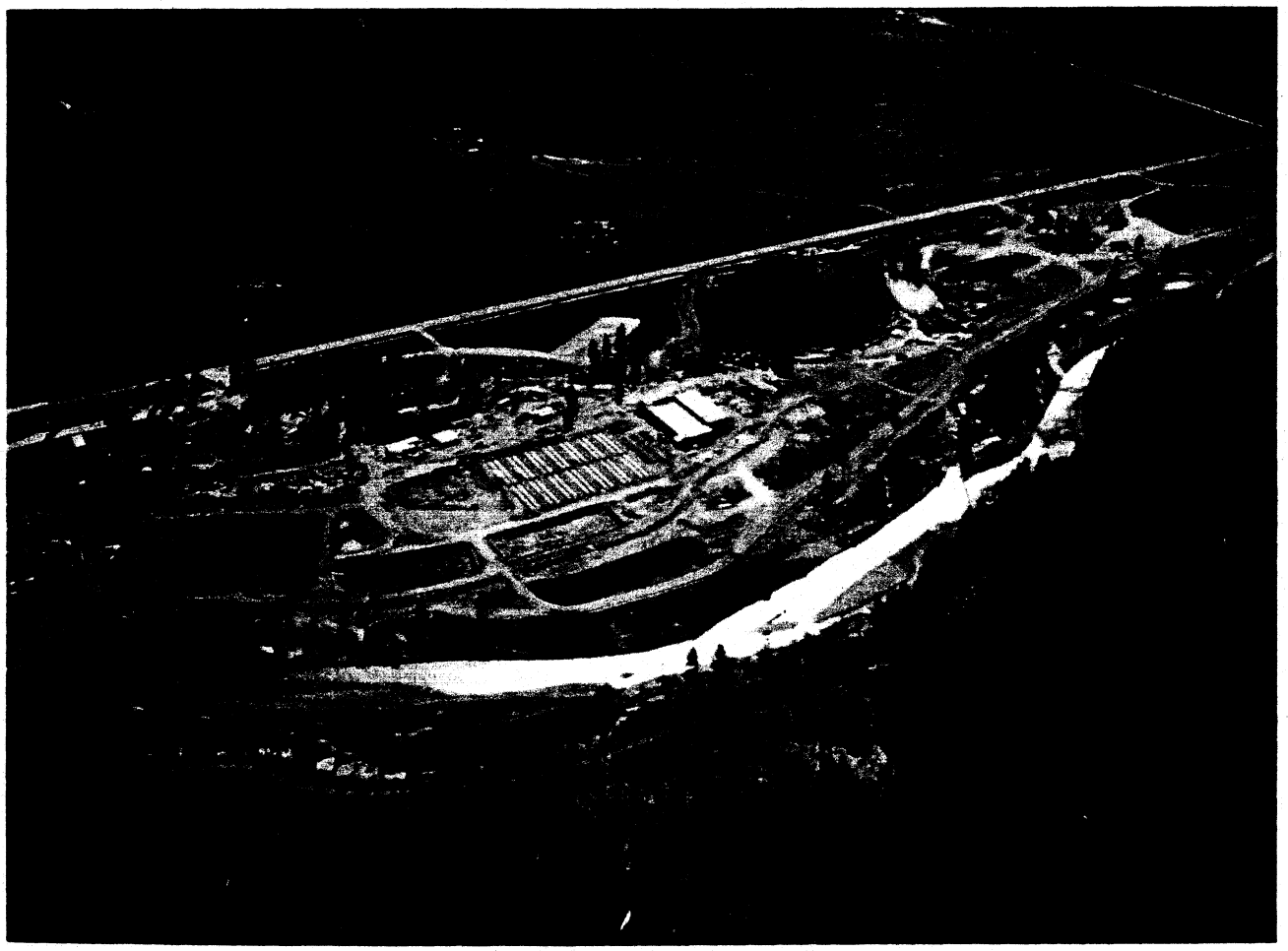
COMPENSATION PLAN PROGRAM

ANNUAL REPORT

FISCAL YEAR 1991

Boise, Idaho

October 1, 1990 - September 30, 1991



The Sawtooth Hatchery, located near the headwaters of the Salmon River, lies in Sawtooth Valley, cradled between the White Cloud Mountains and the Sawtooth range. The hatchery is located six miles south of Stanley and was completed by the Army Corps of Engineers in 1985. The hatchery, and the East Fork Satellite (discussed below), are operated by the Idaho Department of Fish and Game and funded and administered by the U.S. Fish and Wildlife Service. The two facilities are among the twenty-three Lower Snake River Compensation Plan projects built to help restore depleted fish runs resulting from hydropower development on the lower Snake River.

Indians from several tribes used the Sawtooth area historically. Tribal members subsided on the abundance of salmon and mountain sheep found in the area.

Alexander Ross, an explorer for the Pacific Fur Company, passed through the area in 1824, looking for new sources of beaver. Few were found, so he and many later mountain men paid little attention to the Sawtooth Valley for anything other than its scenic beauty.

In 1863, Captain Joe Stanley, with a party of men looking for gold, staked claims around the hatchery area. They worked the claims for awhile, but short supplies and hostile Indians forced them to leave.

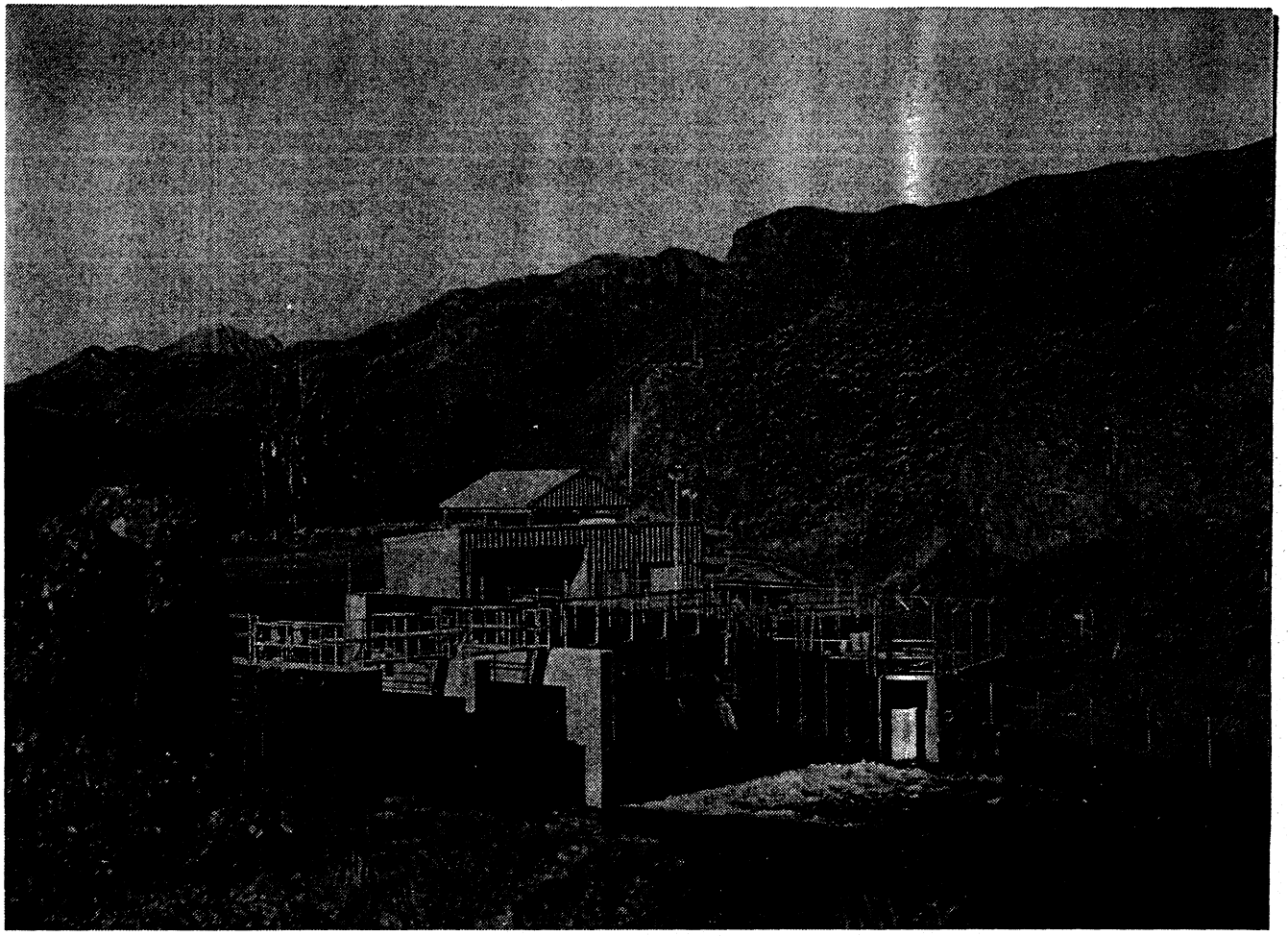
By 1882, mining towns sprang up throughout Sawtooth Valley. Vienna located approximately 17 miles upriver from the hatchery had a population of 800; Sawtooth City had a population of over 600. Present day Stanley has a population of 100 year-round residents.

The winter of 1884-85 was extremely severe. Temperatures remained at -50°F for weeks. Snow piled deep that winter, keeping some roads closed until mid-July. After that winter, mining began a slow decline, then faded to ghost town status.

Mining created the next big change for the area. In the late 1960's an open-pit molybdenum mine was proposed in the heart of the Virgin White Cloud Mountains. A fierce conservation battle ensued, leading to the creation of the Sawtooth National Recreation area in 1972. The backcountry was protected and private land-owners development rights were bought by the Forest Service, ensuring that a pastoral setting would not be lost in Sawtooth Valley. Area residents and the Forest Service had to be assured that Sawtooth Hatchery's construction would not degrade the visual or environmental quality of the area and the facility was built along strict architectural guidelines.

The hatchery is built near traditional chinook spawning grounds in the Salmon River. The actual site was covered with marshes and willows before construction. During high river flows, the entire hatchery site was covered with water. Salmon have been trapped at the hatchery site since 1981. Dirt ponds were used for holding adults and raising juveniles in the early years.

In addition to chinook, the hatchery crew spawns steelhead in April, traps sockeye smolt during the spring, plants catchable rainbow trout during the summer, and last year, held and spawned the four returning Redfish Lake sockeye. A satellite facility on the East Fork of the Salmon River is also operated to support the Sawtooth Fish Hatchery.



The East Fork of the Salmon River Satellite Facility of Sawtooth Fish Hatchery built in 1983 is a trap and release site for "B" steelhead and spring chinook.

The East Fork Satellite was put into operation during the fall of 1984. The facility is located 18 miles up the East Fork of the Salmon River from state highway 93 near Clayton, Idaho. It is put into operation each year in mid-March for steelhead season and taken out of operation in mid-September when the last of the chinook have been spawned. The site is located on former Bureau of Land Management grazing land. An access road into the facility was purchased from a private land owner.

The East Fork had a very large chinook run through the 1960's. The spring chinook arrived during May and June and moved quickly up the lower river to spawn in the headwaters and streams feeding the headwaters. The summer chinook arrived in July and August and they spawned in the lower river reaches.

Eddie Baker, a retired East Fork rancher who grew up in the East Fork Valley, said prior to the 1960's the whole valley stunk from the thousands of rotting carcasses of spawned-out fish. He also remembers Shoshone-Bannock tribal members coming from the Fort Hall Reservation to fish for the salmon. Families would stay several weeks catching and smoking the fish. They brought leather and bead work to sell or trade to the valley residents. Members of the tribe still come to fish on week-ends, but with so few fish returning, tribal biologists have set harvest limits.

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I. 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 currently conveying operational responsibility for constructed fish facilities to the FWS by Memoranda of Understanding for each facility (usually 5-year agreements). Consistent with the desires of the Administration and Congress, the Corps is also transferring fee title of LSRCP hatcheries and associated satellite facilities to the FWS as they are completed and fully operational. Ownership of several hatcheries and satellites has already 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 exceeds $10 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 12 hatcheries and 11 satellite facilities in Idaho, Oregon, and Washington. Idaho Department of Fish and Game (IDFG) will operate four hatcheries (including Clearwater Anadromous Fish Hatchery after completion), Oregon Department of Fish and Wildlife (ODFW) operates three hatcheries, Washington Department of Wildlife (WDW) two hatcheries, Washington Department of Fisheries (WDF) one hatchery, and FWS two hatcheries.

II. Program Highlights for FY1991

The 1990-91 steelhead run above Lower Granite Dam although substantially lower than the previous years near record was approximately 57,000. A large percentage of the run was the result of hatchery releases in 1987, 1988 and 1989 and comes very close to meeting our adult steelhead mitigation goal of 55,100 steelhead adults back to the project area. In 1987 approximately 4,255,000 steelhead were released from LSRCP hatcheries followed by releases of 7.0 million and 6.5 million from these same facilities in 1988 and 1989. In keeping with the success of the LSRCP steelhead production program Magic Valley Fish Hatchery (FH) alone released 2,062,000 steelhead smolts this year weighing 501,100 pounds, the second highest number and weight since they began operation five years ago.

The Clearwater FH the last facility to be constructed under the LSRCP is scheduled for completion in December 1991. The first fish, resident rainbow trout will be used for testing the physical plant in early 1992 and Dworshak National Fish Hatchery (NFH) will supply approximately 500,000 steelhead eggs for the first years shakedown of the facility.

LSRCP facilities continue to produce and release large numbers of salmon, steelhead and resident trout as part of their mitigation responsibility. In FY1991 approximately 12,700,000 salmon, steelhead and rainbow trout weighing nearly 1.8 million pounds were released from LSRCP facilities.

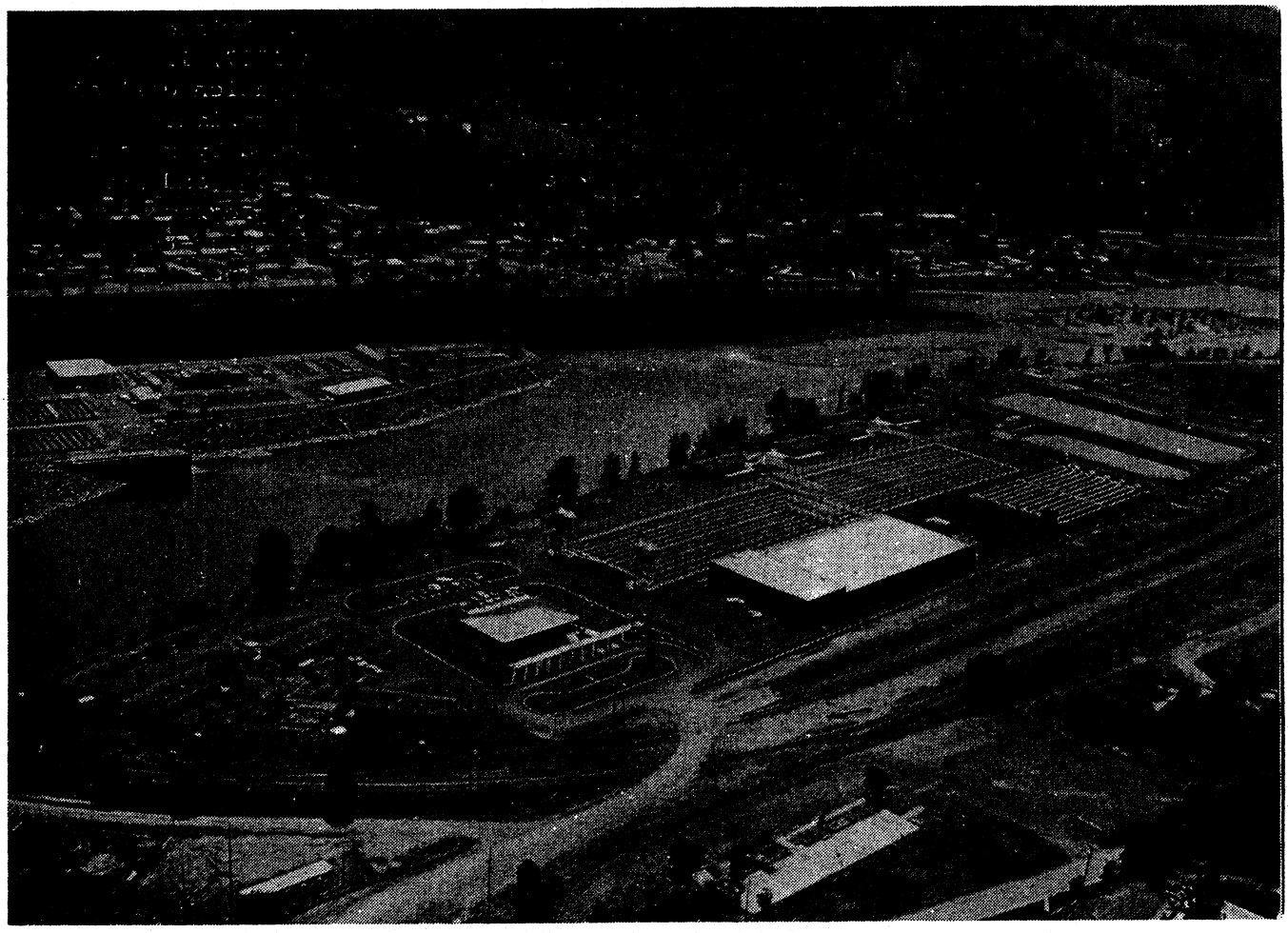
III. STATION AND COOPERATOR OPERATIONS

The Boise LSRCP Office negotiated cooperative agreements with and administered funds to four state agencies, two Indian Tribes and the FWS for operation and maintenance of fish hatcheries and to conduct hatchery monitoring and evaluation studies and fish health programs. A total of $6,451,528 was obligated to WDF, WDW, ODFW, and IDFG or transferred to Dworshak NFH, Hagerman NFH, and Dworshak Fish Health Center for operation and maintenance and fish health monitoring of 12 hatcheries and 10 associated satellite facilities. An additional $1,745,388 was obligated to the same four state cooperators, Nez Perce and Umatilla Tribes, Idaho Fisheries Resource Office (IFRO), and the

Seattle National Fishery Research Center (NFRC) for hatchery monitoring and evaluation studies. A total of 12,561,920 salmon, steelhead and rainbow trout weighing 1,735,252 pounds were stocked from LSRCP facilities in FY1991. Below are brief summaries of hatchery and evaluation activities in FY1991. Tables 1, 2, and 3 provide further data on funds obligated, fish stocked, production targets, construction costs, and hatchery/trap returns.

Clearwater Anadromous Fish Hatchery - Idaho

Clearwater Fish Hatchery will be the last of the 12 hatcheries to be completed under the Corps' LSRCP construction program. The hatchery will be operated by the IDFG and is being built across the North Fork of the Clearwater River from Dworshak NFH. It 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 spring chinook adult return goal for the program is 11,915 salmon and the steelhead return goal is 14,000 adult returns to the Snake River basin.



Clearwater FH shown in the foreground, the most recently constructed LSRCP fish hatchery is located across the North Fork of the Clearwater River from Dworshak National Fish Hatchery which is shown in the background.

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 it should be completed by the end of 1991. The water supply line will be tested in November 1991, and steelhead eggs from Dworshak NFH will be supplied to Clearwater in 1992 for the first rearing cycle.

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

Three satellite fish facilities are associated with the hatchery: Red River, which was 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 excess fish from either Sawtooth FH or, more recently, Dworshak NFH.

Red River trapped 17 adult spring chinook and one jack this year, approximately 32% of the 53 adults collected last year. Seven Red River fish were passed upstream to spawn naturally. A total of 27 adults and 6 jacks were trapped at Powell; only 2 females were spawned with the remaining fish passed upstream to spawn naturally. Crooked River was operational for the second year of trapping; a total of 18 adults and 2 jack were trapped, and all were released to spawn naturally.

A total of 320,386 chinook presmolts were released from the Crooked River pond in October 1991. About 354,713 spring chinook presmolts were volitionally released in October from the Red River rearing pond and 358,372 from the Powell satellite facility.

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 (both completed) serve as the juvenile release and adult trapping sites for the hatchery program. Magic Valley FH completed its fourth rearing season this year, and released approximately 2,062,000 steelhead smolts in April 1991, weighing 501,100 lbs.

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 has achieved considerable success with its summer chinook program, trapping 2,690 adults in 1986, 2,705 in 1987, and 2,393 in 1988. Typical of the lower chinook runs throughout the basin, McCall's returns decreased in 1989 and 1990 when 939 (444 adults and 495 jacks) and 969 fish (941 adults and 28 jacks) were trapped. In 1991, 1,212 fish (391 adults and 821 jacks) were trapped and the hatchery took approximately 704,016 green eggs. This year's egg take will not be close to the numbers needed to produce the desired smolts for release in 1993. A total of 117 adult males and females were released to spawn naturally in 1991.

The McCall FH staff released 708,600 brood year (BY) 1989 summer chinook salmon smolts weighing 29,790 lbs in the South Fork Salmon River in March 1991; this is well below the hatchery's release target of 1,000,000 smolts. The fish were in good health throughout the rearing cycle and mortalities were low.

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.

The adult steelhead returns to Sawtooth FH in 1990 was 1,056, about 112 fish more than in 1989, but less than half of the steelhead return of 2,187 in 1987. This year only 261 steelhead returned to Sawtooth FH. The East Fork satellite facility trapped 119 steelhead, 335 less than in 1990 and 260 less than in 1989.

Spring chinook trapping and spawning ended in September with a total of 566 chinook trapped this year compared to 1,488 trapped in 1990 and 888 trapped in 1989. The East Fork trapped 62 spring chinook this year compared to 145 in 1990, 128 in 1989, and 548 in 1988. Numbers of chinook trapped at both sites were lower than previous years and were typical of the low numbers that returned basinwide.

Most brood year (BY) 1989 spring chinook were released in March 1991. Releases included 650,600 smolts into the Salmon River at the hatchery and 98,300 smolts into the East Fork. An additional 1,496 PIT-tagged BY1990 smolts averaging 44 fish per pound (fpp) were released into the Salmon River this summer.

In addition to the LSRCP program, the State cooperates with the Shoshone-Bannock Tribe, 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. This year 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 is located on the Columbia River near Umatilla, Oregon; operated by the ODFW, the hatchery was completed in October 1985. Collector wells 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 1991 a total of 576 steelhead returned to the Wallowa FH which was approximately 60 percent of the returns in 1990.

Two other advanced rearing and trapping sites, which are satellites of the Irrigon FH, were operational in 1991. Big Canyon satellite is located at the mouth of Big Canyon Creek on the Wallowa River. It was completed in April 1987 and is capable of holding and releasing 225,000 smolts. Two hundred and sixteen adult steelhead returned to Big Canyon satellite in 1989, 336 adults in 1990, and 428 adults returned this year.

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 1987, 1988, and 1989, 730, 286, and 322 steelhead returned to the trap. In 1990, returns were high and 959 steelhead were trapped. The run declined in 1991, however, and this year only 395 steelhead were trapped.

Releases for 1991 of Irrigon-reared fish included about 606,677 Wallowa stock steelhead from the Wallowa FH rearing ponds, 242,982 Imnaha stock steelhead from the Little Sheep Creek site, 268,972 Wallowa stock from the Big Canyon site, and 810,209 fingerlings and smolts at various stream sites.

Lookingglass Fish Hatchery - Oregon

This hatchery is located on Lookingglass Creek north of Elgin, Oregon, and was completed in November 1982. The hatchery 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 went well this year with a total of 491 fish collected at the Imnaha trap (263 adults and 228 jacks) and 273 adults and 152 jacks returning to the Lookingglass trap. An additional 38 chinook (35 adults and 3 jacks) were trapped at Big Canyon Creek facility. The Lookingglass and Imnaha stock returns were about 77% of the 1990 returns.

BY1989 spring chinook releases from Lookingglass FH totaled 1,252,617. These releases included 853,708 Rapid River stock into Lookingglass Creek in April 1991 and 398,909 Imnaha stock from the Imnaha River satellite facility acclimation pond in March and April 1991.

Some rearing problems were experienced at Lookingglass FH which required facility modifications, installation of a larger emergency generator, and the addition of chillers to facilitate uniform size of chinook throughout the rearing cycle. The Corps, FWS LSRCP Office Coordinator, and ODFW personnel worked out the details for hatchery modifications which were completed in the summer of 1991.

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, is 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, completed in November 1984, is 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.

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 WDF's 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 lbs.) is to come from stream enhancement structures funded by the Corps. These structures were constructed by WDW in the early 1980's. The WDW personnel operate the Tucannon FH in cooperation with WDF as a satellite of Lyons Ferry Phases I and II.

The hatcheries along with the Phase I (steelhead) satellite facilities at Cottonwood Creek, Dayton Pond, and Curl Lake were completed from 1983 to 1986. Some problems still exist, however, which need to be addressed. For example, suspended manganese in the water supply system at Lyons Ferry, particularly in the Phase II raceways, appears to be a problem for juvenile fall chinook. The

manganese may be irritating the gills and causing gill hyperplasia and fusion. In 1989 the WDF conducted tests with various loading densities to determine the cause of the losses and help define the potential impact of the problem. The results of these tests were inconclusive and there was no apparent relationship between loading densities, manganese, and bacterial gill disease. Shutting down the suspect well at an early life stage has alleviated the problem.

Gull use of the large steelhead rearing ponds has increased greatly in recent years. The severity of the depredation problem is being determined and various solutions are being considered. Straying of Lyons Ferry steelhead adults released at Lyons Ferry and Curl Lake also continues to be a major problem for WDW's steelhead program.

The temporary weir on the Tucannon River at the Tucannon FH failed in May 1987 when high flows caused the streambed to scour beneath the rack. Concern over continued problems during high flows caused the WDF and WDW to request the Corps to construct a more permanent facility. Discussions occurred in 1988 to select a new site for installation of a more permanent weir. The Corps designed a floating type weir which was installed in the fall of 1989. This new weir was an improvement over previous weirs but had some design flaws which the Corps has agreed to correct. In 1991 new weir panels were installed which work much better.

Spring chinook returns to the Tucannon trap and weir totaled 222 adults and 89 jacks in 1991, up substantially from the 87 adults trapped last year. Twenty-nine females were spawned resulting in an egg take of 98,000. This egg take will not meet the target smolt release goal for 1993.

This year adult fall chinook were trapped at the Lyons Ferry FH and at Lower Granite and Ice Harbor Dams and transported to Lyons Ferry FH for holding and spawning. A total of 1,141 adult fall chinook, approximately the same as last year, were collected at the dams. An additional 521 adults and 602 jacks volunteered to the hatchery ladder. A considerable effort was necessary during spawning to ensure that only Snake River fall chinook adults were using the broodstock. Strays from programs outside the basin were inadvertently used in past years. This effort is of particular importance because of the proposal to list fall chinook as threatened under the Endangered Species Act (ESA).

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) and spring, all trapped steelhead are checked for Lyons Ferry brands. In FY1991, 261 female steelhead were spawned for a take of approximately 1.25 million eggs. No IHN problems were encountered this year; in 1989 the entire brood year was destroyed after detection of a severe IHN outbreak.

On May 28, 1991, the sole water supply pipeline to Lyons Ferry FH was severely damaged and required an emergency repair. All salmon, steelhead, and trout juveniles were moved to Tucannon FH and various state facilities in the Columbia Basin. When the pipeline was repaired by the Corps in early August, all fish were returned with almost no mortalities!

Releases from Lyons Ferry FH were below the goals for fall and spring chinook and near the goal for steelhead. The fall chinook release totaled 224,439 age-0 smolts (all BY1989 progeny were released as age-0 smolts, so no yearlings were available). This entire group was loaded onto barges and released below Ice Harbor Dam. The BY1989 spring chinook release into the Tucannon River was 99,057 yearlings.

About 940,934 steelhead smolts weighing 227,740 lbs were released from Lyons Ferry FH, hauled to the three satellite ponds, or trucked directly to streams. Lyons Ferry and Tucannon FH's combined, reared and released about 167,062 catchable (8 to 9 inch) and 364,723 sublegal rainbow trout for Washington lakes and streams weighing 97,110 lbs.

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. Starting in 1986 twelve raceways formerly used to rear resident trout were converted to rearing spring chinook. This increased Dworshak's chinook rearing potential by about 20,000 pounds, for a total of 90,000 pounds. This additional rearing effort will now be shifted to the Clearwater FH in FY1992.

Spring chinook runs in the Clearwater River were down in FY1991 with only 632 adults returning to the Dworshak/Kooskia Complex. The estimated hatchery egg take of 990,842 green eggs will not be sufficient for the both Dworshak and Clearwater programs.

In April 1991, Dworshak NFH personnel released approximately 1,094,884 BY1989 chinook smolts into the North Fork Clearwater River directly from the NFH. In March 63,004 chinook smolts were released into Red River as a part of the Clearwater FH program. Approximately 269,456 BY1989 smolts were outplanted in March into Eldorado and Papoose Creeks as part of Dworshak's outplanting program, and 165,588 fingerling chinook (BY1990) were released into Newsome Creek in July.

To assist the Clearwater program, Dworshak transferred 714,567 BY1990 fingerlings in June to the Powell and Red River satellite sites for their fall release program. About 578,360 more BY1990 chinook smolts were transferred from Kooskia NFH to the Crooked River facility in June. In mid-September, Dworshak NFH transferred an additional 120,121 salmon to Crooked River to replace fish lost during a severe thunderstorm.

Hagerman National Fish Hatchery - Idaho

Hagerman NFH, located on a 59^{0}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 pounds. Hagerman NFH also retained the capacity to produce 100,000 pounds 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 116,430 BY1991 steelhead "A" eggs from Sawtooth FH, 87,500 BY1991 "B" eggs from the East Fork facility, 677,706 Pahsimeroi "A" eggs, and 1,549,750 BY1991 "B" eggs from Dworshak NFH. Approximately 527,074 "B" steelhead fingerlings from the latter egg lots were transferred back to Dworshak NFH in August.

In April 1991 Hagerman NFH released over 1.4 million BY1990 steelhead smolts weighing nearly 326,000 lbs into various streams in the Salmon River basin. Fish health for the entire history of steelhead production for BY1990 was excellent.

IV. LSRCP OFFICE OPERATIONS

A total of $8,854,916 was obligated for LSRCP programs in FY1991. This total included $1,535,458 for cooperator monitoring and evaluation studies ($55,948 from carry-over monies), $224,000 for Boise LSRCP Office management and coordination, $100,000 for Youth Conservation Corps (YCC) (salaries and benefits), $334,000 for the Regional Office, $197,498 for the National Fisheries Research Center ($149,498 from carry-over monies) and the balance ($6,463,960) for hatchery operations and maintenance. Ten cooperative agreements were signed for FY1991 to distribute evaluation and operation and maintenance funding ($7,030,486) to non-federal entities.

In FY1991 the LSRCP program continued to sponsor a YCC program at a cost of $100,000. The program was conducted on 15 state and federal LSRCP hatcheries and evaluation study projects and included 43 YCC student enrollees and team leaders. Once again the program was well received by the cooperating agencies, it not only accomplished necessary station work but also provided an environmental awareness experience and job training for local youths.

The LSRCP program information video, a cooperative venture with the National Fish and Wildlife Foundation (NF&WF) was placed on hold during part of FY1991 pending announcement of Endangered Species status for several Snake River salmon species. A decision was made between the FWS and NF&WF to incorporate ESA aspects and issues into the video. The video is back on track and should be completed in late fall 1992.

The LSRCP Office also completed two additional public information brochures this year, one for Irrigon FH and one for McCall FH. The LSRCP completed printing 100,000 copies of each full color six page brochures and the two hatcheries are now using them for public distribution to visitors.

Irrigon and McCall FH brochures were produced by the LSRCP Office and printed by the Corps. Eventually all LSRCP FH will have similar brochures.

V. EVALUATION STUDIES

In 1991 all five operating agencies and two Indian Tribes had fully operational evaluation studies underway. By the end of the fiscal year, a total of $1,535,458 had been obligated for 10 study agreements being carried out by the IDFG, ODFW, WDW, WDF, FWS (IFRO), and the Nez Perce and Umatilla Tribes. Below is an overview of the FY1991 evaluation program followed by a synopsis of state and tribal evaluation programs. The IFRO evaluation program is discussed in the next section, **FWS Cooperative Programs.**

A pattern for regular Evaluation Study Committee (ESC) meetings was established in 1985 and continued in 1991. Although the ESC consists of a

single representative from each operating agency and cooperating Indian Tribe, ESC meetings often include additional staff members from each agency and occasionally visitors. Two fully-attended ESC meetings were conducted in FY1991 along with several partial committee meetings to discuss specific topics. Visitors at FY1991 meetings included Jay Gore, an endangered species biologist at the Boise Field Office-FWS; Paul Abbott, an Idaho Power Company biologist; Bob Austin, a BPA biologist; Dennis Rondorf, a FWS biologist at the Willard Field Station; and Scott McCutcheon of BioMark, Inc. In lieu of a summer meeting during the busy field season, the LSRCP evaluation studies coordinator met individually with agency coordinators to discuss project activities, problems, needs, concerns, etc.

IDFG's Evaluation Study Program

In 1991, IDFG combined their three-part study program into a single statement of work and budget. Their study, LSRCP Fish **Hatchery Evaluations-Idaho,** combines three projects--*Hatchery Evaluations, Hatchery-Wild Composition of the Idaho Steelhead Harvest*, and *Coded-Wire Tag Analyses*. Idaho's LSRCP studies were initiated in 1982 and are being conducted 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) assess the LSRCP contribution to fisheries and escapement. The hatchery operation studies include monitoring and evaluation of hatchery loading and size, time, and location of release studies. 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 1991. PIT tagged groups of salmon were released from McCall and Sawtooth FH's to determine migration timing and initial survival. IDFG continued to collect scales from known hatchery adults (i.e. those tagged as juveniles) and wild fish and to provide them to ODFW biologists who are developing scale pattern models which may eventually be used to identify hatchery fish for broodstock and other management purposes. Steelhead size at release experiments continued at Hagerman NFH to help identify the optimum size with the greatest survival and lowest residualism rate. Survival implications of high, medium, and low density chinook rearing conditions continued another year at Sawtooth FH. To assess effects of handling and CWTing, summer chinook in one pond at McCall FH were again marked with TM-100 for comparison to CWTed fish in the adjacent pond.

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. This survey is the major means of recovering adult steelhead tagged as fingerlings under other evaluation studies. These efforts were funded through 1991 and will be continued annually until compensation goals have been met, and periodically thereafter. Data collected under this project have shown that LSRCP-reared fish are returning to Idaho at

a rate of about one percent (0.9 to 1.5 percent). Exploitation rates are often quite high, ranging from 60 to 80 percent of those fish that can be accounted for.

The process of reading tags and analyzing marks was funded in 1991 as part of the evaluation study while actual marking costs remained a part of each hatchery's budget. In 1991 several thousand tags (many recovered under the Harvest Study described above) were removed from fish and decoded at IDFG's Lewiston lab.

ODFW's Evaluation Study Program

ODFW conducts nearly all of their evaluations under one "umbrella" study, **An Evaluation of the LSRCP Program in Oregon.** The ODFW began a few evaluations under this study in 1983 but full-scale studies did not begin until FY1984. Their evaluation program currently encompasses monitoring and evaluation of hatchery practices; size, time, and location of release studies; marking activities (CWTing, branding); assisting with disease monitoring efforts; and creel census studies to determine the LSRCP contribution to Oregon's steelhead fishery and to recover tagged fish. In addition to being the evaluation studies coordinator, the principal LSRCP investigator in Oregon also coordinates the broodstock selection, egg-taking programs, and outplanting program for all of Oregon's LSRCP program, currently the only anadromous hatchery program in NE Oregon.

In 1990 a study was initiated to develop a discriminate function model based on scale growth patterns to separate hatchery and wild-origin adult salmon at Lower Granite Dam and points above. This effort was continued in FY1991 and incorporated Idaho's scale collection effort (as noted above).

This year ODFW initiated acclimation versus direct stream release steelhead studies at Little Sheep and Big Canyon Creeks. Similar studies at Wallowa FH were completed with the release of smolts this past spring (BY1990). Chinook acclimation versus direct stream release studies will be initiated at Imnaha facility in 1992.

ODFW findings for BY1987 through BY1989 steelhead show that migration timing and passage of acclimated and direct stream releases are similar. Smolt-to-adult survival rates, however, were consistently greater for the acclimated 1986 through 1988 broods. Fall versus spring release comparisons for chinook have shown poorer passage indices at Lower Granite for fall than spring releases. Scale pattern models have been described for Oregon chinook and have been used to analyze stocks on natural spawning grounds. Preliminary data have shown higher than expected proportions of hatchery fish present.

A short-term study initiated by ODFW in 1984 was continued through 1991: **Evaluation of the Benefits Provided by Pre-smolt Releases in the Grande Ronde.** No fingerlings have been tagged or released since 1986, and the last adults marked for this project returned this year. When data analyses are completed, the presmolt study will help determine the efficacy of releasing fry and presmolts in the summer and fall.

WDF's Evaluation Study Program

The WDF field evaluation program was initiated in 1985 when a principal investigator was hired and stationed at Lyons Ferry FH. Their 1991 evaluation program is similar to Idaho's in that all major evaluations are being conducted under one multiple-objective study including 1) monitoring and evaluation of hatchery practices, juvenile outputs, adult returns, and contribution to fisheries; 2) time, size, and location of release studies; and 3) evaluation of impacts of hatchery releases on wild chinook stocks. Because the hatchery program is being built entirely with the endemic fall and spring chinook stocks, special attention is being paid to quantifying and monitoring genetic variables in each population.

Due initially to the concern for status of declining Snake River chinook stocks, and subsequently to the proposal to list fall and spring/summer chinook stocks as threatened species, WDF initiated some new studies in FY1991. Specifically, they began a radio tag tracking study of adult fall chinook captured at Ice Harbor Dam. Their study was an "add-on" to a similar and much more extensive Corps-funded Idaho Cooperative Fish and Wildlife Research Unit (ICFWRU) study of steelhead and spring chinook. The Service, WDF, ICFWRU, and others also combined forces in working on a LSRCP/BPA-funded study of Snake River fall chinook habitat and juvenile migration and survival (see FWS Cooperative Programs section).

As noted above, major efforts were taken in 1991 by evaluation and hatchery staffs to identify the origin of fall chinook broodstock captured at Ice Harbor and Lower Granite Dams and returning to the Lyons Ferry ladder. WDF is trying to ensure that future broodstocks contain no non-endemic fish as has happened in several past years. All fall chinook releases are being marked so Lyons Ferry origin adults can be identified in future returns.

The BY1990 spring chinook hatchery returns were spawned with other hatchery fish and wild fish to compare with wild X wild crosses. This was the first broodstock to contain 4-year-old hatchery-origin returns. The crosses will be compared through the hatchery rearing period and uniquely marked to determine adult return rates.

A major activity initiated in 1989 and continued in 1991 involved radio tagging and tracking wild and hatchery adult spring chinook above the Tucannon FH weir to determine movement, spawning time, and location, survival, and spawning success. With the completion of the new weir in 1990, biologists have been able to enumerate all returns, both wild and hatchery, and select a predetermined proportion of both wild and hatchery-origin fish for the hatchery use and for upstream release. WDF radio tagging studies have shown wild fish moving further upstream than hatchery fish.

Thus far, WDF tagging studies have indicated yearling fall chinook releases return at higher rates to ocean fisheries and to the project area than subyearling releases. However, barged (from Lyons Ferry FH) and direct release return rates appear similar. Brood Year 1992 data will be available from WDF tagging studies and from chinook density rearing studies at other

LSRCP facilities to allow WDF to better refine optimum fall chinook rearing and release strategies.

WDW's Evaluation Study Program

The bulk of the WDW's evaluation program has been and will continue to be conducted under one study, **Lyons Ferry FH Evaluation Study - Steelhead.** The long term program 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 (over 90 percent of the total).

The hatchery evaluations and related field studies at Lyons Ferry FH have been underway since 1983, when the steelhead and trout production programs were initiated. Major concerns which have surfaced as a result of evaluations have been the large numbers of residuals below some satellite release facilities, low returns to the Tucannon River (from Curl Lake releases), and poor fall/early winter returns to the Cottonwood pond area (Grande Ronde R.). In addition, surveys since 1986 showed large portions of the Lyons Ferry FH and Tucannon-released fish are returning above Lower Granite Dam--well above their release sites. A WDW/ODFW radio tagging study confirmed that many Lyons Ferry and Tucannon River adult returns are wintering above Lower Granite; and, although some drop back to the dam, most fail to return to their release area.

In a study initiated in 1988 and continued in 1990, steelhead presmolts outplanted to the three conditioning ponds were sampled before outplanting to the ponds, midway through the conditioning period, and at release to determine the process and degree of smoltification. In 1991 the study continued at Curl Lake and incorporated direct stream releases. The hypothesis is that poor outmigration and homing may be related to smolt condition. The direct stream releases underwent similar smoltification sampling, were marked, and will be compared to the conditioned fish when data are available on their outmigration success and their adult return and straying rates.

Size may also be a factor affecting homing. To test this, WDW is comparing smoltification, migration rates, and eventually straying and return rates of 4 and 6 fpp steelhead released from the Dayton conditioning pond.

Tribal Evaluation Study Programs

In 1986 the LSRCP office initiated funding for tribal involvement in the LSRCP program. Because the Tribes do not operate any LSRCP facilities and because their primary concerns are for the compensation of tribal fisheries, their projects are oriented toward evaluating the implementation and success of the program rather than solving fish culture problems.

The Nez Perce Tribe (NPT) initiated their **Nez Perce Tribe LSRCP Evaluation Study** in 1989 and continued it in 1991 to develop tribal stocking and outplanting priorities, to monitor tribal harvest, to evaluate effects of hatchery plants on native production, and to assist IDFG, ODFW, and FWS in their evaluation studies. The NPT's major initiative in 1991 was to develop a

long-term plan for monitoring natural production in the Imnaha River. The plan was closely coordinated with ODFW and the CTUIR and was completed in late FY1991. The major field initiative in FY1992 will involve placement and use of screw traps to monitor juvenile chinook migration and early freshwater survival.

The Confederated Tribes of the Umatilla Indian Reservations (CTUIR) became cooperators in the LSRCP Program for the first time in FY1987 (they were subcontractors of the Nez Perce in 1986). The CTUIR biologist assigned to the LSRCP program works for the LSRCP ODFW research coordinator because of the close coordination required for their joint studies. The CTUIR initiated studies in late FY1989 and continued the same effort with 1991 funds to: 1) assess smoltification stresses of steelhead released at Wallowa FH and spring chinook at Lookingglass FH and 2) develop scale analysis techniques with ODFW (discussed above).

The CTUIR's new initiative for 1991 was to begin development of a program to evaluate the success of reestablishing a naturally reproducing population of spring chinook in Lookingglass Creek. The study plan is due early in FY1992 and must be approved before it can proceed.

VI. FWS COOPERATIVE PROGRAMS

The LSRCP program funded a variety of studies with other FWS stations. Most can be categorized as evaluation studies and were funded to investigate and solve specific hatchery production problems. Because of proposals to list fall and spring/summer chinook under the Endangered Species Act (ESA), some new studies were funded to help get an early start on field data collection.

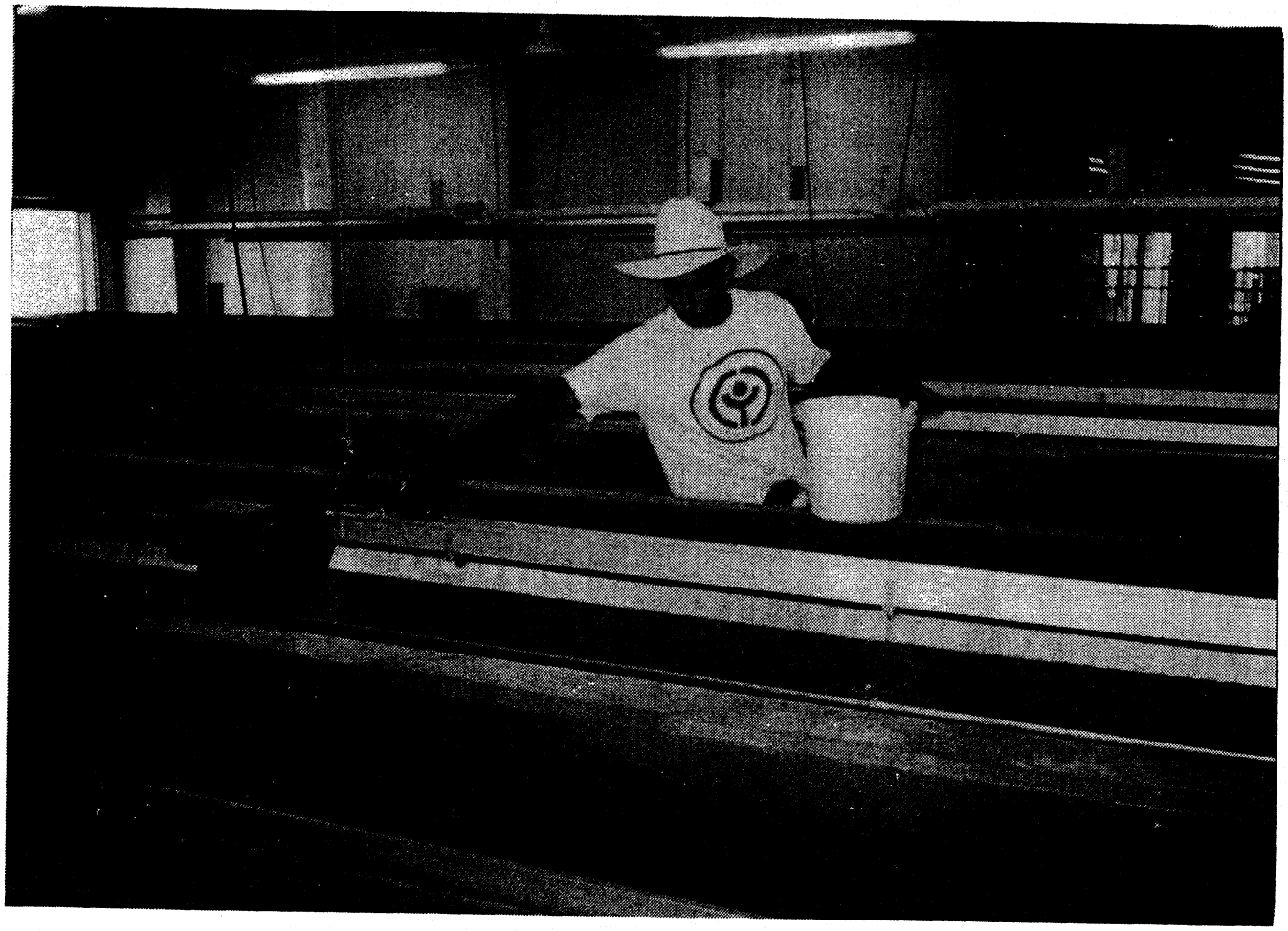
The IFRO was funded by the LSRCP program in FY1991 to conduct hatchery monitoring and evaluation studies at Dworshak and Hagerman NFH's. IFRO's program was similar to those conducted by the state agencies; and they, in fact, closely coordinate all work with IDFG. Their study, **Evaluation and Technical Coordination for FWS LSRCP Hatchery Programs**, is a long-term effort designed 1) to aid NFH's with the development of a database system for hatchery management, 2) to define and solve cultural and management problems affecting LSRCP success, 3) to provide interagency coordination, and 4) to determine fishery contribution and escapements of Dworshak and Hagerman NFH LSRCP programs. The IFRO initiated a study in 1990 to determine optimum rearing densities for spring chinook at Dworshak NFH and continued with another BY in 1991. Their study parallels IDFG's Sawtooth FH density study (discussed above under IDFG). The IFR's age-0 chinook release studies, which used photoperiod control to cause adults to spawn earlier than normal, have shown similar survival through the Snake River dams of age-0 and yearling smolts. The larger smolt size (resulting from the early spawning) may be the primary reason for these early survival results since smaller age-0 releases of previous years survived poorly.

LSRCP funds were provided to the Dworshak Fish Health Center for diagnostic activities at Dworshak and Hagerman NFH's and for health monitoring coordination between State and Federally-operated LSRCP hatcheries.

The LSRCP Program partially funded four Seattle NFRC studies in 1991. Two studies related to BKD: one to help define the salt water stress on BKD-infected spring chinook salmon from Dworshak NFH and Sawtooth FH, and a second to assess migration timing and success and fishery contribution and hatchery return rates of progeny of lightly versus heavily infected BKD parents.

A third SNFRC study funded by the LSRCP involves a major effort to define early life history and habitat use of Snake River fall chinook. Funding for the multi-year effort will be picked up by the BPA in FY1992, but LSRCP funding allowed field studies and field procedures to be tested in FY1991.

The final LSRCP-funded SNFRC study was conducted by their Willard Field Station to determine smoltification at various WDW conditioning ponds and Lyons Ferry FH. That effort is discussed above under WDW's program.



YCC enrollees have become an integral part of the hatchery crew for the busy summer months allowing the permanent staff to focus on the more pressing rearing and spawning demands.

VII. OTHER COOPERATIVE PROGRAMS

IDFG, the Shoshone-Bannock Tribe, BPA, NMFS, and others are attempting to restore sockeye salmon runs to Redfish Lake. To assist in the restoration effort, facilities at Sawtooth FH are being made available for the sockeye salmon propagation program which is funded by BPA. IDFG and the LSRCP Office also entered into an informal agreement which allowed the Sawtooth FH to act as a distribution point for catchable trout stocking in surrounding waters.

ODFW utilized several raceways at Irrigon FH to hold fall chinook salmon smolts scheduled for release in eastern Oregon and to serve as a catchable trout distribution point under the state's catchable trout program.

Cooperative agreements are in place with all State agencies except WDF for the temporary loan of equipment and vehicles between programs.

VIII. CORPS CONSTRUCTION ACTIVITIES

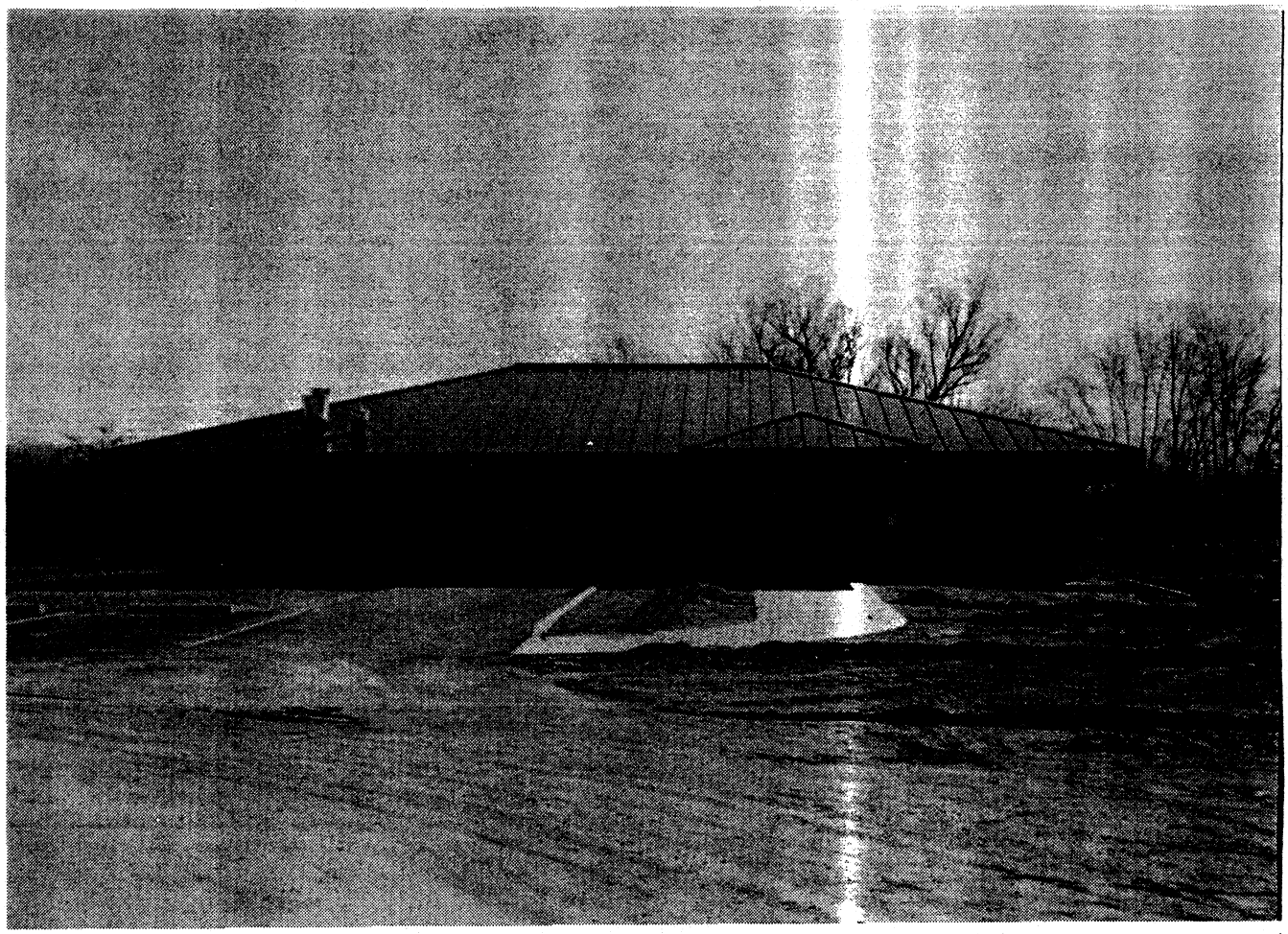
The Corps of Engineers has statutory responsibility to design and construct all LSRCP facilities. The LSRCP Office does not get deeply involved in this process although we do review designs and the Corps always seeks our advice, particularly on items which would affect operation and maintenance of a new facility.

Construction of the Clearwater FH, the last hatchery under the LSRCP, is nearly completed. The Clearwater FH should be completed in late FY1991 and in operation by the spring of 1992. We anticipate IDFG will not fill the facility to capacity the first year, but will test the operation of the hatchery with a lesser number of fish.

We have been negotiating with the Corps throughout the year to develop final clean-up contracts for all facilities that have been in operation 3 or more years. Completion contracts were advertised in FY1991 for Irrigon, Lookingglass, Imnaha, Wallowa, Little Sheep Creek, Big Canyon Creek, Lyons Ferry, Tucannon, Magic Valley and Sawtooth. Clean-up contract items will be developed for Crooked River and Clearwater FH after they have been operating for several years.

Construction of the Eagle Disease Diagnostic Laboratory, Eagle, Idaho was completed this year and it began full operation this past summer. The official dedication ceremony was held on October 25, 1991. The lab provides diagnostic services to all IDFG-operated LSRCP facilities in Idaho.

Pertinent data relating to hatchery design and construction schedules and costs are included in Table 2. Approximate facility locations are identified on the LSRCP facility map (Figure 1).



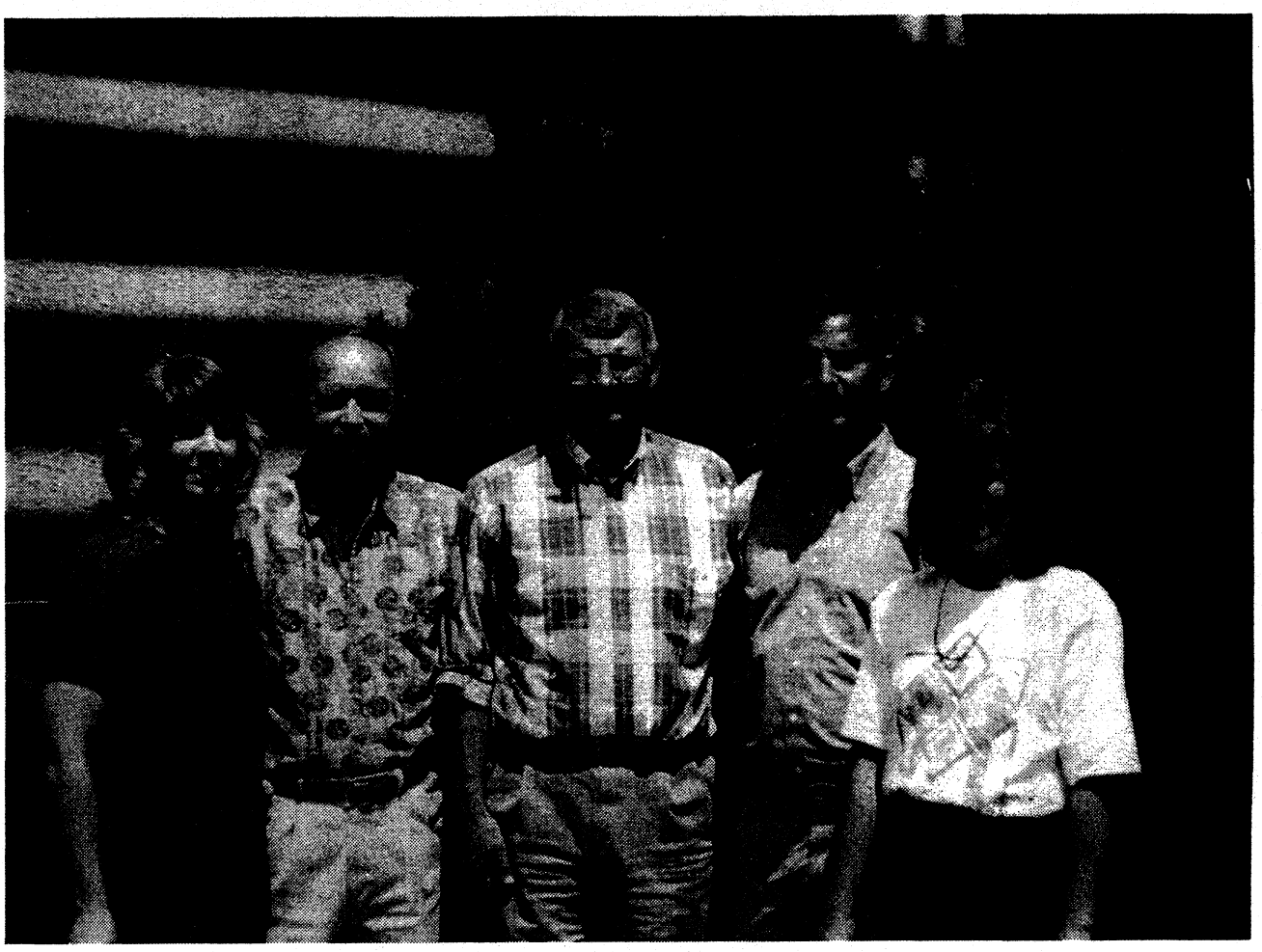
The Eagle lab, one of the most modern pathology labs in the country was completed this year. The lab, partially funded by the LSRCP, is operated by Idaho Department of Fish and Game and performs diagnostic pathology for both state and LSRCP facilities in Idaho.

IX. STAFFING

A total of 5.0 permanent full time (FTE) staff years are now being utilized for operation of the LSRCP Office. The newest addition to our staff Joseph Krakker, fishery biologist, came on duty September 23, 1991 at the end of the fiscal year.

LSRCP Boise Office employees as of September 30, 1992

Edouard J. Crateau, LSRCP Coordinator, GM-13
Daniel M. Herrig, Evaluation Study Coordinator, GS-12
Joseph J. Krakker, Fishery Biologist, GS-11
Lori R. Arden, Cooperative Agreement Assistant, GS-7
Tammy A. Froscher, Secretary, GS-5



The LSRCP staff from left to right Lori Arden, Dan Herrig, Ed Crateau, Joe Krakker, Tammy Froscher

X. FUTURE OUTLOOK

Although still in its infancy, the Lower Snake River Compensation Plan Program is well underway with the last hatchery, Clearwater, just being completed. The Corps' contractor began construction of Clearwater FH in spring of 1990 with a completion date expected in late 1991. All satellite facilities serving to support full hatchery production, by providing broodstock trapping and holding capabilities and smolt acclimation and release ponds, have been completed.

The Corps has in most cases done an excellent job in constructing and equipping LSRCP hatcheries and satellites 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 facilities, the Corps advertised clean-up contracts on 11 facilities in FY1991.

The steelhead returns to the Snake River basin are close to the adult goals set in the original LSRCP and, with the completion and full production at Clearwater FH, our LSRCP steelhead goals should be met. Currently, the uncontrollable influence of low flows in the Columbia River basin are causing poor returns even to steelhead programs. Also, getting returns back at the right time and to the right place are problems with some facilities.

As evidenced by the proposed listing of naturally-produced fall and spring/summer chinook, we are experiencing difficulties in achieving programmed rates of return for hatchery chinook salmon. Changes are being planned in rearing and release strategies which we hope will improve this situation, and research to solve outmigration and disease problems that we hope will further improve our performance is underway. Any efforts to save stocks of naturally-produced chinook salmon proposed for listing under the ESA will also help to increase hatchery adult return rates.

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. Funding for this phase of the LSRCP program was substantially improved in FY1990 and FY1991. Further increases in this area will be needed to continue an adequate hatchery evaluation program while protecting and enhancing naturally reproducing populations.

The LSRCP is a relatively new program with the average age of hatcheries at only 6 to 7 years and satellite facilities about 5 years. This translates to less than two full chinook life cycles and about two for steelhead.

We are optimistic about the future of the LSRCP Program and the general trends indicate increases in the return rates of steelhead which may exceed model predictions. The chinook salmon return rates and adult returns to the basin are currently below the level used to design the LSRCP facilities. Improved adult chinook return rates are expected with changes in production release strategies, increased disease treatment and prevention, and improvements in smolt emigration.

XI. MEETINGS ATTENDED IN FY1991

10/3/90 System Planning Meeting by Northwest Power Planning Council, Boise, Idaho (Dan Herrig)

10/11/90 Meeting with COE Regarding Clean-up Contract for LSRCP Hatcheries, Boise, Idaho (Ed Crateau)

10/12/90 Meeting with Beth Workman on LSRCP Logo, Boise, ID (Ed, Dan, Lori and Tammy)

10/15/90 Meeting with Gene McPherson regarding City of McCall sewer line right-of-way request, McCall, Idaho (Ed Crateau)

Attend Idaho Conservation League panel discussion on Idaho Salmon issues, Boise, Idaho (Dan Herrig)

10/16/90	Meeting with Tim Burgess of Toothman, Ortman Engineers, regarding McCall right-of-way for sewer line construction, Boise, Idaho (Ed Crateau)
10/18/90	Meeting with Beth Workman to discuss new logo, Boise, Idaho (Ed, Dan, Lori and Tammy)
10/23/90	Evaluation biologists meeting, 10/23-25/90, Peck, Idaho (Dan Herrig)
10/25/90	Dworshak Coordination Meeting, Ahsahka, Idaho (Dan Herrig)
10/29/90	Meeting with Bill Shake and Dan Diggs regarding Hatfield pre-listing meeting and attended initial Salmon Summit Meeting, Boise, Idaho (Ed Crateau and Dan Herrig)
10/30/90	Attended Columbia/Snake River basin FWS Project Leaders Meeting, Ahsahka, Idaho (Ed Crateau, Dan Herrig)
	Meeting with Beth Workman on logo design, Boise, Idaho (Ed, Dan, Lori and Tammy)
11/6/90	Red River and Crooked River Satellite Inventories, (Ed Crateau, Dan Herrig)
11/7/90	Sawtooth FH inventory, Stanley, Idaho (Tammy Froscher)
11/8/90	Powell satellite inventory and Dworshak Coordination Meeting, Dworshak NFH, (Ed Crateau, Dan Herrig)
11/13/90	Meeting with Beth Workman on logo, Boise, Idaho (Ed, Dan, Lori and Tammy)
11/14/90	Meeting with COE clean-up contract for Lyons Ferry FH, Starbuck, Washington, (Ed Crateau)
11/16/90	Meeting with Beth Workman on Logo, Boise, Idaho (Ed, Dan, Lori and Tammy)
11/19/90	Meeting with Tom Rogers regarding Clearwater FH production plan, Boise, Idaho (Ed Crateau)
11/20/90	Meeting with Dave Alf's on hatchery brochures, Boise, Idaho (Ed Crateau)
11/21/90	Meeting with Beth Workman on logo, Boise, Idaho (Ed, Dan, Lori and Tammy)
11/27/90	Meeting with IDFG regarding Snake River review Workshop, Boise, Idaho (Dan Herrig)

11/28/90 Meeting with Bill Hutchinson (IDFG) regarding LSRCP Hatchery Review Workshop, Boise, Idaho (Ed Crateau)

12/4/92 Attended NW Fish Culture Conference, 12/4-6/90, Boise, Idaho (Ed Crateau, Dan Herrig)

12/5/90 Meeting with Bob Gable, CGS, 12/5-6/90 regarding changes in handling agreements, Portland, Oregon (Lori Arden)

12/11/90 Snake River Hatchery Review Workshop 12/11-13/90, Boise, Idaho (Ed Crateau, Dan Herrig)

12/17/90 Met to discuss West Region FR Action Plan, Boise, Idaho (Ed, Dan, Lori and Tammy)

12/18/90 Preview traveling exhibit and meeting with RO Office, Portland, Oregon (Ed Crateau)

1/3/91 Attended meeting in RO to discuss CRITFC Production Plan and attended International Steelhead Symposium 1/3-4/91, Portland, Oregon (Dan Herrig)

1/7/91 Meeting with Dave Alf's on final review of McCall and Irrigon FH brochures, (Ed Crateau)

1/10/91 Meeting with ODFW and Umatilla Tribe, LaGrande, OR (Dan Herrig)

1/16/91 Meeting with IDFG staff to discuss their supplementation study proposal, Boise, Idaho (Dan Herrig)

1/17/91 Hatfield Salmon Summit Production sub-group: Doug Dompier-Inter-tribe chairman, Steve Yundt (IDFG), Jerry Bauer (BPA), Scott (Sho-Ban), Bill Miller (FWS), Portland, Oregon (Ed Crateau)

1/22/91 Meeting with Tom Rogers regarding office furniture inventory at IDFG warehouse and to discuss future planning efforts of the IDFG/LSRCP hatcheries program as it relates to ESA, Boise, Idaho (Ed Crateau)

1/23/91 Hatfield Salmon Summit, attended by representatives of most federal, state and private interest groups dealing with fish, water, power and irrigation, Boise, Idaho (Ed Crateau)

Meeting with Nez Perce and Umatilla Tribes regarding FY91 work plans, Boise, Idaho (Dan Herrig)

1/29/91 Teach a course at Leetown Fisheries Academy, W. Virginia and meeting with Dobert Productions, Inc. to review progress of LSRCP VCR, 1/29-30/91, Fairhaven, MD (Ed Crateau)

1/30/91 Meeting with Public Affairs Staff, FWS to discuss LSRCP VCR in Washington, D.C. (Ed Crateau)

1/31/91	Meeting with IDFG, IFRO and NPT to discuss FY91 work plans, Boise, Idaho (Dan Herrig)
2/6/91	Meeting with NPT and ODFW regarding FY91 work plans of both agencies, Walla Walla, Washington (Dan Herrig)
2/8/91	Meeting with IDFG regarding future hatchery production in relation to ESA, Boise, Idaho (Ed Crateau and Dan Herrig)
2/11/91	Meeting with WDF, Ted Bjornn, IFRO regarding fall chinook studies on the Snake River, IDFG Office, Lewiston, Idaho and meeting with IFRO and IDFG regarding CWT database management, reporting and CWT recovery and decoding procedures, Peck, Idaho (Dan Herrig)
2/12/91	Meeting with NPT regarding FY91 SOW and Budget for NPT studies, Peck, Idaho (Dan Herrig)
2/14/91	Hagerman Coordination Meeting, Hagerman NFH, (Dan Herrig)
2/19/91	Meeting with ODFW, CTUIR, BPA on Operations of the Umatilla FH, Pendleton, OR (Dan Herrig)
2/20/91	Meeting with FWS FRO's RO FRO meeting 2/20-21/91, Bend, OR
2/25/91	Meeting with ODFW, Corps of Engineers on Water supply problems at Irrigon FH, Irrigon, Oregon (Dan Herrig)
2/26/91	Meeting with ODFW, CTUIR, NPT and BPA regarding ODFW/LSRCP Program Review, LaGrande, OR (Dan Herrig)
3/5/91	LSRCP Evaluations Coordinators, IDFG Hatchery Supervisor and Anadromous FH Coordinator and staff from NW Marine Technology, Inc. on mass marking methods brainstorming session, Boise, Idaho (Ed Crateau, Dan Herrig)
3/6/91	LSRCP Evaluations Studies Coordinators from states and tribes, Willard Lab and Biomark staff project leaders meeting, Boise, Idaho (Dan Herrig)
3/8/91	AFS Meeting, Boise, Idaho (Dan Herrig)
3/14/91	Meeting with FWS, IDFG, NPT and COE, Semi-annual Coordination Meeting, also toured construction at Clearwater FH, Ahsahka, Idaho (Ed Crateau, Dan Herrig)
3/19/91	Review chinook evaluation study program at Tucannon FH, Pomeroy, Washington (Dan Herrig)
3/21/91	Pacific Fish Biologist Meeting and set up LSRCP Display at Sun River, Oregon 3/21-22/91 (Ed Crateau, Dan Herrig)

3/25/91	Meeting with ODFW and COE on Irrigon Water Supply, Irrigon FH, (Ed Crateau)
3/27/91	Presentation on Status and Future of the LSRCP Program to Ada County Fish and Game League Meeting, Boise, Idaho (Dan Herrig)
8/4/91	Meeting with Ted Bjornn, WDF and IFRO personnel on mainstem Snake River multi-agency salmon studies, University of Idaho, Moscow, Idaho (Ed Crateau, Dan Herrig)
4/10/91	Meeting with Steve Huffaker, IDFG on LSRCP program management in Idaho, IDFG Office, Boise, Idaho (Ed Crateau, Dan Herrig)
4/29/91	VISION Action plan development with Region 1 personnel 4/29-5/3/91, Flying "M" Ranch, Yamhill, Oregon (Dan Herrig)
4/30/91	Meeting with Ken Witty, ODFW on budgets, Boise, Idaho (Ed Crateau)
5/3/91	Idaho Wildlife Federation Convention 5/3-5/91, Boise, Idaho (Ed Crateau)
5/7/91	Meeting with Dave Cannamela to discuss FY1991 evaluation studies and additional biologist for program, Boise, Idaho (Dan Herrig)
5/14/91	Meeting with Fred Olney and Brian Kinnear (FWS) on Snake River passage and flow issues, Boise, Idaho (Ed Crateau, Dan Herrig)
5/15/91	Attend planning meeting at Dworshak NFH and inspect Clearwater FH construction, 5/15-16/91, Orofino, Idaho (Ed Crateau)
5/20/91	Real property inventory at Sawtooth FH and present Revenue Sharing Act check to the County of Custer, 5/20-21/91, Stanley, Idaho, (Ed Crateau)
5/23/91	Meeting with Steve Yundt, IDFG on Coordination of LSRCP Evaluation activities with IDFG anadromous fish management, Boise, Idaho (Dan Herrig)
5/28/91	National Fishing Week proclamation signing - Governors Office, Boise, Idaho (Ed Crateau)
	Presented Revenue Sharing Act check to Valley County and attend Board of Commissioners meeting in Cascade, Idaho (Ed Crateau)
	Attended genetics and conservation biology of threatened salmonids in PNW symposium 5/28-29/91, Corvallis, Oregon (Dan Herrig)
6/4/91	Meeting with Travis Coley, Boise, Idaho (Ed Crateau, Dan Herrig)
6/5/91	Stepfan Dobert filming LSRCP brainstorming meeting, Boise, Idaho (Ed Crateau, Dan Herrig)

6/7/91	Attend Vision Management Team Meeting to assess action plans, Portland, OR (Dan Herrig)
6/12/91	Property inventories of Lyons Ferry FH (WDF & WDW) and Tucannon FH, 6/12-13/91, (Lori Arden)
6/17/91	Attend Symposium on Biological Interaction of Enhanced and Wild Salmonids, Vancouver, B.C. 6/17-20/91 (Dan Herrig)
6/24/91	Project Leaders Meeting, 6/24-28/91, Reno, Nevada, (Ed, Dan and Tammy)
7/9/91	Meeting with Idaho Cooperators, NPT and FWS on ESA issues, 7/9-10/91, Kimberland Meadows, Idaho (Ed Crateau, Dan Herrig)
7/15/91	Meeting with Carl Ross, Bob Bugert and Kathy Hopper of WDF regarding ESA conferencing issues, 7/15-16/91, Boise, Idaho (Ed Crateau, Dan Herrig)
7/17/91	Meeting with Lynn Mellner and Jerry Dianan of BPA regarding depreciation of and calculating hatchery replacement changes for FY1992 reporting, Boise, Idaho (Ed, Dan and Lori)
7/23/91	Property inventories of Powell, Crooked River and Red River, 7/23-24/91, (Lori Arden)
7/24/91	Conduct meeting with WDW personnel on ESA Conferencing Review, Walla Walla, Washington (Ed Crateau, Dan Herrig)
7/25/91	Conduct meeting with ODFW and NPT and CTUIR on ESA Conferencing review, 7/25-26/91, LaGrande, Oregon, (Ed Crateau, Dan Herrig)
7/30/91	Vision Team Meeting, Portland, Oregon, (Dan Herrig)
	Meeting with NFS regarding ESA conferencing, Portland, Oregon (Ed Crateau)
7/31/91	Meeting with COE on construction site for Clearwater FH, 7/31-8/1/91, Orofino, Idaho (Ed Crateau)
8/5/91	Gave tour of LSRCP facilities for Washington, D.C. personnel, 8/5-7/91 (Ed Crateau)
8/13/91	Meeting with IDFG to discuss broodstock collection plans at McCall and Sawtooth FH's, Boise, Idaho (Ed Crateau, Dan Herrig)
8/14/91	Meeting with WDF on ESA issues, Olympia, Washington (Ed Crateau, Dan Herrig)
8/26/91	Meeting at Powell satellite, (Ed Crateau)
9/4/91	ESA meeting with NMFS, IDFG, FWS, Boise, Idaho (Dan Herrig)

9/10/91 Hagerman Coordination Meeting, Hagerman, Idaho (Dan Herrig)

Oregon Coordination Meeting, LaGrande, Oregon (Ed Crateau)

9/18/91 Marking Meeting, 9/18-20, Portland, Oregon (Ed Crateau)

9/30/91 Meeting with IDFG, Boise, Idaho (Ed Crateau)

Meeting with IDFG Evaluations, Boise, Idaho (Dan Herrig, Joe Krakker)

XII. TRAINING

Ed Crateau

Total Quality Management in the Public Sector, 2/19-3/1/91, Denver, CO

Lori Arden

Budget Estimating Techniques, 3/5-8/91, Denver, CO
Fisheries Workshop, 4/15/91, Portland, OR
Cooperative Agreement and Space Management, 6/20/91, Portland, OR

Tammy Froscher

Fisheries Workshop, 4/15-19/91, Portland, OR
Imprest Fund Training, 8/13-14/91, San Francisco, CA

XIII. AVAILABLE REPORTS

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Table 3. Hatchery or trap rack returns to LSRCP hatcheries operating in 1991.

Species/Hatchery	Hatchery/Trap Returns Adults	Jacks
Summer Chinook		
McCall FH/South Fork	391	821
Spring Chinook		
Clearwater FH[1]	62	9
Sawtooth FH	498	68
East Fork Trap	56	6
Lookingglass FH	273	152
Imnaha Trap	263	228
Big Canyon Trap	35	3
Dworshak NFH	133	15
Lyons Ferry/Tucannon FH	222	89
Fall Chinook		
Lyons Ferry FH[2]	1,662	602
Steelhead Trout		
Irrigon FH:		
Wallowa FH	576	
Little Sheep Trap	359	
Big Canyon Trap	428	
Lyons Ferry FH[3]	261	
Hagerman NFH/Magic Valley FH[4]	380	

[1] Returns to Powell, Red River and Crooked River traps only.
[2] Includes ladder returns plus Ice Harbor and Lower Granite trapping.
[3] Ladder is only open for short period, many captures are strays.
[4] Includes returns to East Fork, Sawtooth FH racks.

6/11/92

Table 1. LOWER SNAKE RIVER COMPENSATION PLAN ACTIVITIES FOR 1991.

INSTALLATION/PROGRAM	FUNDING LEVELS	SPECIES	TYPE	FISH RELEASED NUMBERS	POUNDS
STATE OF IDAHO					
McCall FH	$364,250	SuCS			
South Fork Satellite			Smolts	708,600	29,700
Sawtooth FH	704,650	SpCS	Smolts	650,600	24,738
			Fingerlings	1,496	34
East Fork Satellite		SpCS	Smolts	98,300	3,200
Magic Valley FH	659,700	STT	Smolts	2,062,000	501,100
Clearwater FH	517,450				
Satellite Facilities		SpCS	Smolts	1,033,411	35,553
Eagle Lab	143,300				
STATE OF OREGON					
Lookingglass FH	504,742	SpCS	Smolts	836,304	45,488
			Fingerlings	17,404	287
Imnaha Satellite			Smolts	398,909	21,216
Irrigon FH	1,040,132	STT	Smolts	597,724	106,973
		STT	Fingerlings	212,485	3,873
Wallowa FH		STT	Smolts	606,677	128,506
Little Sheep Creek		STT	Smolts	242,982	45,408
Big Canyon Satellite		STT	Smolts	268,972	53,047
STATE OF WASHINGTON					
Lyons Ferry FH (WDF)	551,829	SpCS	Smolts	99,057	11,007
		FCS	Fingerlings	224,439	4,580
Lyons Ferry FH (WDW)	945,649	STT	Smolts	940,934	227,740
		RBT	Catchables	111,899	42,391
			Fingerlings	329,303	10,237
Tucannon FH Satellite	183,276	RBT	Catchables	55,163	44,367
			Fingerlings	35,420	115
FISH AND WILDLIFE SERVICE					
Hagerman NFH	542,250	STT	Smolts	1,436,909	325,550
Dworshak NFH	218,000	SpCS	Smolts	1,427,344	68,511
Dworshak FHC	63,000		Fingerlings	165,588	1,952
Seattle NFRC:					
Salt Water Tests(BKD)	25,000				
FCS Migrant Study	149,498				
(McNary Dam Marking)	12,432				
STT Smolt Index Monitoring	5,000				
Dworshak SpCS Tagging(BKD)	18,000				
YCC Program	100,000				
Regional Office	334,000				
LSRCP Management/Coord.	224,000				
EVALUATION STUDIES	1,535,458				
TOTAL OBLIGATED	$8,854,916	SPECIES SUMMARY:			
		FCS	Age-0 smolts	224,439	4,580
		SuCS	Smolts	708,600	29,700
		SpCS	Smolts	4,543,925	209,713
			Fingerlings	184,488	2,273
		STT	Smolts	6,156,198	1,388,324
			Fingerlings	212,485	3,873
		RBT	Catchables	167,062	86,758
			Fingerlings	364,723	10,352
			TOTALS	12,561,920	1,735,252

RBT-rainbow trout/FCS-fall chinook salmon/SpCS-spring chinook salmon/SuCS-summer chinook salmon/STT-Steelhead trout.

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

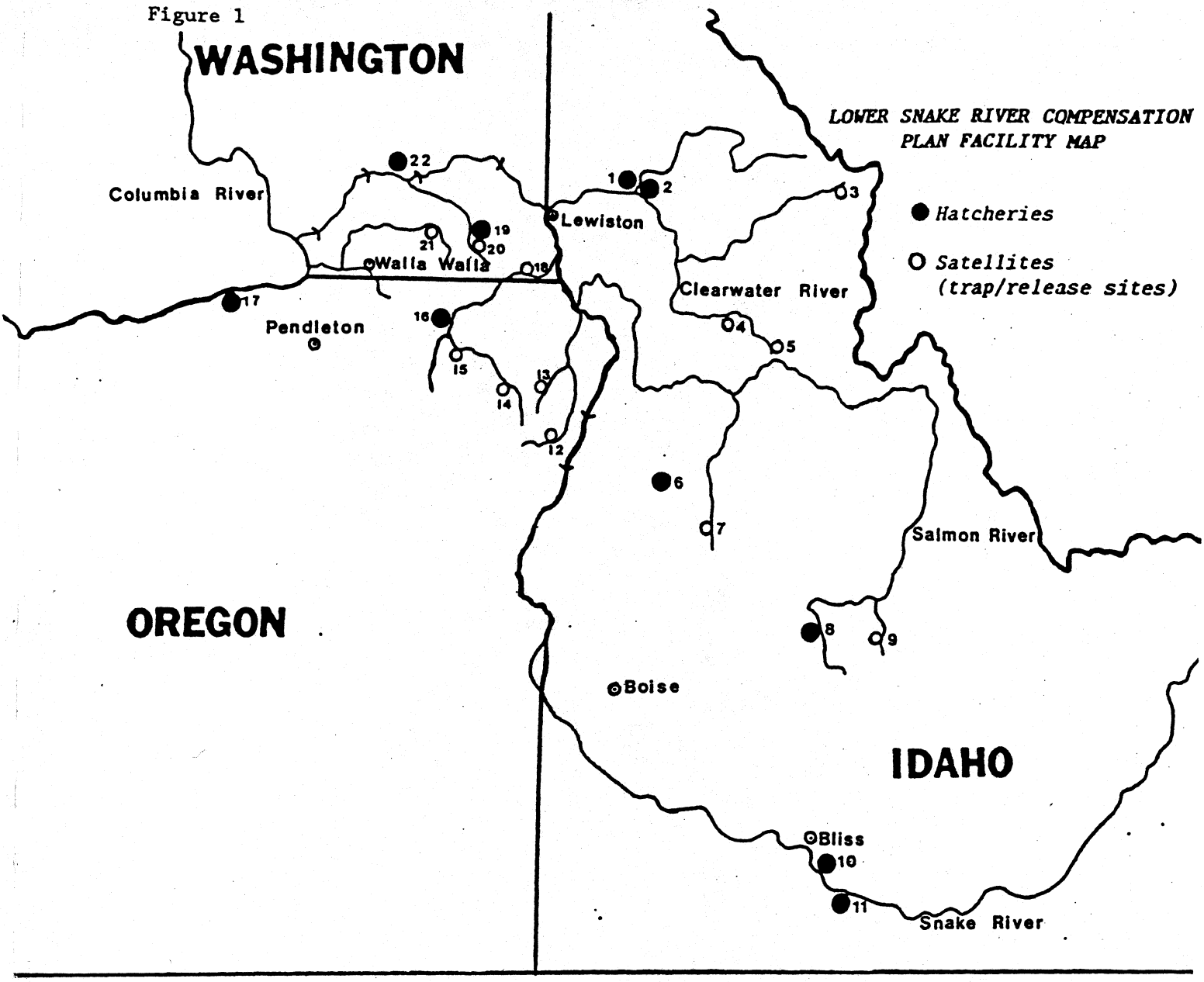
Hatchery (Operator)[a]	Fish Type	Pound	Total Cost ($1,000)	Satellite Facilities	Date of Completion
Lookingglass (ODFW)	Spring Chinook	69,600	$ 8,993		Nov. 82
			$ 2,763	Big Canyon Ck.	Apr. 87
			$ 1,525	Imnaha	Jul. 89
Irrigon/Wallowa (ODFW)	Steelhead	279,600	$15,646		Oct. 85
			$ 3,230	(Wallowa)[b]	May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

[a] ODFW - Oregon Department of Fish and Wildlife
WDW - Washington Department of Wildlife
WDF - 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

Figure 1



Operating Agencies

Idaho Department of Fish & Game

1. Clearwater FH
3. Powell
4. Crooked River
5. Red River
6. McCall FH
7. South Fork Salmon River
8. Sawtooth FH
9. East Fork Salmon River
11. Magic Valley FH

U.S. Fish and Wildlife Service

2. Dworshak NFH Expansion
10. Hagerman NFH

Oregon Department of Fish & Wildlife

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

Washington Department of Fisheries

22. Lyons Ferry FH - Salmon

Washington Department of Wildlife

18. Cottonwood Creek
19. Tucannon FH
20. Curl Lake
21. Dayton Pond
22. Lyons Ferry FH - Steelhead