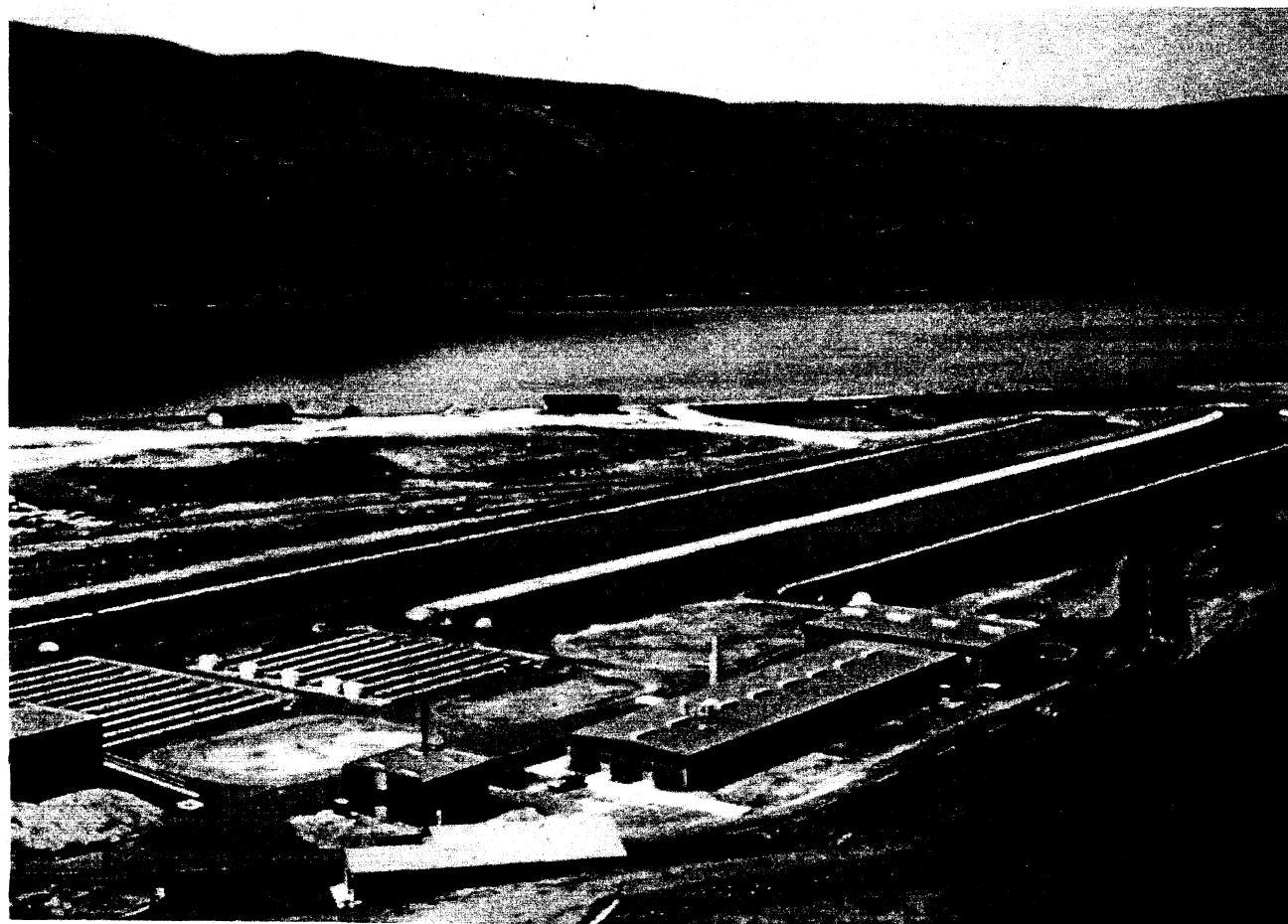


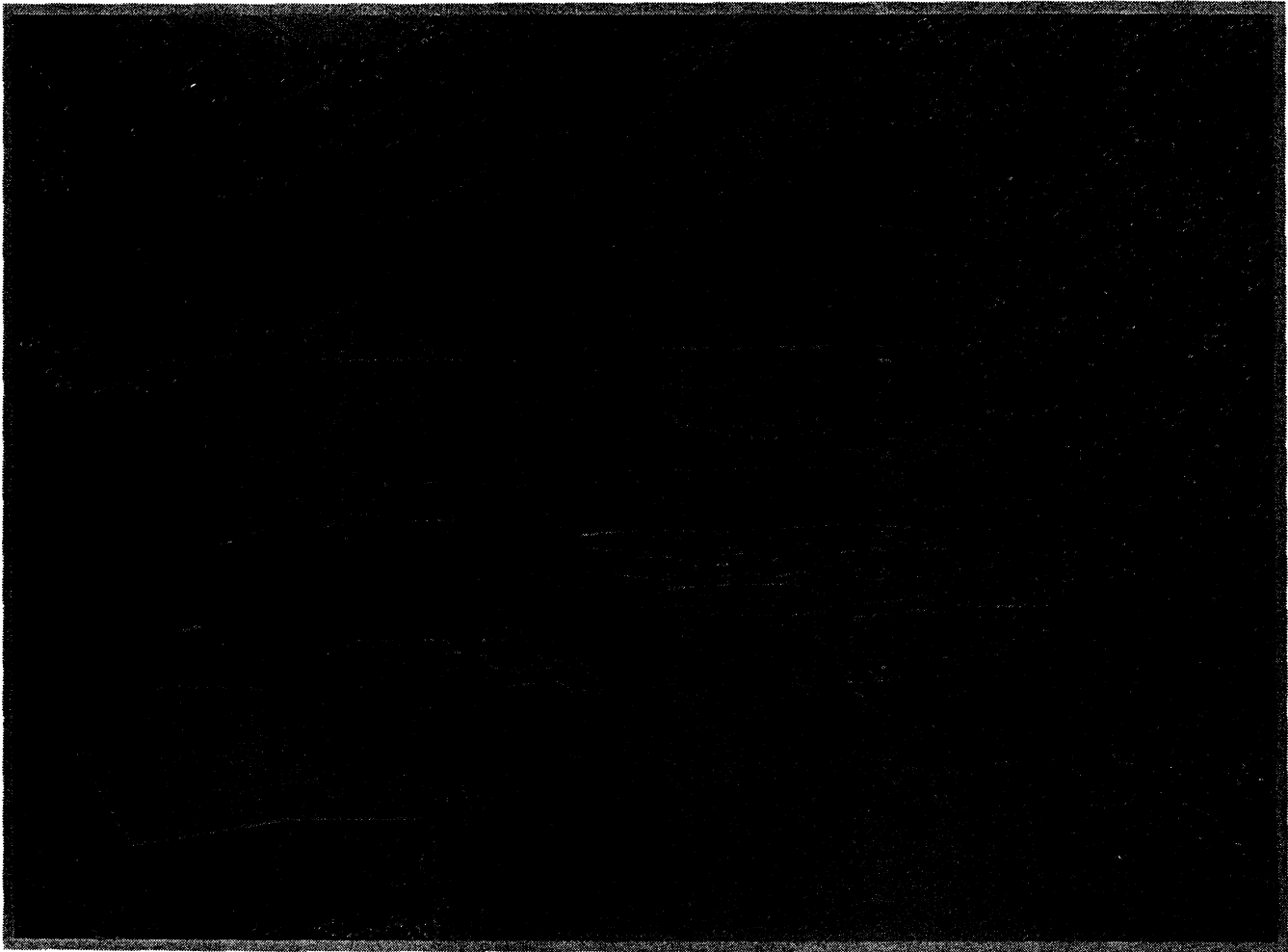
LOWER SNAKE RIVER
COMPENSATION PLAN PROGRAM
ANNUAL REPORT
FISCAL YEAR 1990

Boise, Idaho

October 1, 1989 - September 30, 1990



Cover Photo: Lyons Ferry Fish Hatchery, a combination facility operated by Washington Dept. of Fisheries and Washington Dept. of Wildlife, was the third and fourth facility constructed under the LSRCP by the Corps of Engineers in 1983 and 1984. The facility, located near Starbuck, Washington, along the banks of the Snake River, was constructed in two phases to produce fall and spring chinook salmon, summer steelhead and rainbow trout. The first account of the area, where the hatchery is located, dates back to the descent of the Snake River by Lewis and Clark in 1805. The Palouse River, entering the Snake River near what is now the ferry landing, was called the Palouse River after a local Indian Tribe. The explorers tried renaming the river "Drewyer's River" for one of their party, but the name never was accepted. The opening of the Mullan Road to traffic in 1862 at a cost of some \$250,000, had the greatest impact on the area. The road, running in front of the hatchery entrance, connected Walla Walla to Fort Benton, Montana by a ferry that brought the military, settlers, miners and heavily laden freight wagons across the river. The first operator of the ferry, Edward L. Massey, was granted a franchise in 1859, but it was not until June 5, 1860, that the first commercial operation was started. Ledger books owned by the present operator (since 1945) the Turners, show it was called the "Palouse Ferry" until 1926 when W. J. Cummings changed it to "Lyons Ferry", thus honoring the family that operated it for most of its existence up until that time. The railroad bridge for the Union Pacific's main line and most prominent feature of the area was hailed as one of the structural wonders of the world when it was opened to traffic in 1914. Its entire length of 3,920 feet is built entirely of steel, set on concrete piers.



The Tucannon Fish Hatchery, currently a satellite facility of Lyons Ferry FH was originally designed and built by the Washington State Department of Game in 1949. The hatchery was originally designed to produce rainbow, brook and brown trout, summer run steelhead and spring chinook for stocking in lakes and streams in a six county area of S.E. Washington. This facility, located 43 miles southeast of Dayton, Washington, was rebuilt and modernized by the Corps from a combined private, WDW and Corps remodeling plan in 1985. It is currently operated by WDW under a cooperative agreement with the FWS.

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Title: LSRCP Coordinator

Date: April 25, 1991

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I. INTRODUCTION

The Lower Snake River Compensation Plan (LSRCP) Program was authorized by Congress under the Water Resources Development Act of 1976 (90 Stat. 2917). The applicable sections of this Act directed the responsible agency to replace fish and wildlife losses caused by the construction and operation of four Snake River Dams; 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. Each dam is approximately 100 feet high and the four dams create a total of nearly 140 miles of reservoirs from about 10 miles above the mouth of the Snake River upstream to Lewiston, Idaho. The lower most dam, Ice Harbor, was completed in 1961; the uppermost and last dam to be built, Lower Granite, became operational in 1975.

Between 1963 and 1975, the U.S. Fish and Wildlife Service (FWS) conducted assessments and provided reports detailing the individual effects on fish and wildlife of the first three projects, Ice Harbor, Lower Monumental and Little Goose. These reports were based on limited engineering and biological data and as such made only general recommendations regarding fish passage and artificial propagation. In a letter dated April 11, 1966, the Walla Walla District, U.S. Army Corps of Engineers (Corps), responsible for constructing and operating the four dams, requested that the Service produce a single report which would cover all Lower Snake River projects to meet the latest Fish and Wildlife Coordination Act (FWCA), requirements.

Between 1971 and 1972 the FWS, National Marine Fisheries Service (NMFS) and five fish and wildlife agencies in Oregon, Washington and Idaho collaborated to prepare a final report summarizing the effects of all four projects. Based on the detailed FWCA report and additional supplemental reports, the Corps produced a "Special Report" in June 1975 and submitted it to Congress for authorization and funding for fish hatchery development as well as improvements to the dams and powerplants to improve smolt passage.

Construction responsibility for the LSRCP was assigned to the Corps, while responsibility for fish hatchery Operation and Maintenance (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, NMFS, and FWS; it stated that the FWS would budget for and administer O&M funding 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 report confirmed the 1977 NMFS/FWS agreement on Page 2, Section 4.d, "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 report noted 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."

Consistent with the desires of the Administration and Congress, the Corps proposes to transfer fee titles of LSRCP fish hatcheries and satellite facilities to the FWS as they are completed and become fully operational.

The Corps' estimated cost for construction of the authorized LSRCP off-project fisheries facilities (hatcheries and related satellite facilities) is \$177 million; the FWS cost for annual O&M by the year 2000 is estimated to be \$15 million. All anadromous fisheries compensation and most resident fisheries compensation are allocated to project power costs and are reimbursed to the U.S. Treasury 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 requires 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 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.

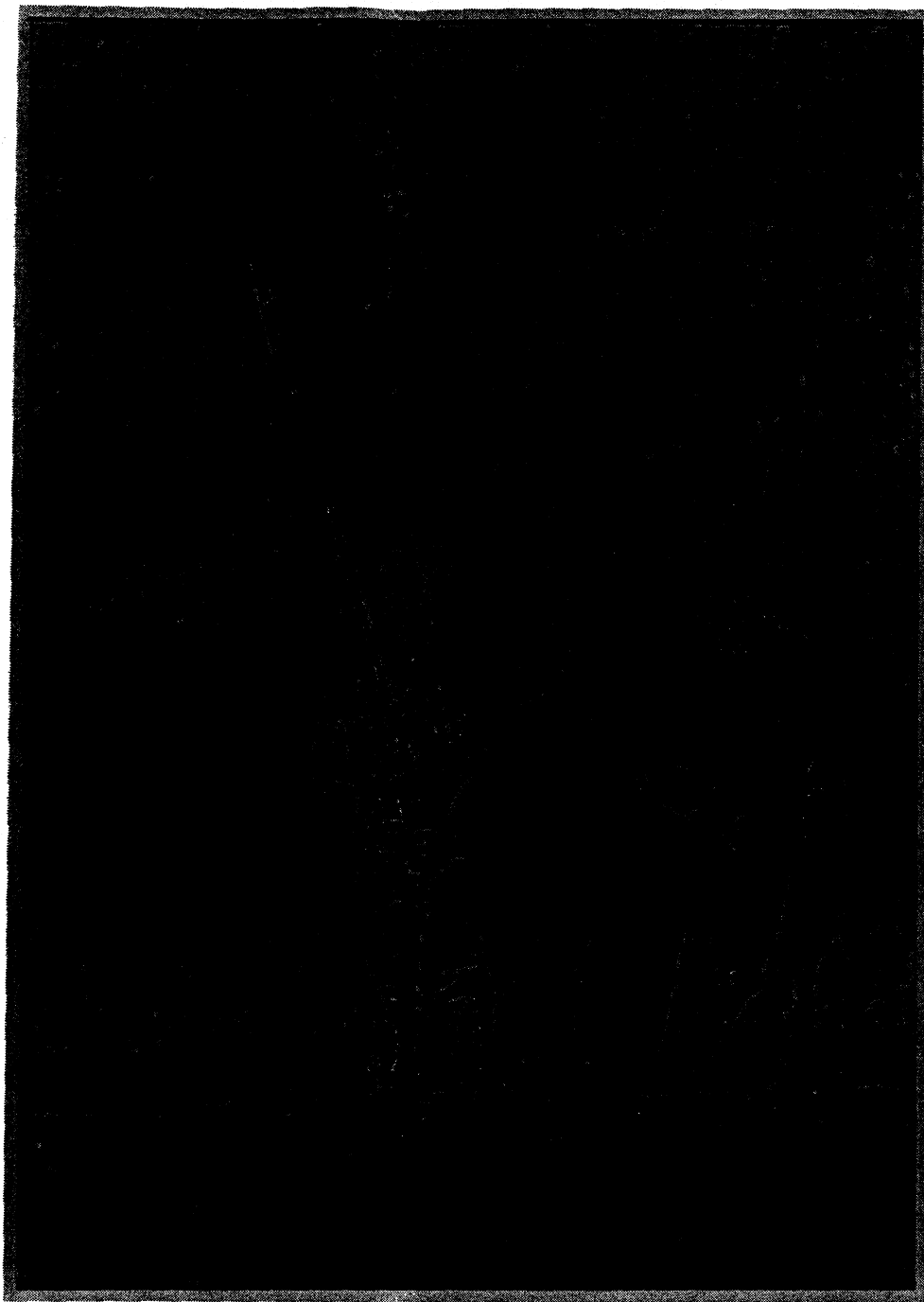
The first hatchery constructed by the Corps, as part of the LSRCP (McCall FH, Idaho), began operation in 1979. By FY 1992 12 hatcheries and 11 satellite facilities, the full compliment, will be fully operational. In addition the Corps plans to transfer ownership of all facilities to the Service within the next few years.

Prior to 1982 all LSRCP business was conducted by the FWS Boise Area Office. In September 1982 the Boise Area Office was closed during the Service's reorganization and the LSRCP Office was established in Boise, Idaho. The LSRCP Office, currently staffed by a Project Leader, Assistant Project Leader, Cooperative Agreement Assistant, and a Secretary, has the responsibility for budgeting, planning and administering operational aspects, and O&M and evaluation funds for cooperative agreements under the LSRCP.

II. PROGRAM HIGHLIGHTS FOR FY 1990

The 1989-90 steelhead run above Lower Granite Dam was the largest since the 1986 record of 134,300. Approximately 133,000 steelhead successfully negotiated eight lower Columbia and Snake River dams, swimming upstream into Idaho, this past fall. A large percentage of the run was the result of hatchery releases in 1986, 1987 and 1988. In 1986 approximately 3 million steelhead were released from LSRCP hatcheries followed by releases of 4.2 million and 6.0 million from these same facilities in 1987 and 1988. In keeping with the success of the LSRCP steelhead production program Magic Valley Fish Hatchery (FH) alone released 2.1 million steelhead this year

weighing 486,750 pounds, the second highest number and weight since they began operation four years ago. A record 16,000 steelhead were caught in the Clearwater River alone during the 1990 fall season.

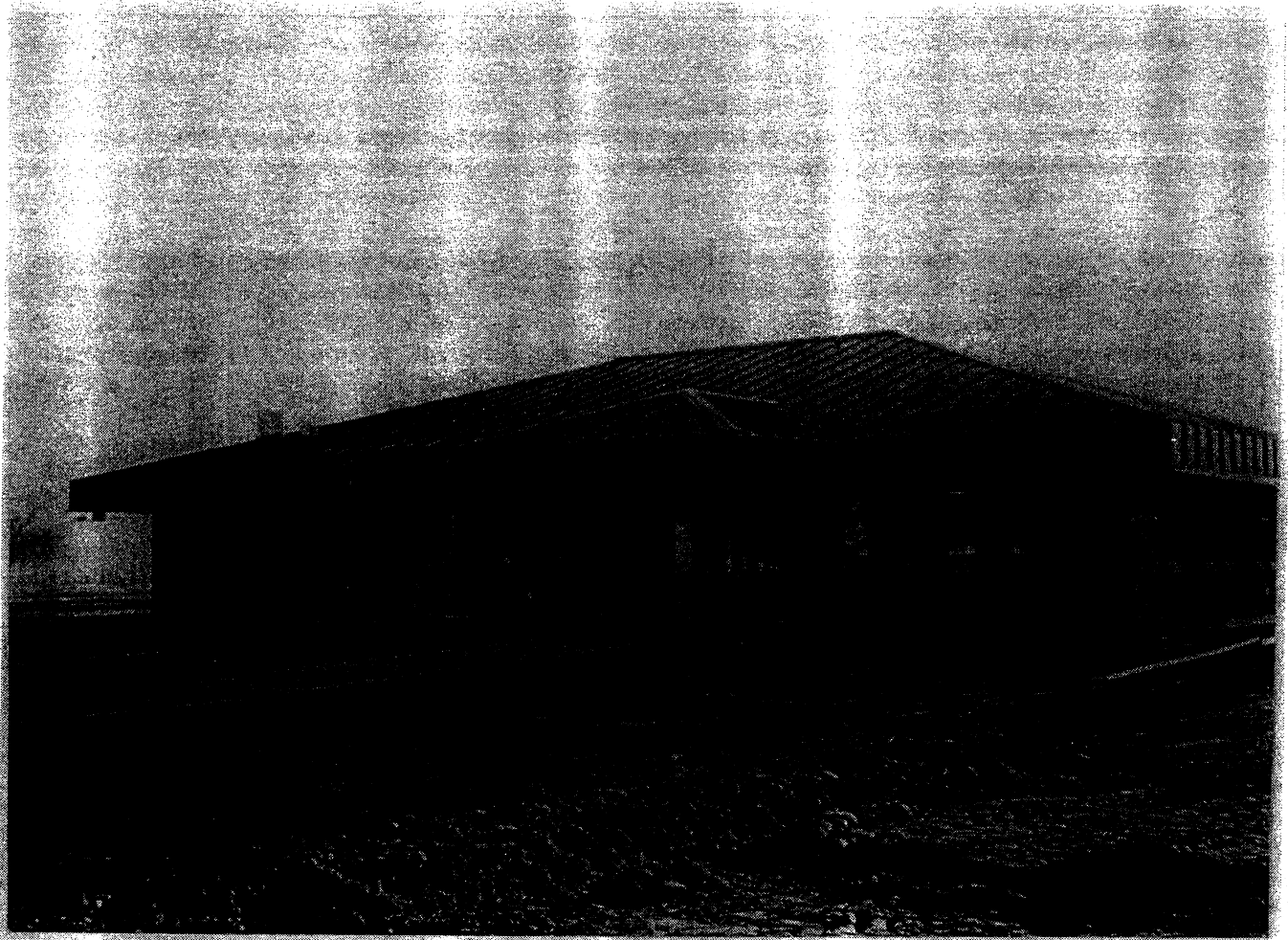


A young fisherman, assisted by his dad lands one of the thousands of steelhead that were successfully landed during this years excellent fishery.

Construction of the last satellite facility Crooked River, an adult trapping and smolt acclimation support facility of the Clearwater FH, was completed in FY 1990. The facility was completed in time to receive spring chinook salmon from the Dworshak National Fish Hatchery (NFH) LSRCP program for acclimation and a fall release.

Construction of the Clearwater FH, the last facility to be completed under the LSRCP program, began this year and the facility should be in operation in early 1992. Construction of the facility was about 30% complete at the end of September 1990.

Construction of the Eagle Fish Disease Laboratory in Eagle, Idaho, also began this year and should be completed by mid 1991. The 3,400 square foot building will be used by the Idaho (IDFG) fish health staff and will serve as a diagnostic center for LSRCP hatcheries located in Idaho and operating under a cooperative agreement between IDFG and the Service.



The LSRCP Eagle Lab construction was begun this year and the facility should be completely finished and in full operation by mid 1991.

LSRCP facilities continued to produce and release large numbers of salmon, steelhead and resident trout as part of their mitigation responsibility. In FY 1991 approximately 19,000,000 salmon, steelhead and rainbow trout weighing nearly 2 million pounds were released from LSRCP facilities.

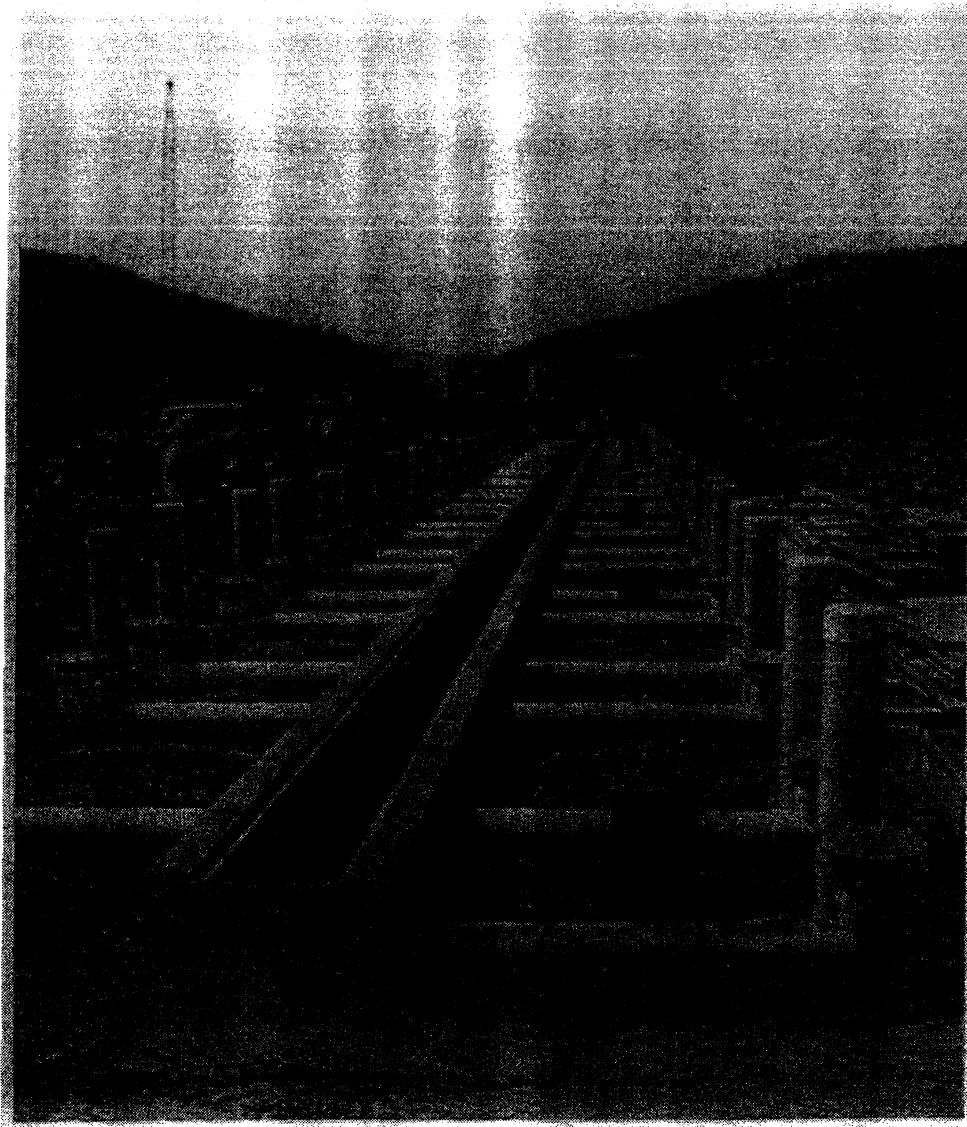
III. STATION AND COOPERATOR OPERATIONS

The LSRCP Office, located in Boise, Idaho, negotiated cooperative agreements with and administered funds to four State agencies, two Indian Tribes, the University of Idaho, and the FWS for operation and maintenance of fish hatcheries, hatchery operations studies and to conduct hatchery effectiveness evaluation studies and fish health programs. At a total of \$6,463,264 was expended on contracts with WDF, WDW, ODFW and IDFG and transferred to Dworshak NFH, Hagerman NFH and Dworshak Fish Health Center for O&M and fish health monitoring of 11 hatcheries and 11 associated satellite facilities. This total also included administration of the LSRCP Program. An additional \$1,402,709 was contracted to Idaho Fisheries Resources Office (IFRO), Idaho Cooperative Fish and Wildlife Research Unit (ICFWRU) and the Seattle National Fisheries Research Center for hatchery effectiveness and evaluation studies. In addition the LSRCP Office administered one of the largest Youth Conservation Corps (YCC) programs in the country, with 44 enrollees employed for an average of eight weeks. Total payroll and materials for this YCC Program was \$75,000.

A total of 19,069,431 salmon steelhead and trout weighing 1,935,714 pounds were stocked from LSRCP facilities in FY 1990. Following are brief summaries of hatcheries and evaluation activities in FY 1990. Tables 1 through 4 provide further data on funds obligated, fish stocked and mitigation goals.

Clearwater Anadromous Fish Hatchery - Idaho

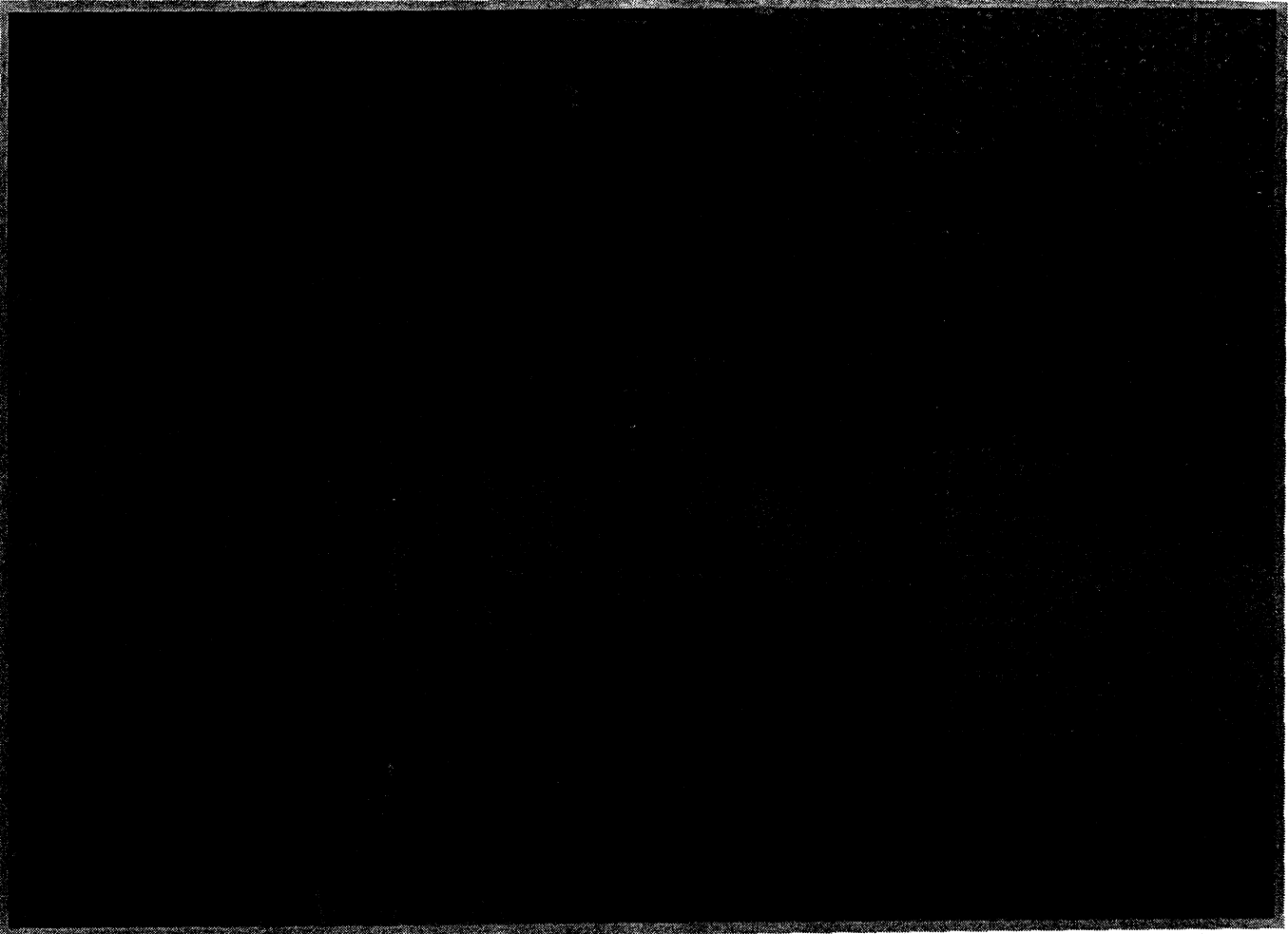
The contract for completion of the Clearwater FH, the last facility to be built under the LSRCP, was awarded late last fiscal year (FY) with ground breaking ceremonies held August 18, 1989. The total cost for this new facility is estimated to be in the \$30,000,000 range. Construction of this facility began shortly after ground-breaking, but was delayed for several months due to an archeological dig. Work was resumed in the spring of 1990. By the end of FY 1990 construction of the facility was approximately 30% complete. The Clearwater FH will be one of the largest, most modern salmon and steelhead facilities in the country. It's design is similar to Magic Valley FH with a moveable bridge used for feeding, crowding, moving and loading fish. The facility will be operated by IDFG under a LSRCP cooperative agreement and is designed to produce 1,369,500 spring chinook smolts weighing 91,300 lbs. and 2,500,000 steelhead smolts weighing 350,000 lbs. The facility will be supplied with water from Dworshak Reservoir with the capability of blending water from one line located directly below the surface and a second deeper line which will supply cold water. The FWS's Dworshak NFH will also receive water through these lines for incubation and early rearing which should drastically alleviate their IHN problems.



The Clearwater FH, the last LSRCP facility to be built by the Corps is well under way and should be in operation by the spring of 1992.

Crooked River, the last satellite facility of the Clearwater FH, was completed this year in time to receive spring chinook from Dworshak NFH for final rearing/acclimation and release. Approximately 340,000 smolts at 23.9 fish per pound (fpp) and weighing 10,306 lbs were released from the Crooked River facility in FY 1990. Crooked River also trapped 29 spring chinook in 1990, releasing all fish tagged to spawn naturally, as sufficient adults were trapped at Dworshak NFH to supply the Crooked River facility.

Red River, also a satellite of Clearwater FH, final reared, acclimated and released 273,806 smolts at 27.9 fpp and weighing a total of 9,813 lbs. This facility also trapped 53 adults and released all fish above the weir to spawn naturally. Powell, the third satellite facility to the Clearwater FH, located on Walton Creek, a tributary of the Lochsa River, final reared, acclimated and released 307,104 smolts at 25.4 fpp and weighing a total of 12,091 lbs. This facility also trapped 179 spring chinook between June and September and released all spawners above the weir. Powell's future egg needs were also met by adult returns to Dworshak NFH in 1990.

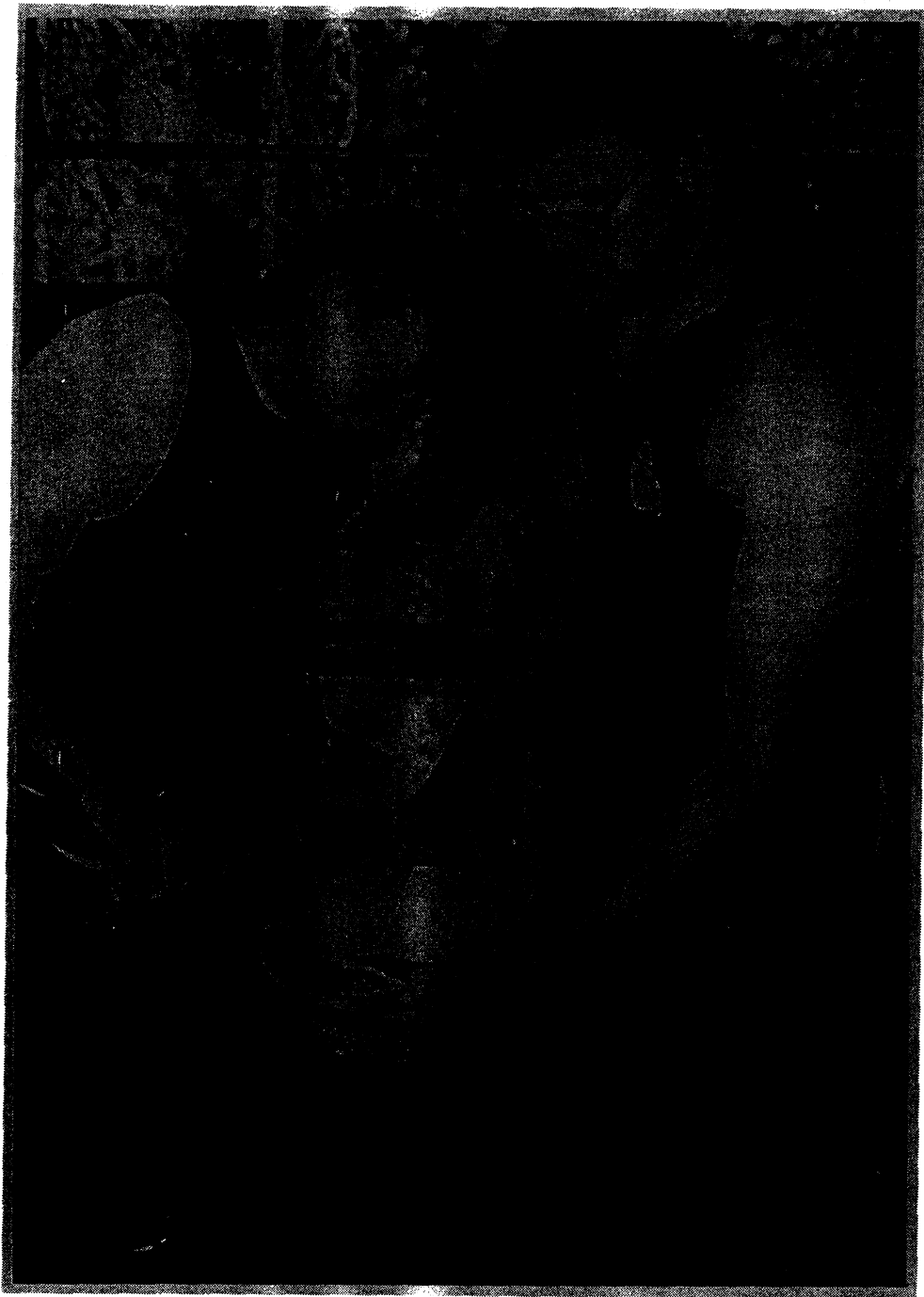


The Crooked River satellite facility of the Clearwater FH was completed this year in time to receive, acclimate and release spring chinook salmon. This facility is the last support satellite station to be constructed under the LSRCP.

Magic Valley Fish Hatchery - Idaho

Located on the Snake River near Filer, Idaho, Magic Valley FH, operated by IDFG under a FWS cooperative agreement, was completed in August, 1987 at a cost of approximately \$10,800,000. It is designed to produce 2,000,000 "A" and "B" stock steelhead smolts weighing 291,500 lbs annually. All steelhead produced at Magic Valley FH are stocked in the Salmon River and its tributaries. Because of the abundant water supply from the Snake River aquifer, the hatchery was able to produce larger smolts and for the past several years has exceeded it's design capacity in pounds of smolts produced. Last year Magic Valley FH produced 2,200,000 steelhead smolts averaging 4.32 fpp and weighing a total of 509,100 lbs. In FY 1990 Magic Valley FH produced approximately 2,123,000 averaging 4.26 fpp and weighing a total of approximately 487,000 lbs. Magic Valley FH has just completed its 4th year of

operation and each year has produced the targeted number of substantially larger smolts, exceeding the hatcheries total weight projection.



Employees of the McCall FH spawning summer chinook salmon at the hatchery's South Fork Salmon River satellite facility.

McCall Fish Hatchery - Idaho

Although McCall FH began operation as the first LSRCP facility in 1979, it wasn't completed until 1981 at a cost of \$5,453,000. Operated by IDFG under a cooperative agreement with the FWS, the hatchery is located along the North Fork of the Payette River in McCall, Idaho, approximately 1 mile from the outlet of Payette Lake. Adult trapping and spawning facilities, supporting the hatchery, are located on the South Fork of the Salmon River approximately 50 miles from the hatchery, as salmon do not have access to the Payette River system. McCall FH, the only summer chinook salmon facility under the LSRCP, was designed to produce 1,000,000 summer chinook smolts weighing 61,300 lbs annually. McCall FH achieved considerable success with its summer chinook program meeting its goals from 1986 through 1988 trapping 2,690, 2,705 and 2,393 adults respectively each year. Last year, typical of the low adult returns basin wide, only 939 summer chinook (444 adults and 495 jacks) were trapped resulting in collection of only 801,319 green eggs representing the brood year (BY) egg take for the FY 1991 smolt releases. In FY 1990, approximately 1,033,000 smolts, averaging nearly 21 fpp and weighing about 50,000 lbs were released in the South Fork of the Salmon River, again meeting, or slightly exceeding their 1.0 million smolt release goal.

McCall FH's 1990 summer chinook spawning run was slightly higher than 1989 totaling 969 fish. The major difference was that 941 of the returning summer chinook were adults and only 28 were jacks. Approximately 1.11 million eggs were taken this year compared to 801,319 in 1989. A poor adult return is predicted for 1991 and the low jack return this year may further indicate the validity of this prediction. McCall FH also has a concurrent federally approved trout production program which is funded entirely by IDFG.

Sawtooth Fish Hatchery - Idaho

The Sawtooth FH, designed to produce 2,400,000 spring chinook smolts at 15.0 fpp and supply other LSRCP facilities; Magic Valley FH and Hagerman NFH, with 4,500,000 "A" strain steelhead eggs, has been in operation since 1985. The hatchery's East Fork Salmon River trap is used to capture East Fork spring chinook and "B" strain steelhead. The East Fork steelhead are also reared at Hagerman NFH and Magic Valley FH.

In 1990, 2,611,000 smolts weighing 107,469 lbs were stocked in the East Fork Salmon River, the Yankee Fork and the Salmon River. Approximately 2,000 fingerlings weighing 80 lbs were also released in the Salmon River in August, 1990.

This year's spring chinook run at Sawtooth was substantially larger than last year's poor run. In 1990, 1,488 adults were trapped compared to 888 captured last year. The East Fork trapping station was slightly more successful this year with 145 fish trapped compared to 128 trapped in 1989. This year's green egg take at the Sawtooth FH was 1,505,290 compared to 747,500 in 1989, and at the East Fork trap 106,180 green eggs were collected compared to 148,000 collected last year.

Steelhead adult returns and egg takes were similar to the 1989 totals. Sawtooth FH trapped 1,056 "A" strain steelhead which yielded 1,028,000 green eggs. At the East Fork facility 454 "B" strain steelhead were trapped yielding 560,300 green eggs. Only 21% of the steelhead collected at the Sawtooth FH and 23% of those captured at the East Fork facility were adult females. Sawtooth FH was again involved in a low density rearing project to compare return rates of fish reared under low rearing densities compared to those of normal and high density rates.

Irrigon/Wallowa Fish Hatcheries - Oregon

Irrigon FH, located on the Columbia River near Umatilla, Oregon, is operated by ODFW under a cooperative agreement with the FWS. The hatchery has been in use since 1984, but was completed in 1985 at a cost of \$3,117,000.

Irrigon FH was designed to produce 1.68 million steelhead smolts averaging approximately 6.0 fpp, weighing a total of 279,000 lbs, for the Grand Ronde, Wallowa and Imnaha River basins of Northeast Oregon.

Irrigon FH's satellite facility, Wallowa FH, an operating State fish production facility, was expanded in 1985 at a cost of \$2,206,000 to include trapping, adult holding, spawning and acclimation facilities. It serves as a final rearing, acclimation and release site for about 600,000 steelhead smolts from Irrigon FH and in turn provides steelhead eggs for Irrigon FH. In 1990 a total of 950 steelhead returned to the Wallowa FH.

Two other satellite facilities, Big Canyon Creek and Little Sheep Creek, both advanced rearing, acclimation, release and adult trapping facilities, are operated in support of the Irrigon FH. Big Canyon Creek satellite is located at the mouth of Big Canyon Creek a tributary of the Grand Ronde. It was completed in April 1987 at a cost of \$1.8 million and was designed to hold and release 225,000 smolts. A total of approximately 240 steelhead adults were trapped at Big Canyon Creek this year compared to 85 adults last year. The number of fish trapped this year is well below the target goal of 600 but the trap has only been operating a few years.

The Little Sheep Creek satellite facility, located in the Imnaha River basin was designed to hold and release 250,000 steelhead smolts. It was completed in 1987 at a cost of 1.78 million. This year 970 steelhead adults were trapped at Little Sheep Creek compared to 322 adults trapped last year.

In 1990 Irrigon FH released a total of approximately 1.66 million steelhead smolts averaging 5.0 fpp, weighing a total of 328,500 lbs. The hatchery also released 27,900 fingerlings weighing 405 lbs and averaging 68.8 fpp. Irrigon FH also reared approximately 248,000 spring chinook fingerlings for the LSRCF Lookingglass FH program. These fish were transferred to Lookingglass FH at 133 fpp for their final rearing and release.

Irrigon FH, supplied by water from collector wells, has recently been plagued with a loss of water. The hatchery was designed for a total of 25,000 gallons per minute (gpm) of water at the peak of production and because of collector well problems is now operating on approximately 18,000 gallons per minute

(gpm). This has called for somewhat reduced densities and required the hatchery staff to thin fish during the middle of the production cycle. The LSRCP and ODFW staffs have been working with the Corps to find a solution to the problem. Additional wells will be drilled and piped to a common aeration tower to add the lost 7,000 gpm to the current 18,000 gpm flow.

Irrigon FH is also engaged in State funded programs incidental to LSRCP rearing. In 1990, 64,000 rainbow trout fingerlings and 160,000 rainbow trout catchables were stocked for the State's Northeast Oregon trout program.

Irrigon FH also reared 3,200,000 zero age fall chinook for the BPA funded Umatilla River restoration program. In addition Irrigon FH personnel took 147,000 summer steelhead eggs for the Umatilla River program.

Lookingglass Fish Hatchery - Oregon

Lookingglass FH, located on Lookingglass Creek north of Elgin, Oregon, is operated by ODFW under a FWS cooperative agreement. The hatchery was completed in 1982 at a cost of \$6,324,000 and was designed to produce 1.4 million spring chinook smolts weighing 69,600 lbs. Two satellite facilities, Big Canyon Creek (previously discussed) and Imnaha, both adult trapping, spawning and release sites, support the Lookingglass FH operations. The Imnaha satellite facility was completed last year at a cost of \$818,000 and is located directly on the Imnaha River near Homestead, Oregon.

Lookingglass FH personnel trapped a total of 403 spring chinook (347 adults and 56 jacks) at the Imnaha site this year compared to a total of 435 fish captured in 1989. The Lookingglass FH spring chinook return was 665 (659 adults 6 jacks) compared to 1,053 adults and 52 jacks trapped in 1989. A total of 1,190,460 eggs were collected from females spawned at both facilities. Idaho Dept. of Fish & Game transferred an additional 184,387 spring chinook eggs to Lookingglass FH from their Rapid River facility.

Last year Lookingglass FH released approximately 530,000 spring chinook into Lookingglass Creek directly from the hatchery and an additional 314,500 from Imnaha and Big Canyon Creek facilities. This year 822,595 spring chinook were released from Lookingglass FH and 535,935 were released from Imnaha, Big Canyon Creek and Little Sheep Creek facilities for a total of 1,358,530 smolts averaging 17.4 fpp and weighing a total of 77,891 lbs.

The Corps, FWS and ODFW have agreed on two items to be included in a final clean-up contract for Lookingglass FH. These items include installation of a larger water chilling system and larger capacity emergency generator system. Completion of a clean-up contract should occur sometime in FY1991.

Lyons Ferry/Tucannon Fish Hatchery Complex - Washington

The Lyons Ferry/Tucannon Fish Hatchery Complex is actually three facilities operated by two separate state agencies under cooperative agreements with the Service. The Lyons Ferry FH, operated by WDW, was completed in November 1983 as Phase I of the Corps complex construction plan. This facility was designed

to produce 1,169,500 steelhead smolts averaging 10 fpp, totaling 116,400 lbs and 45,000 lbs of catchable size rainbow trout.

Phase II Lyons Ferry FH, operated by WDF, was completed in 1984 and is co-located with the steelhead facility. This facility was designed to produce 9,162,000 fall chinook smolts averaging 90 fpp and weighing a total of 101,800 lbs and 132,000 spring chinook smolts averaging 15 fpp and weighing 8,800 lbs.

Tucannon FH, the third facility, was originally operated as a State FH and was reconstructed by the Corps in 1984 in support of WDW's Lyons Ferry steelhead hatchery. This facility also rears an additional 41,000 lbs of catchable rainbow trout and serves as an adult trapping and smolt release site for WDF's Tucannon River spring chinook program. Three satellite facilities, Cottonwood Creek, Dayton Pond and Curl Lake, all final rearing, acclimation and release facilities, were built in support of the three fish hatcheries. Cottonwood Creek is located on the Grand Ronde, Dayton Pond on the Touchet River and Curl Lake on the Tucannon River. The total cost of construction of all facilities under the LSRCP in Washington was \$24,789,000.

In 1990 Lyons Ferry steelhead facility released 818,352 smolts averaging 4.6 fpp and weighing approximately 177,500 pounds and approximately 228,000 sub-smolts averaging 65 fpp weighing approximately 3,500 lbs. Rainbow trout production included 128,994 legal size fish averaging 3.3 fpp weighing 39,414 lbs and 248,164 sub-legal size fish averaging 36 fpp and weighing 6,839 pounds. Steelhead adult returns were similar to previous years however the number of females spawned and the egg take doubled. A total of 2,458 adults were trapped this year and 437 females were spawned compared to 243 last year yielding a total of approximately 2,570,676 green eggs.

The Tucannon FH released 160,700 rainbow trout averaging 2.6 fpp and weighing 60,925 pounds. An additional 24,000 rainbow trout averaging 32 fpp and 50,000 rainbow at 20 fpp for a total of 3,250 lbs were transferred to IDFG.

Tucannon FH also trapped a total of 460 spring chinook salmon this year and spawned 44 females. Approximately 328 fish were passed upstream to spawn naturally.

Lyons Ferry salmon facility, operated by WDF, released 145,146 spring chinook yearlings averaging 11 fpp and totaling 13,195 into the Tucannon River this year. The hatchery also released a total of 3,480,110 fall chinook consisting of 3,043,756 fingerlings at 69 fpp and 436,354 yearling averaging 9.6 fpp. The total weight of all fall chinook released was approximately 89,000 lbs. Approximately 3,100,000 fall chinook were released directly into the Snake River from the hatchery with the remainder barged below Ice Harbor dam and released into the Snake River.

By the end of September 1990, fall chinook returns were higher than last year at this time. A total of 1,016 adults had been captured at Ice Harbor Dam and transported to the hatchery while 244 had returned to the hatchery for a combined total of 1,276 compared to 1,178 collected last year. An additional 1,277 adults were collected at the dam or returned to the hatchery ladder after September 30, 1990. Straying of Umatilla River fall chinook into the

the Snake River continued to present problems in the operation of the Lyons Ferry FH. The high stray rate of non-Snake River stocks necessitated the marking of all fall chinook released this year so the known Lyons Ferry FH fish can be identified in the future.

Dworshak National Fish Hatchery Expansion - Idaho

Dworshak NFH is located at the confluence of the North Fork of the Clearwater River and the main stem Clearwater near the unincorporated town of Ahsahka, in north central Idaho.

Construction of the Dworshak NFH was included in the authorization for Dworshak Dam and Reservoir, Public Law 87-874, dated 23 October, 1962. The main purpose of the hatchery is to mitigate for steelhead losses caused by Dworshak Dam and Reservoir. An expansion of the existing Dworshak NFH facilities for LSRCP spring chinook production was completed by the Corps in November 1982 at a cost of \$1,539,000. This expansion included the addition of 30 spring chinook raceways capable of producing 1,600,000 spring chinook smolts weighing 90,000 pounds. The facility is operated by the FWS and the spring chinook production portion is funded through the LSRCP.

In addition to their own spring chinook production program, Dworshak NFH also provides approximately 1.3 million fingerling spring chinook each year to satellite facilities of the Clearwater FH for their final rearing, acclimation and release. Dworshak NFH transfers these fingerlings to the Crooked River, Red River and Powell satellite facilities in June for an October release. Dworshak NFH also supplies some steelhead eggs to Hagerman NFH and Magic Valley FH for LSRCP production.

In FY 1990 Dworshak NFH released approximately 1.74 million spring chinook smolts averaging 18.1 fpp and weighing 96,134 lbs. The majority of these smolts were released directly from the hatchery with approximately 492,000 released as outplants at the Powell satellite facility and Eldorado Creek.

The BY 1990 spring chinook returns were substantially higher than last years 1,698 (1,542 adults and 156 jacks) with a total of 3,183 fish returning to Dworshak and Kooskia NFH's. Only 18 of the 1990 returns were jacks. Dworshak NFH was able to collect approximately 4,833,000 green eggs from the returning females which should be a sufficient number to meet all FY 1991 needs.

Dworshak NFH was also involved in several special studies on LSRCP spring chinook this year. The major study on spring chinook was the Pasco/Elliot BKD experiment in which three raceways of fish from high-BKD parents and three from low-BKD parents were tracked through release. The primary objective of this study is to evaluate outmigration performance, comparing barge transportation to natural downstream migration. On station performance of the two groups showed greater losses and probably poorer released fish quality in the high-BKD group. This group also had cumulative losses after ponding of over 18 percent while low-BKD fish experienced losses of approximately four percent.

The second year of a NMFS photoperiod study was also conducted this year. Regulated lighting was initiated in early January, 1990. In March 2,040 of these fish on regulated lighting were moved to Dworshak's nursery with half placed on a heated water supply and the remainder on cold water. These fish were released with the general smolt release in early April, 1990.

The first year of a multiple year study examining effects of rearing density on survival (adult returns) began on FY 1990. At ponding over 500,000 fingerlings were divided into high, medium and low rearing groups. Appropriate numbers of these fish will be marked to monitor outmigration and provide information when these fish return as adults.

Hagerman National Fish Hatchery - Idaho

Hagerman NFH is located along the Snake River about 30 miles northwest of Twin Falls, Idaho near Hagerman, Idaho. The hatchery was authorized by 46 Stat. 371 on May 21, 1930. Production at the newly constructed facility began in 1933. The primary goal of the hatchery at that time was the production of rainbow trout for stocking in Idaho, eastern Oregon and northern Nevada.

In the late 1970's the hatchery became part of the Lower Snake River Fish and Wildlife Compensation Plan. To implement the new role of the Hagerman NFH under the LSRCF to produce 340,000 pounds of summer steelhead averaging between 4 and 5 fpp, the hatchery was rebuilt by the Corps and was put back into full operation in April of 1984.

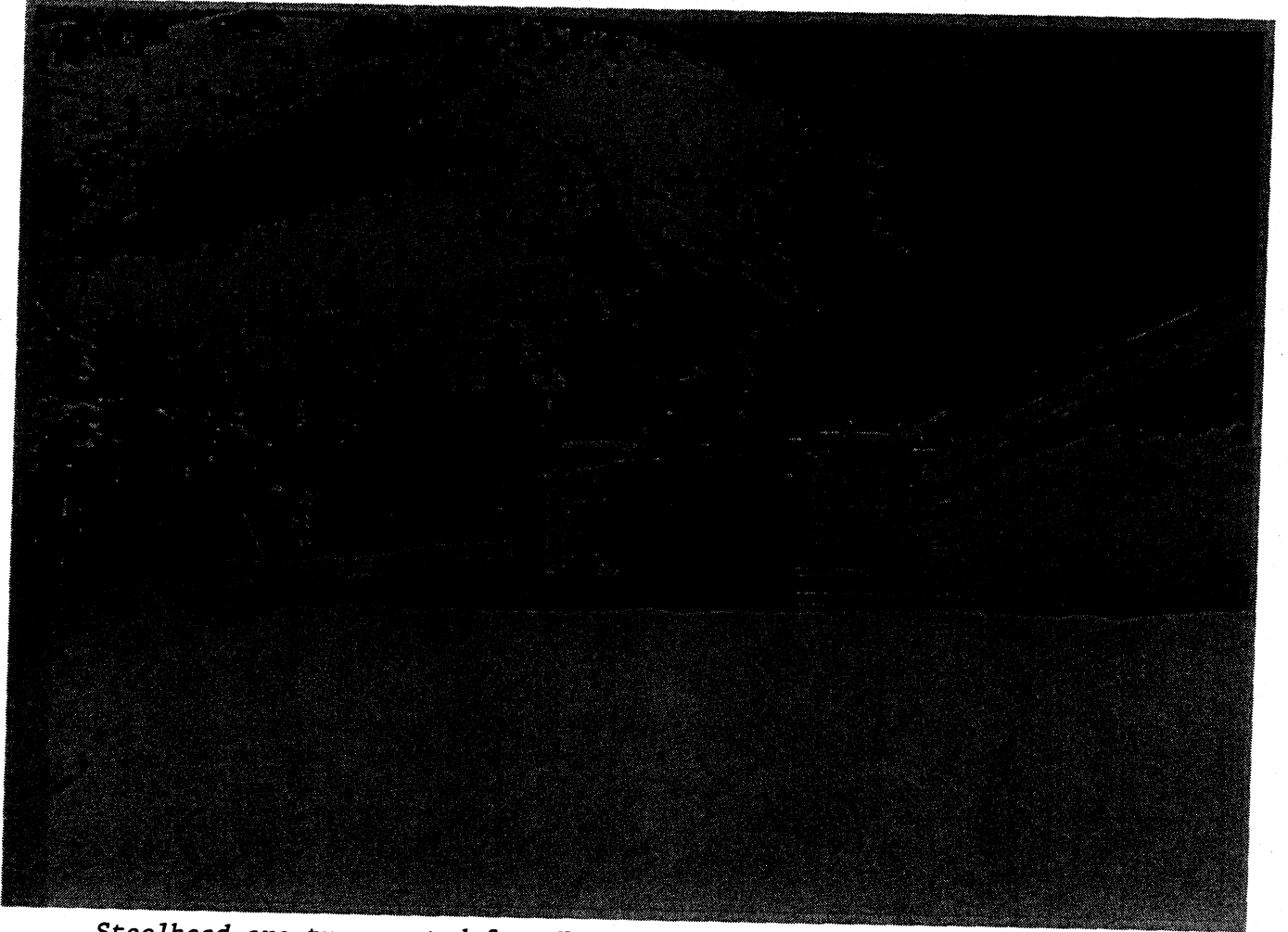
In 1990 Hagerman NFH released approximately 1,440,000 steelhead smolts at 4.24 fpp and weighing and total of approximately 340,000 pounds, exactly the goal of the original construction plan. Survival of BY 1989 fish from eyed eggs to distribution was 88% for "A" strain and 80.2% for "B" strain steelhead. In addition to the smolts released, Hagerman also transferred approximately 332,000 "A" strain steelhead fingerlings to Lyons Ferry FH to make up for IHN losses they experienced this year.

Hagerman NFH conducted two studies in FY 1990. The first study conducted at the hatchery was designed to compare fish growth, fed the contract feed and a new commercial salmon diet (Biosponge Salmon Grain). Feed conversion using Biosponge was slightly better than the control group at 1.05 vs 1.16. This slight improvement however was offset by the higher diet cost of the tested feed. There was little difference between the two groups when comparing growth and condition factors.

The second study is designed to test whether large steelhead smolts at 2.75 fpp have a higher return rate than the 4.5 fpp normally released from Hagerman NFH. These test lots are scheduled to be released in mid-April, 1991.

Hagerman NFH experienced a limited IHN outbreak in a few small lots of steelhead during the year. In June one raceway of "B" steelhead contracted IHN and heavy mortalities resulted. All fish in that raceway were destroyed in an attempt to prevent the further spread of the virus. Two weeks later the virus appeared in the adjoining raceways with moderate to heavy mortalities occurring. After the mortalities in the infected raceways dropped back to

normal all raceways that tested positive for IHN virus were distributed to the East Fork Salmon River below the fish trap. These fish were distributed as excess fish under the LSRCP rather than return them to Dworshak NFH. A total of 540,733 steelhead fingerlings averaging 33 fpp and weighing 16,465 lbs were distributed to the East Fork as excess fish.



Steelhead are transported from Hagerman NFH and Magic Valley FH, beginning about April 1st each year, to the Salmon River basin. This year a combined total of 826,270 lbs of steelhead required nearly 150 trips totaling 6,500 miles.

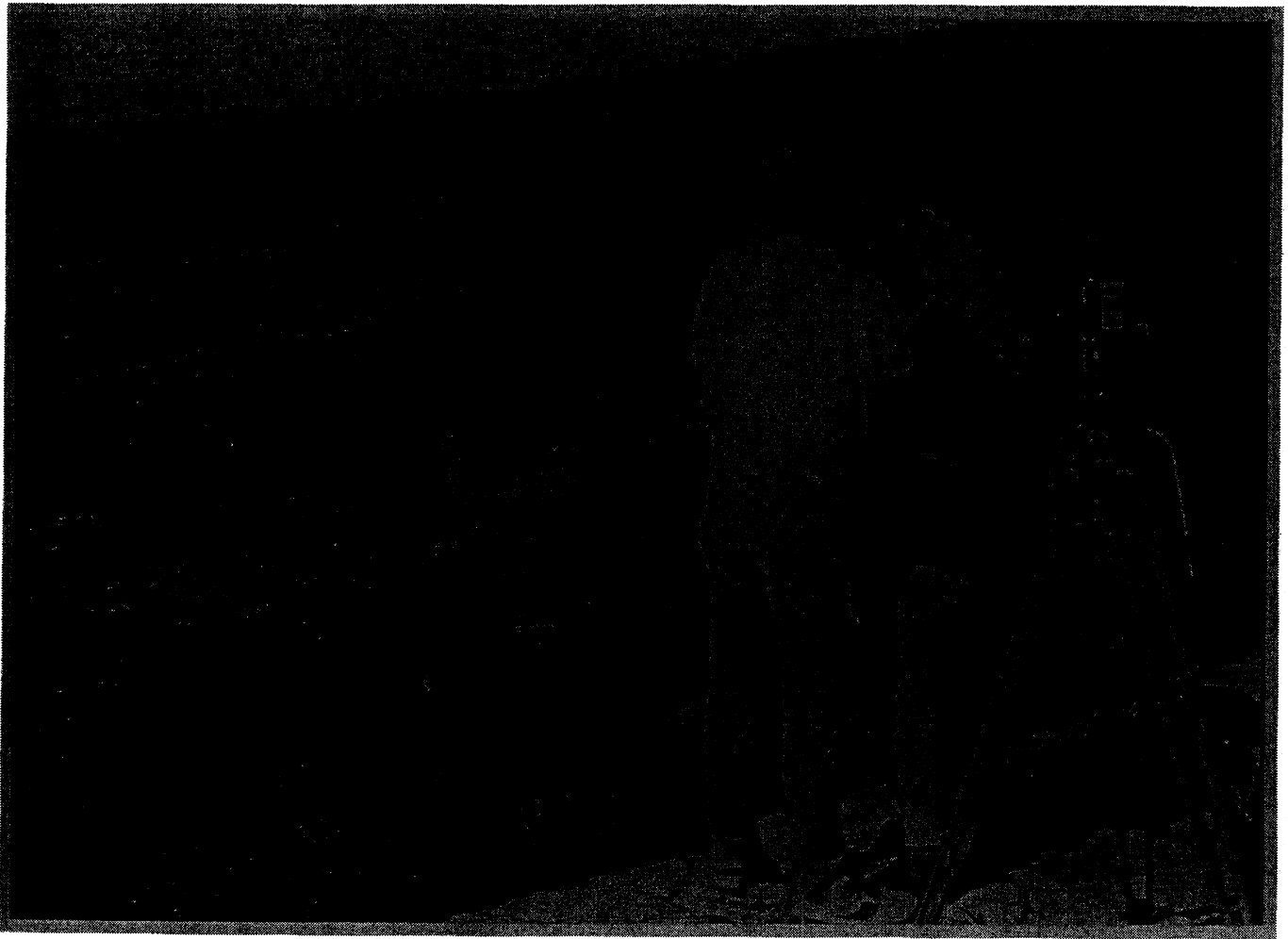
IV. LSRCP OFFICE OPERATIONS

A total of \$7,940,973 was obligated for LSRCP programs in FY 1990. This total included \$1,275,109 for LSRCP Evaluation Studies (\$11,540 from carry-over funds) \$205,000 for Boise Office Management and Coordination \$75,000 (salaries and benefits) for Youth Conservation Corps (YCC) \$250,000 for the Regional Office (\$150,000 carry-over funds) for Administrative Functions, \$52,600 for the National Fisheries Research Center, Seattle, Washington, and the balance (\$6,083,264) for contracts to State cooperators for hatchery O&M. Eleven

cooperative agreements were drafted and finalized during this fiscal year to distribute the O&M and evaluation funding to non-federal entities.

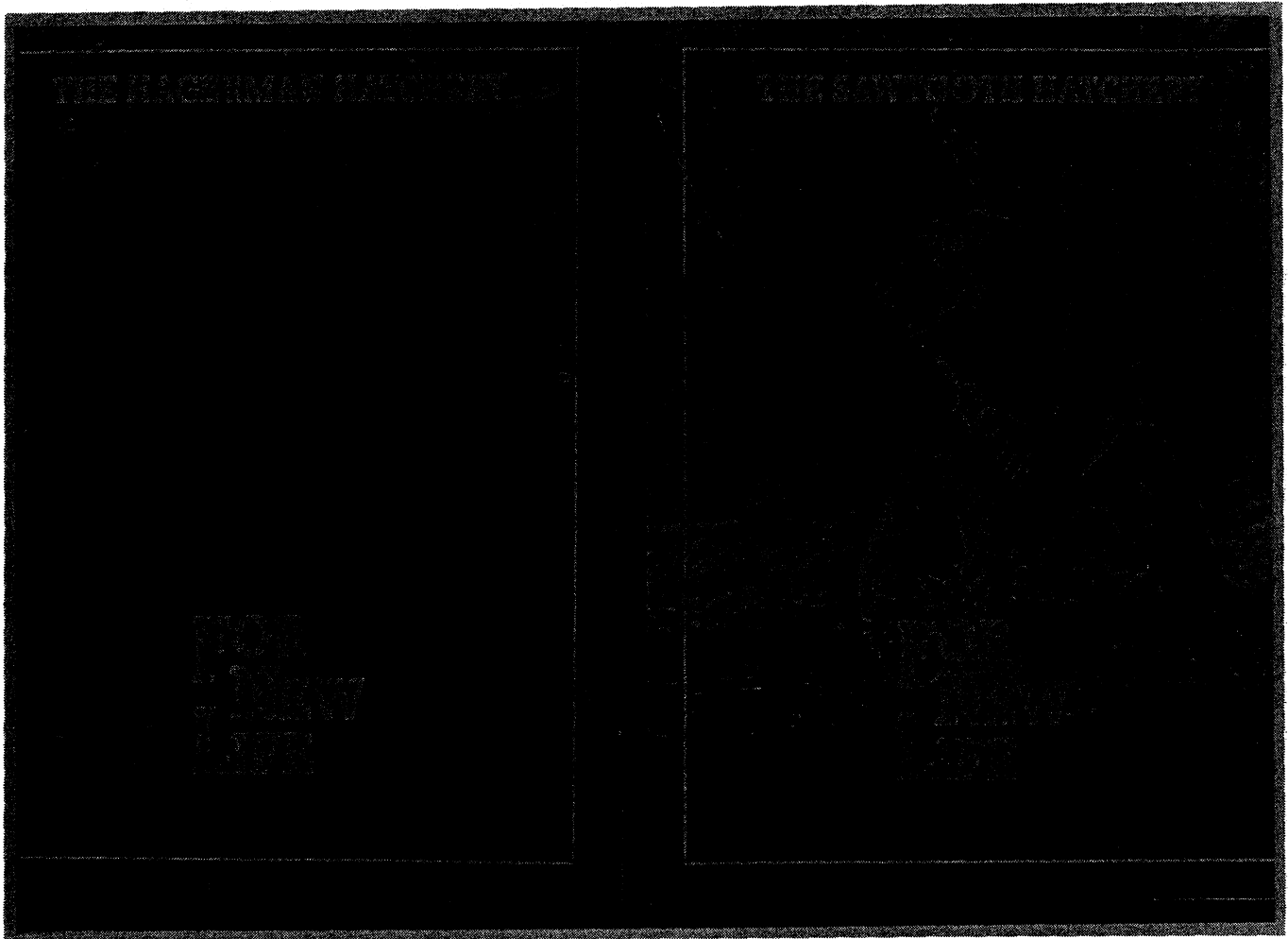
Once again the LSRCP YCC program was the largest in the Region. The LSRCP Office had 44 enrollees at 16 facilities. A total of \$75,000 was obligated to the YCC program for salaries and supplies.

The LSRCP program information video contract to the National Fish and Wildlife Foundation last year was approximately 60% completed this year. Approximately 40 reels of footage have been taken to date with additional footage planned in FY 1991. The video, explaining the LSRCP program and it's cooperative nature, should be available for distribution in late FY 1991.



A professional cinematographer utilizes underwater equipment to record hatchery releases in the Salmon River. A LSRCP video is being produced to provide the public with information regarding the large cooperative restoration effort.

Two public information hatchery brochures, one for McCall FH and one for Irrigon FH were nearly completed this year. Printing of the brochure by the Corps should be done by mid FY 1991. Approximately 100,000 copies of these full color six page brochures will be used by the two hatcheries for distribution to visitors.



Two hatchery brochures, similar to the two shown above, which were completed last year, will be available to the public next year. The two new brochures for Irrigon and McCall FH's are now being printed by the Corps.

V. EVALUATION STUDIES

In 1990 all five operating agencies and two Indian Tribes had fully operational evaluation studies underway. By the end of the fiscal year, a total of \$1,275,109 had been obligated for 14 studies being conducted by the IDFG, ODFW, WDW, WDF, FWS, IFRO, and the Nez Perce and Umatilla Tribes. An

additional \$52,600 was obligated to studies conducted by the FWS Seattle National Fisheries Research Center (NFRCC). Below is an overview of the FY 1990 evaluation program followed by a synopsis of state and tribal evaluation programs and some of their findings. FWS LSRCP evaluation programs are discussed in the next section (IX), FWS Cooperative Programs. Section XIII contains a list of all evaluation study reports received by the LSRCP Office. All results noted below are contained in these reports or recent monthly reports.

A pattern for regular Evaluation Study Committee (ESC) meetings was established in 1985 and continued in 1990. 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 ESC meetings were conducted in FY 1990 along with several partial committee meetings to discuss specific topics. Visitors at 1990 meetings included Dennis Rondorf of the Columbia River Field Station (Seattle NFRCC), Matthew Schwartzberg of the Columbia River Inter-tribal Fish Commission, and Col. James Walter and Joe McMichael of the Corps. In lieu of a summer meeting during the busy field season, the LSRCP evaluation studies coordinator met individually with each agency coordinator to discuss project activities, problems, needs, concerns, etc.. Partial committee meetings often included LSRCP Office, operating agency, and Indian Tribe personnel, and were held to coordinate programs or modify work statements.

IDFG's Evaluation Study Program

In 1990, 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 study program was initiated in 1982 and is 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 evaluation 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 what hatchery rearing and release practices will result in the best adult returns. Recent studies have been initiated: 1) to compare survival to adult of CWTeD versus unmarked salmon reared at McCall FH; 2) to determine effects of high, medium, and low density rearing conditions for spring chinook at Sawtooth FH; and 3) to determine optimum steelhead release sizes at Hagerman NFH and Magic Valley FH.

In late 1984, Idaho began an angler survey to assess the LSRCP contribution to Idaho's steelhead fishery, to estimate the escapement of LSRCP fish, to recover information on marked fish and to 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 1990 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 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 1990 as part of the evaluation, study while actual marking costs remained a part of each hatchery's budget. In 1990 about 2,000 tags (many recovered under the Harvest Study described above) were removed from fish and read 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 FY 1984. Their evaluation program encompasses monitoring and evaluation of hatchery practices; size, time and location of release studies; marking activities (CWTing, branding); some disease monitoring efforts; and creel census studies to determine the LSRCP contribution to Oregon's steelhead fishery and to recover tagged fish. In 1990 a new task was initiated to develop a discriminate function based on scale growth patterns to separate hatchery and wild-origin adult salmon as they pass above Lower Granite Dam. Idaho's stocks are being included in this study. In addition, the principal LSRCP investigator in Oregon coordinates the broodstock selection, egg-taking procedures, and outplanting program for all of Oregon's LSRCP program, currently the only anadromous hatchery program in NE Oregon.

Two short-term studies were initiated by ODFW in 1984 and continued through 1990: Evaluation of the Benefits Provided by Pre-smolt Releases in the Grande Ronde and Evaluation of Benefits Provided by Reprogramming Spring Chinook Smolts from Lower Columbia Hatcheries. Both are short term studies involving CWTing, tag recovery and analyses of returns. The presmolt study will help determine the efficacy of releasing fry and presmolts in the summer and fall. No fingerlings were tagged or released in 1990 and the last adults marked for this project will return in 1991. The reprogramming study was conducted to help determine the efficiency of bolstering the LSRCP program by releasing Carson stock smolts in the Grande Ronde and Imnaha River systems. Because of the availability of Upper Snake River stocks, no Carson stocks were released in 1987, 1988, or 1989. All activities with this project in 1990 were related to CWT recovery and analysis. The final results are not available at this time, however, ODFW prefers to use stocks which are most similar to the native stocks. Therefore, the Rapid River FH stock has been the stock of choice in recent years.

ODFW evaluations have some preliminary findings on several hatchery rearing and planting practices which have caused some changes in their rearing program. After four years of tests, fall releases of spring chinook have had much poorer passage indices at Lower Granite Dam than spring-released smolts of similar size. Passage to Lower Granite of 20 fpp versus 12 fpp has been similar during three years of tests. When adult return data of these tests are complete, time and size of release practices will be adjusted. In the mean time, fall releases have been discontinued.

Studies have also shown that the age composition of Imnaha hatchery-reared spring chinook differs somewhat from the wild adult population; that is, the proportion of jacks is much greater. This is believed to be caused by releasing large smolts (about 10 fpp). Smolt size targets are being adjusted.

Three years of comparing 4 versus 5 fpp smolts and direct stream versus acclimated releases have been completed. The size at release studies have shown variable results with the larger smolts clearly surviving better only with the 1986 release. After two years, the direct stream releases appear to show lower returns. Migration survival of these same groups has shown mixed results through 1990. Additional size and location of release studies are being initiated.

WDF's Evaluation Study Program

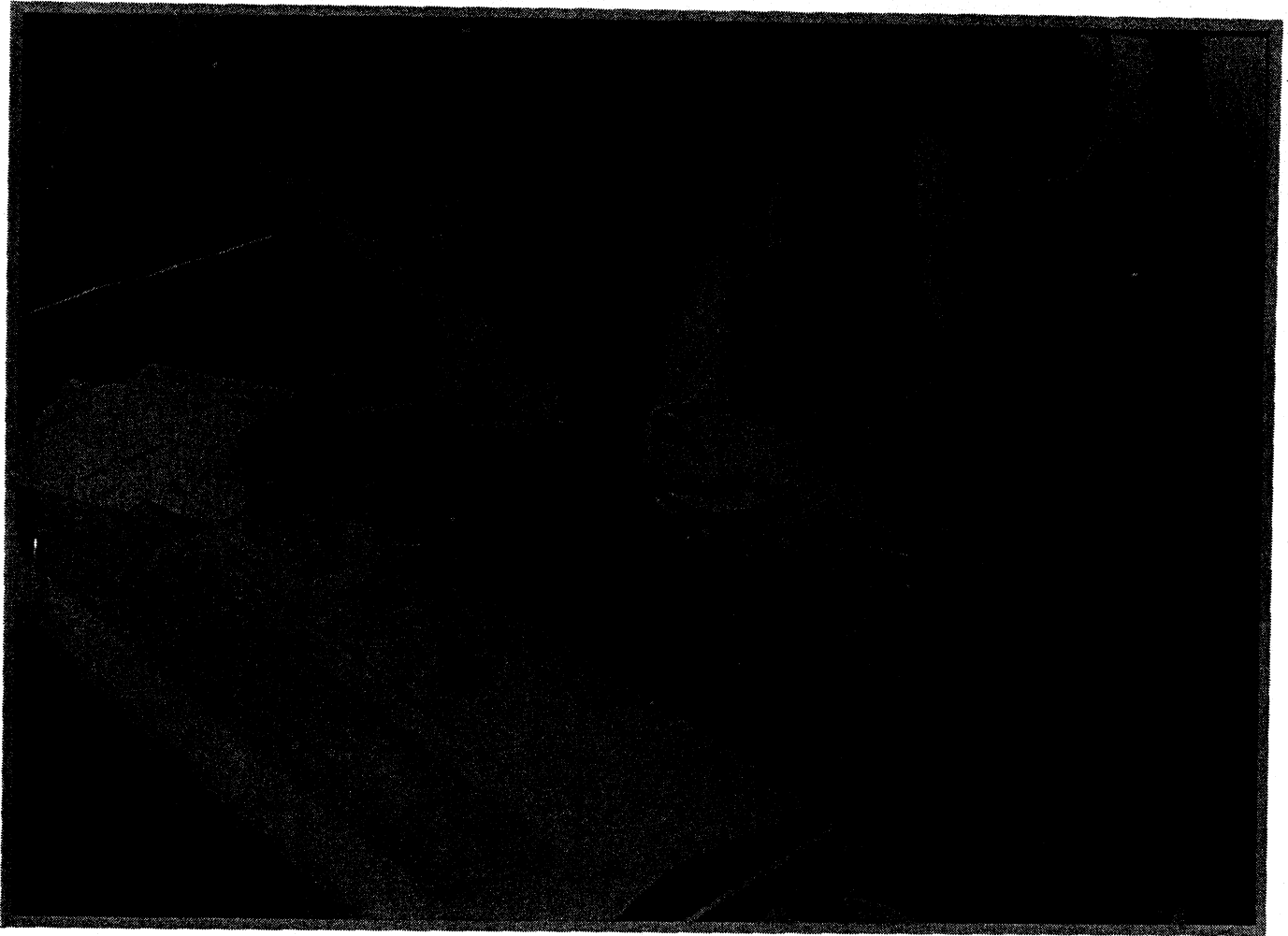
The Department of Fisheries field evaluation program was initiated in 1985 when a principal investigator was hired and stationed at Lyons Ferry FH. The Lyons Ferry FH Evaluation-Salmon program had its first full year of studies in 1986. Washington Department of Fisheries 1990 evaluation program is similar 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 endemic fall and spring chinook stocks, special attention is being paid to quantifying and monitoring genetic variables in each population. As in 1989, WDF assumed the responsibilities for trapping and hauling fall chinook from Ice Harbor Dam, an activity formerly done by ICFWRU personnel.

A smolt trap, first constructed and operated on the Tucannon River (jointly with WDW) in 1986 to monitor the numbers, timing, size and condition of outmigrating natural and hatchery spring chinook and steelhead, was moved upriver in 1987 to improve its operation. Trap operation was continued in FY 1990 although the trapping intensity has been reduced now that migration timing, size of migrants, etc. have been defined.

A major activity initiated in 1989 and continued in 1990 involved radio tagging and tracking wild and hatchery adult spring chinook above the hatchery weir to determine their movement, spawning time and location, survival and spawning success. With the completion of the new weir this year, biologists were able to enumerate all returns, both wild and hatchery, and select a predetermined proportion of both wild and hatchery-origin fish for hatchery use and upstream releases. Because all hatchery spring chinook have been marked, WDF is able to enumerate all hatchery fish returning to the weir. BY 1985 returns indicate there was a 0.29% release to adult return rates. Data from more releases are incomplete, but returns will likely be similar.

Thus far, WDF tagging studies have indicated yearling fall chinook releases (10-12 fpp) return at higher rates to ocean fisheries and to the project area than subyearling releases (55-90 fpp). By 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 their fall chinook rearing and release strategies.



Washington Dept. of Fisheries biologists insert a radio transmitter in an adult spring chinook to learn more about their life history and habitat utilized for spawning.

Tag return data have identified a problem with non-Snake River fall chinook straying into the Snake River, captured at Ice Harbor Dam or returning to Lyons Ferry FH. An unknown number of strays have been incorporated into the production program for several years. Steps were taken in 1990 and additional steps will be taken in FY 1991 to assess the problem, reduce the likelihood of genetic dilution, and develop a plan to prevent further problems. All releases in 1990 were marked; this practice is expected to continue.

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 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 lower than expected brood stock returns to the Lyons Ferry ladder, large numbers of residuals below satellite release facilities (10-22% of releases), low returns (from Curl Lake releases) to the Tucannon River (50% less than other Lyons Ferry releases), and poor fall/early winter returns to the Cottonwood pond area (Grande Ronde R.).

WDW estimates of adult return rates have shown 1 to 2% survival to adult for most programs. Location of returns, however, are not where desired. For example, surveys since 1986 showed large portions of the Lyons Ferry FH and Tucannon-released fish 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 WDW study initiated in 1988 and continued in 1990, steelhead presmolts outplanted to the three conditioning ponds were sampled to determine the process and degree of smoltification before outplanting to the ponds, midway through the conditioning period and at release. The hypothesis is that poor outmigration (residualism) and homing may be related to smolt condition. Direct stream releases underwent similar sampling, were marked, and will be compared to the conditioned fish when they return. In the mean time, WDF is investigating propagation of adults now returning to the Tucannon and Walla Walla Rivers to determine if use of these "native" stocks would alleviate the straying problems.

In lieu of 7,000 pounds of hatchery capacity for resident trout, WDW was funded by the Corps to build instream improvement structures for natural fish propagation. In FY 1984 and ending in FY 1985 the LSRCP Office and the Corps jointly funded an evaluation of the status of the structures and of their success in compensating for resident trout losses. In 1989 data were collected on the current condition and use of the habitat structures and a creel survey was conducted to determine angler use and success. The studies showed increased use of improved areas by yearling and larger trout since 1985 and angler preference for improved sites. A WDW report on the study will be available soon.

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 1990 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. In 1991 the NPT is developing a detailed study plan to monitor chinook and steelhead in Idaho. The tribe is particularly interested in determining the success of re-establishing natural runs with hatchery outplants.

Previous projects involving defining NPT goals for implementing the LSRCP in ceded areas have indicated general agreement with IDFG and ODFW plans for the LSRCP steelhead. Some conflicts with the spring chinook program relating to outplanting have surfaced and must be resolved.

The Confederated Tribes of the Umatilla Indian Reservations (CTUIR) became direct cooperators in the LSRCP Program for the first time in FY 1987. (They were subcontractors with the Nez Perce in 1986). The CTUIR initiated studies with 1989 funds in late FY 1989 and continued the same effort with 1990 funds to: 1) assess smoltification stresses of steelhead released at Wallowa FH and spring chinook at Lookingglass FH, 2) develop scale analysis techniques with ODFW (discussed above), 3) review methods to accelerate maturation of salmon adults to promote larger zero-age releases, and 4) monitor success of adult salmon outplants. Findings for CTUIR studies are not available at this time.

In 1991 the CTUIR will develop a detailed study plan to evaluate re-establishing a naturally producing population of spring chinook in Lookingglass Creek above the FH. Particular care will be taken to assess the effects of releasing fish above the FH water intake. This program is unique in that the CTUIR biologist assigned to the LSRCP program works for ODFW's LSRCP research coordinator.

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.

The Idaho Fisheries Resources Office (IFRO) was funded by the LSRCP program in FY 1990 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. 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 data base 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 to determine optimum rearing densities for spring chinook at Dworshak

NFH; their study parallels IDFG's Sawtooth FH study (noted above under IDFG). LSRCP funds were also 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.

LSRCP-funded studies initiated in 1990 included one with the Idaho CFWRU and four with the Seattle NFRC. The Unit study involves a graduate student who will determine interaction and spawning success of natural and hatchery-produced salmon adults released above hatchery weirs in two streams in Idaho, the South Fork Salmon and upper Salmon rivers. There is some concern that contribution of hatchery-produced adults is low and random selection of adults at these weirs may be "mining" the natural run. About 315 summer chinook captured at the South Fork weir and 366 spring chinook captured at the Sawtooth FH weir were marked and monitored this past summer.

The LSRCP Program partially funded four Seattle NFRC studies in 1990. 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 (discussed above under Dworshak).

LSRCP funds were also used to supplement ongoing VHS studies occurring at the SNFRC. The final SNFRC study was conducted by their Willard Field Station to determine smoltification at various WDW conditioning ponds and Lyons Ferry FH (discussed above in the WDW program).

VII. OTHER COOPERATIVE PROGRAMS

The State of Idaho is attempting to restore sockeye salmon runs to Redfish Lake. To assist in the restoration effort, facilities at Sawtooth are being made available for the IDFG sockeye salmon program which is funded by the National Marine Fisheries Service. IDFG and the LSRCP Office also entered into an informal agreement which allowed the Sawtooth Hatchery to act as a distribution point for catchable trout stocking in surrounding waters.

The State of Oregon 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 for the temporary loan of equipment and vehicles between programs.

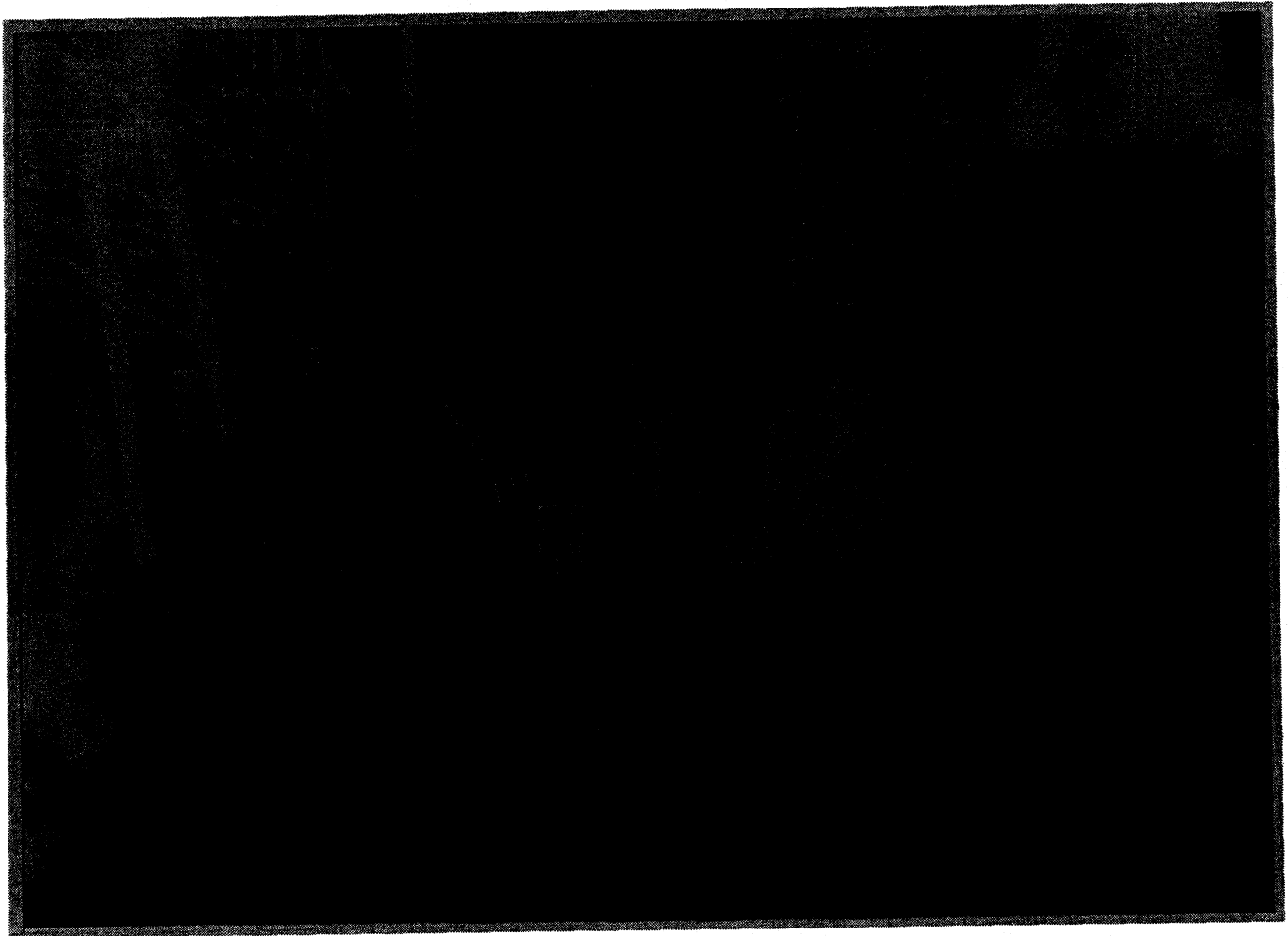
VIII. CORPS CONSTRUCTION ACTIVITIES

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 was completed on the Crooked River facility, the last satellite facility for the yet to be completed Clearwater FH. FY 1990 marked the first year that spring chinook were acclimated at and released from this satellite.

Construction of the Clearwater FH, the last hatchery under the LSRCP, is well under way. One section of pipe which will supply the hatchery with water from Dworshak Reservoir has been laid under the North Fork of the Clearwater River. The Clearwater hatchery should be completed by the end of 1991 and in operation by the spring of 1992.



Bill Shake, FWS Assistant Regional Director, Fisheries and Federal Aid (left) and Jim Martin, ODFW, Chief of Fisheries (right) each presented Joe McMichael, Walla Walla District Corps, LSRCP project manager with an award for his outstanding cooperation and contribution in the construction of LSRCP facilities.

We have been negotiating with the Walla Walla District Corps of Engineers throughout the year to develop final clean-up contracts for all facilities that have been in operation 3 or more years. The Corps was reluctant to complete the facilities to our satisfaction but through continued effort on the part of the Boise and RO staff we finally convinced the Corps that we would not accept transfer of ownership until the facilities meet with our approval. Completion contracts will be advertised in FY 1991 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.

The LSRCP staff spent considerable time negotiation a right of way sewerline construction program at the McCall FH. The city of McCall has proposed replacement of a city sewerline which runs parallel and close to McCall's main water supply line. A right of way has been negotiated with the City with provisions to protect the water supply and property during construction.

Construction of the Eagle Disease Diagnostic Laboratory, Eagle, Idaho is well underway and will be completed and in operation by the summer of 1991. This lab will provide diagnostic services to all IDFG, LSRCP facilities in Idaho.

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

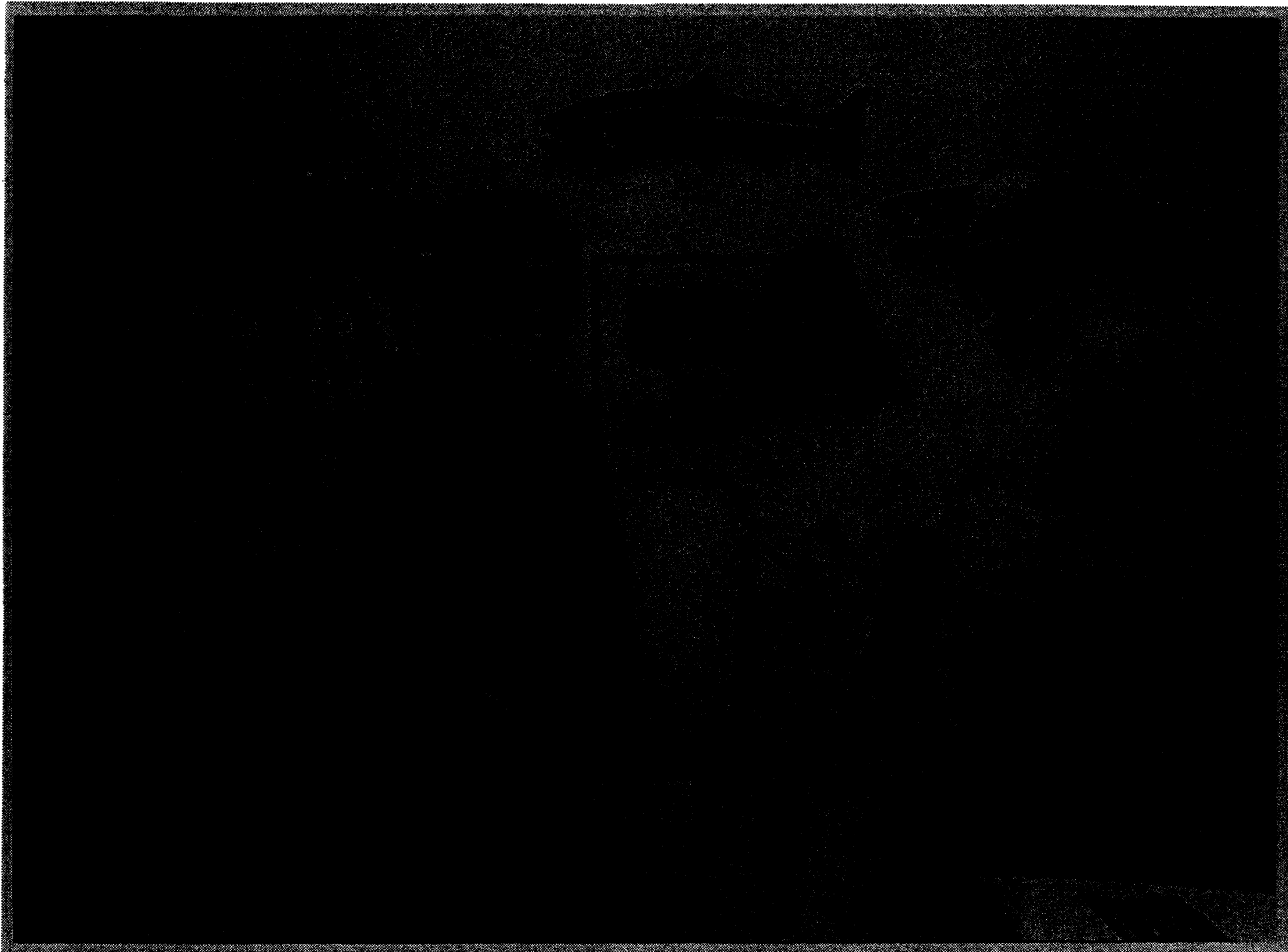
IX. STAFFING

A total of 4.0 permanent full time equivalents (FTE) staff years were utilized in FY 1990. No temporary employees were utilized during the year.

In FY 1990 the LSRCP continued to sponsor a YCC program at a cost of \$75,000. The program was conducted on 16 state and federal LSRCP hatcheries and evaluation study projects and included 44 YCC student enrollees and crew leaders. Once again the program was well received by the cooperating agencies; it not only accomplished needed station work, but also provided environmental awareness and training for local youths.

LSRCP Boise Office employees as of September 30, 1990:

Edouard J. Crateau, LSRCP Coordinator, GM-13
Daniel M. Herrig, Evaluation Studies Coordinator, GS-12
Lori R. Arden, Cooperative Agreement Assistant, GS-7
Tammy A. Froscher, Secretary/typist, GS-5



The LSRCP Staff from left to right Ed Crateau, Lori Arden, Tammy Froscher and Dan Herrig.

X. FUTURE OUTLOOK

Although still in its infancy, the Lower Snake River Compensation Plan Program is well underway with only one hatchery, Clearwater, not yet constructed. The Corps' contractor began construction of Clearwater FH this spring 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 Crooked River satellite facility another Idaho site, was completed this spring and rounded out the full complement of support satellites for the Clearwater Fish Hatchery.

The U.S. Army Corps of Engineers 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 for the most part been willing to make the necessary repairs and changes in an attempt to help them reach their full capability. This year the Corps did exhibit some reluctance to bring them up to the standard we established, but after considerable negotiations and compromise they have agreed to complete clean-up items at several facilities. With the exception of the new facilities the Corps will advertise clean-up contracts at 11 facilities in FY 1991 if funding is available.

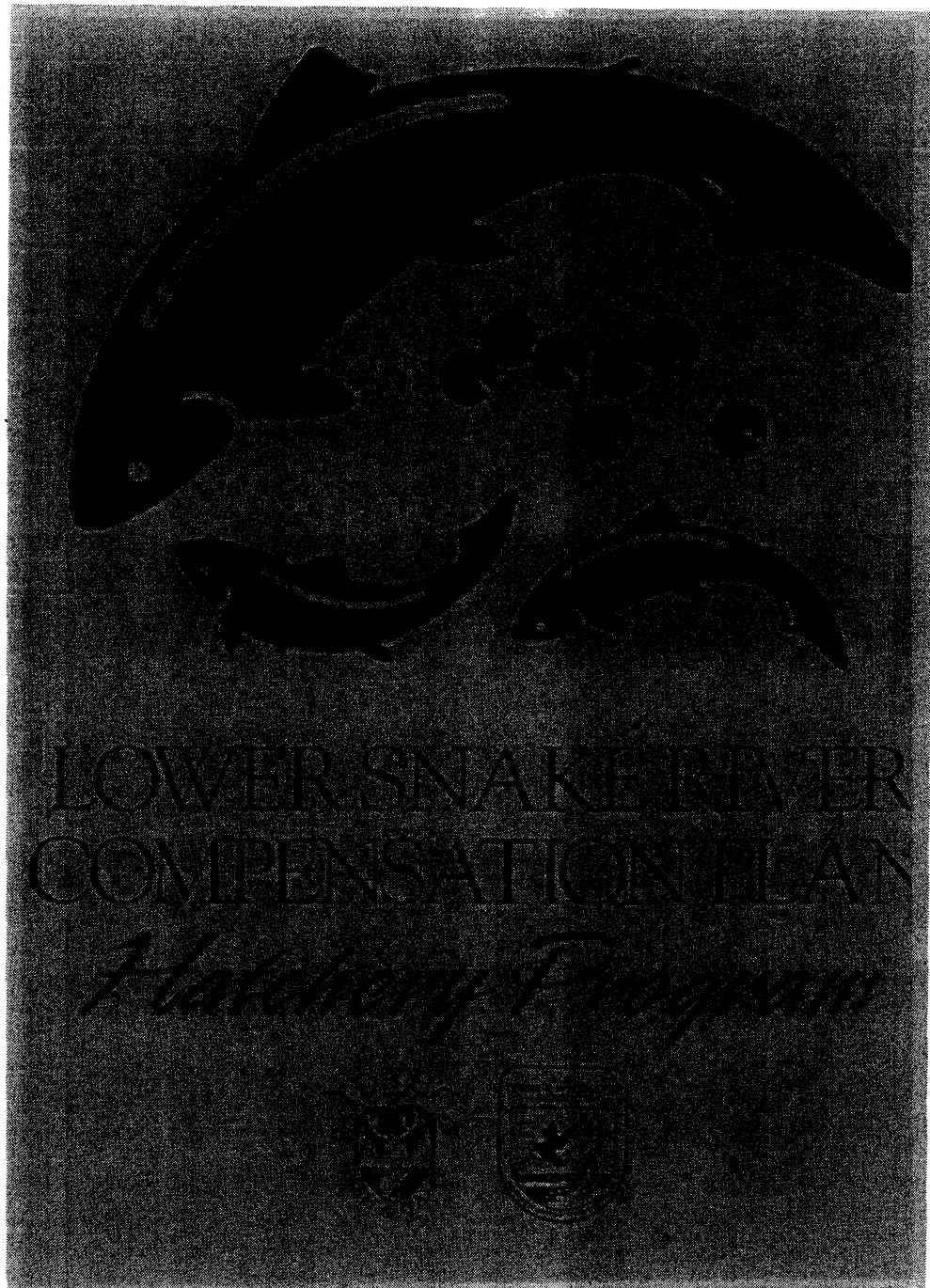
The steelhead mitigation objectives are close to the goals set in the original LSRCP and with the completion and full production at Clearwater FH our goals should be easily met taking into account the uncontrollable influences of low flow years and natural oceanic cycles.

We are experiencing difficulties in achieving programmed rates of return for chinook salmon. However, with changes planned in rearing and release strategies combined with research to solve outmigration and disease problems we feel confident that we can improve our performance substantially. Possible changes in outmigration flow levels and various strategies that will result from the possible listing of several stocks of chinook salmon will also help to increase adult return rates.

Hatchery effectiveness 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 had fallen behind the needs over the last few years as more facilities came on line and funding levels remained static. There was a substantial improvement in the FY 1990 funding level which has provided sufficient money to continue an adequate hatchery evaluation program.

The LSRCP is a relatively new program with the average age of hatcheries at only 6 years and satellite facilities at 4.7 years. This translates to less than two full chinook life cycles and about two for steelhead.

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



The Boise LSRCP staff developed a new logo to be used by cooperating agencies, which illustrates the principle activity of our program. Each cooperating agency will have their emblem or shield along with the FWS shield displayed on their logo.

XI. MEETINGS AND TOURS IN FY 1990

- 10/17/89 LSRCP Evaluations Meeting at Billy Creek on the Snake River
10/17-10/19 (Ed Crateau, Dan Herrig)
- 10/18/89 Property Inventory at Red River Satellite, ID (Lori Arden)
- 10/23/89 Meeting with Stefan Dobert & David Klinger on LSRCP VCR
Production, Boise (Ed Crateau)
Tour of Idaho LSRCP facilities with David Klinger and Stefan Dobert
for VCR Production 10/23-10/25 (Ed Crateau)
- 10/30/89 Meeting with RO Staff and Dick Kuehner on LSRCP Traveling
Exhibit, 10/30-10/31, Portland, OR (Ed Crateau)
- 10/31/89 Meeting with Bob Gable to review Hatchery Brochure bid
package, Portland, OR (Ed Crateau)
- 11/01/89 Meeting at Irrigon FH regarding need for additional 5,000
cu.ft. of water to operate hatchery (Ed Crateau)
- 11/07/89 Cooperators meeting with U. of I. staff, Boise (Ed Crateau)
- 11/08/89 Spring Chinook Salmon Workshop, Pasco, WA 11/8-11/9 (Ed
Crateau, Dan Herrig)
- 11/13/89 Dworshak Coordination Meeting, Dworshak NFH, Ahsahka, ID
11/13-11/14 (Ed Crateau, Dan Herrig)
- 11/15/89 Yakima Fisheries Project Evaluation Review, Yakima, WA 11/15-
11/16 (Dan Herrig)
- 11/30/89 Meeting with Corps and ODFW regarding cleanup contracts,
Irrigon FH (Ed Crateau)
- 12/01/89 Meeting with Bob Gable and Dave Alfs of Alfs & Assoc.
regarding hatchery brochure contract, Boise, ID (Ed Crateau)
- 12/04/89 National Review Team Meeting, Washington, D.C. 12/4-12/7 (Ed
Crateau)
- 12/05/89 Project Leaders meeting and NW Fish Culture Conference at
Salishan Lodge, Gleneden Beach, OR 12/5-12/7 (Dan Herrig)
- 12/11/89 Meeting with Steve Steubner, Idaho Statesman on news release,
Boise, ID (Ed Crateau)
- 12/14/89 Meeting with Nez Perce on evaluation studies, Boise, ID (Dan
Herrig)

- 12/20/89 Meeting with Montgomery Engineering, IDFG & COE on pipe line for Clearwater FH, Boise, ID (Ed Crateau) Meeting called by Shoshone-Bannock Tribe on sockeye salmon status and potential T & E listing, Boise, ID (Dan Herrig)
- 01/03/90 Meeting with IDFG on evaluation program in Idaho and PIT tagging studies, Boise, ID (Dan Herrig)
- 01/10/90 Meeting with Mitch Sanchotena, ISSU regarding LSRCP, Boise, ID (Ed Crateau)
- 01/12/90 National Review Team visits to various FH in Co., WY. & N.D. & review at Region 6 Lakewood, CO 1/12-1/19 (Ed Crateau) Meeting with NWPPC, Nez Perce Tribe, FWS-RO, BPA, IDFG regarding feasibility of NPT hatchery proposal under the F&W program, Boise, ID (Dan Herrig)
- 01/23/90 Meeting with COE and ODFW regarding cleanup contract for Lookingglass FH, Walla Walla, WA (Ed Crateau)
- 01/25/90 Meeting with Bill Hutchinson of IDFG regarding NPT Hatchery and Clearwater FH, Boise, ID (Ed Crateau, Dan Herrig)
- 02/02/90 Management Control Review throughout Region 5 at various MA & NH sites, 2/2-2/9 (Ed Crateau)
- 02/13/90 Second meeting with NWPPC, Nez Perce Tribe, FWS-RO, BPA and IDFG regarding feasibility of NPT hatchery proposal under the F&W program, Boise, ID (Ed Crateau, Dan Herrig)
- 02/15/90 Abernathy SCTC meeting, Longview, WA (Dan Herrig)
- 02/20/90 Management Control Review Team meeting to write up reports, Washington, D.C. 2/20-2/23 (Ed Crateau) Briefing of R.D. regarding LSRCP facilities and the pending Corps' cleanup contracts, Portland, OR (Dan Herrig)
- 02/27/90 Evaluation Study Coordinators Meeting, Boise, ID 2/27-2/28 (Dan Herrig)
- 03/06/90 Visioning Team Program presented by Dan Diggs, Boise, ID (LSRCP staff)
- 03/07/90 Meeting with Stacy Gebhard regarding Boise River Demonstration Project, Boise, ID (Ed Crateau)
- 03/08/90 Hagerman Coordination Meeting, Hagerman, ID (Ed Crateau, Dan Herrig)
- 03/13/90 Meeting with IDFG on 5-year Evaluation Plans, Boise, ID (Dan Herrig)

- 03/15/90 Meeting with Dworshak FAO and Dan Diggs, RO regarding supplementation studies, Ahsahka, ID (Dan Herrig) Serve as an EEO counselor on a complaint, Portland, OR 3/15-3/16 (Ed Crateau)
- 03/21/90 Meeting with Dan Diggs and Fred Olney regarding Snake and Columbia River flows, Boise, ID (Ed Crateau, Dan Herrig)
- 03/22/90 Dworshak Coordination meeting, Boise, ID (Ed Crateau) Coordination meeting with ODFW personnel, LaGrande, OR 3/22-3/23 (Dan Herrig)
- 04/03/90 Meeting with all cooperators and Stefan Dobert regarding LSRCP video tape production, Boise, ID (Ed Crateau)
- 04/10/90 Meeting with Corps regarding cleanup at Imnaha satellite and Lookingglass FH, LaGrande, OR (Ed Crateau)
- 04/23/90 Inspection of facilities in Idaho and Washington 4/23-4/26 (Ed Crateau, Dan Herrig)
- 05/03/90 Meeting with Dave Alfs of Alfs & Assoc. regarding McCall FH brochure, Boise, ID (Ed Crateau)
- 05/08/90 Meeting with Beth Workman to discuss development of new LSRCP logo, Boise, ID (Ed Crateau, Dan Herrig)
- 05/09/90 Inspection of Imnaha Satellite Facility after break-in (Ed Crateau, Dan Herrig)
- 05/10/90 Meeting and field work with WDF personnel, Dayton and Tucannon FH, WA, (Dan Herrig)
- 05/14/90 Meeting and field work with WDW personnel on Dayton and Tucannon Rivers, WA (Dan Herrig)
Presentation of Revenue sharing check to Valley County Commissioners, Cascade, ID (Ed Crateau)
Tour of Idaho and Washington facilities with John Miller 5/14-5/18 (Ed Crateau)
- 05/23/90 Attend dedication of National Fishing Week at Idaho Governor's Office, Boise, ID (Dan Herrig)
- 05/30/90 Meeting with Dave Alfs regarding progress of Hatchery brochures, Boise, ID (Ed Crateau)
- 05/31/90 Meeting with IDFG and others regarding plans to mark LSRCP fish in fall 1990 and spring 1991, Boise, ID (Dan Herrig)
- 06/04/90 Attend USFWS Fisheries training courses Module II and teach a course, Leetown Fisheries Academy, W.VA 6/4-6/7 (Ed Crateau)
Meeting with Regional ADP Specialist and attend Anadromous Fish Production Committee Meeting, Portland, OR 6/4-6/5 (Dan Herrig)

- 06/19/90 Project Leaders meeting, Portland, OR 6/19-6/21 (Ed Crateau, Dan Herrig)
Attend a portion of the Supplementation TWG meeting, Portland, OR (Dan Herrig)
- 06/19/90 Property inventory of both Lyons Ferry FHs and Tucannon FH 6/19-6/21 (Tammy Froscher)
- 06/26/90 Property inventory of Magic Valley FH and Hagerman NFH, ID (Lori Arden)
- 06/27/90 Meeting with Beth Workman on LSRCP Logo, Boise, ID (LSRCP staff)
- 06/28/90 Meeting on Lyons Ferry brood stock management, Vancouver, WA (Ed Crateau)
- 06/29/90 Meeting with Nez Perce Tribe discussing salmon management, Lapwai, ID (Ed Crateau, Dan Herrig)
- 07/10/90 Anadromous Fish Production Committee, Portland, OR (Dan Herrig)
- 07/11/90 Oregon Fishery Biologist Annual Meeting, Portland, OR (Dan Herrig)
- 07/12/90 Meeting with Chris Christianson and Ken Witty from ODFW regarding 1990 agreement and Snake River Hatchery Workshop, Boise, ID (Ed Crateau, Dan Herrig)
- 07/16/90 Property inventory of Irrigon FH, Lookingglass FH, Wallowa and Imnaha satellites 7/16-7/18 (Lori Arden)
- 07/17/90 Assisted Dworshak FAO personnel with studies on Duck Valley Indian Reservation, NV (Dan Herrig)
- 07/25/90 Meeting with Beth Workman to view drafts of new LSRCP logo, Boise, ID (LSRCP staff)
Meeting with Dave Alfs to review Hatchery brochures, Boise, ID (Ed Crateau)
- 07/27/90 Attend briefing to discuss potential Endangered Species Act listing of Snake River salmon species, Boise, ID (Ed Crateau, Dan Herrig)
- 08/06/90 Meeting with BPA on LSRCP program, Portland, OR (Ed Crateau)
- 08/07/90 Teach a course and attend FWS Fisheries Courses Module II, Harpers Ferry, WV (Dan Herrig)
- 08/09/90 Meeting with IDFG evaluations biologists to discuss FY1990 agreement work statement and 5 year plan, Boise, ID (Dan Herrig)

- 08/13/90 Meeting with Beth Workman on LSRCP logo development, Boise, ID (LSRCP staff)
- 08/14/90 Anadromous Fish Production Committee meeting on current plans for Snake River URB at Lyons Ferry, Vancouver, WA (Ed Crateau)
Meeting with Nez Perce Tribe and Dworshak FAO 8/14-8/15, Lapwai and Orofino, ID (Dan Herrig)
- 08/15/90 Artificial Production Coordinating Committee of the Columbia Basin Fish and Wildlife Authority on long term planning for Lyons Ferry and Snake River fall Chinook, Portland, OR (Ed Crateau)
- 08/16/90 Meeting with COE regarding Lookingglass FH, Walla Walla, WA (Ed Crateau)
- 08/21/90 Supplementation TWG meeting, Portland, OR (Dan Herrig)
- 08/23/90 Assist ODFW with field survey, Lostine and Imnaha Rivers, 8/23-8/24 (Dan Herrig)
- 08/27/90 Meeting with ODFW Research Supervisor to discuss FY90, Boise, ID (Dan Herrig)
- 08/28/90 LSRCP Conference regarding Lower Snake Hatchery review workshop meeting with Ken Witty and other ODFW and IDFG personnel, Boise, ID (Ed Crateau, Dan Herrig)
- 08/29/90 Meeting with Beth Workman progress of LSRCP Logo, Boise, ID (LSRCP staff)
McCall FH inventory, McCall, ID (Tammy Froscher)
- 09/06/90 Meeting with Dworshak FAO and IDFG biologists to discuss 5 year plans for evaluation studies in Idaho, Boise, ID (Dan Herrig)
- 09/10/90 Meeting with Tom Rogers, IDFG on FY1991 budgets, Boise, ID (Ed Crateau)
- 09/11/90 Hagerman Coordination Meeting, Hagerman, ID (Ed Crateau, Dan Herrig)
- 09/12/90 Meeting with Dworshak FAO and USFS Intermountain Station Research biologists to discuss LSRCP evaluation studies, Boise, ID (Dan Herrig)
- 09/18/90 Tour of Trinity River Fisheries Project, Weaverville, CA (Ed Crateau)
- 09/19/90 N.E. Pacific Chinook and CoHo Salmon Symposium, Eureka, CA 9/19-9/21 (Ed Crateau)
- 09/24/90 Meeting on LSRCP Traveling Exhibit, Portland, OR (Ed Crateau)

- 09/26/90 Meeting with IDFG personnel regarding LSRCP programs in Idaho, Boise, ID (Ed Crateau)
- 09/28/90 Meeting with Steve Huffaker, IDFG, and Idaho Power on Snake River Hatcheries Review meeting, Boise, ID (Ed Crateau, Dan Herrig)

XII. TRAINING

Daniel M. Herrig

Assertive Supervision - Correspondence Course - Boise

Lori R. Arden

Governmental Bookkeeping & Accounting I 2/26 - 3/2, San Diego, CA
Introduction to Federal Budgeting 5/7 - 5/10, San Diego, CA

Tammy A. Froscher

Listening & Memory Skills Development 3/8 - 3/9, Seattle, WA
Professional Development for Secretaries 4/23 - 4/24, Portland, OR

XIII. AVAILABLE REPORTS

U.S. Fish and Wildlife Service - Operation & Maintenance

- Bjornn, T.C. and R. Ringe. 1985. Fall Chinook Trapping at Ice Harbor Dam in 1980 (80165). Idaho Cooperative Fishery Research Unit, University of Idaho, Moscow, Idaho. 6 pp.
- Bjornn, T.C. and R. Ringe. 1985. Fall Chinook Trapping at Ice Harbor Dam in 1981 (81127). Idaho Cooperative Fishery Research Unit, University of Idaho, Moscow, Idaho. 6 pp.
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- Bjornn, T.C. and R. Ringe. 1985. Fall Chinook Trapping at Ice Harbor Dam in 1983 (83160). Idaho Cooperative Fishery Research Unit, University of Idaho, Moscow, Idaho. 6 pp.
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- Bruhn, D. 1985. Annual Report, FY 1984, Hagerman National Fish Hatchery, U.S. Fish and Wildlife Service, Hagerman, Idaho. 2 pp.
- Bruhn, D. 1986. Annual Report, FY 1985, Hagerman National Fish Hatchery. U.S. Fish and Wildlife Service, Hagerman, Idaho. 6 pp.
- Bruhn, D. 1987. Annual Report, FY 1986, Hagerman National Fish Hatchery. U.S. Fish and Wildlife Service, Hagerman, Idaho.
- Bruhn, D. 1988. Annual Report, FY 1987, Hagerman National Fish Hatchery. U.S. Fish and Wildlife Service, Hagerman, Idaho. 13 pp.
- Bruhn, D. 1988. Annual Report, FY 1988, Hagerman National Fish Hatchery. U.S. Fish Wildlife Service, Hagerman, Idaho. 18 pp.
- Bruhn, D. 1989. Annual Report, FY 1989, Hagerman National Fish Hatchery. U.S. Fish and Wildlife Service, Hagerman, Idaho. 19 pp.
- Bruhn, D. 1990. Annual Report, FY 1990, Hagerman National Fish Hatchery. U.S. Fish and Wildlife Service, Hagerman, Idaho. 18 pp.
- Hesson, C.P., J. C. Lientz, G. Pratschner, and R. B. Roseburg. 1986. ELISA/FAT Comparisons for Bacterial Kidney Disease (BKD). U.S. Fish and Wildlife Service, Dworshak National Fish Hatchery, Ahsahka, Idaho. 12 pp.
- Lientz, J. 1988. Annual Report FY 1987, Dworshak Fish Health Center. U.S. Fish and Wildlife Service, Ahsahka, Idaho. 30 pp.
- Lientz, J., C. Hesson, and E. Steiner. 1988. Annual Report FY 1988, Dworshak Fish Health Center. U.S. Fish and Wildlife Service, Ahsahka, Idaho. 10 pp.
- Lientz, J. 1989. Annual Report FY 1989, Dworshak Fish Health Center. U.S. Fish and Wildlife Service, Ahsahka, Idaho. 53 pp.
- Lientz, J. 1990. Annual Report, FY 1990, Dworshak Fish Health Center. U.S. Fish and Wildlife Service, Ahsahka, Idaho. 65 pp.

- Alsager, R. 1989. Sawtooth Fish Hatchery, East Fork Satellite, 1989 Spring Chinook Salmon Run Report. Idaho Dept. of Fish and Game, Stanley, Idaho. 10 pp.
- Alsager, R. 1990. Sawtooth Fish Hatchery, Annual Report, FY 1990. Idaho Dept. of Fish and Game, Stanley, Idaho. 8 pp.
- Frew, T. 1985. Annual Report, McCall Hatchery, 1 Oct. 1984 - 30 Sept. 1985, (85022). Idaho Dept. of Fish and Game, McCall, Idaho. 4 pp.
- Frew, T. 1986. Annual Report, McCall Summer Chinook Salmon Hatchery, 1984 Brood Year. Idaho Dept. of Fish and Game, McCall, Idaho. 26 pp.
- Frew, T. 1988. Annual Report, McCall Summer Chinook Salmon Hatchery, Brood 1985 Production Report. Idaho Dept. of Fish and Game, McCall, Idaho. 20 pp.
- Hutchinson, W. G. 1983. Annual Report, McCall Hatchery, 1 Oct. 1982 - 30 Sept. 1983, (80002). Idaho Dept. Fish and Game, McCall, Idaho. 3 pp.
- Hutchinson, W. G. 1984. Annual Report, McCall Summer Chinook Salmon Hatchery, 1 Oct. 1983 - 30 Sept. 1984, (80002). Idaho Dept. Fish and Game, McCall, Idaho. 6 pp.
- Hutchinson, W. G. 1985. Annual Report, McCall Summer Chinook Hatchery, 1 Oct. 1980 - 30 Sept. 1981 (80002). Idaho Dept. Fish and Game, McCall, Idaho. 28 pp.
- Hutchinson, W. G. 1985. Annual Report, McCall Summer Chinook Hatchery, 1 Oct. 1981 - 30 Sept. 1982 (80002). Idaho Dept. Fish and Game, McCall, Idaho. 30 pp.
- McGehee, J. 1989. Clearwater Fish Hatchery, Annual Report, FY 1989. Idaho Dept. of Fish and Game, Kamiah, Idaho. 4 pp.
- McGehee, J. 1990. Clearwater Fish Hatchery, Annual Report, 1990. Idaho Dept. of Fish and Game, Kamiah, Idaho. 11 pp.
- McPherson, D. 1989. McCall Summer Chinook Hatchery Annual Report, FY 1989. Idaho Dept. of Fish and Game, McCall, Idaho. 6 pp.
- McPherson, D. 1990. McCall Summer Chinook Hatchery, Annual Report, FY 1990. Idaho Dept. of Fish and Game, McCall, Idaho. 4 pp.
- Moore, B. 1983. Annual Report, FY1982, Sawtooth Salmon Trap. Idaho Dept. Fish and Game, Stanley, Idaho. 5 pp.
- Rogers, T. L. 1984. Annual Report Sawtooth Hatchery, 1 Oct. 1982 - 30 Sept. 1983 (83103). Idaho Dept. Fish and Game, Boise, Idaho. 10 pp.
- Rogers, T. L. 1985. Annual Report Sawtooth Hatchery, 1 Oct. 1983 - 30 Sept. 1984 (83103). Idaho Dept. Fish and Game, Boise, Idaho. 20 pp.

- Rogers, T. L. 1986. Sawtooth Fish Hatchery and East Fork Satellite, 1984 Chinook Salmon Brood Year Report and 1985 Steelhead Brood Year Report. Idaho Dept. Fish and Game, Stanley, Idaho. 22 pp.
- Rogers, T. 1988. Sawtooth Fish Hatchery and East Fork Satellite, 1985 Spring Chinook Salmon and 1986 Steelhead Brood Year Reports. Idaho Dept. of Fish and Game, Stanley, Idaho. 26 pp.
- Vaughn, R. L. 1984. Annual Report, FY 1983, Magic Valley Steelhead Hatchery. Idaho Dept. Fish and Game, Filer, Idaho. 5 pp.
- Vaughn, R. L. 1985. Annual Report Magic Valley Steelhead Hatchery, 1 Oct. 1983 - 30 Sept. 1984 (84044). Idaho Dept. Fish and Game, Boise, Idaho. 6 pp.
- Vaughn, R. L. 1986. Annual Report, FY 1985, Magic Valley Steelhead Hatchery. Idaho Dept. Fish and Game, Filer, Idaho. 4 pp.
- Wimer, L. 1985. Annual Report, McCall Summer Chinook Salmon Hatchery, 1 Oct. 1979 - 30 Sept. 1980 (80002). Idaho Dept. Fish and Game, McCall, Idaho. 25 pp.

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- Ball, K. 1986. Evaluation of Hatchery - Wild Steelhead Harvest for September 1, 1984 through November 30, 1984 (84133). Idaho Dept. Fish and Game, Salmon, Idaho. 38 pp.
- Ball, K. 1986. Evaluation of the Hatchery - Wild Composition of Idaho Salmon and Steelhead Harvest for December 1, 1984 to October 1, 1985 (85067). Idaho Dept. Fish and Game, Salmon, Idaho. 62 pp.
- Ball, K. 1988. Evaluation of the Hatchery-Wild Composition of Idaho Salmon and Steelhead Harvest for October 1, 1985 to December 31, 1986 (86505). Idaho Dept. of Fish and Game, Salmon, Idaho. 99 pp.
- Ball, K. 1989. Evaluation of the Hatchery-Wild Composition of Idaho Salmon and Steelhead Harvest for October 1, 1986 to December 31, 1987 (87501). Idaho Dept. of Fish and Game, Salmon, Idaho. 84 pp.
- Ball, K. 1990. Evaluation of the Hatchery-Wild Composition of Idaho Salmon and Steelhead Harvest, October 1, 1987 to December 31, 1988 (88501). Idaho Dept. of Fish and Game, Salmon, Idaho. 75 pp.
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Carmichael, R.W., R.T. Messmer, and B.A. Miller. 1990. Annual Progress Report, Evaluation of LSRCP Facilities in Oregon, July 1, 1987 to June 30, 1988 (87513). Oregon Dept. of Fish and Wildlife, Portland, Oregon. 42 pp.

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Seidel, P., R. Bugert, R. S. Kirby, and L. Ross. 1986. LSRCP Lyons Ferry Evaluation Project, 1985 Annual Report (85072). Washington Dept. of Fisheries, Olympia, Washington. 54 pp.

Seidel, P. and R. Bugert. 1987. LSRCP Lyons Ferry Salmon Evaluation Program, 1986 Annual Report (86521). Washington Dept. of Fisheries, Olympia, Washington. 51 pp.

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Table 1. LOWER SNAKE RIVER COMPENSATION PLAN ACTIVITIES FOR 1990.

<u>INSTALLATION/PROGRAM</u>	<u>FUNDING LEVELS</u>	<u>SPECIES</u>	<u>TYPE</u>	<u>NUMBER OF FISH STOCKED</u>	<u>POUNDS OF FISH STOCKED</u>
<u>STATE OF IDAHO</u>					
McCall FH	357,104	SuCS			
South Fork Satellite			Smolts	1,032,500	49,774
Sawtooth FH	629,779	SpCS	Smolts	2,096,400	84,289
			Fingerlings	2,000	80
East Fork Satellite		SpCS	Smolts	514,600	23,100
Magic Valley FH	592,399	STT	Smolts	2,122,900	486,750
Clearwater FH	456,800				
Satellite Facilities		SpCS	Smolts	919,997	32,210
Eagle Lab	138,000				
<u>STATE OF OREGON</u>					
Lookingglass FH	464,871	SpCS	Smolts	822,595	45,721
Imnaha Satellite			Smolts	364,549	22,345
Big Canyon			Smolts	91,433	5,475
Little Sheep Creek			Smolts	79,953	4,360
Irrigon FH	1,040,885	STT	Smolts	633,100	125,000
		STT	Fingerlings	27,800	405
Wallowa FH		STT	Smolts	497,800	99,600
Little Sheep Creek		STT	Smolts	250,000	50,000
Big Canyon Satellite		STT	Smolts	275,000	53,900
<u>STATE OF WASHINGTON</u>					
Lyons Ferry FH (WDF)	529,542	SpCS	Smolts	145,146	13,195
		FCS	Smolts	436,354	45,453
			Fingerlings	3,043,756	44,112
Lyons Ferry FH (WDW)	764,640	STT	Smolts	818,352	177,458
			Fingerlings	227,632	3,490
		RBT	Catchables	128,994	39,414
Tucannon FH Satellite	279,244	RBT	Fingerlings	248,164	6,839
		RBT	Catchables	160,700	60,925
			Fingerlings	74,000	3,250
<u>FISH AND WILDLIFE SERVICE</u>					
Hagerman NFH	549,000	STT	Smolts	1,439,266	339,520
			Fingerlings	872,011	22,915
Dworshak NFH	218,000	SpCS	Smolts	1,744,329	96,134
Seattle NFRC	52,600				
Dworshak Fish Health Ctr.	63,000				
YCC Program	75,000				
Regional Office	250,000				
LSRCP Management/Coord.	205,000				
<u>EVALUATION STUDIES</u>					
	1,275,109				
		STT	Smolts	6,036,418	1,332,228
			Fingerlings	2,000	80
		STT	Smolts	6,036,418	1,332,228
			Fingerlings	1,127,543	26,810
TOTAL OBLIGATED	7,940,973	RBT	Catchables	289,694	100,339
			Fingerlings	322,164	10,089
			TOTALS	19,069,431	1,935,714

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

Table 2. LOWER SNAKE RIVER COMPENSATION PLAN EVALUATION STUDIES

<u>Cooperator/Study</u>	<u>1990 Funds</u>	<u>Species Studied</u>
<u>Idaho Dept. of Fish and Game</u>		
Hatchery Evaluations	\$344,484	Chinook, Steelhead
<u>Oregon Dept. of Fish and Wildlife</u>		
Hatchery Evaluation	\$294,681	Chinook, Steelhead
Pre-smolt Release (tagging)	7,044	Chinook
Reprogramming Smolts (tagging)	<u>6,862</u>	Chinook
Subtotal	\$308,587	
<u>Washington Dept. of Fisheries</u>		
Lyons Ferry Evaluation	\$204,992	Chinook
<u>Washington Dept. of Wildlife</u>		
Lyons Ferry Evaluation	\$179,086	Steelhead, Resident trout
<u>Nez Perce Tribe</u>		
LSRCP Production Plan Evaluations	\$104,075	Chinook, Steelhead
<u>Umatilla Confederated Tribes</u>		
LSRCP Evaluation Project	\$ 63,885	Chinook, Steelhead
<u>Idaho Fisheries Resource Office</u>		
Hatchery Coordination	\$ 70,000	Chinook, Steelhead
<u>Seattle National Fisheries Research Center</u>		
BKD, VHS, and Smoltification Studies	\$ 52,600	Chinook, Steelhead
TOTAL	\$1,327,709	

Table 3. Pertinent Data for Lower Snake River and Wildlife Compensation Plan Fish Hatchery Facilities.

Hatchery (Operator) ^a	Fish Type	Pound	Construction Cost (\$1,000)	Satellite Facilities	Date of Completion
Lookingglass (ODFW)	Spring Chinook	69,600	\$ 6,324	Big Canyon Ck. Imnaha	Nov. 82
			\$ 1,805		Apr. 87
			\$ 818		Jul. 89
Irrigon/Wallowa (ODFW)	Steelhead	279,600	\$ 8,117	(Wallowa) ^b Little Sheep Ck (Big Canyon Ck)	Oct. 85
			\$ 2,206		May 85
			\$ 1,780		Aug. 87
			\$ 1,809		
Lyons Ferry:			\$20,503 ^c		
Phase I (WDW)	Steelhead	116,400			Nov. 83
	Trout	45,000			
Phase II (WDF)	Trout	41,000	\$ 540	Cottonwood	Feb. 85
			\$ 828	Dayton Pond	Oct. 86
	Fall Chinook Spring Chinook	101,800 8,800	\$ 2,775	Tucannon FH	Nov. 84
			\$ 143	Curl Lake	Feb. 85
					Nov. 84
Sawtooth (IDFG)	Spring Chinook	149,000	\$ 9,322	E.Fk. Salmon R.	Jan. 85
			\$ 1,386		Nov. 83
Dworshak (FWS)	Spring Chinook	70,000	\$ 1,539		Nov. 82
Clearwater (IDFG)	Steelhead	350,000	\$20,500	Red River Crooked River Powell	Dec. 91
			\$ 759		Nov. 86
	Spring Chinook	91,300	\$ 2,177		May 90
			\$ 1,239		Aug. 89
Magic Valley (IDFG)	Steelhead	291,500	\$10,753	(Sawtooth) (East Fork)	Aug. 87
Hagerman (FWS)	Steelhead	340,000	\$ 6,980	(Sawtooth) (East Fork)	Apr. 84
McCall (IDFG)	Summer Chinook	61,300	\$ 4,615	S.Fk. Salmon R.	Sep. 81
			\$ 838		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.

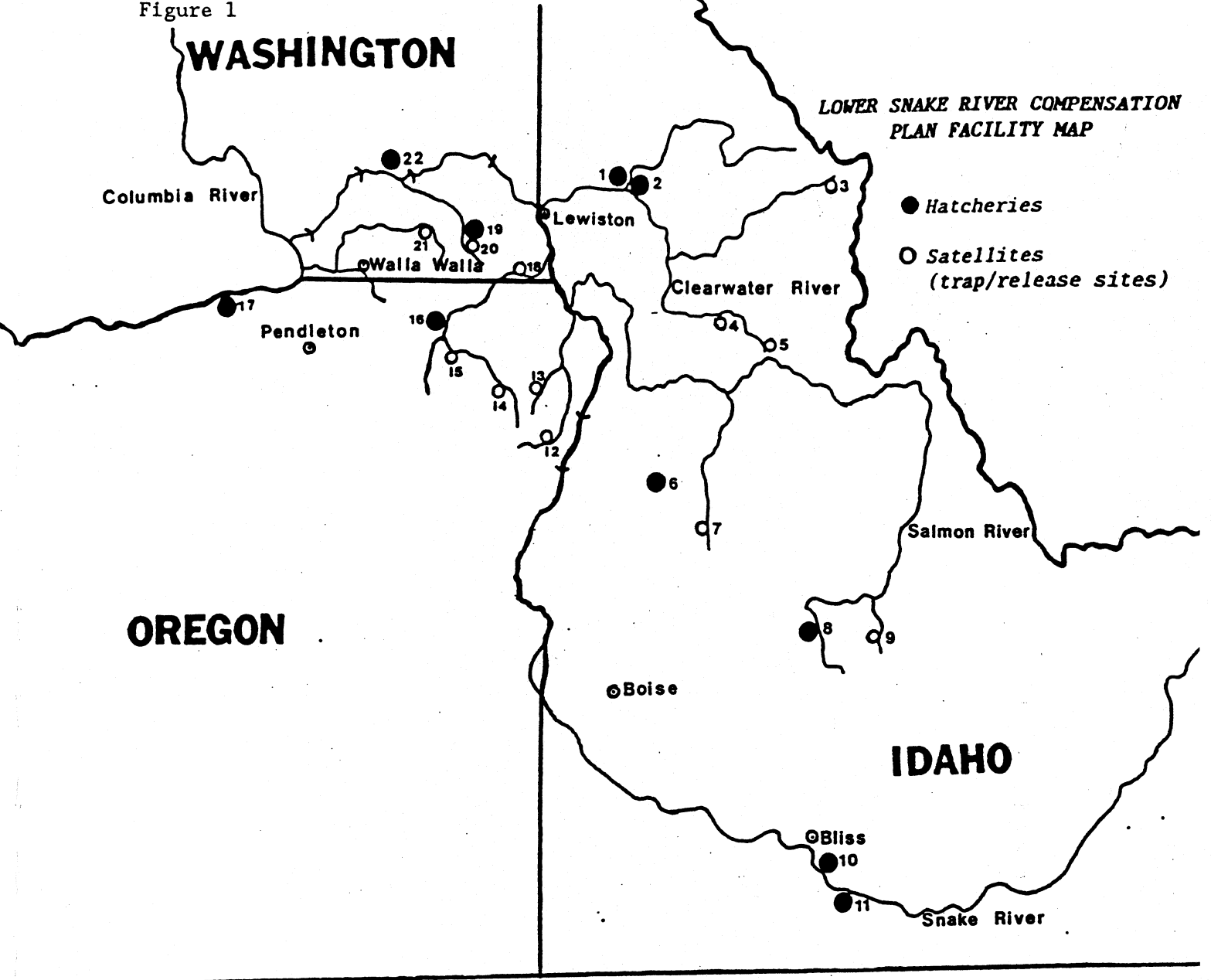
^c Total cost of Lyons Ferry Phases I and II

Table 4. Adult return goals and hatchery or trap rack returns of LSRCP hatcheries operating in 1990 (total return estimates to the Snake River Basin are not available).

Species/Hatchery	Adult Return Goals to Snake River	Hatchery/Trap Rack Returns ¹
Summer Chinook		
McCall FH/South Fork	8,000	969
Spring Chinook		
Sawtooth FH/East Fork	19,232	1,633
Lookingglass FH/Imnaha	9,072	1,234
Dworshak NFH	9,000	3,183
Lyons Ferry/Tucannon FH	1,152	460
Clearwater FH	12,200	261 ²
Fall Chinook		
Lyons Ferry FH ³	18,300	2,553
Steelhead Trout		
Irrigon/Wallowa FH ⁴	11,184	2,160
Lyons Ferry FH ⁵	4,656	2,458
Hagerman NFH/Magic Valley FH ⁶	13,600	1,510

- ¹ Chinook returns include jacks.
- ² Returns to Powell, Red River and Crooked River traps only.
- ³ Includes ladder returns plus Ice Harbor trapping results.
- ⁴ Includes returns to Wallowa, Big Canyon, Little Sheep traps.
- ⁵ Ladder is only open for short period, many captures are strays.
- ⁶ Includes returns to East Fork, Sawtooth FH racks.

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

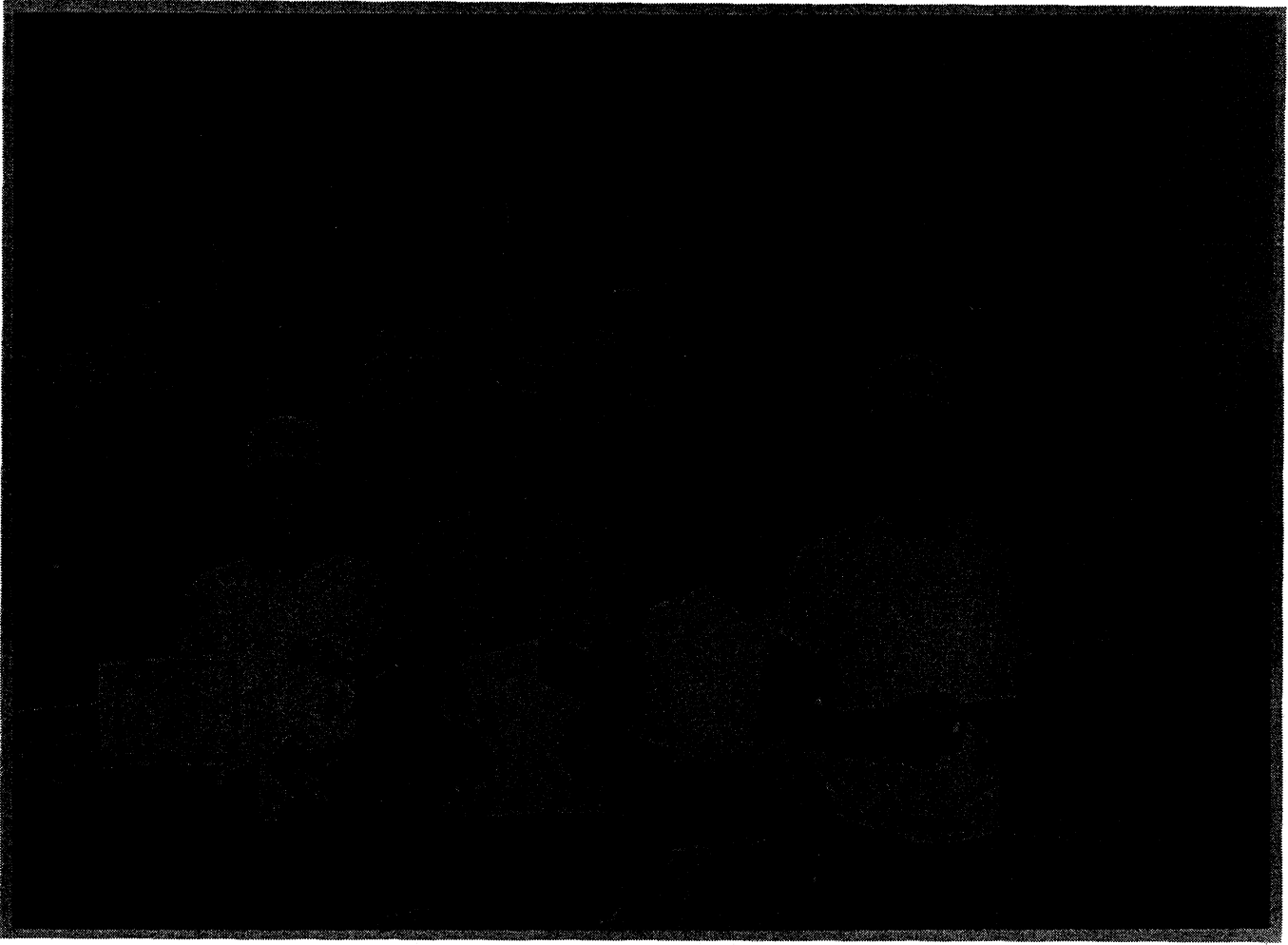
- 12. Imnaha
- 13. Sheep Creek
- 14. Wallowa FH
- 15. Big Canyon
- 16. Lookingglass FH
- 17. Irrigon FH

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



The YCC Program has proven to be not only popular, but successful. Youths are employed at LSRCP facilities for an eight week period, during the summer, to assist in accomplishing valuable maintenance and natural resource work while at the same time providing the employees with an income and environmental education.