
UNITED STATES DEPARTMENT OF INTERIOR - FISH AND WILDLIFE SERVICE

LOWER SNAKE RIVER COMPENSATION PLAN OFFICE

4696 OVERLAND ROAD, ROOM 560

ANNUAL REPORT - LYONS FERRY TROUT HATCHERY
OCTOBER 1, 1988 TO SEPTEMBER 30, 1989
CONTRACT NUMBER: 14-16-0001-86503(RGW)

HAROLD R. HARTY - FISH HATCHERY MANAGER 5
TIM W. HOLDER - ASSISTANT MANAGER
LYONS FERRY TROUT HATCHERY
STARBUCK, WASHINGTON

INTRODUCTION

Lyons Ferry Trout Hatchery is part of the Lower Snake River Compensation Plan and has been in operation since 1983. Mitigation goals are for 875,000 summer-run steelhead smolts, 120,000 rainbow legals and 100,000 rainbow fry annually. Two satellite stations, the Cottonwood and Dayton Acclimation Ponds, located on the Grande Ronde and Touchet Rivers respectively, are used to acclimate smolts for a period of two months prior to release. Tucannon Hatchery is also a satellite facility of Lyons Ferry Trout Hatchery with mitigation goals of 153,000 rainbow legals and 75,000 rainbow fry.

The Lyons Ferry Hatchery 1988-1989 fiscal year production of steelhead was 861,033 smolt and 279,760 sub-smolts with weights of 165,559 pounds and 6,367 pounds respectively. Rainbow production included 165,120 legals and 123,249 fry with weights of 41,972 pounds and 6,750 pounds respectively. The change in rainbow legals and fry production is due to a requested program change by the State of Idaho.

Steelhead adult returns, females spawned, and egg takes were similar to past years. A total of 1,126 adults were trapped in the months of September, October, and November. A total of 1,263,237 green eggs were taken this year. A major change in the health status occurred with the egg take this year. IHN Virus was detected in virtually all adults spawned. IHN virus epizootics in Lyons Ferry stock summer steelhead fry resulted in their destruction and the entire facility disinfected with chlorine. To offset the loss, surplus steelhead from the WDW Wells Hatchery and Hagerman National Fish Hatchery were shipped in. A special "Thanks" to Mr. Bill Hutchinson of Idaho Fish & Game for providing these replacement fish.

LYONS FERRY STOCK SUMMER-RUN STEELHEAD

1988 BROOD YEAR

At the start of the fiscal year a total of 639,061 fish at an average size of 28 fish per pound (/lb.) were divided into two lakes. Lake One was stocked with 309,476 fish (24.8/lb.) for a weight of 12,503 pounds (lbs.). Lake Two was stocked with 329,585 fish (31.6/lb.) for a weight of 10,430 lbs. During the week of January 23-27, 1989, 283,810 fish from lakes one and two were moved into twelve raceways for marking (coded wire micro tags, freeze brands, and ventral fin clips). In the process we lost 44,000 fish. A screen had plugged during the night, thereby decreasing the water inflow to the holding structures, which in turn led to the suffocation of the fish. The marking crew began on February 8 and finished by February 17. The marked fish were divided into three main groups (Table 1).

On March 7, we began hauling fish to Dayton and Curl Lake Acclimation Ponds. By March 21, and after 12 loads, Dayton Pond had received 81,698 marked fish and 78,870 unmarked fish; Curl Lake received 60,941 marked fish and 99,120 unmarked fish (Table 1). Fish sizes during transportation ranged from 5.6-7.4/lb. Lyons Ferry Hatchery reared 101,990 marked fish. Fish reared at Dayton Pond were allowed to migrate into the Touchet River April 15-30. Fish released averaged 4.6/lb. at an estimated weight of 33,014 lbs. Fish reared at Lyons Ferry Hatchery were stocked into the Snake River April 30, 1989 averaging 4.8/lb. with an estimated weight of 20,549 lbs.

Table 1. Marking Breakdown of Lyons Ferry Steelhead for the 1989 Release.

<u>CURL LAKE ACCLIMATION POND</u>			
NUMBER OF FISH	BRAND	TAG CODE	FIN CLIP
20,261	LA-IJ-3	63-50/35-R3	AD/LV
20,502	LA-IJ-4	63-50/49-R3	AD/LV
20,178	LA-IJ-3	64-50/50-R3	AD/LV
<u>DAYTON ACCLIMATION POND</u>			
20,465	LA-IT-3	63-2/50-R3	AD/LV
20,224	RA-IT-3	63-2/49-R3	AD/LV
20,444	LA-IT-1	63-2/47-R3	AD/LV
20,565	RA-IT-1	63-50/52-R3	AD/LV
<u>LYONS FERRY TROUT HATCHERY</u>			
25-515	RA-IJ-1	63-55/8-R6	AD/LV
25,635	RA-IJ-1	63-55/8-R6	AD/LV
25,350	RA-IJ-3	63-1/32-R6	AD/LV
25,490	RA-IJ-3	63-1/32-R6	AD/LV

1989 BROOD YEAR

Operation of the fish ladder commenced on September 1, 1989, and ceased on December 13. A total of 1,126 steelhead returned to the trap during this time period. Peak returns occurred between September 28 and October 4 (Table 2). On March 27, at Mark Shuck's (the project evaluation biologist) request, adults were trapped for a tag recovery study (Table 3). A total of 1,400 adults were trapped. All fish trapped were checked for various marks and brands. On December 20, Washington State University requested and received nine steelhead adults for a study of tissue at various stages of maturation (Table 2). Spawning began on February 21, and eggs were taken once each week until March 21. Steve Roberts, Fish Pathologist, took ovarian fluid and tissue samples from all females spawned. A total of 243 females and 576 males were spawned, producing 1,263,237 eggs (Table 4). Fish not spawned were returned to the Snake River (Table 2). Viral test results revealed virtually 100 percent of the samples to be IHNV positive. On March 30, 1989, the virology lab notified us that egg takes one and two were positive for IHNV. Department of Wildlife Administration made the decision to keep and raise all eggs. 11,996 eyed eggs were shipped to Walla Walla High School (Agricultural Department) on April 11 for a stream enhancement program (Table 4).

Hatching of take-one occurred on March 20, 1989, followed by take-two on March 25, take-three on April 1, take-four on April 8, and take-five on April 15. The first take had been feeding for eight days when an increase in mortality occurred. Steve Roberts was notified April 17, and he diagnosed the group as having IHNV on April 18. On April 19, WDW Administration made the decision to destroy all fry from take-one. Abnormally high mortalities in fry from take-two occurred April 22 through May 1. WDW Administration made the decision to destroy only groups showing signs of IHNV. 164,000 fry from the second take were destroyed on May 2. Takes three, four, and five did not show signs of IHNV during early fry development. IHNV was confirmed on May 20 in fry from take-three; and on May 23, 19,597 fry from this group were destroyed. Remaining fry from takes three and four were moved to the tanks on May 30. On May 31, fry from take-five were moved to the tanks. Fry from takes three, four, and five were moved to the raceways on June 29. An increase in mortalities occurred in raceway five on July 7, and Steve Roberts confirmed IHNV in the group on July 23. All fingerlings in raceway five were destroyed July 27. Mortalities increased in raceway four on August 12. IHNV was confirmed in this group on August 16, and all fingerling in raceway four were destroyed. The Lyons Ferry stock were totally destroyed resulting in a loss of 941,000 summer steelhead (Table 5).

Table 2. Adult Returns to Lyons Ferry Hatchery and Adults Shipped.

LYONS FERRY SUMMER STEELHEAD

Date of first return.....	9-12-88
Date of last return.....	12-13-88
Number of females returning.....	587
Number of males returning.....	539
Dates of peak returns.....	9-28-88 to 10-4-88
Number of males and females released to spawn naturally....	303
Mortality of all adult returns.....	76
Number of adults shipped.....	9

Table 3. Adult Returns to Lyons Ferry Hatchery (tag recovery).

Date of first return.....	3-27-89
Date of last return.....	4-12-89
Number of adults returning.....	816
Number of adults checked.....	545
Mortality of adults.....	271

Table 4. Spawning Records for 1989 Lyons Ferry Stock Summer Steelhead.

<u>DATES SPAWNED</u>	<u>NUMBER EGGS TAKEN</u>	<u>NUMBER FEMALES</u>	<u>NUMBER MALES</u>
2-21-89	522,780	94	164
2-28-89	188,691	38	91
3-07-89	170,800	33	90
3-14-89	199,008	45	109
3-21-89	181,958	33	96
Total number of females spawned.....		243	
Total number of males spawned.....			576
Total number of green eggs.....			1,263,237
Total number of eyed eggs.....			1,010,590
Number of eggs retained for rearing.....			957,074
Number of eggs shipped.....			11,996

WALLOWA SUMMER STEELHEAD

1988 BROOD YEAR

Beginning October 1, 1988, 408,545 fish (73/lb.) totaling 5,597 lbs. were on hand. Rock Lake received 101,080 fish, weighing 1,900 lbs. (53.2/lb.) on October 25, 1988 (Table 6). On February 27, 1989 we began hauling fish to Cottonwood Pond. Due to vehicle weight restrictions on Rattlesnake Grade, caused by freezing weather, fish were loaded at 3 a.m. for transfer to Cottonwood Pond. By March 10, and after eight loads, Cottonwood Pond had received 225,150 fish (9.58/lb.) totaling 23,500 lbs. (Table 6). Wallowa Steelhead were allowed to migrate from Cottonwood Pond to the Grande Ronde River from April 15 to April 30. Fish released averaged 5.3/lb. with an estimated weight of 41,896 lbs. Asotin Creek was stocked with 29,975 fish (5.5/lb.) totaling 5,450 lbs. The Grande Ronde River was stocked with 50,410 fish (5.19/lb.) equalling 9,700 lbs. on April 25-26. No disease problems were experienced for Wallowa stock summer steelhead.

1989 BROOD YEAR

Wallowa eggs were shipped from Enterprise Hatchery (Oregon Department of Fish and Wildlife) to the Tucannon Hatchery on May 5, 1989. Eggs and resulting fry were held at the Tucannon Hatchery to prevent exposure of the IHNV epizootic occurring at Lyons Ferry Hatchery. 226,025 fry (435-460/lb.) weighing 505 lbs. were received on July 18, and put in two deep tanks. On August 1, the Wallowa's were graded, divided into three deep tanks, and ranged from 272 to 287/lb. Marking adipose fins began on August 5. Fish from 202 to 193/lb. were moved from the tanks to the marking trailer and directly to rearing pond number three. Wallowa's were moved directly to the rearing lake as protection from possible IHNV exposure in the raceways. On September 30, 239,002 fish (65/lb.) equalling 3,677 lbs. were on hand for the 1990 release.

SKAMANIA SUMMER STEELHEAD (1989 BROOD YEAR)

On January 20, 1989, Lyons Ferry Hatchery received 210,528 eyed eggs from Skamania Hatchery. Skamania eggs hatched on January 29, 1989 with only a 4.40 percent egg loss (9,268). Skamania Steelhead fry from 405-666/lb. were graded and moved to the deep tanks on March 26. On April 19, fingerlings were graded and moved to the raceways as follows: 88,635 fish (127/lb.) equalling 655 lbs. to raceway one and 98,343 fish (205/lb.) equalling 478 lbs. to raceway two. Skamania and Ringold Strains were to be used in a comparison study of adult returns to the Ringold Hatchery. 178,680 Skamania Steelhead (40/lb.) were stocked on July 5 and 6 into Rock Lake (Table 6). The comparison study was aborted due to the IHNV epizootic at Lyons Ferry and communication problems between regions within the state. Measures have been taken to avoid future communication problems.

RINGOLD SUMMER STEELHEAD (1989 BROOD YEAR)

Lyons Ferry Hatchery received 236,284 eyed summer steelhead eggs (Ringold stock) from Chelan Hatchery between December 29 and January 26. Individual dates on eggs received are as follows: 50,952 eggs December 29; 63,036 eggs January 6; 39,576 eggs January 12; 46,204 eggs January 19; and 36,516 eggs January 26. Hatching was completed on February 5, resulting in 222,240 fry and an egg loss of 13,964 or 5.91 percent. On March 13, Ringold Steelhead fry were graded and transferred to deep tanks as follows: 63,532 (524.3/lb.) to tank six and 145,724 (717.9/lb.) to tank seven. On May 8 these fingerlings were graded and moved to the raceways as follows: 86,280 fish (118/lb.) equalling 731 lbs. to raceway three and 90,427 (118/lb.) equalling 766 lbs. to raceway four. Ringold Steelhead were adipose clipped on August 15 and 16. These fish developed bacterial coldwater disease and TM 100 was fed from September 5 through September 14 to successfully control the disease. On September 30, 197,316 fish (142/lb.) equalling 13,895 lbs. were on hand for the 1990 release.

WELLS SUMMER STEELHEAD (1989 BROOD YEAR)

On July 20, 1989 Lyons Ferry Hatchery received 60,000 summer steelhead fingerlings (750/lb.) equalling 80 lbs. from Wells Hatchery. These fish were held in the hatchery's deep tanks. On August 20 Wells Hatchery transported 62,000 fingerling (40/lb.), equalling 1,500 lbs., to Lyons Ferry Hatchery. These fish were unloaded into raceways 11 and 12. A total of 67,100 Wells steelhead (122/lb.) were moved from the tanks to the raceways on September 11. Wells steelhead were adipose clipped on September 12 and 13. These steelhead were moved from the raceways to lake two as follows: 62,000 fingerling (40/lb.) on September 5, and 64,914 fingerling (93/lb.) on September 27. On September 30, 126,914 Wells steelhead (43.2/lb.) equalling 2,936 lbs. were retained.

PAHSIMEROI SUMMER STEELHEAD (1989 BROOD YEAR)

Lyons Ferry Hatchery received Pahsimeroi summer steelhead as follows: 136,801 fingerling (68.4/lb.), equalling 2,000 lbs., on September 26, and 101,255 fingerling (65.45/lb.), equalling 1,550 lbs., on September 28. These fish were stocked into Lake One resulting in 238,056 Pahsimeroi steelhead (67/lb.) equalling 3,550 lbs. on hand September 30. All fish were transferred to us from Hagerman National Fish Hatchery.

SPOKANE STOCK RAINBOW TROUT

1987 BROOD YEAR

At the beginning of the fiscal year raceways six through ten contained 151,499 Spokane stock rainbow trout (13/lb.), equalling 11,654 lbs. 48,108 fish (11.4/lb.) were stocked on October 11 and 12 in Sprague Lake (Table 6). During December, TM 100, a treatment for bacterial coldwater disease, was fed to the rainbow and successfully controlled the epizootic. Stocking lakes began on March 14, 1989, sizes ranged from 1.8 to 3.2/lb. (Table 6).

1988 BROOD YEAR

On December 19, 1989, Lyons Ferry Hatchery received 304,500 eyed rainbow trout eggs from Spokane Trout Hatchery. Hatching was completed on December 30, resulting in 291,015 fry with only a 4.42 percent egg loss (13,485). The transfer of 288,405 fry (544/lb.) from the troughs to the deep tanks occurred on February 20. 277,517 fingerling (217.5/lb.) were moved on March 24 from the deep tanks to raceways eighteen and nineteen. These fish were split between four raceways April 8, resulting in 288,405 fish (61.35/lb.). Bacterial gill disease was diagnosed on April 22, and the rainbow were treated with two percent hyamine on April 23, 24, and 25. On June 22, 259,190 fingerlings (30.8/lb.) were graded and split into seven raceways as follows: 144,123 fish in raceways eighteen and nineteen, and 115,067 fish in raceways six through ten. Idaho received 75,141 fish, at 29.7/lb., on July 13 and 14. Due to the IHNV epizootic, 63,005 rainbow destined for Idaho waters were tested for IHNV and left ventral fins were clipped. IHNV was confirmed in rainbow trout in raceways six and seven on August 16. WDW Administration made the decision to destroy rainbow in raceways six and seven, and plant the remaining 1990 legal program into the Snake River. These measures were taken to protect future stocks reared at Lyons Ferry Hatchery from IHNV. On August 18, 46,051 rainbows (9.4/lb.) from raceways six and seven were destroyed, and 69,040 rainbows (9.61/lb.) from raceways eight through ten were stocked in the Snake River (Table 6). On September 30, 63,005 rainbows, at 6.8/lb., equalling 9,250 lbs., were on hand for stocking Idaho waters.

GOLDENDALE STOCK RAINBOW TROUT (1988 BROOD YEAR)

On August 30, 1989 Lyons Ferry Hatchery received 81,370 rainbow fingerlings (25.2/lb.), equalling 3,220 lbs., from Puyallup Hatchery. These fish were stocked into Lake One. The transfer of 70,892 rainbows (17.6/lb.) equalling 4,028 lbs. to raceways six through ten occurred on September 18. Seagull predation resulted in a 12.87 percent loss (10,478 fish) in these raceways. On September 30, 70,895 rainbows, at 14.5/lb., equalling 4,902 lbs., were on hand for stocking in 1990.

OPERATIONS & MAINTENANCE

ENGINEERING PROJECTS

The U.S. Army Corps of Engineers had a "clean-up" contract with the work scheduled for this fiscal year. Items included in the contract were: fish ladder water supply modification, piping modification in pump pits three and four, realignment of pump six, degasser tower modification, head tank level indication system modification, asphalt repair around manholes 10, 11, 18, & 23, rewiring of fish sorting control system, installation of emergency lighting in Department of Fisheries Hatchery, and replacement of breakers and installation of air conditioning in the Marmes generator building.

Unfortunately, the new pump for the fish ladder would not pump the volume of water necessary for operation of the ladder. At the present time a new pump is being constructed. Hopefully, the pump will arrive before January 1990. The degasser tower modification hit a few snags and is still not completed. New bladders have been ordered for the valves and the control mechanism sent to Red Valve Company for cleaning and re-calibration. The replacement of the breakers in the Marmes generator building is also incomplete as the wrong parts were ordered. Completion of this work is scheduled for May 1990. Problems were again encountered with the head tank level indication system repair. The transducers had to be returned to the manufacturer for re-calibration. Completion of these projects will be on hold until the end of April, 1990, when fish loadings will be sufficiently decreased.

Pump seven developed a vibration, which caused major concern as further damage could occur. Upon pulling the pump for inspection, plugged spider bearings and a pitted pump shaft were discovered. After conferring with the manufacturer, a decision to replace the pump shaft and spider bearings was made. At a cost of \$14,083.81, a stainless steel pump shaft and re-designed spider bearings were installed in December 1988. The remaining seven pumps will also need these repairs to avoid damage to the pumps and motors. The cost of replacing a pump and a motor is in excess of \$40,000.00. The check valve on pump 8 failed in July 1989. The Corps has a valve on order for replacement. It will have to be installed after April 1990.

Satellite dishes and receivers purchased by the Army Corps of Engineers were installed at each of the eight residences in January 1988. This is a major enhancement and is greatly appreciated by all. The communication and alarm system was also updated by the Corps. We can now communicate, while in transit, between Marmes pumping site and the hatchery. This will enhance our efficiency while responding to the numerous alarms that occur throughout the year.

EQUIPMENT PURCHASES

Equipment purchases for the fiscal year included a roof mower, a propane cannon, and a one-ton Dodge flatbed truck. The roof mower will be an aid to the upkeep of the greenbelts and will greatly enhance their appearance. Predation by seagulls continues to be a problem on the lakes (rearing ponds). The propane cannon has worked quite well at reducing the predation by scaring away the seagulls. On an average day there will be 200 to 350 gulls circling the lakes. The one-ton truck will be more efficient when transferring fish feed to the acclimation ponds, picking up supplies, hauling gravel or topsoil and other required tasks.

Contruccion Projects

The hatchery crew was involved in various projects this past year to improve hatchery operations, increase storage areas and to repair or replace damaged or faulty equipment. Last winter, the woodstoves were moved to the basements prior to the installation of new carpet in Residences 1 through 5. The stoves will be installed in the basements, which will improve their efficiency, sometime next year. An irrigation system was installed at Residences 1 through 5 in the Spring, 1989.

The hatchery staff designed and built shelves for Cottonwood and Dayton Acclimation Pond storage areas. These shelves have helped to organize and clean up these areas. We constructed a weather station at the hatchery in cooperation with the Columbia County Conservation District. Weather reports are now being sent to them on a monthly basis. Gary Griffen, plant mechanic, constructed a 150 gallon portable sprayer. This is a great addition to the hatcheries equipment. The sprayer does a much better job than a hand held sprayer and is more efficient.

The visitor's center roof drain plugged which in turn filled the furnace room with water. The drain was repaired and is operating properly. Septic system problems occurred in Residences 3 and 5. The drainfield at Residence 5 was damaged during construction and had to be replaced. At Residence 3, the septic tank was full and needed to be pumped. After inspecting the septic tanks at all five residences, the decision was made to have them all pumped out. This will help alleviate any future problems with these systems. Water lines in the hatchery quarters froze up in February because the heat pump could not maintain adequate temperatures during the cold weather. A larger and more efficient heat pump will be installed in the near future.

Numerous problems were encountered with the back-up power generator systems throughout the year. At one time, we were without power for five hours and the hatchery was without water for an hour and a half. The diesel engines shut down and could not be restarted. Spokane Diesel Service, the representative for these engines, was called and started the engines. A design deficiency in the systems was discovered and later corrected by the Corps. Quick thinking and action by Gary Griffen saved 1.3 million eggs and fry on March 11, 1989. The diesel-generator that supplies water to the hatchery would not operate as designed. Even though it showed "Crank Mode", the starter was not engaging. Gary managed to start the generator by short-circuiting the starter solenoid. With the generator operating, water was soon flowing in the hatchery. The problem with the generator has since been corrected.

Numerous sink holes have appeared throughout the hatchery complex. At the present time the Corps has not repaired these holes and there exists the possibility that the hatchery may have to have them repaired. Also, the bird netting that covers the raceways collapsed on January 7, when four inches of wet snow fell. The estimated cost of replacement is \$50,000.00 as quoted by the Department of Wildlife's Engineering Division (Rodger Bogden, Engineering Chief).

Personnel

A number of personnel changes have occurred in the 1988-1989 fiscal year. Tim Holder promoted to Fish Culturist II replacing Morgan Grant at the Tucannon Hatchery. Steve Jones was hired as the new Fish Culturist I. Lyle Leslie was hired as a temporary Fish Culturist I, his duties included relieving the Assistant Managers at the conditioning ponds. Jim Morrow and Art Westrope were hired as Assistant Managers for Cottonwood and Dayton ponds. Orville Bramer stocked fish (5000 gallon tanker) into the conditioning ponds and other waters for the upcoming smolt migration and fishing season. Floyd Schriener retired and Tim Holder was promoted to Assistant Manager. Louis Case, a Umitilla Tribe Technician, performed as a trainee and then moved on to Lookingglass Hatchery.

Table 5. Food Fed and Weight Gain Data for all Species at Lyons Ferry Hatchery.

<u>SPECIES</u>	<u>BROOD YEAR</u>	<u>LBS FOOD FED</u>	<u>GAIN</u>	<u>CONVERSION</u>
SUMMER STEELHEAD				
Lyons Ferry	1988	120,824	85,850	1.40
*Lyons Ferry	1989	3,596	3,237	1.11
<u>SUB TOTAL</u>	(1988-1989)	124,420	85,850	1.45
Wallowa	1988	54,951	53,349	1.03
Wallowa	1989	4,962	3,172	1.56
<u>SUB TOTAL</u>	(1988-1989)	59,913	56,521	1.06
Skamania	1989	4,870	4,467	1.09
Wells	1989	2,325	1,306	1.78
Ringold	1989	13,898	13,138	1.06
Pahsimeroi	1989	0	n/a	n/a
*All fish destroyed/IHNV - Not included in Gain (pounds) or Conversion totals.				
TOTAL (All Steelhead 88-89)		205,426	161,282	1.27
RAINBOW TROUT				
Spokane	1987	31,638	31,385	1.01
Spokane	1988	20,316	19,477	1.04
*Spokane	1988	n/a	4,896	n/a
Goldendale	1988	1,994	1,682	1.19
TOTAL (All Rainbow 87-89)		53,948	52,544	1.02
*Fish destroyed/IHNV - not included in pounds total, included in feed fed and conversion.				
TOTAL ALL SPECIES		259,374	213,826	1.21

Table 6. 1989 Stocking Data for Lyons Ferry Trout Hatchery.

<u>LOCATION</u>	<u>BROOD YEAR</u>	<u>NUMBER of TRIPS</u>	<u>NUMBER of FISH</u>	<u>WEIGHT of FISH</u>
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SUMMER-RUN STEELHEAD SMOLTS PRODUCED

LYONS FERRY

Tucannon R. (Curl Lk.)	1988	6	160,061	27,349
Walla Walla R.	1988	6	106,140	21,350
Snake R.	1988	4	98,504	20,549
Riparia Pond	1988	1	13,825	1,750
Mill Cr.	1988	1	21,600	4,500
Touchet R. (Dayton P.)	1988	6	158,468	33,014

WALLOWA'S

Cottonwood Pond	1988	8	222,050	41,896
Grande Ronde	1988	2	50,410	9,700
Asotin Cr.	1988	1	29,975	5,450
<u>SUB TOTAL</u>		35	861,033	165,558

SUMMER STEELHEAD SUB-SMOLTS PRODUCED

SKAMANIA

Rock Lake	1989	2	178,680	4,467
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WALLOWA'S

Rock Lake	1988	2	101,080	1,900
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<u>SUB TOTAL</u>		4	279,760	6,367
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TOTAL (Steelhead 1988-1989)		39	1,140,793	171,925
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Table 6 Continued

LOCATION	BROOD YEAR	NUMBER of TRIPS	NUMBER of FISH	WEIGHT of FISH
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RAINBOW TROUT LEGALS PRODUCED

SPOKANE

Golf Course Pond	1987	3	5,871	1,894
Silcott Pond	1987	2	1,531	494
West Evans	1987	3	4,011	1,294
Blue Lake	1987	4	10,372	4,067
Rainbow Lake	1987	3	11,219	3,658
Spring Lake	1987	4	14,091	4,875
Quarry Pond	1987	3	24,979	8,832
Big Flat Lake	1987	2	7,440	2,400
Riparia Pond	1987	2	1,069	334
Pampa Pond	1987	2	9,997	4,630
Dam Pond	1987	2	2,000	835
Orchard Pond	1987	2	1,500	678
Dayton Juvenile Pond	1987	1	1,000	400
Marmes Pond	1987	1	1,000	400
Snake River	1988	1	69,040	7,181
<u>SUB TOTAL</u>		36	165,120	41,972

RAINBOW TROUT SUB-LEGALS PRODUCED

Sprague Lake	1988	4	48,108	4,220
Idaho F & G (transfer)	1988	2	75,141	2,530
<u>SUB TOTAL</u>		6	123,249	6,750
TOTAL (All rainbow BY 1987-1989)		42	288,369	48,722

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OCTOBER 1, 1988 TO SEPTEMBER 30, 1989
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WILLIAM N. HUBBARD - FISH HATCHERY MANAGER III
TUCANNON FISH HATCHERY
POMEROY, WASHINGTON

INTRODUCTION NARRATIVE

OPERATIONS:

The Tucannon Hatchery is part of the Lower Snake River Compensation Plan and has been in operation under this plan for four years. It was built in 1949 by the then Washington Department of Game. In 1981 it was turned over to the Army Corps of Engineers. The facility was redesigned and expanded at a cost of \$3.1 million. The Tucannon Hatchery is operated as a satellite of both Lyon's Ferry Hatcheries (Fisheries and Wildlife), primarily Department of Wildlife. Trapping, holding, spawning, and acclimatization of spring chinook are the Department of Fisheries' responsibilities. The primary responsibility of WDW is rainbow production and acclimatization of summer-run steelhead with Lyon's Ferry, Wildlife. Curl Lake, a satellite of the Tucannon Hatchery is used for Steelhead acclimatization, as well as legal rainbow fisheries. The 81,612 pounds of production at Curl Lake is testament to its usefulness to the two larger hatcheries.

EQUIPMENT PURCHASES:

A new 1,500 gallon aluminum insulated planting tank was designed, built, and installed, and used this past year. It proved invaluable. Lyon's Ferry (WDF) also used this tank for five weeks to transport fall chinook around the dams and to the hatchery for holding and spawning. Many small purchases were made to increase efficiency. We hope to replace a vehicle or two in the near future, plus install an underground irrigation system.

CONSTRUCTION PROJECTS:

A new adult fish trap and weir in the river was constructed by the Army Corps of Engineers with a completion date of December, 1989. The design is a unique combination of Corps and Japanese floating weir technology. This excellent structure will be a model for many weirs designed and built in the future. The primary purpose was for spring chinook trapping, but it will be used by Assessment Biologists of both Fisheries and Wildlife for trapping other species.

ENGINEERING PROJECTS:

The Corps and WDW did tests on well #3 to find if it would be capable of pumping more water. We wanted more water for the spring chinook acclimatization to try to ease the EBIS disease problem. Through these tests it was determined that the #3 well was not capable of providing the quantity of water required.

PERSONNEL CHANGES:

The assistant manager, promoted to Lyon's Ferry Wildlife Hatchery (Tim Holder), and we had Doug Maxey move here from Skamania in July. Both are very capable individuals. This was the fourth such change in four years.

PERSONAL OBSERVATIONS:

This past year has been a remarkable success. In excess of 80,000 pounds of fish was produced for less than \$2.00 per pound utilizing 2 1/3 FTEs (plus YCC). The hatchery staff was involved with trapping/spawning/acclimatization without any major glitches. With the new weir we will be involved in a Tucannon wild summer-run steelhead assessment/trapping/spawning projects in the near future. This is a new challenge.

FISH PRODUCTION

RAINBOW TROUT (SPOKANE STOCK) BROODYEAR 1987

At the start of the fiscal year (1988) these fish numbered 157,982 and weighed 23,230 pounds. Beginning in April and ending in June of 1989 we planted these fish in a six county area in lowland lakes and streams. Approximately 170,280 fish weighing 57,911 pounds were planted. It was another excellent year for us. The fish experienced no trouble with disease, the winter was mild except it started in February (-27 F.). These fish were as high a quality of fish as I have ever produced in the 15 years I have been here.

RAINBOW TROUT (SPOKANE STOCK) BROODYEAR 1988

On December 12 and 19, we received 226,200 eyed rainbow eggs from the Spokane Hatchery (WDW). These eggs and fish have been excellent. By the end of this fiscal year they numbered 161,745, and weighed 29,792 pounds. We planted 13,344 (556 pounds) as fry to bring our program in line in July, 1989.

SUMMER-RUN STEELHEAD (LYON'S FERRY STOCK) BROODYEAR 1988

On March 15-21, 1989, 160,161 summer-run steelhead, weighing 27,349 pounds, from Lyon's Ferry Wildlife Hatchery, were put in Curl Lake Acclimatization Pond. These fish consumed 7,600 pounds of feed while there. On April 15, the screens were pulled and fish allowed to volitionally migrate. Approximately 1/4 had gone out on their own by May 1. Beginning May 1, and ending May 8, we pulled the boards in the pond and forced the remainder from the pond. A total of 160,131 fish, weighing 36,393 pounds, were planted into the Tucannon River. This was an especially cold spring (winter really didn't start until February) and the fish really didn't want to migrate. The fish from Lyon's Ferry were in excellent shape and were especially nice fish this year.

SUMMER-RUN STEELHEAD (WALLOWA STOCK) BROODYEAR 1989

On May 5, 1989, 250,104 summer-run steelhead eggs were received from the Fish & Wildlife hatchery at Enterprise, Oregon. These fish would normally have gone to Lyon's Ferry Wildlife Hatchery but due to an IHN epizootic it was decided to raise them here. These fish were reared exclusively in the hatchery building, on pathogen-free water, as a disease prevention measure. These were shipped to Lyon's Ferry on July 19, 1989. These fish numbered 226,025 at 447 per pound and weighed 505 pounds.

SPRING CHINOOK SALMON (TUCANNON STOCK) 1987 BROODYEAR (SMOLTS)

During the period, November 16-28, 1988, approximately 156,219 spring chinook, weighing 10,100 pounds and at 15.47 per pound, were transported from the WDF Lyons Ferry Hatchery and put into the acclimatization raceway.

It wasn't long after transport that these fish tested positive with the virus EBIS. There wasn't much we could do as they were being acclimatized to raw river water. Losses were low in the winter but rose steadily in the spring. As long as the water was cold mortality was minimal, but when it warmed up and they started to smolt, mortality increased dramatically. These fish were diagnosed as having EBIS, bacterial cold water disease, chills, bacterial kidney disease. EBIS appeared to be the causative agent for the mortality in the spring chinook.

These fish were much smaller than previous broodyears, so we did not face any environmental problems. Our MDI and FLI were all below 70 percent.

The screens were pulled on April 10, 1989 and the remainder of the fish forced out on April 14, 1989.

A total of 152,501, at 8.9 per pound and weighing 17,135 pounds were released.

SPRING CHINOOK SALMON (TUCANNON STOCK) 1989 ADULTS

The first adult spring chinook trapped was on May 15, 1989, and the last adult on July 1, 1989. Jacks continued to show up all month long in July. Mortality was minimal, with successful treatments of formalin at a rate of 1:5000, to reduce fungal infections. The fish were injected twice for protection against bacterial kidney disease and columnaris. On August 24, 1989 the first adult was spawned. On September 19, 1989, five takes later, the last female was spawned. On the first spawn there were 45 females present. By the fifth spawn 37 had been spawned. A total of 92 adults were trapped. The program will be smaller next year as not as many eggs were taken and their quality was not as good as in the past.

SUMMER RUN STEELHEAD PRODUCTION - FRY
Wallowa Stock - Brood Year 1989

POUNDS GAINED.....	505
POUNDS FED.....	514
CONVERSION.....	1.02
EGGS RECEIVED.....	250,104
NUMBERS TRANSFERRED.....	226,025
POUNDS TRANSFERRED.....	505

RAINBOW PRODUCTION - TOTALS

POUNDS GAINED.....	65,033
POUNDS FED.....	74,370
CONVERSION.....	1.14
POUNDS PLANTED.....	58,467
NUMBERS PLANTED.....	183,624
NUMBERS ON HAND.....	161,745
EGGS RECEIVED.....	226,200

SUMMER STEELHEAD PRODUCTION - Smolts

POUNDS GAINED.....	9,044
POUNDS FED.....	7,600
CONVERSION.....	.84
POUNDS PLANTED.....	36,393
NUMBERS PLANTED.....	160,131

SPRING CHINOOK SALMON PRODUCTION

POUNDS GAINED.....	7,030	
POUNDS FED.....	8,490	
CONVERSION.....	1.21	
POUNDS PLANTED.....	17,135	
NUMBERS PLANTED.....	152,502	
ADULTS PASSED UPSTREAM.....	88	+ 2 Jacks
ADULTS TRAPPED & HELD.....	92	
JACKS TRAPPED & HELD.....	76	
FEMALES SPAWNED.....	37	
MALES SPAWNED.....	31	
ADULT LOSSES WHILE HOLDING.....	24	
TOTAL EGG TAKE.....	148,000	

TUCANNON HATCHERY GRAND TOTAL PRODUCTION

POUNDS PRODUCES.....	81,612	
POUNDS FED.....	90,974	
CONVERSION.....	1.11	
POUNDS PLANTED.....	111,995	
NUMBERS PLANTED.....	496,256	
NUMBERS ON HAND.....	161,745	
ADULTS TRAPPED.....	92	

TUCANNON HATCHERY
1988-1989
Fish Stocked

LOCATION	Brood Year	Number Trips	Number of Fish	Weight of Fish
SUMMER RUN STEELHEAD				
(Curl Lake)				
Tucannon River	88	1	160,131	36,393
SPRING CHINOOK SALMON				
(Hatchery Release)				
Tucannon River	87	1	152,501	17,135
RAINBOW TROUT - STREAMS				
Alkali Creek	87	1	1,056	330
Alpowa Creek	87	1	1,485	450
Asotin Creek	87	2	4,290	1,300
Blue Creek	87	1	800	250
Coppei Creek	87	2	1,820	700
Dry Creek	87	1	2,460	900
Mill Creek	87	2	15,527	4,860
Pataha Creek	87	2	6,298	2,090
Tucannon River	87	5	23,346	7,780
Union Flat Creek	87	1	2,112	660
RAINBOW TROUT - LAKES				
Bakers Pond	87	1	1,504	470
Big Four Lake	87	1	4,160	1,600
Blue Lake	87	3	11,860	3,980
Casey Lake	87	4	16,688	5,356
Coles Pond	87	1	1,680	525
College Place Pond	87	2	3,274	1,220
Curl Lake	87	4	16,688	5,356
Dayton Jv. Pond	87	1	1,680	525
Evens Pond West	87	2	1,640	550
Fishhook Pond	87	2	7,784	2,860
Garfield Pond	87	1	1,620	600
Gilcrest Pond	87	2	4,065	1,415
Golf Course Pond	87	2	3,196	1,070
Headgate Pond	87	2	4,174	1,570
Jefferson Park Pond	87	2	3,274	1,220
Rainbow Lake	87	6	27,501	9,605
Rock Lake	88	1	13,344	566
Silcott Pond	87	3	2,850	1,100
Spring Lake	87	3	10,594	3,670
Watson Lake	87	1	3,224	1,040
GRAND TOTAL		60	496,256	111,995

