



SPRING CREEK NATIONAL FISH HATCHERY



ANNUAL REPORT 2011

ANNUAL REPORT FISCAL YEAR 2011

**Spring Creek National Fish Hatchery
Station**

**Underwood, Washington
City and State**

Mark A. Ahrens, Hatchery Manager

Date

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2011 Annual Report Narrative

Introduction

The U.S. Fish and Wildlife Service's Spring Creek National Fish Hatchery produces tule fall Chinook salmon (*Oncorhynchus tshawytscha*) for the Columbia River Basin as mitigation under the Mitchell Act of 1938 and the Flood Control Act of 1950.

The hatchery was authorized by Special Act 24 Stat.523, March 3, 1887 and Special Act 30. Stat.612, July 01, 1891 and placed into operation in 1901 primarily to support the commercial fishing industry. The hatchery was reauthorized by the Mitchell Act (16 USC 755-757:52



Stat.345)
May 11,
1938 and
amended on
August 8,
1946, (60
Stat.932) for
conservation
of fishery
resources in
the
Columbia
River. The
hatchery was
remodeled in
1948 to
mitigate for
Bonneville
Dam
(Mitchell
Act) and was
expanded to

its present size in 1972 by the U.S. Army Corps of Engineers (ACOE) for mitigation under the John Day Dam Flood Control Act of 1950.

Spring Creek is located on the Columbia River one mile west of Underwood, Washington and approximately sixty miles east of Portland, Oregon. The hatchery sits on 60.21 acres in Skamania County, Washington at river mile 167. Hatchery facilities include: a combined visitor center and spawning building, administration building, and feed storage building with crew room, forty-four Burrows ponds, eighteen filterbeds, pollution abatement pond, fish ladder, several service buildings and four houses for hatchery employee residence. The primary water supply for the hatchery comes from a series of five unnamed springs located at the base of basalt cliffs north of the hatchery. A production well is utilized during incubation and early ponding period.

The hatchery produces more than 10.5 million tule fall Chinook salmon annually for an on station release. These fish are native to this part of the Columbia River and originally spawned in the White Salmon River which is one mile east of the hatchery. From 1901 to 1938 tule fall Chinook were trapped by seining the mouth of the White Salmon River. Collected eggs were transported to Spring Creek NFH for incubation and fingerlings were released at both the hatchery site and in the White Salmon River. After construction of Bonneville Dam in 1938 adult collections in the White Salmon River became very difficult and by 1964 sufficient number of adults were returning to the hatchery that collection of adults in the White Salmon River was discontinued. Spring Creek is the only hatchery above Bonneville Dam that produces tule fall Chinook salmon and strives to maintain the genetic integrity of this important stock. The tule fall Chinook is an indicator stock for the U.S. - Canada Pacific Salmon Treaty, providing valuable information on all salmon stocks for harvest management decisions. This stock is also important for meeting the U.S. Government Treaty (1855) obligations and trust responsibilities to Native Americans. It helps to support an important commercial and recreational ocean fishery as well as a lower Columbia River fishery, and provides mitigation for habitat lost due to construction of dams.

Spring Creek also operates a small substation on the White Salmon River known as the Big White Ponds. Constructed in the early 1950s, the facility sits on 42 acres that are 1.25 river-miles upstream from its confluence with the Columbia River. The purpose of the facility was for adult trapping and egg collection for tule fall Chinook salmon. After 1964, when adult trapping was discontinued, the facility was used to raise additional tule fingerlings for release into the White Salmon River. Other species, such as brown trout, chum, Coho and spring Chinook salmon have been reared at the facility and released into the White Salmon River. The last release from the facility took place in 2002, when 170,500 spring Chinook salmon were released. The substation consists of a water intake structure and pipeline, two raceways, a diversion rack in the river and a service building with water-rights of 30cfs from the White Salmon River. The facility has not been operated for traditional purposes since 2002 due to intake screen compliance issues. But in the fall seasons of 2008 and 2009 it was operated during adult returns as an adult collection site as part of a tule fall Chinook salvage plan study. And, in 2011 the Big White Ponds played a key role in the actual fish salvage operations leading up to the scheduled breach of Condit Dam on Oct. 26th. Throughout the summer of 2011 the facility was prepared, modified and improved to maximize fish trapping efficiency. It contributed significantly to the effort. With modifications, this facility could play an important role in restoration of native species once Condit Dam is removed providing access to 16 miles of additional habitat.

Station Operations

Fish Production

Current Fish Production Program Goals

Spring Creek National Fish Hatchery produces tule fall Chinook salmon (*Oncorhynchus tshawytscha*) for the Columbia River Basin as mitigation for Bonneville Dam under the Mitchell Act of 1938 and John Day Dam under the Flood Control Act of 1950. The current production programs at Federally-funded mitigation hatcheries in the Columbia River Gorge are guided by specific fish production goals identified by the United States v. Oregon Production Advisory Committee. The primary goals of the Advisory Committee and the parties they represent are to rebuild weak runs to full productivity and fairly share the harvest of upper river runs between treaty and non-treaty fisheries in the ocean and Columbia River Basin, as well as to more appropriately balance species distributions and their rearing/release locations with their endemic regions. As a means to accomplish this purpose, the Parties intend to use protection authorities, enhancement efforts, and artificial production techniques as well as harvest management to ensure that Columbia River fish runs continue to provide a broad range of benefits in perpetuity. Fish production goals specific to Spring Creek NFH were modified in a Memorandum of Agreement (2008), recently extended to 2013, by the Service, Bonneville Power Administration, U.S. Army Corps of Engineers, and the National Marine Fisheries Service, and include the following:

3,000,000 tule fall Chinook salmon eyed eggs transferred to Bonneville State Fish Hatchery (SFH), reared to achieve an onsite release of 2,800,000.

1,800,000 tule fall Chinook salmon sub-yearlings transferred to Little White Salmon NFH for acclimation and an onsite release of 1,700,000.

10,500,000 tule fall Chinook salmon sub-yearlings released on site at Spring Creek NFH.

15,000,000 is the total target of tule fall Chinook sub-yearlings produced from Spring Creek NFH.

A more detailed description of Spring Creek NFH's production goals are provided in the Comprehensive Hatchery Management Plan (CHMP) and the Hatchery and Genetic Management Plan (HGMP) for Spring Creek NFH.

Tule Fall Chinook Salmon Collection and Spawning: Return Year 2010

The spawning of adult tule fall Chinook at Spring Creek NFH usually coincides with the ending of one fiscal year and the beginning of another. The fall Chinook sub-yearlings that were released during FY11 were produced from adult fall Chinook that returned over the period August 25, 2010 thru September 30, 2010, or return year 2010 (RY10), at the conclusion of FY10. A total of 21,967,396 eggs were obtained from 4,245 females, over 15 takes (September 15 – October 4).

The following table summarizes the Return Year (RY) 2010 spawning season at Spring Creek

NFH:

| Species | No. Adult Fish Needed (Escapement Goal) | | No. Adult Fish Spawned | | Eggs Collected | % Eye-Up |
|---------|---|--------|------------------------|-------------------|----------------|----------|
| | Male | Female | Male | Female | | |
| | tule fall Chinook | 4000 | 4000 | 3119 ¹ | | |

¹includes 252 jacks

A more detailed summary of returns (RY10) and spawning for BY10 is available in the Five Year Hatchery Production Summary, Form 3-115, and the Production Year Report provided at the end of this report.

Tule Fall Chinook Salmon Rearing: Brood Year 2010, Lot Number 75

Rearing conditions were excellent this year with stable temperatures, and low incidence of disease and fish health issues.

In comparison to BY09, there was a slight increase in the observed occurrence of soft shell disease during incubation; however the presence of soft shell did not result in any significant losses and can reasonably be attributed to a natural, cyclical event. Survival to eye-up was 95.1%, and survival from eye-up to hatch was 89.9%. Female fecundity (5,174 eggs/female) was higher than our pre-spawning estimates which resulted in a surplus of 4,411,496 eggs that had to be culled prior to ponding. In an effort to minimize the likelihood that we will have to cull a large number of eggs next rearing season, we will spawn fewer females and estimate female fecundity at each take using an average female length fecundity regression analysis.

A new mass otolith/thermal marking program was implemented during the incubation process this year. The thermal mark was achieved by exposing the fish to two 24-hour cold events per week for four weeks (November 29 thru December 23). The marking process went smoothly and reference samples were collected from all 15 takes prior to ponding to verify successful otolith banding, and aid in the identification of Spring Creek fish in the future. The marking was so successful during the BY10 season that a more complex otolith/thermal marking program will be implemented during the BY11 season such that fish of Bonneville SFH transfer, Little White Salmon NFH transfer, Spring Creek NFH release, and wild origins will be distinct from each other. Identification of returning adult Spring Creek origin fish will be done by Washington Department of Fish and Wildlife's otolith lab.

Ponding began in the last week of December and was completed on January 7. The fish took to the starter feed, BioVita Starter #0 (Skretting) well and growth rates were as expected. Survival from hatch to feeding was 98.8%. However, within the weeks of switching from BioVita Starter #1 to Abernathy 3/64 (Skretting) daily mortalities increased and remained elevated for approximately three weeks. Lower Columbia River Fish Health examined the fish and concluded

that the increased mortality was likely due to the change in feed. We plan to feed BioVita Starter #1 to a larger size before switching to 3/64 during BY11 to avoid similar mortalities. Despite this increase in observed mortality, the overall survival from ponding to release was 98.1%, a 0.8% increase from BY09. Detailed information on weight gain, feed expended, cost, and survival rate are provided in the Hatchery Production Summary table included in this report.

The Columbia River Fisheries Program Office's Hatchery Marking Team marked all fish transferred to Little White Salmon NFH's acclimation pond, as well as all fish released on site at Spring Creek NFH. The marking operations went well, beginning on February 23 and completed on April 23. Extensive PIT-tagging of Spring Creek BY10 fish was done this year. The on-site April release included 8,956 PIT-tagged fish and the May release included 5,985 PIT-tagged fish. Funding for this was provided by CRFPO-Hatchery Marking Team funds.

A more detailed summary of BY10 rearing and production is available in the Hatchery Production Summary (Intensive Culture), Form 1-103a, provided at the end of this report.

Tule Fall Chinook Salmon Distribution: Brood Year 2010, Lot Number 75

During fiscal year 2011, a total of 15,672,544 tule fall Chinook salmon were produced at Spring Creek NFH. Of these fish, 3,000,000 were transferred as eyed-eggs to Bonneville SFH in the fall of 2010 where they were reared and eventually released on site as sub-yearlings. As described by our program production goals, another 1,811,252 of these fish were transferred as sub-yearlings to Little White Salmon NFH's acclimation ponds and subsequently released on site in April 2011. Sub-yearling tule fall Chinook were released on site at Spring Creek NFH in two release groups, 6,229,093 in April, and 4,632,199 in May (totaling 10,861,292).

We were also able to provide 1,200 eyed eggs, not included in the previously stated production total, to the Information and Education's "Salmon in the Classroom" project. These eggs were "adopted" by 12 classrooms at several local schools, serving as an excellent learning tool in the life cycle of the salmon.

An additional 15,000 sub-yearlings (also not included in the production total) were provided for research at the U.S. Geological Survey laboratory in Willard, WA.

A detailed summary of these distributions and transfers is available in the Fish and Fish Egg Distribution Summary, Form 3-102, provided at the end of this report.

Tule Fall Chinook Salmon Collection and Spawning: Return Year 2011

In anticipation of a large and timely return, the ladder was opened on August 25, however few fish ascended the ladder upon its opening. In fact, the run seemed to be late this year with daily swim-in rates peaking approximately 5 and 12 days later than usual, exhibiting a bimodal distribution trend typical of Spring Creek adult returns. Nonetheless, adult tule fall Chinook returns to the hatchery exceeded the 10,000 fish escapement goal, totaling 20,809 adult fish.

Ladder operation was shut down on September 30 to limit the number of surplus fish that would have to be dealt with after spawning and to increase tribal harvest opportunities. The run was comprised of 7,277 males, 9,781 females, and 3,751 jacks, or 47.0, 34.9, and 18.0%, respectively.

Spawning began on September 15 and ended September 29. A total of 19,399,922 eggs were taken from 3,891 females over 11 takes. Average fecundity for the 2011 spawning season was estimated to be 4,985 eggs/female.

The following table summarizes the Fiscal Year 2011 spawning season at Spring Creek NFH:

| Species | No. Adult Fish Needed (Escapement Goal) | | No. Adult Fish Spawned | | Eggs Collected | % Eye-Up |
|---------|---|--------|------------------------|--------------------|----------------|----------|
| | Male | Female | Male | Female | | |
| | tule fall Chinook | 4,000 | 4,000 | 3,537 ¹ | | |

¹includes 285 jacks

A more detailed summary of Return Year 2011 (RY11) is available in the Wild Brood Stock Summary, Form 3-101, provided at the end of this report.

Tule Fall Chinook Salmon Fish Health-A Great Year for Fish Health

Brood year 2010 was a great year for fish health from start to finish. Kidney samples were collected from a subset of spawned adults (150 females, and 60 males) to determine the incidence of bacterial kidney disease (BKD) by enzyme linked immunosorbent assay (ELISA). Results showed that 99% females had non-detectable or very low levels of BKD, 143/150 and 6/150, respectively. These results are typical for this stock. However, the finding of one very high female was somewhat unusual. All males tested for BKD were found to be non-detectable (59/60) or of very low levels (1/60). The fish health lab tested juvenile fish throughout the rearing season for various pathogens and disease, however nothing was detected. Surprisingly, not even Enteric Red Mouth disease (ERM), a disease often observed in our juvenile brood stock, was not observed at all in BY10 (Form 3-108).

Funding

The majority of funding for Spring Creek National Fish Hatchery is reimbursable, provided by the Army Corps of Engineers (ACOE), under John Day Mitigation and NOAA Fisheries, National Oceanic Atmospheric Administration, through Mitchell Act. Funding is also provided by the Service to address maintenance issues. Total O&M funding for the facility in FY2011 is addressed in the Columbia River NFH Complex report.

Meetings and Events

actual fish salvage operation which began in Aug. 2011. With the breaching of Condit Dam on track to actually take place Oct. 26th the weir was installed at Big White on Aug. 11th along with folks from our Vancouver FPO, WDFW, NMFS and the Yakama Nation Fisheries Program. Active trapping and transport at the ponds was an extremely successful partnership, and along with lower-river seining efforts helped relocate 679 tule fall Chinook (380 males, 299 females).

The hatchery has also participated on the White Salmon River Watershed Management Committee that is currently developing habitat restoration projects for the White Salmon River.

Staffing

Current staffing at Spring Creek NFH (org. code 13255) has been reduced as part of the reorganization of the gorge hatcheries which have been consolidated into the Columbia River Gorge NFH Complex along with Carson, and the previously existing Little White Salmon/Willard NFH Complex.

With the retirements of Larry Marchant and Ron Armstrong, and transfer of Spring Creek Administrative Assistant, and two I&E staff to the Columbia River Gorge NFH Complex (org. code 13200), the overall staff at Spring Creek is reduced from 10 positions (7-permanent, 2-term, and 1-STEP winter-weekends) to 7 positions (5-permanent, 1-term, and 1-STEP winter-weekends):

Spring Creek NFH (org. code 13255):

- Hatchery Manager (this position a consolidation and restructuring of previous titles/duties from: Project Leader and Deputy Project Leader with CRGNFHC-Coordination, Budget Management, and Hatchery Manager supervision to Complex Manager)
- Fishery Biologist
- Lead Animal Caretaker
- Animal Caretaker
- Animal Caretaker/laborer (one) term
- Maintenance Mechanic
- STEP (student temporary employment program) -weekend helper - during the rearing season

CRGNFH-Complex (13200); still stationed at, and integral to Spring Creek as well as the Complex, were the:

- Administrative Assistant,
- Information/Educational Specialist and
- Information/Educational Assistant (part-time Park Ranger-I&E).

Personnel Changes

December 30th, 2010 after 34 years of outstanding service with the FWS Spring Creek Project Leader Larry Marchant retired. He worked his last day and left Spring Creek with a long list of great accomplishments, far too many to list. He will be missed and fondly remembered. Spring Creek staff, friends and colleagues had the pleasure of sending him off with a very nice retirement party on December 10, 2010.

Ron Armstrong also retired on August 26, 2011 after 30 years of service 27 of them here at Spring Creek NFH as an outstanding maintenance worker. He will also be missed and fondly remembered. A surprise party was held on August 22, 2011 for everyone to have the opportunity to send him off.

Construction/Capital Improvements

Water Reuse System, Electrical Distribution

An ARRA project to replace all fourteen production-water system pumps and motors (6-aeration, 4-deaeration, 4 spring water) that was awarded to Northern Management finally came to an end in May of 2011. All 14 pumps and motors were replaced with high efficiency units along with variable speed drives. The project also included upgrades to the electrical system involving primary commercial and generator transfer switches, motor control centers and motor starters. This project greatly increased the reliability and efficiency of the biological water reuse system and power distribution throughout the facility.



Water Alarm System

A major highlight of the year in terms of maintenance and system improvements occurred in August 2011 when an entirely updated alarm system was installed with new automatic telephone dialer. The system was last upgraded in the early 80's with new software and PC, but is now completely modernized with this new system from TSI utilizing state-of-the-art equipment. TSI has replaced alarm systems at most Region-1 Fish Hatcheries over the last ten years.

This new system replaced all the previously existing alarm functions of monitoring critical water flow and temperatures. Those functions were updated and significantly enhanced with real time computer readouts of parameters such as flow (gpm), water temps, pH, and dissolved oxygen,

viewable by desktops both on-station and remote login from home. Additionally they provide logging functions for all of this data including alarm histories, and it has the ability to download and analyze trends.

Throughout the redesign all functions were improved, and as mentioned some added weren't previously available such as dissolved oxygen and pH monitoring. All of these critical points are monitored and set for alarm triggered notification. New functions were added for temperature alarms as well in the critical phases required. Alarms can also be set and adjusted to suit other functions such as flow rates high or low. The comprehensive coverage this new system provides is a quantum leap forward in hatchery rearing security technology that provides even more confidence in the concept of alarm responders living off-station.

Incubation Building Lighting

On Feb. 16 Schlecht Construction began work on a major construction project to improve energy efficiency in the Incubation Building by replacing 184 light fixtures that currently use 300 watt bulbs. They replaced them with 2x4' fluorescent tube fixtures that use 2-32 watt tubes each. The design called for 74 of these new lower wattage lights which will yield a significant reduction in use of electricity, but eventually it was realized there were some miscalculations. Eventually 90 fixtures were installed to meet the lighting needs as specified in the contract. The energy savings for light usage drops from an enormous 55,200 watts down to an approximate 5,760 watts, almost 90% drop!

Lagoon Pumps (Waster-water pumps)

Schlecht Construction was awarded the contract to replace the three pump/motor assemblies that handle all of the waste-water last of the aged pumps and motors not yet replaced. Work was scheduled to proceed in October with sub-contractor Mather & Sons Pumps Incorporated handling the pump and motor replacement, and Coburn Electric on the electrical controls replacement.



Interpretive Trail

A contract that was awarded to P.F. Pepeiot Inc. to design/construct an ADA interpretive trail with a viewing area and ADA fishing accessible area is getting underway. The trail will begin east of the Wind Surfing Park and near our pollution abatement ponds. It will link with the designated walking path along the entrance road. The concept of the trail would be to attract visitors from the wind

surfing park to the hatchery via the trail that includes viewing areas with informational signage concerning the Columbia River fisheries and cultural resources. Spring of 2012 is the completion date set for this project.

Quarters Maintenance Projects

From Oct. 4-8, 2010 Monaghan Mechanical Inc., a contractor based in Hayden, Idaho, installed new air handling and heat pump systems in all four hatchery quarters at a combined cost of \$22,000. The old units were roughly 35 years old and worn out, needing repair and/or near failure altogether. The new systems are modern energy-star units and should provide a significant improvement in energy efficiency.

Five-Rivers Construction was contracted for work on all four hatchery houses and the administration office for much needed repairs and upgrades, many of which will result in higher energy efficiencies. Work completed at each residence was: Q#1 – driveway drainage correction, new kitchen counters, and new rear entry door; Q#2 – rehab. bathroom with new shower insert toilet, vent-fan and paint, new front and rear entry doors; Q#3 – replaced damaged windows kitchen and living room, complete rehab. of bathroom with new shower insert, floor, toilet, vanity, paint, and vent-fan; Q#5 – new front and rear entry doors. The administration office received a new wind the project continued on at Carson and Willard where one residence at each station will be having a kitchen remodeled.

Additionally, a total of four new appliances were replaced in quarters number 1 (refrigerator), 2 (dishwasher), 3 (refrigerator) and 5 (dishwasher).

WILD BROODSTOCK SUMMARY

| Station: Spring Creek National Fish Hatchery | | | | Period Covered: October 1, 2010 | | | Through: September 30, 2011 | |
|--|---|----------------|-------------------|---------------------------------|--|--------------------|--|--|
| Species/Strain And Stock 1 | Total Number Returned Or Captured | | Number Spawned | | Eggs (E) Taken or Fish (F) Harvested | | Eggs Retained For On-Station Production 8 | Remarks 9 |
| | Females 2 | Males 3 | Females 4 | Males 5 | Number 6 | % Eyed 7 | | |
| FCS-SCW-11-SPC-76 | 9,781 | 7,277 | 3,891 | 3,252 | 19,399,922 | 95.9 | 18,955,009 | An initial 45,000 green eggs were taken for research at USGS-Willard Lab. Eggs retained is pre-discard, 3,000,000 transferred to Bonneville SFH-ODFW. |
| Jacks | | 3,751 | | 285 | | | | |
| | | | | | | | | |
| | | | | | | | | |
| Totals/Averages | 9,781 | 11,028 | 3,891 | 3,537 | | | | |

FISH AND FISH EGG DISTRIBUTION SUMMARY

Station: Spring Creek National Fish Hatchery

Fiscal Year: 2011

| Species (All Tule FCS) FCS-SCW-09-SPC-74 1 | Fish or Fish Egg Number 2 | Fish | | Management Area 5 | State 6 | Agency 7 |
|--|--|-----------------------------|--------------------|---------------------------------|-----------------------|------------------------------|
| | | Total Weight 3 | Length 4 | | | |
| FCS-SCW-10-SPC-75 | 1,200 eyed eggs | 1 | EE | I&E | WA | Various local area schools |
| | 3.0M eyed eggs | 2,400 | EE | Columbia River | OR | ODFW – Bonneville SFH |
| | 1,811,252 | 9,438 | 1.93 | Columbia River | WA | USFWS – Transfer to LWSNFH |
| | 6,229,093 | 56,305 | 3.07 | Columbia River | WA | USGWS – April Release |
| | 4,632,199 | 52,289 | 3.29 | Columbia River | WA | USFWS – May Release |
| | 15,000 | 45 | 2.10 | Columbia River | WA | USGS – Matt Mesa – Cook Labs |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

Form 3-102 (Rev. 1/89)

HATCHERY PRODUCTION SUMMARY (INTENSIVE CULTURE)

| Station: Spring Creek National Fish Hatchery | | | | Period Covered: 10/01/10 | | | | Through: 09/30/11 | |
|--|---------------------------------|-------------|-------------|--------------------------|-----------|--------------------------|---------------|-------------------|---------------------------|
| Species/Strain and Lot Number 1 | Fish on Hand Last Day of Period | | | | | To Date This Fiscal Year | | | |
| | Number 2 | Weight 3 | Length 4 | D.I. 5 | F.I. 6 | Weight Gain 7 | Feed Expended | Conversion 9 | Percent Survival 10 |
| | | | | | | | Pounds 8 | | |
| FCS-SCW-10-SPC-75 | | | | | | 106,322 | 81,606 | 0.76 | 98.11 |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| Totals/Averages | | | | | | 106,322 | 81,606 | 0.76 | 98.11 |

Form I-103a (Rev. 1/89)

**FISH HEALTH ACTIVITIES SUMMARY
NATIONAL FISH HATCHERY**

Station: Spring Creek National Fish Hatchery

Fiscal Year: 2011

| Problem/Incident/Activity 1 | Species 2 | Therapeutic Treatment 3 | Results/Comments 4 |
|---------------------------------------|---------------------|-----------------------------------|--|
| N/A | N/A | N/A | No fish health problems to note in rearing of FCS-SCW-10-SPC-75. |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

Chemical Summary:

Chemical : Iodophor Purpose: Disinfection Total Amount Used: 440 Gallons

Chemical : MS - 222 Purpose: Anesthetic Total Amount Used: 3 Kilos

Chemical : Chlorine Purpose: Disinfection Total Amount Used: 583 Gallons

FIVE YEAR HATCHERY PRODUCTION SUMMARY

STATION: Spring Creek National Fish Hatchery

| | | | | | | Fiscal Year 2011 | | | | |
|----------------------------|--|--|--|--|--|------------------|------------|------------|------------|------------|
| | | | | | | 2011 | 2010 | 2009 | 2008 | 2007 |
| Fish Production Data | | | | | | | | | | |
| Intensive Culture: | | | | | | | | | | |
| Fish Weight Gain (pounds) | | | | | | 106,505 | 105,919 | 117,541 | 136,014 | 133,524 |
| Fish Numbers | | | | | | 12,687,604 | 12,557,833 | 13,129,341 | 14,936,336 | 15,475,070 |
| Percent Survival | | | | | | 98.11 | 97.32 | 98.84 | 97.13 | 97.3 |
| Feed Conversion | | | | | | 0.76 | 0.76 | .65 | .73 | .82 |
| Extensive Conversion | | | | | | | | | | |
| Fish Weight Gain (pounds) | | | | | | | | | | |
| Fish Numbers | | | | | | | | | | |
| Percent Survival | | | | | | | | | | |
| Pounds Per Acre | | | | | | | | | | |
| Broodstock Production Data | | | | | | | | | | |
| Number of Females Spawnd | | | | | | 3,891 | 4,425 | 3,846 | 4,312 | 3,301 |
| Number of Eggs | | | | | | 18,955,009 | 21,967,397 | 20,740,546 | 22,408,533 | 16,951,908 |
| Number of Fish | | | | | | | | | | |
| Management Data | | | | | | | | | | |
| Full-Time Equivalent | | | | | | 8.15 | 10.61 | 9.20 | 9.37 | 9.86 |

REPORT OF STATION PERSONNEL

STATION: Spring Creek National Fish Hatchery

FISCAL YEAR: 2011

| Part I - Permanent Personnel (FTE's: 8.15) | | | | | |
|--|------------------------------------|------------|-------------------------|-------------------------------------|-----|
| Name of Employee | Functional Title | Grade | Period Worked | Remarks | FTE |
| Marchant, Lawrence S. | Hatchery Manager | GS 0482/13 | 10/01/2010 – 12/31/2010 | Retired | .25 |
| Ahrens, Mark A. | Hatchery Manager | GS 0482/12 | 10/01/2010- 09/30/2011 | | 1 |
| Anderson, Cheri A. | Information & Education Specialist | GS 1001/11 | 10/01/2010- 09/30/2011 | | 1 |
| Armstrong, Ronald D. | Maintenance Worker | WG 4749/8 | 10/01/2010- 08/27/2011 | Retired | .90 |
| Doulos, Mark F. | Animal Caretaker | WG 5048/5 | 10/01/2010- 09/30/2011 | | 1 |
| Hogberg, Debra L. | Program Assistant | GS 0303/7 | 10/01/2010- 09/30/2011 | | 1 |
| Meduna, John H. | Maintenance Mechanic | WG 4749/10 | 10/01/2010- 09/30/2011 | | 1 |
| Risley, Casey A.L. | Fish Biologist | GS 0482/9 | 10/01/2010- 09/30/2011 | | 1 |
| Zirjacks, Scott L. | Animal Caretaker Leader | WL 5048/5 | 10/01/2010- 09/30/2011 | | 1 |
| | | | | | |
| Part II - Temporary Personnel (FTE's: 1.68) | | | | | |
| Name of Employee | Functional Title | Grade | Period Worked | Remarks | FTE |
| Hankin-Dustin, Chris | Laborer | WG 3502/3 | 10/01/2009- 09/30/2010 | Term | 1 |
| Ingram, Brittany | Animal Caretaker (STEP) | WG 5048/2 | 12/24/2010 – 05/07/2011 | Part-Time STEP 288 Hours Worked | .13 |
| Rowlen, Jennifer | Park Ranger | GS 5938/6 | 10/01/2010- 09/30/2011 | Part-Time Term 1155 Hours Worked | .55 |

Form3-114(Rev.1/89)

PRODUCTION YEAR REPORT

Spring Creek National Fish Hatchery

Fall Chinook Salmon

Hatchery Return Measurements 2010

Table 1: 2010 Adult Returns, Dead In Ponds (DIPs), Killed as Surplus, Other (Bad or Green Females) and Spawned.

| | Males | Females | Jacks | Totals |
|-----------------------------|--------|---------|-------|--------|
| Adult Return | 16,623 | 30,020 | 3,492 | 50,135 |
| DIP's | 722 | 664 | 140 | 1,526 |
| Killed as Surplus | 12,989 | 24,898 | 3,086 | 40,973 |
| Other (Bad, Green, Wild) | 45 | 213 | 14 | 272 |
| Spawned | 2,867 | 4,245 | 252 | 7,364 |

Dates of Adult Return: August 26 – September 30
 Dates of Spawning: September 15 – October 4
 Results: 21,967,396 eggs taken (fecundity 5,174 eggs/female)

Incidence of Disease in Adults:

Males 60 sampled
 Infectious Hematopoietic Necrosis (IHN) 1+/20
 Infectious Pancreatic Necrosis (IPN) 0
 Viral Hemorrhagic Septicemia (VHS) 0
 Erythrocytic Inclusion Body Syndrome (EIBS) 0

Females 150 sampled
 (IHN) 15+/50
 (IPN) 0
 (VHS) 0

150 sampled *Renibacterium salmoninarum* 6 (very low) 1 (very high)
30 sampled *Pseudomonas fluorescens* 1
30 sampled *Aeromonas hydrophila* 9
20 sampled *Ceratomyxa shasta* 0

Table 2: **RY2010** Adult Return Age Composition and Mean Lengths.

| Male | | | Female | | |
|-------|--------|-------------|--------|---------|-------------|
| Age | Number | Mean Length | Age | Number | Mean Length |
| 2 | 4,770 | 62.60 | 2 | 86 | 62.00 |
| 3 | 14,073 | 87.67 | 3 | 29,7662 | 83.07 |
| 4 | 1,272 | 98.00 | 4 | 172 | 98.00 |
| 5 | 0 | 0 | 5 | 0 | 0 |
| Total | 20,115 | | | 30,020 | |

Hatchery Rearing BY2010

| | |
|------------------|--|
| Green Eggs Taken | <u>21,967,396</u> |
| Kept | <u>14,554,700</u> |
| Discarded | <u>4,411,496</u> |
| Shipped | <u>3,000,000 ODFW – Bonneville SFH</u> |
| | <u>1,200 USFWS – I&E Salmon in the Classroom</u> |

| | | |
|----------------------|---------------------|--------------|
| Survival Percentages | Green To Eyed Egg | <u>95.1%</u> |
| | Eyed Egg To Ponding | <u>95.8%</u> |
| | Ponding To Release | <u>98.1%</u> |

| | | |
|-----|-----------------------|-------------------|
| Fry | Ponded for Production | <u>12,932,028</u> |
| | Released | <u>10,861,292</u> |

Table 3: Rearing Conditions for System During Rearing Period (Dec.2010 - May 2011).

| Month | Density Index | Flow Index | Ammonia (ppm) |
|----------|---------------|------------|---------------|
| December | 0.06 | 0.55 | 0.05 |
| January | 0.11 | 1.00 | 0.13 |
| February | 0.17 | 0.80 | 0.13 |
| March | 0.22 | 1.03 | 0.20 |
| April | 0.23 | 1.09 | 0.24 |
| May | 0.23 | 1.10 | 0.12 |

Table 4: Fish Health Conditions During Rearing Period (Dec.2010 - May 2011).

| Date | Presence of Pathogens |
|------------|--|
| At Ponding | No disease, virus, or bacteria detected. All release groups were very clean and healthy. |
| January | |
| February | |
| March | |
| April | |
| May | |

Release Conditions for Fish Held in Production Ponds Only

Table 5: Conditions at Release.

| At Release(by group) | LWS Transfer | April | May |
|-----------------------------|--|--|--|
| Date | 3/08 & 09 | 4/12 | 5/10 |
| Average Length (in.) | 2.60 | 3.13 | 3.37 |
| Total Released* | 909,406 <u>901,846</u> 1,811,252 | 6,229,093 | 4,632,199 |
| Index Marked | 203,407 Ad/CWT | 204,697 CWToonly 205,010 Ad/CWT | 199,811 CWToonly 200,298 Ad/CWT |
| Other Marks | 100% Ad-clipped | 100% Ad-clipped except Double Index (CWT only) | 100% Ad-clipped except Double Index (CWT only) |
| Water Temp in River(F) | NA | 48.5°F | 49.5°F |

* = reflects mortality occurring post-marking until release