

Draft 2010

Annual Operating Plan

for

Fish Production Programs

in the

Salmon River Basin

By

Idaho Department of Fish and Game
U.S. Fish and Wildlife Service
Shoshone-Bannock Tribes
Idaho Power Company
Nez Perce Tribe

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1 **STEELHEAD** – Adult returns, and spawning, egg and fish disposition are contained in Table 1 and Table 2, respectively. Final BY 2008 releases and mark groups are contained in Table 3. BY 2009 releases/projected releases and marking are contained in Table 4. Planned BY 2010 releases and marking are contained in Table 5.

1.1 Adult Trapping, Spawning, and Disposition

1.1.1 Dworshak

➤ BY-2009 Trapping and Spawning

Adult Return – The total rack return to Dworshak NFH in 2009 was 4,313, 1,384 males and 2,929 females. Twenty-two wild steelhead were collected and returned to the river.

Spawning – A total of 430 adults were spawned for the Magic Valley Hatchery program, 190 males and 240 females. Spawning occurred over a three week period as follows: On 3/17/09 59 males and 77 females were spawned, on 3/24/09 56 males and 77 females were spawned, and on 3/31/09 75 males and 86 females were spawned.

Fish health- There were 28 females (28/240) of the MVH lot which tested positive for *infectious hematopoietic necrosis virus* (IHNV). These females came out of Takes 7-8-8A and this testing was done by personnel from the Idaho Fish Health Center (IFHC). All eggs for MVH which tested positive for IHNV were discarded.

Number shipped and disposition – A total of 1,754,276 green eggs were obtained for the Magic Valley Hatchery program and were transferred to Clearwater Hatchery immediately after spawning. Refer to the section for Magic Valley Hatchery for details on methods for shipping and transfer of eggs.

Comments –All monitoring and evaluation for progeny of the Magic Valley Hatchery program is conducted by the Idaho Department of Fish and Game. Refer to the Magic Valley Hatchery program for M & E details.

➤ BY 2010 Trapping and Spawning

Adult Return -The projected return for 2010 summer steelhead is 3,638.

1.1.2 East Fork Salmon River Weir (EF Weir)

➤ BY-2009 Trapping and Spawning

Adult Return - A total of 132 adult steelhead were trapped for the East Fork Natural Steelhead Program, 115 were hatchery-origin (72 males/43 females) and 17 were natural-origin steelhead (8 males/ 9 females) (Table 1). One adipose fin-clipped male was trapped; this fish was killed and not used for spawning, and was also not included in the trapping totals. All carcasses were disposed through a rendering plant at the end of the season.

Fish health - Viral replicating agents were not detected in 37 brood fish sampled, while 18/64 fish were found to be positive for *Renibacterium* by ELISA (all lows). We did not detect *Myxobolus cerebralis* in the 20 fish sampled. *Doug Munson*

Spawning - A total of 70 East Fork males (63 hatchery-origin / 7 natural-origin) and 42 East Fork females (38 hatchery-origin / 4 natural-origin) were used for natural-production spawn crosses in 2009. Twenty adults were released above the weir to spawn naturally. Spawning activities from 42 East Fork female steelhead yielded a total of 212,572 green eggs for a mean fecundity of 5,061 eggs per female. A total of 167,775 eyed-eggs were obtained from natural-production crosses, for a percent survival to the eyed-stage of development average of 78.9 percent. No eggs were culled. Table 2.

Number shipped and disposition - All 167,775 eyed-eggs produced from EFSR natural crosses were transferred to Hagerman National Fish Hatchery for final incubation and rearing. Table 2.

Comments - CWT were collected from all adult steelhead to determine age composition and to verify stock composition.

➤ **BY-2010 Trapping and Spawning**

Adult Return - PIT tag expansion estimates indicate approximately 761 adults from the East Fork Natural program crossed Lower Granite Dam. The majority of these should reach the East Fork of the Salmon River because they are not subject to harvest (i.e. intact adipose fin). However a substantial number of fish “fall out” prior to reaching the weir located 18 miles from the mouth. The limited data that is available suggest 15% of the fish entering the East Fork of the Salmon River are collected at the weir. Based on this, the rack return projection is 114 (95% CI 67, 190).

1.1.3 Hells Canyon Trap (HC Trap)

➤ **BY-2009 Trapping and Spawning**

Adult Return - The HC Trap operated for 9 days between October 27, and November 17, 2008, and again in April 2009 for 2 days. A total of 3,811 steelhead trout were trapped during the operating period. They consisted of 3,767 (98.8%) hatchery steelhead and 44 (1.2%) wild steelhead. Wild fish were released below Hells Canyon Dam and hatchery fish were held for spawning or out-planting. The age-class ratio for the hatchery fish was 2,458 (65.3%) one-ocean and 1,309 (34.7%) two-ocean. The sex ratio by age class for hatchery fish, was 1,290 males (52.5%) and 1,168 females (47.5%) for one-ocean fish, and 381 (29.1%) males and 928 (70.9%) females for two-ocean fish. A total of 8 wild steelhead were one-ocean fish (18.2%) and 36 (81.8%) were two-ocean fish. The sex ratio for one-ocean wild fish was 5 males (62.5%), 3 females (37.5%) and 14 males (38.9%), 22 females (61.1%) for two-ocean. There were 12 hatchery trap mortalities; included in these numbers. Table 1.

During the fall of 2008 3,066 steelhead were out-planted for sport fisheries or supplementation programs. Of the 3,066 fish; 1,000 were released into the Boise River, 1,066 were released into Hells Canyon Reservoir, and 1,000 were given to the Nez Perce Tribe for subsistence. After broodstock needs were met 1 female was released into Hells Canyon Reservoir in May of 2009, for a total of 3,067 fish released.

Fish health -Viral replicating agents were not detected in 163 brood fish sampled, while 0/65 fish were found to be positive for *Renibacterium* by ELISA. We did not detect *Myxobolus cerebralis* in the 20 fish sampled.DM

Spawning - In 2009 spawning consisted of 17 egg takes from March 12 to May 11. A total of 297 females were processed. One female was culled because it was green. Eggs from the remaining 296 females were incubated. The eggs were sorted and counted using a Jentsorter™ egg sorter and a Jentsorter™ egg counter. The females had an average fecundity of 5,359 and produced 1,586,227 green eggs. From the green eggs, 1,385,766 developed to the eyed stage, constituting 87% eye-up (Table 2). In 2009 all males and females used for spawning were sampled for DNA.

Number shipped and disposition In 2009, 418,483 eyed-eggs were shipped to Niagara Springs Fish Hatchery (NSFH). The remaining eggs were raised to fry stage. Of the resulting fry, 466,391 were shipped to NSFH and 452,528 excess fry were discarded. Table 2.

➤ **BY-2010 Projected Trapping and Spawning**

Adult Return - The number of 1-ocean adult steelhead returning to the vicinity of the HC trap was estimated by expanding the number of PIT tagged adults observed at Lower Granite Dam (LGD) by the tagging rate. It is important to note, these estimates are based on exceedingly small sample of PIT tags and therefore contain a substantial amount of sampling error. Furthermore these estimates do not account for the 2-ocean component of the run. Estimates indicate 19,701 (CI 11,652-38,155) adult 1-ocean steelhead from the brood year 2007 release at Hells Canyon Dam crossed LGD. Harvest information is very limited for this release therefore a surrogate exploitation rate of 41%, from Pahsimeroi Fish Hatchery (PFH) of the HC Trap. Based on this, 11,624 (95% CI 6,875-22,511) adult steelhead are expected to return to Hells Canyon near the HC trap.

BY- 2010 steelhead trapping for HC Trap begins in the fall of 2009 and continues in the spring of 2010. As of November 27, Oxbow Fish Hatchery (OFH) has trapped 5,606 steelhead at the HC Trap including; 5,572 hatchery steelhead and 34 unmarked steelhead. Incidental fish trapped this year included 112 hatchery fall Chinook jacks, 2 unmarked fall Chinook jacks and 2 hatchery fall Chinook adults. Steelhead trapped beyond brood stock needs were dispersed between Idaho, Oregon, and the Nez Perce Tribe. The Nez Perce Tribe received 1,349 fish. IDFG transported 1,665 fish to the Boise River and Oregon received 1,360 fish released into Hells Canyon Reservoir. The EFHL performed necropsy on 60 fish. These carcasses and 3 others were given to the Halfway Food Bank for distribution. Hatchery brood stock collection for fall 2009 was completed with 271 males and 275 females that will be held for spawning in spring 2010. An additional 50 females or 10% of the broodstock will be trapped in spring 2010. Additional steelhead are not trapped and remain in the river.

➤ **BY-2011 Projected Trapping and Spawning**

Adult Return – The OFH program will hold 550 adult steelhead to be trapped in the fall of 2010 and held over winter, with an additional 50 females or 10% of the broodstock to be trapped in the spring of 2011. In the spring the trap is operated to acquire the 50 fish needed to fulfill the 10% goal for spring steelhead trapping. Typically that is only for a few hours. Excess fish remain in the river.

1.1.4 Pahsimeroi Weir (PFH Weir)

➤ **BY-2009 Trapping and Spawning**

Adult Return - A total of 6,208 adult hatchery (3,156 males, 3,052 females), and 30 natural (6 males, 24 females) was trapped at the PFH Weir in 2009. Table 1.

Fish health - Viral replicating agents were not detected in 150 brood fish sampled, while 0/91 fish were found to be positive for *Renibacterium* by ELISA. We detected ¼ pools + For *Myxobolus cerebralis* (5 fish per pool) in the 20 fish sampled. DM

Spawning - A total of 652 females were spawned producing 2,810,472 green eggs and 2,556,521 eyed eggs. Not included in the green egg total was 42,594 culled eggs. Table 2.

Number shipped and disposition - Eyed eggs and fry were distributed to NSFH, Shoshone-Bannock tribes (SBT) eggbox program, Magic Valley Fish Hatchery (MVFH), and Hagerman State Fish Hatchery (HSFH) (Table 2).

➤ **BY-2010 Projected Trapping and Spawning**

Adult Return - The number of 1-ocean adult steelhead returning to the Pahsimeroi weir was estimated by expanding the number of PIT tagged adults observed at LGD by the tagging rate. It is important to note, these estimates are based on a small sample of PIT tags and therefore contain a substantial amount of sampling error. Furthermore 2-ocean adult steelhead (300-1,100) return each year but are not included in these estimates. Estimates indicate 34,694 (CI 18,932-61,284) adult 1-ocean steelhead from the brood year 2007 release at the Pahsimeroi weir crossed LGD. 19,786 (95% CI 11,170-36,157) adult steelhead are expected to return to PFH Weir based on the average exploitation rate (41%), which varies annually due to river conditions. Biological data (sex, length, and recovery date) is needed for a total of 400 CWT adult steelhead for age composition analysis. Length cut off criteria will be employed to ensure samples from each sex and age group. Biological data will be collected from an additional 1,000 adult steelhead from across the run for age composition analysis.

Upper Salmon B (USRB) Program - Beginning in the spring of 2010, the Upper Salmon B-run (USB) steelhead program will begin its transition to Pahsimeroi Fish Hatchery (PFH) from Squaw Creek with the first smolt release of 95,000 smolts into the Pahsimeroi River below the PFH weir. The Squaw Creek trap will continue to be operated by Sawtooth Fish Hatchery (SFH) personnel until 2013 when adults will be scheduled to return to PFH. The goal of this program is to eventually trap and spawn 176 pairs of brood-stock at PFH to produce 661,000 smolts. 120,000 smolts are scheduled for annual release in the Pahsimeroi River below the PFH weir to fulfill brood-stock requirements. The remaining smolts would be released at Squaw Creek to provide recreational fisheries.

This year SFH will provide PFH with as many green eggs as possible based on USB returns to Squaw Creek. These adults will be transferred to the East Fork spawning and holding facility for spawning. Green eggs will be transferred to PFH as single females in isolation buckets. They will be incubated at two females per tray upon transfer to PFH at various temperature regimes based on shipping schedules. Once the eggs have eyed, they will be transferred to MVFH for rearing.

Carcass Distribution – The Department’s policy regarding carcass distribution is as follows: Spawned-out fish and excess un-spawned fish will be distributed in the following priority order:

1. Indian tribes for ceremonial and subsistence purposes.

2. Nonprofit charitable organizations.
3. Members of the general public.

Indian tribe and nonprofit charitable organizations must make prior arrangements with the Chief of Fisheries or his designated representative. On any given spawning day, up to one-half will be distributed to the general public on a first-come, first served basis. Individual Indians and representatives of tribes or charitable organizations who have not made prior arrangements will receive fish on the same basis as the general public.

Nonprofit groups who wish to pick up fish must provide adequate containers and ice to preserve fish for human consumption.

Current charitable organizations currently on file are:

1. Shoshone Bannock Tribe.
2. Eastern Idaho Community Action Partnership (Idaho Falls and Salmon).
3. The Idaho Food Bank (Boise, Idaho)
4. Freedom Resources of Idaho (Boise, Idaho).
5. Montana Food Bank.
6. Shoshone Paiute.

Due to whirling disease amplification issues, carcasses are not used for nutrification of local waters. Fish not suitable for public or charitable distribution are placed in a refrigeration unit and hauled to a rendering plant in Kuna, ID for disposal.

1.1.5 Sawtooth Fish Hatchery and Weir (SFH)

➤ BY-2009 Trapping and Spawning

Adult Return - A total of 3,313 adult “A- run” steelhead was trapped. Of these fish, 3,279 (1787 males / 1,492 females) were marked hatchery-origin fish and 34 (20 males / 14 females) were unmarked fish of natural origin or unclipped hatchery fish (Table 1). The 34 unmarked steelhead were released upstream of the hatchery weir after a genetic sample, scale sample, fork length and gender data were collected. A total of 1,117 marked steelhead were used for broodstock egg collection; 558 females were spawn-crossed with 559 males. The spawned carcasses, as well as fish that were killed and not used for spawning were distributed to the public on a first-come first-served basis (total of 1,234). Another 1,760 surplus marked steelhead were provided to tribal C&S programs or to charitable food bank organizations. The remaining 319 steelhead carcasses (either pond mortalities or those that were unfit to be distributed for consumption) were kept frozen on station then sent to a rendering plant after the 2009 Chinook season.

Fish health - Viral replicating agents were not detected in 365 brood fish sampled, while 14/60 fish were found to be positive for *Renibacterium* by ELISA (12 low optical densities and 2 high optical densities). We did not detect *Myxobolus cerebralis* (5 fish per pool) in the 20 fish sampled.DM

Spawning - A total of 559 male steelhead was spawn-crossed with 558 female steelhead over 10 spawning days. Two females’ eggs were culled before enumeration due to eye-up near zero percent; therefore, only 556 females were used in calculating percent eye-up and average fecundity. A total of 2,932,308 green eggs were collected, with a mean fecundity of 5,274 eggs per female. Total green egg take yielded 2,466,626 eyed-eggs for a percent survival to the eyed-

egg stage of development average of 82.3 percent (Table 2). Genetic samples were taken from 100 percent of broodstock fish.

Number shipped and disposition - Eyed-egg transfers to HNFH totaled 1,487,230 eyed-eggs for Salmon River smolt releases, including 481,900 genotyped eyed-eggs for the SBT DNA Parentage Exclusion Analysis Program. Another 520,177 genotyped eyed-eggs were provided for the SBT Egg Box Program. MVFH received a total of 141,000 eyed-eggs for smolt releases into the Salmon River. A total of 170,553 surplus eyed-eggs were shipped to HSFH for resident fish management purposes. The Sawtooth-stock eyed-egg transfer totaled 2,318,960 (Table 2).

Comments - Biological data was collected from all CWT adult steelhead and a subsample of non-CWT fish for age compositions analysis.

➤ **BY-2010 Trapping and Spawning**

Adult Return - The number of 1-ocean adult steelhead returning to the Sawtooth weir was estimated by expanding the number of PIT tagged adults observed at LGD by the tagging rate. It is important to note, a number 2-ocean adult steelhead (200-600) return each year but are not included in these estimates. Estimates indicate 31,816 (CI 28,909-34,998) adult 1-ocean steelhead from the brood year 2007 release at Sawtooth weir crossed LGD. 12,090 1-ocean steelhead (95% CI 10,986-13,299) adult steelhead are projected to return to Sawtooth weir based on the average exploitation rate (62%), which varies annually due to river conditions.

Carcass Distribution – The Department’s policy regarding carcass distribution is as follows: Spawmed-out fish and excess un-spawmed fish will be distributed in the following priority order:

4. Indian tribes for ceremonial and subsistence purposes.
5. Nonprofit charitable organizations.
6. Members of the general public.

Indian tribe and nonprofit charitable organizations must make prior arrangements with the Chief of Fisheries or his designated representative. On any give spawning day, up to one-half will be distributed to the general public on a first-come, first served basis. Individual Indians and representatives of tribes or charitable organizations who have not made prior arrangements will receive fish on the same basis as the general public.

Nonprofit groups who wish to pick up fish must provide adequate containers and ice to preserve fish for human consumption.

Current charitable organizations currently on file are:

7. Shoshone Bannock Tribe.
8. Eastern Idaho Community Action Partnership (Idaho Falls and Salmon).
9. The Idaho Food Bank (Boise, Idaho)
10. Freedom Resources of Idaho (Boise, Idaho).
11. Montana Food Bank.
12. Shoshone Paiute.

Due to whirling disease amplification issues, carcasses are not used for nitrification of local waters. Fish not suitable for public or charitable distribution are placed in a refrigeration unit and hauled to a rendering plant in Kuna, ID for disposal.

1.1.6 Squaw Creek Pond/Weir

➤ **BY-2009 Trapping and Spawning**

Adult Return - A total of 34 steelhead were trapped: 10 marked Upper Salmon B males, 15 marked Upper Salmon B females, 4 undersized ad-clipped males without coded wire tags one undersized ad-clipped female without a CWT, and one undersized ad-clipped female with a CWT. There were also 2 unmarked female and 1 unmarked male steelhead that were released above the picket weir. Table 1. The 25 Upper Salmon B broodstock adults were transferred to the East Fork trapping facility for pre-spawn holding. The 4 undersized hatchery males and the undersized female that did not have CWT's were released back into the mainstem of the Salmon River, above the mouth of Squaw Creek. The undersized female with a CWT was killed and her snout was collected for tag reading. Between March 29 and April 20, as part of an angler contribution program, a total of 24 Upper Sawtooth B steelhead (14 males / 10 females) were caught by anglers and transferred by IDFG staff to the East Fork spawning facility and held for spawning. One ad-clipped male angled on April 1 died the next day. Of the 14 males angled, 10 were of B-run size and had CWT's, three were of size and did not have CWT's, and one was undersized and did have a CWT--real-time tag reading determined that this was a B-Run target fish to be included in the broodstock. A total of 25 marked USB females and 22 marked USB males were used in hatchery-production spawn crosses in 2009. Of the 25 females spawned, 15 were trapped fish and 10 were angled; of the 22 males spawned, 9 were trapped fish and 13 were angled. Carcasses were provided to Clayton, ID, branch of charitable group Helping Hands.

Fish health- Upper Salmon River B-program will not have 150 females, thus collect from up to 60 females (half of them sample ovarian fluid, half sample tissues (kidney/spleen). Sixty kidney samples are collected for ELISA testing for *RS*. Twenty 20 head wedges are collected and examined for *Myxobolus cerebralis*.

Viral replicating agents were not detected in 26 brood fish sampled, while 3/36 fish were found to be positive for *Renibacterium* by ELISA (all lows). *Myxobolus cerebralis* was detected in 1/6 pools (3 fish per pool) sampled.DM

Spawning - All spawning was conducted at the EF Trap, with spawning activities from the 25 females yielding a total of 182,602 green eggs for a mean fecundity of 7,304 eggs per female. A total of 121,035 eyed-eggs were obtained from hatchery-production crosses, for a percent survival to the eyed-stage of development of 66.3 percent. Table 2.

Number shipped and disposition - All 121,035 eyed-eggs produced from Upper Salmon B-Run hatchery crosses were transferred to the MVFH for final incubation and rearing. Table 2.

Comments – Biological data was collected from all CWT adult steelhead and a subsample of non-CWT fish for age compositions analysis.

➤ **BY-2010 Projected Trapping and Spawning**

Adult Return – 2-ocean fish, the primary source of broodstock for the program, were not PIT tagged at rates sufficient to generate an adult return estimate. Therefore the adult return estimate is based on last year's success and release group size (we are expecting the returns of our largest USRB release group). Based on this relationship 120 adults are projected to return to the Squaw Creek.

Starting in BY 2010 broodstock will be held and spawned at the EF Trap; however, the fertilized eggs will be transferred to PFH for early incubation. As in the past, smolts will be reared at MVFH.

1.2 Hatchery Production

1.2.1 Hagerman National Fish Hatchery (HNFH)

➤ BY-2009 Release and Marking

HNFH planned release of 1,360,736 SawA stock smolts, and 125,903 EFnat stock smolts in the upper Salmon River and East Fork Salmon River in 2010. Table 4.

A summary of BY 2009 marks, tags, and release numbers from HNFH reared smolts is contained in Table 4.

➤ BY-2010 Release and Marking

HNFH proposes releasing 1,190,000 SawA stock smolts and 170,000 EFnat smolts in the upper Salmon and East Fork Salmon River in 2011 River. Table 5.

A summary of proposed BY 2010 marks, tags, and release numbers is provided in Table 5.

1.2.2 Magic Valley Fish Hatchery (MVFH)

➤ BY-2009 Release and Marking

MVFH projects 2010 smolt releases will include 157,185 SawA stock smolts, 499,436 PahA stock smolts, 97,226 USRB stock smolts, and 884, 837 DworB stock smolts in the Little Salmon River and upper Salmon River. Table 4.

A summary of BY 2009 marks, tags, and release numbers is provided in Table 4.

➤ BY-2010 Release and Marking

MVFH proposes releasing 270,000 SawA stock smolts, 380,000 PahA stock smolts, 120,000 USRB stock smolts, and 830,000 DworB stock smolts in the Little Salmon River and upper Salmon River in 2011 Table 5.

A summary of proposed BY 2010 marks, tags, and release numbers is provided in Table 5.

1.2.3 Niagara Springs Fish Hatchery (NSFH)

➤ BY-2009 Release and Marking

NSFH projects releasing 1,000,000 PahA stock smolts and 800,000 OxbA stock smolts in the Pahsimeroi River, Little Salmon River, and Snake River in 2010. Table 4.

NSFH also stocked 179,470 unmarked steelhead fingerlings totaling 2,275 pounds (79 fpp) into Salmon Falls Reservoir at Grays Landing from September 9 through September 11, 2009. These fish were surplus to fulfilling mitigation goals of the Snake and Salmon rivers.

A summary of BY 2009 marks, tags, and release numbers is provided in Table 4.

➤ **BY-2010 Release and Marking**

NSFH proposes releasing 1,000,000 PahA stock smolts and 800,000 OxbA stock smolts in the Pahsimeroi River, Little Salmon River, and Snake River in 2011. Table 5.

A summary of proposed BY 2010 marks, tags, and release numbers is provided in Table 5.

1.2.4 Shoshone Bannock Tribes Egg Box Program

➤ **BY-2009 Release and Marking**

A total of 497,049 PahA and 513,412 SawA eyed eggs was outplanted in eggbox incubators in 2009. Table 4.

Comments – Broodyear 2008 age-0⁺ juveniles were collected in the fall of 2008 by electrosampling. Age-1⁺ individuals were collected in 2009 through the use of a rotary screw trap in Yankee Fork. Genetic parentage analyses estimate an overall relative proportion of 0.114 hatchery juveniles produced from the 2008 spawning efforts among all steelhead juveniles evaluated. A comprehensive analysis was completed for 2006-2008 and identified slightly higher overall relative hatchery proportion with the identification of age-2+ smolts (n=16) produced from the SSI program.

➤ **BY-2010 Release and Marking**

Comments – Potentially install a small picket weir in Pond Series 1 of Yankee Fork to trap returning adult steelhead to initiate the development of a localized run.

2 CHINOOK SALMON - Adult returns, and spawning, egg and fish disposition are contained in Table 6 and Table 7, respectively. Final BY 2007 releases and mark groups are contained in Table 8. BY 2008 and BY 2009 releases/projected releases and marking are contained in Table 9 and Table 10, respectively. Planned BY 2011 releases and marking are contained in Table 11.

2.1 Adult Trapping, Spawning, and Disposition

2.1.1 HC Trap

➤ **BY -2009 Trapping and Spawning**

Adult Return – A total of 634 hatchery jacks and 515 hatchery adults and 4 unmarked adults was trapped at the HC Trap in 2009.

➤ **BY -2010 Trapping and Spawning**

The number of 2-ocean, and 3-ocean spring Chinook salmon returning to HC trap in 2010 is currently projected to be 19,526 to the mouth of the Columbia River. It is important to note, this is a preliminary estimate and will be refined as fish enter the basin. Collection of broodstock and fish disposition will be modified to accommodate projected return as projections are refined throughout adult migration. After the strength of the return to RRFH is determined, fish may be trapped for broodstock at RRFH. Prior to the initiation of trapping the IDFG Fisheries Bureau will communicate its numeric trapping goals to IPC including anticipated uses of adult spring Chinook salmon such as out-planting of excess adults or supplementation programs done in coordination with other agencies or tribes. The HC Trap will operate three days/week Monday – Wednesday as flows permit (less than 50k ft³/s). Trapping for spring Chinook salmon may occur from May 1 through July 15. Any deviation in the scheduling to accommodate vacation, holidays, employee illness or other unique circumstances will be discussed and mutually agreed to by IDFG and IPC prior to the event whenever possible. Termination of trapping will be dictated primarily by water temperatures. If daily maximum water temperatures at OFH exceed 65°F IDFG may request that trapping be terminated for the season. The trap will be operated by qualified IPC personnel only and IDFG will have someone on site at all times that the trap is in operation. Since there are no means to sort and release fish at the trap, all trapped fish will be delivered to OFH for inspection and sorting. IDFG personnel will determine which fish, if any, meet the criteria for return to the Snake River. Once identified as such listed fish will be returned to the Snake River within 24 hours. If return numbers exceed broodstock needs and mutually agreed dispersal the trapping operation may be curtailed leaving fish in river and available for treaty and non-treaty fisheries in Hells Canyon. Spring Chinook salmon to be held for spawning will be held at OFH for transport to RRFH weekly or more often depending on water temperatures. If broodstock needs are exceeded, fish will be provided to tribal and humanitarian organizations. Surplus fish may also be transported to other drainages in Oregon or Idaho to provide fishing opportunity or for supplementation. These hatchery fish will be loaded from the holding ponds at OFH and will not be anesthetized or injected. The decision to release hatchery fish will be made based on the number of rack returns at HC trap and RRFH, run size as projected by IDFG, and on the overall condition of fish trapped earlier in the run. In addition to the dispersal priority set forth in IDFG Policy No. FW-20.00 § B, guidelines pursuant to US v. Oregon shall be followed to wit equal shares of excess trapped fish shall be provided to the Idaho, Oregon, and the Nez Perce Tribe. The goal of the broodstock collection shall be to capture a cross section of the run. Pursuant to that goal excess fish will be dispersed throughout the run while trapping continues.

Discussions between NPT and IDFG will occur prior to harvest seasons to determine harvest sharing of RRFH and HC Trap returning adults.

2.1.2 Johnson Creek Weir

➤ **BY - 2009 Trapping and Spawning**

Adult Return - In 2009, a total of 814 summer Chinook salmon were trapped at the Johnson Creek weir. The trap was in operation from June 25 to September 15. The table below details origin (natural, supplementation, stray), age, and sex of the salmon trapped on Johnson Creek in 2009. Table 6.

2009 Johnson Creek Adult Trapping Summary

Age and Sex		Natural Origin (NOR) Adults	Supplementation origin (HOR) Adults	Stray Adults	Total by Age and Sex	Total by Age
Age 3	Jack	65	265	10	340	340
Age 4	Male	98	88	9	195	435
	Female	77	153	10	240	
Age 5	Male	7	0	0	7	39
	Female	27	5	0	32	
Total		274	511	29	814	814

Fish health - Pre-spawning mortality for Johnson Creek broodstock averaged 19.1% in 2009. Males had a high pre-spawn rate compared to females for the year (see table below).

2009 Johnson Creek Broodstock Pre-Spawn Mortality (PSM)

	Johnson Creek PSM	Total Transported to SFSR Facility	Percent Johnson Creek PSM
Jacks	0	3	0%
Males	7	31	22.6%
Females	6	34	17.7%
Total	13	68	19.1%

Adult Chinook entering the Johnson Creek Trap were given an intra-peritoneal injection of erythromycin at a target dose of 10 mg/kg to limit pre-spawning mortality due to BKD. *Renibacterium* was detected during routine brood stock inspections at the South Fork Trap during 2009. One female was culled during spawning because of clinical evidence of BKD. Eggs from females with ELISA optical densities greater than 0.25 are culled from production. The Johnson Creek summer Chinook had no females with an ELISA value above 0.25. Additional sampling did not detect either IHNV or *Myxobolus cerebralis* in Johnson Creek brood fish.

Spawning - A total of 28 Johnson Creek returning natural females was spawned at the SFSR trap August 14 – September 1, 2009. One female was culled during spawning due to clinical evidence of BKD. The remaining 27 females produced a total of 127,903 green eggs (after culling) at an average fecundity of 4,737 eggs per female. Average eye-up was 86.5% resulting in 110,595 eyed eggs. Eggs from individual females were incubated separately (1 female/tray). Fish health protocols require the culling of eggs from females with ELISA optical densities greater than 0.25. None of the remaining 27 females' eggs were culled. Table 7. *John Gebhards*

➤ **BY - 2010 Trapping and Spawning**

The 2010 pre-season adult prediction for Johnson Creek is 1,384 natural origin (NOR) and 727 HOR adults. Based on this value, the JCAPE project will be collecting 1 out of every 20 natural origin fish by sex to utilize for brood stock for 2010. This collection is to begin with the first fish collected to ensure that a representative sample of broodstock is collected across

the entire run trapped. This collection rate may be modified during the season as adult PIT tag detections begin at the Columbia and Snake River Dams. As the trapping season progresses, we will continue to evaluate the number of NOR adults that have returned. Brood stock retention will be adjusted accordingly throughout the season to allow for a maximum number of NOR spawners to be released upstream while still retaining ample brood stock for production goals.

If actual NOR adult numbers exceed our prediction we will adjust our collection rate and/or return excess collected adults back to Johnson Creek prior to the start of spawning. As the trapping season progresses, we would continue to evaluate the number of NOR adults that have returned and make adjustments to the collection rate as needed to meet the brood stock size of 80 fish. On or about August 1, 2010, the adult trap numbers will be evaluated to determine the likelihood of achieving broodstock requirements. If more than enough brood stock has been trapped by this time, those extra fish will be returned to Johnson Creek for natural spawning. If fewer than anticipated numbers of broodstock have been collected, the JCAPE project will consult with NOAA Fisheries to determine if a change in broodstock collection rates needs to be implemented.

The Johnson Creek 2010 pre-season prediction was calculated using run-reconstruction information from previous brood year returns. The average age class structure (NOR fish were determined by PIT tags, fin ray analysis and fork length breakouts, while HOR fish were determined with PIT tags, CWT and VIE marks) by brood year and origin type of adults returning to Johnson Creek and the estimated number of juvenile migrants by brood year at Lower Granite Dam (LGD) was used to estimate the run size for future generations of fish. The estimated number of age 3 fish was calculated by multiplying the estimated number of brood year 2007 migrants at LGD by the average number of juvenile migrants at LGD that converted to age 3 fish at Johnson Creek over the years (age 3 adult fish returns at Johnson Creek divided by the estimated number of migrants at LGD within a brood year). The estimated number of age 4 fish was calculated by multiplying the average number of 3 year old fish returning to Johnson Creek that converted to age 4 (within brood year) by the number of age 3 fish returning from brood year 2006. The estimated number of age 5 fish was calculated by multiplying the average number of age 3 and age 4 fish combined that converted to age 5 (within brood year) by the total number of age 3 and age 4 fish returning from brood year 2005. Table 6. *John Gebhards/Craig Rabe*

2.1.3 Pahsimeroi Weir

➤ **BY -2009 Trapping and Spawning**

Adult return – In 2009, 3 hatchery mini-jacks, 3,507 hatchery jacks, 9 hatchery jills, 2,634 hatchery adult males, and 2,746 hatchery adult females were trapped at PFH Weir. Natural origin Chinook trapped included 33 jacks, 146 adult males, and 147 adult females. Table 4.
Fish health – Sampling of broodstock for pathogens detected 5/285 (1.8%) female Chinook salmon with optical densities of 0.25 or greater for RS. The eggs from these fish were culled. IHNV was not detected in 90 fish and MC was not detected in 20 fish sampled.DM

Spawning - The entire run was represented during egg-takes. The first egg take took place on September 3, 2009 and the last on September 28, 2009. Eggs were incubated at one female per

incubator tray for BKD isolation. Eggs from females whose ELISA values are greater than 0.25 were culled prior to hatch. Eggs were treated three times per week with a 15 minute 1,667-ppm formalin drip to control fungal growth as well as a 15 minute 500 ml iodine flow through treatment for soft shell disease.

A total of 316 females was spawned producing 1,382,982 green and 1,269, 143 eyed eggs. Eggs from 41 females were culled due to BKD and cancellation of an age 0 release study. Table 5.

➤ **BY- 2010 Trapping and Spawning**

Adult return – The current run forecast for 2010 is approximately 12,532 adults to the mouth of the Columbia River (Table 6). Surplus adults will be recycled back to the fishery at the following sites: Salmon River mile marker 270, Deer Gulch access and Elk Bend. Surplus jacks will be planted into the Salmon Kid’s Creek pond, Blue Mountain Meadow pond, or selected for charitable/tribal fish giveaways. Surplus fish killed for charitable/tribal giveaways are not injected with erythromycin. Once the fish reach a point where they can no longer be used for food and fisheries are closed, surplus fish are killed and stored in a refrigerated trailer unit until they are transferred to a rendering plant in Kuna, ID. Neither excess adult fish nor carcasses are transferred out of the upper Salmon River Basin due to whirling disease concerns.

In addition, discussion is on-going regarding development of an integrated brood component (per US v. OR) of up to 250,000 smolts. Release of BY -2010 smolts is to be determined pending agreement among co-managers on release site, number, and agreement on brood collection (integrated, reserve, etc.).

Carcass Distribution – The Department’s policy regarding carcass distribution is as follows: Spawned-out fish and excess un-spawned fish will be distributed in the following priority order:

1. Indian tribes for ceremonial and subsistence purposes.
2. Nonprofit charitable organizations.
3. Members of the general public.

Indian tribe and nonprofit charitable organizations must make prior arrangements with the Chief of Fisheries or his designated representative. On any give spawning day, up to one-half will be distributed to the general public on a first-come, first served basis. Individual Indians and representatives of tribes or charitable organizations who have not made prior arrangements will receive fish on the same basis as the general public.

Nonprofit groups who wish to pick up fish must provide adequate containers and ice to preserve fish for human consumption.

Current charitable organizations currently on file are:

1. Shoshone Bannock Tribe.
2. Eastern Idaho Community Action Partnership (Idaho Falls and Salmon).
3. The Idaho Food Bank (Boise, Idaho)
4. Freedom Resources of Idaho (Boise, Idaho).
5. Montana Food Bank.
6. Shoshone Paiute.

Due to whirling disease amplification issues, carcasses are not used for nutrification of local waters. Fish not suitable for public or charitable distribution are placed in a refrigeration unit and hauled to a rendering plant in Kuna, ID for disposal.

2.1.4 Rapid River Weir

➤ **BY - 2009 Trapping and Spawning**

Adult Return- In 2009 the Rapid River fish trap operated from March 19 to September 10. The trapping operation was interrupted three times for removal of accumulated sand, but was not closed more than 6 hours at time. From May 12 to September 2, 2009 a total of 5,418 marked spring Chinook salmon were trapped (Table 6) including: 3,285 three-year-old males, 0 three-year-old females, 783 four-year-old males, 1,123 four-year-old females, 93 five-year-old males, and 134 five-year-old females. In 2009, unmarked Chinook salmon entered the RRFH fish trap from June 15 through August 4 including: 5 three-year-old males, 0 three-year-old female, 8 four-year-old males, 9 four-year-old females, 4 five-year-old males, and 4 five-year-old females. From March 24 through May 28, 2009 130 adult steelhead entered the FFRH fish trap (Table 1) including: 44 wild males, 62 wild females, 12 hatchery males, and 12 hatchery females. In 2009, 422 bull trout were trapped from May 12 through August 6.
Ralph Steiner

Fish Health- ELISA monitoring of female broodstock detected 23/1,288 (1.89%) females with optical densities >0.249 . The eggs from these females were culled. Pre-spawning mortality was measured at 6.4% in 2009. *Ralph Steiner*

Spawning- In 2009, 1,288 females were spawned from August 10 through September 8, producing 5,440,512 green eggs. Of these, 283,008 eggs from 67 females were culled. This left 5,157,504 green eggs from 1,221 females (Table 5). Average fecundity was 4,224 eggs/female. Survival to eyed-eggs was 4,976,849 or 96.5%. During spawning, eggs from 391 females were transferred to OFH, and after culling and enumeration, eggs from 383 females were returned to RRFH. Eggs from an additional 270 were transferred to Clearwater Fish Hatchery. Table 7. In 2009 all males and females used for spawning were sampled for DNA. *Ralph Steiner*

➤ **BY - 2010 Trapping and Spawning**

The number of 2-ocean, and 3-ocean spring Chinook salmon returning to RRFH in 2010 is currently projected to be 97,632 to the mouth of the Columbia River (Table 6). It is important to note, this is a preliminary estimate and will be refined as fish enter the basin. Collection of broodstock and fish disposition will be modified to accommodate projected return as projections are refined throughout adult migration. The adult trapping facility will be put into operation approximately March 15, 2010. Spring Chinook salmon will arrive at the trap beginning in April or May. Approximately, 2,500 spring Chinook salmon will be needed for broodstock for the RRFH spring Chinook salmon program. Trapping will continue through the first week of September. Trap operations may be discontinued based on water conditions or for cleaning the trap. The entrance to the trap may be closed to regulate the number of fish in the holding area to prevent overcrowding and subsequent hypoxia. If this occurs the fish will be left in river and available to fisheries. If broodstock needs are exceeded, fish will be

provided to tribal and humanitarian organizations. Surplus fish may also be transported back into the Salmon River or Little Salmon River to re-enter fisheries, or be transported to other drainages to provide fishing opportunity or for supplementation. These hatchery fish will be loaded directly from the fish trap and will not be anesthetized or injected. The decision to release hatchery fish will be made based on the number of rack returns, run size as projected by IDFG, and on the overall condition of fish trapped earlier in the run. The goal of the broodstock collection shall be to capture a cross section of the run. Pursuant to that goal excess fish will be dispersed throughout the run. Dispersal priority shall follow policy set forth in IDFG Policy No. FW-20.00 Distribution of Spawmed-out and Excess Carcasses at Anadromous Fish Hatcheries § B to wit:

B. After needs for eggs and natural spawning are met, spawned-out fish and excess unspawned fish will be distributed in the following priority order:

1. Indian tribes for ceremonial and subsistence purposes.
2. Nonprofit charitable organizations.
3. Members of the general public.

Indian tribes and nonprofit charitable organizations must make prior arrangements with the Chief of Fisheries or his designated representative. On any given spawning day, up to one-half will be distributed to the general public on a first-come, first-served basis. Individual Indians and representatives of tribes or charitable organizations who have not made prior arrangements will receive fish on the same basis as the general public.

Nonprofit groups who wish to pick up fish must provide adequate containers and ice to preserve fish for human consumption.

2.1.5 Sawtooth Weir

➤ BY - 2009 Trapping and Spawning

Adult return-The Spring Chinook Salmon, *Oncorhynchus tshawytscha*, weir at Sawtooth Fish Hatchery (SFH) on the Main Salmon River was installed on June 24, 2009 and remained in operation until October 16, 2009. During its operation, the weir diverted all upstream migration of fish through the trap at the facility, trapping a total of 4,003 adult Chinook salmon (Table 6). Of the 4,003 adult Chinook trapped, 3,556 were hatchery-produced marked fish (380 jacks, 1,348 adult males, 1,828 females) and 447 were unmarked (77 jacks, 208 adult males, 162 females.) Hatchery-origin marked fish are defined as fish with either an adipose fin-clip only (AD), adipose clip/Coded Wire Tag (AD/CWT), or CWT only. Unmarked fish are defined as fish with no external markings or CWT. Table 5. All unmarked Chinook were released above the hatchery weir for volitional spawning. Marked Chinook ponding included 1,067 brood stock (50 jacks, 495 males, 522 females) with the remainder identified as excess to brood stock needs. There were 5 trap mortalities of marked fish (1 male, 4 females); there were 57 mortalities (31 females and 26 males) prior to spawning activities. Of the excess fish, a total of 709 Chinook were identified with a hole punch in the left opercle then recycled through the fishery down river to Torrey's Hole and Watt's Bridge. There were 149 recapture recycled fish from this group. Additionally, 1,517 excess Chinook (750 males, 767 females) were transferred to the Yankee Fork of the Salmon River for a supplementation program managed by the Shoshone-Bannock

Tribes Fisheries Department (SBT). Transferred fish were either taken directly from the trap or from a holding pond. Fish provided from the holding ponds were excess fish, recycled-recaptured fish or males that were used once for spawning and then provided to SBT. Fish were transferred by IDFG and SBT personnel to the Yankee Fork. Excess fish were also provided to food banks and charitable organizations as follows:

Shoshone-Bannock Tribes Food Bank	15 adults
Middleton Food Bank	100 jacks
<u>Lowman/Idaho City Food Bank</u>	<u>198 jacks</u>
Total Distributed To Food Banks	298 jacks, 15 adults

The remaining 160 excess fish were frozen and shipped to a rendering facility.

A total of 1,067 spring Chinook salmon were ponded as brood stock. Brood stock pre-spawning mortality of 0.01 percent included 2 females and 9 males. An additional 2 females and 13 males were killed but not used at spawn time (KNU). The remaining 1,041 brood stock spawned included 518 females and 523 male. Due to egg culling, 490 enumerated females spawn crosses resulted in 2,429,273 green eggs being collected with an eye up rate of 94 percent producing 2,282,484 eyed eggs. Average fecundity was 4,958 eggs per female. All fish carcasses used for spawning, pre-spawn mortalities, KNU, or excess that were not distributed elsewhere, were shipped to a rendering facility.

Trapping and Release Protocols - Trapping and release protocols in 2009 were such that all unmarked Chinook were released for volitional spawning and all marked hatchery fish (AD, AD/CWT or CWT-only), were held at the hatchery. Upon being removed from the trap, all brood stock and unmarked fish were measured for fork length (cm), checked for external tags and scanned for PIT and CWT tags, gender determination was made, and genetic tissue was sampled (unmarked fish only). A total of 662 fish held for brood stock were injected with erythromycin. After July 3, when daily trapping numbers peaked, injections of erythromycin were given only to brood stock females to reduce fish handling time. Injections continued until August 19, 2009, after which the injections were no longer considered beneficial. Due to higher than expected return in jack numbers, only 50 jacks possessing a CWT were held for hatchery brood stock. After initial handling the fish were placed into the appropriate adult holding pond or in the adult transfer tank to recover prior to release.

Adult health - Sampling of broodstock for pathogens detected 16/518 (3.1%) female Chinook salmon with optical densities of 0.25 or greater for RS. The eggs from these fish were culled. IHNV was not detected in 90 fish. DM

Spawning - Hatchery spawning began August 13 and concluded on September 16, with a total of 518 females spawned on eight separate spawn days (lots). Spawn crosses were made by 1:1 (f/m) split-random cross mating. A total of 518 females were spawned with 523 males. Each female's eggs were fertilized individually with one male, and then combined after 15 seconds with eggs from another female and milt from a second male. All adult males were used once; 105 broodstock males were spawned once and then provided to the SBT for supplementation to the Yankee Fork of the Salmon River. An additional two males were spawned with one female on days where an odd number of females were spawned. There were 2 KNU females, and 13 KNU males that were not used for spawning. After fertilization, all eggs were rinsed with well water then water-hardened for 30 minutes in a 50 parts per million (ppm) solution of Ovidine (Povidone Iodine), and then drained. Once drained, the eggs were then immersed in a solution of

100 (ppm) Ovidine (Povidone Iodine) for ten minutes. Eggs were incubated at two females per egg tray in vertical-stack incubators. The green egg take from the remaining 490 females was 2,429,273 eggs, yielding 2,282,484 eyed eggs for a percent survival to the eyed-stage of development average of 94 percent and a mean fecundity of 4,958 eggs per female (Table 7). An additional 481,717 excess eyed eggs were provided to the SBT to be placed in egg boxes in the Yankee Fork of the Salmon River for supplementation.

Adult health - Sampling of broodstock for pathogens detected 16/518 (3.1%) female Chinook salmon with optical densities of 0.25 or greater for RS. The eggs from these fish were culled. IHNV was not detected in 90 fish. DM

➤ **BY - 2010 Trapping and Spawning**

The projected return to the mouth of the Columbia River in 2010 is 2,108 adults.

In addition, discussion is on-going regarding development of an integrated brood component (per US v. OR) of up to 250,000 smolts. Release of BY -2010 smolts is to be determined pending agreement among co-managers on release site, number, and agreement on brood collection (integrated, reserve, etc.).

Discussions between NPT and IDFG will occur prior to harvest seasons to determine harvest sharing of RRFH and HC Trap returning adults.

2.1.6 South Fork Salmon River Weir (SFSR Weir)

➤ **BY - 2009 Trapping and Spawning**

Adult return - A total of 9,737 summer Chinook salmon were processed through the SFSR Trap during the 2009 return year (Table 6). These included: 9,185 hatchery AD-clipped (5,308-J, 1,491-M, 2,386-F), 552 wild/natural (108-J, 209-M, 235-F) and zero Unknown CWT only. Table 6. No Johnson Creek origin strays were encountered in 2009. Length frequency age analysis for the 2009 return run indicated 5,416 1-ocean (5,308-H, 108-W/N), 4,068 2-ocean (3,681-H, 387-W/N) and 253 3-ocean (196-H, 57-W/N) summer Chinook salmon. In 2009 the SFSR Trap was in operation June 15th to September 11th.

Adult health - Approximately 4.9% (23/473) of the brood females sampled by ELISA were above 0.250 and considered high. The eggs from these females were culled. Pre-spawning mortality was measured at 28.1% in 2009. No other pathogens were detected. *Doug Munson*

Spawning - Eggs were collected from 473 Reserve SFSR summer Chinook females over 6-Lots, August 14 – September 1, 2009. Eggs from 72 Reserve females (3-Lots) were transferred to Clearwater FH following water hardening at the SFSR Trap. Eggs from the remaining 401 spawned females were returned to MCFH for incubation. These females produced 1,999,933 green eggs resulting in an average fecundity of 4,987 eggs per female. Eye-up was 89.1%, leaving 1,782,742 eyed eggs. Of these, 169,032 were culled as BKD High ELISA positives, 187,358 were culled as excess BKD Low ELISA positives, 326,840 were transferred to the Shoshone Bannock Tribe and 1,099,512 were retained for hatchery production. The highest

ELISA optical density retained for hatchery production was 0.165. Representatives from the SBT received 326,840 eyed eggs, coming from 74 females, on October 7, 2009 for use in Dollar Creek in-stream incubator boxes (Table 7).

A limited study to evaluate the need for injecting returning salmon adults with erythromycin was conducted during the 2009 trapping year. A total of 683 males (TL > 69 cm) and 682 females ponded as brood stock were evaluated for differences in pre-spawning mortality. Of these, 314 males and 309 females received the standard erythromycin injection. Results indicated there was little to no health benefit to injecting ponded brood stock with erythromycin. Pre-spawning mortality rates were: Males 5.7% (18/314) injected, 5.7% (21/369) non-injected; Females 18.1% (56/309) injected, 17.7% (66/373) non-injected. Comparisons of BKD High Positive ELISA optical density results were also evaluated. Results also seemed to indicate there was little to no benefit obtained from the erythromycin injection. Of the 473 Females spawned, BKD High Positive ELISA optical densities were observed in 6.4% of the injected females (7/110) and 4.4% of the non-injected females (16/363). Based on these observations and the need to insure erythromycin is not unintentionally released into the environment through the in-river disposal of carcasses no erythromycin injections will be given to any returning salmon in the 2010 return

➤ **BY -2010 Trapping and Spawning**

Adult return - Initial adult return (preseason) forecast estimates 40,712 reserve adults to return to the mouth of the Columbia River in 2010 (Table 7). If this estimate holds true, adult returns should exceed hatchery brood stock needs and should provide an ample surplus of reserve salmon available for both sport and tribal harvest seasons.

In addition, discussion is on-going regarding development of an integrated brood component (per US v. OR) of up to 250,000 smolts. Release of BY -2010 smolts is to be determined pending agreement among co-managers on release site, number, and agreement on brood collection (integrated, reserve, etc.).

The table below identifies outplant locations (see McCall Fish Hatchery Appendix 2), and presumes that prior to out-planting, harvest, broodstock, and subsistence distribution needs are satisfied. Out-planting will occur after the upper mainstem South Fork Salmon River reaches the Nez Perce Tribe minimum viable number of 1,000 spawners. Releases should occur late enough to encourage fish to remain in outplant sites for intended spawning (i.e. after July 25) to ensure that fish sufficiently mature to decrease chances of fish straying into other tributaries(SFSR- South Fork Salmon River, EFSFSR – East Fork South Fork Salmon River, 2LOP- Two left opercle punches, 2ROP- Two right opercle punches).

Out-plant table for excess adult Chinook fish from upper mainstem South Fork Salmon River weir, listed by priority, stream, location, numbers, and applied marks.

Prioritization of Out-plants	Out-plant Stream	Release Location	Number Out-Planted		Core Mark
			Male:Fem Pairs	Total	
1	SFSR	Goat Creek/Roaring Creek	200	400	2LOP
2	EFSFSR	Above Glory Hole	200	400	2ROP
3	EFSFSR	Below Glory Hole	200	400	2ROP
4	SFSR	Goat Creek/Roaring Creek	200	400	2LOP
5	EFSFSR	Above Glory Hole	200	400	2ROP
6	EFSFSR	Below Glory Hole	200	400	2ROP
7	EFSFSR	Above Glory Hole	200	400	2ROP
8	EFSFSR	Below Glory Hole	200	400	2ROP
		SFSR Total	400	800	
		EFSFSR Total	1,200	1,800	
		Grand Total	1,600	2,600	

2.1.7 Yankee Fork

➤ **BY-2009 Trapping and Spawning**

Adult return – A total of 25 hatchery male and 39 hatchery female Chinook salmon was trapped at the Yankee Fork Weir in 2009. Natural Chinook trapped included 26 males and 33 females (Table 6).

➤ **BY 2010 Trapping and Spawning**

The weir will be installed as flows permit. Trapped adults will be transported to the EF Weir and held for spawning.

2.2 Hatchery Production

2.2.1 Eagle Fish Hatchery (EFH)

➤ **BY - 2004 Release and Marking**

On July 20, 2009, six BY04 Chinook Salmon matured at Manchester and were released to the East Fork Salmon River. The Chinook salmon averaged 2,713 grams per fish and were 100% adipose fin clipped, PIT tagged, and marked with a green spaghetti tag.

On July 8, 2009, two BY04 Chinook Salmon matured at Manchester and were released to the West Fork Yankee Fork. The Chinook salmon averaged 1,675 grams per fish and were both adipose fin clipped, PIT tagged, and marked with a green spaghetti tag.

No BY04 Chinook salmon remain in production at Manchester.

➤ **BY - 2005 Release and Marking**

On July 20, 2009, 114 BY05 Chinook Salmon matured at Manchester and were released to the East Fork Salmon River. The Chinook salmon averaged 2,234 grams per fish and were 100% adipose fin clipped, PIT tagged, and marked with orange (female) or white (male) spaghetti tags.

On July 8, 2009, 101 BY05 Chinook Salmon matured at Manchester and were released to the West Fork Yankee Fork. The Chinook salmon averaged 2,212 grams per fish and were adipose fin clipped, PIT tagged, and marked with a white (female) or orange (male) spaghetti tags.

NOAA Fisheries currently has 28 WFYF and eight EFSR spring Chinook salmon in production at Manchester Research Station (saltwater rearing). All remaining Chinook salmon will mature at age-5. *Carlin McAuley/Dan Baker*

Approximately 25 WFYF and five EFSR spring Chinook salmon will mature at age-5. Mature Chinook salmon will be returned to Idaho in early July and released directly to natal streams. *Dan Baker*

➤ **BY - 2006 Release and Marking**

No BY2006 eyed-eggs were collected during 2006. No further collections are planned for this project.

2.2.2 McCall Fish Hatchery (MCFH)

➤ **BY 2008 Release and Marking**

Johnson Creek stock - As of Dec. 2009, there were 101,723 BY - 2008 supplementation summer Chinook being reared at the MCFH. Planned marks CWT, elastomer, VIE. Projected release target in March 2010 is 90,000 smolts at 26 - 28 fpp. Table 9. These fish will most likely be directly released into Johnson Creek into the pool located below the Wapiti Ranch bridge. No attempts will be made to acclimate these fish at the time of release. *John Gebhards*

One half of the BY - 2008 production will be released the week of March 15, ahead of the MCFH production release and one half will be released the week of March 29 after the MCFH production release.

SFSR stock - As of February 1, 2010 there were 1,039,600 BY2008 summer Chinook salmon parr being reared at MCFH. All marking has been completed for this brood year.

Current hatchery inventory numbers project the availability of 1,038,000 BY2008 smolts for release in late-March 2010. Projected size at release is 21-23 fpp. Marks projected to be released in this brood year include: 782,400 Ad only, 51,700 AD/PIT, and 203,900 Ad/CWT

(Table 9). A 1.92% shed rate for CWTs has been applied to this broodyear based on a 21 day post tag retention check conducted by fish marking personnel.

Initial efforts to reduce the hatchery inventory to a “full hatchery capacity” level resulted in the culling of 155,420 eyed eggs that had been spawned from 40 females and were in incubation trays where one of the contributing females demonstrated ELISA results of 0.167-0.249 (eggs from 21-Low Positive females were paired with eggs from 19 other females).

A secondary inventory reduction occurred in the form of a fall release of 180,000 excess Ad-clip only parr into the SFSR near the Trap water intake structure on September 28-29, 2009 (Table 9). Size at release was 31.5 fpp (4.6 inch TL). No medicated feed treatments were applied to BY2008 SFSR summer Chinook reared at MCFH.

➤ **BY - 2009 Release and Marking**

Johnson Creek stock - As of Dec. 2009, there were 109,620 BY - 2009 supplementation summer Chinook being reared at the MFH. Planned marks include CWT, VIE, and PIT tags. Half of the fish will be released in mid-March and the remaining half will be released in early to mid-April 2011. Projected release target is 102,578 smolts at 26 - 28 fpp (80.2% average green egg to release survival) (Table 10). These fish are scheduled to be directly released into Johnson Creek into the pool located below the Wapiti Ranch bridge. No attempts will be made to acclimate these fish at the time of release.

SFSR stock - As of February 1, 2010 there were 1,085,000 BY2009 reserve summer Chinook salmon fry being reared at MCFH.

Hatchery setout inventory numbers project 1,052,000 BY2009 reserve summer Chinook salmon smolts to be available for release in late March 2011. Release target size for these fish is 20.0 fpp. Expected marks will include: 800,000 AD-clip only, 52,000 AD/PIT and 200,000 AD/CWT (Table 10).

No prophylactic erythromycin medicated feed treatments are scheduled to be fed to BY2009 summer Chinook salmon reared at MCFH.

2.2.3 Pahsimeroi Hatchery (PFH)

➤ **BY - 2008 Release and Marking**

Production target for brood year 2008 is approximately 1,175,000 at 15 fish per pound (fpp) or 78,667 pounds (Table 9). This is greater than the typical production goal of 1,000,000 due to an excess egg take and unknown projected mortality levels in the new PFH. Inventory of 1,180,000 fish was composed of the parental lineage designation of fish classified as reserve. Table 9.

BY-2008 is the first full brood year to go through their full life cycle at the new Upper Pahsimeroi FH. Lengths and weights are being recorded on each lot of fish monthly to gather baseline data for the new rearing facility. PFH personnel are evaluating initial length at ponding, monthly mortality, fish health, condition factors, standard deviation, and coefficient of variation to fine tune fish rearing at this new facility.

Beginning May 21, 2009 fish were 100% AD clipped and received 121,748 CWT's. Pit tagging will begin on March 20, 2010 and approximately 21,400 fish will be PIT tagged (Table 9).

➤ **BY - 2009 Release and Marking**

Based on current inventories, 1,050,000 smolts will be released in 2011. Planned marking includes 930,000 AD and 120,000 ADCWT. In addition, 21,400 smolts will be Pit tagged (Table 10).

BY-2009 is the second full brood year to go through their full life cycle at the new Upper Pahsimeroi FH. Lengths and weights are being recorded on each lot of fish monthly to gather baseline data for the new rearing facility. PFH personnel are evaluating initial length at ponding, monthly mortality, fish health, condition factors, standard deviation, and coefficient of variation.

2.2.4 Rapid River Hatchery (RRFH) and weir

➤ **BY - 2008 Release and Marking**

3.2 million BY08 Spring Chinook will be released starting March 15, 2010 (Table 6). The volitional release into Rapid River will be 2.5 million and include 100% AD clips, 104,851 CWT (number marked June 2009) and 52,000 PIT tags (to be marked February 2010) (Table 9). Pursuant to US vs. OR 2008 – 2017 Management Agreement Table B1, 500,000, 100% AD clip smolts will be released into the Snake River below Hells Canyon Dam and 200,000, 100% AD clip smolts will be released into the Little Salmon River. *Ralph Steiner*

One prophylactic feeding of erythromycin-medicated feed was applied to juveniles with a target dose of 100 mg/kg for 28 days. *Doug Munson*

Excess production strategies - Pursuant to US vs. OR 2008 – 2017 Management Agreement Table B1, release sites will include Rapid River, the Snake River below Hells Canyon Dam, and the Little Salmon River. For production at or above 3.0 million, releases will be 2.5 million into Rapid River and alternating releases of 100,000 to Hells Canyon and 50,000 to Little Salmon River (footnote 11 to Table B1 US vs. OR 2008-2007 Management Agreement). *Ralph Steiner*

➤ **BY - 2009 Release and Marking**

Release of three million smolts will occur in 2011 (Table 10). Pursuant to US vs. OR 2008 – 2017 Management Agreement Table B1, release sites will include Rapid River, the Snake River below Hells Canyon Dam, and the Little Salmon River. For production at or above 3.0 million, releases will be 2.5 million into Rapid River and alternating releases of 100,000 to Hells Canyon and 50,000 to Little Salmon River (footnote 11 to Table B1 US vs. OR 2008-2007 Management Agreement). Marks will include 100% AD clips, 100,000 CWT, and 52,000 PIT tags. *Ralph Steiner*

One prophylactic feeding of erythromycin-medicated feed will be applied to juveniles with a target dose of 100 mg/kg for 28 days. *Ralph Steiner*

2.2.5 Sawtooth Hatchery (SFH)

➤ **BY - 2008 Release and Marking**

As of February 1, 2010, there are approximately 1,860,000 million pre-smolt in 10 outside raceways. The presmolts average 29 fpp and 4.9 inches length. Fish for April weir release include 123,000 AD/CWT and 1,330,000 Ad only. Fish for April YFSR release include 203,000 Ad-only and 203,000 CWT only. *Brent Snider*

IDFG tagging and research personnel will PIT tag 18,800 during March of 2010, and monitor PIT tag detection at dams.

➤ **BY - 2009 Release and Marking**

The projected hatchery release is 1,700,000 smolts. Allocation between Sawtooth weir and Yankee Fork release sites is to be determined.

➤ **BY - 2010 Release and Marking**

Smolt production capacity at Sawtooth is 1.7 million smolts. Allocation of available smolts potentially includes 1.3 million weir release and 200,000 to Yankee Fork. In addition, discussion is on-going regarding development of an integrated brood component (per US v. OR) of up to 250,000 smolts. Release of BY -2010 smolts is to be determined pending agreement among co-managers on release site, number, and agreement on brood collection (integrated, reserve, etc.).

2.2.6 Shoshone Bannock Tribes Egg Box Program

➤ **BY 2009 Release and marking**

Monitoring and evaluation – All paired spawners will be fin-clipped (females) and operculum punched (males) to collect genetic tissue for future monitoring and evaluation activities as described by Jones and Ardren (2003). In-stream incubators will be visually checked monthly and data collected for cleanliness, water temperature, dissolved oxygen, conductivity, pH, flow velocity, sediment accumulation, and life stage for each box location. Future evaluations include pairing Dollar Creek with two control streams to compare fish densities and dispersal (treatment effect) through snorkeling and/or electroshocking. Adult evaluation through redd counts occur annually. *Lytle Denny/Kurt Tardy*

➤ **BY 2010 Release and marking**

300,000 eyed eggs to Dollar Creek.

3 Sockeye Salmon

3.1 Hatchery Production

3.1.1 Eagle Fish Hatchery /Burley Creek Fish Hatchery

➤ **BY-2005 Release and Marking**

Currently 24 fish are in culture representing BY2005. Most will mature as five year old fish and incorporated into the captive broodstock (4 fish) or released to Redfish Lake (approximately 15 fish). The fish that do not mature as five year olds will remain in culture until maturity. The BY2005 captive broodstock group is represented by four fish and the adult release group is represented by 20 fish. *Dan Baker/Carlin McAuley*

All maturing fish from NOAA Fisheries adult release group (approximately 15) will be released in September, the remaining immature fish will remain in culture until mature. *Carlin McAuley/Dan Baker*

➤ **BY-2006 Release and Marking**

Currently 103 fish are in culture representing BY2006. Most will mature as four year old fish and incorporated into the captive broodstock (70 fish) or released to Redfish Lake (approximately 15 fish). The fish that do not mature as four year olds will remain in culture until maturity. The BY2006 captive broodstock group is represented by 84 fish and the adult release group is represented by 19 fish. *Dan Baker/Carlin McAuley*

All maturing fish from NOAA Fisheries adult release group (approximately 15) will be released in September, the remaining immature fish will remain in culture until mature. *Carlin McAuley/Dan Baker*

➤ **BY-2007 Release and Marking**

Currently 1,010 juveniles are in culture representing BY2007. A majority (approximately 80%) will mature as three year olds and will be incorporated into the broodstock spawning matrix. The fish that do not mature as three year olds will remain in culture until maturity. The BY2007 captive broodstock group is represented by 744 juveniles and the adult release group is represented by 266 juveniles. *Dan Baker/Carlin McAuley*

All maturing fish from NOAA Fisheries adult release group (approximately 160) will be released in September, the remaining immature fish will remain in culture until mature. Additionally, a portion of the captive broodstock from Eagle Hatchery will be released (approximately 200). The actual number will be determined based on the number of anadromous sockeye incorporated into the Eagle Hatchery spawning matrix. *Dan Baker*

➤ **BY-2008 Release and Marking**

Currently Eagle FH has 758 fish representing BY2008 captive broodstock. NOAA Fisheries has 326 fish representing BY2008 captive broodstock and 304 fish representing adult release production. *Dan Baker/Carlin McAuley*

No BY-2008 sockeye are scheduled for release in 2010.

➤ **BY-2009 Release and Marking**

Currently Eagle FH has 1,031 eyed-eggs representing BY2009 captive broodstock. NOAA Fisheries has 515 eyed-eggs representing BY2009 captive broodstock and 517 eyed-eggs representing adult release production. Eagle FH is currently rearing 19,820 fry for a pre-smolt release to Alturas Lake in July. *Dan Baker/Carlin McAuley*

Eagle Hatchery will release approximately 18,000 BY2009 juveniles scheduled for a July pre-smolt release to Alturas Lake. *Dan Baker*

➤ **BY-2010 Release and Marking**

Adult return - Projected anadromous adults returning in 2010 to Salmon River Basin weirs (Sawtooth FH weir and Redfish Lake Creek weir) is 500 sockeye. *Mike Peterson*

3.1.2 Oxbow (Oregon) Fish Hatchery

➤ **BY-2008 Release and Marking**

Sawtooth FH is currently rearing 80,276 juveniles in two outside raceways. These fish are scheduled to be released in May 2010 as smolts. *Duane Banks/Dan Baker*

Approximately 80,000 smolts will be released the first week in May at the Sawtooth FH weir on the Salmon River and/or below the smolt trap on Redfish Lake Creek. *Duane Banks/Dan Baker*

➤ **BY-2009 Release and Marking**

NOAA Fisheries transferred 104,963 eyed-eggs in November and December to meet production goals. Currently Oxbow FH has 104,963 eyed-eggs in production scheduled for a 2011 smolt release. *Duane Banks/Dan Baker*

No projected release of BY 2009 juveniles in 2010. *Dan Baker*

3.1.3 Sawtooth Fish Hatchery

➤ **BY-2008 Release and Marking**

Sawtooth FH is currently rearing 99,809 juveniles in two outside raceways. These fish are scheduled to be released in May 2010 as smolts. *Brent Snider/Dan Baker*

Approximately 99,000 smolts will be released the first week in May at the Sawtooth FH weir on the Salmon River and/or below the smolt trap on Redfish Lake Creek. *Brent Snider/Dan Baker*

➤ **BY-2009 Release and Marking**

Production status - Sawtooth FH received 218,844 eyed-eggs from Eagle FH and NOAA Fisheries to make up their BY2009 production group. Approximately 75,000 pre-smolts and 100,000 smolts will be produced from this group. *Brent Snider/Dan Baker*

Projected release BY2009 production releases will include pre-smolts to Salmon River Basin Lakes. Redfish Lake will receive 45,000 pre-smolts in October and Pettit Lake will receive 15,000 pre-smolts in October. *Dan Baker*

Fish health - Fish that die in the program during the course of any rearing year are assayed for typical viral and bacterial pathogens. To date, sockeye salmon have remained disease free. A 60 fish sample will be tested before release for viral and bacterial pathogens. All pathology guidelines will be met before pre-smolts are released. *Doug Munson*

Monitoring and evaluation - All pre-smolts are ad-clipped and a representative sample will be PIT tagged before releases. Out-migration will be monitored the following spring to estimate out-migration from different release strategies. A representative sample of out-migrants will be PIT tagged and survival will be monitored downstream as smolts pass each dam. *Mike Peterson*

Communication - Eagle FH produces monthly updates provided to IDFG Fisheries Bureau. Stanley Basin Sockeye Technical Oversight Committee (SBSTOC) meets quarterly providing program updates to participating agencies. *Dan Baker/Mike Peterson*

4 RAINBOW TROUT

4.1 2009

SFH: Nampa Fish Hatchery (NFH) supplied SFH with Trout Lodge triploid rainbows for stocking. A total of 48,374 fish were delivered to SFH from May 21 to July 14. Based on 8 sample counts, the fish averaged 3.38 fish per pound and 9.06 inches in length (230mm). SFH personnel stocked a total of 48,374 fish in local lakes and streams. Due to the presence of *Ichthyophthirius multifiliis* (ICH) at Nampa hatchery, all groups of fish transferred to SFH received metaphylactic treatment with formalin prior to the transfer. Gills from 60 individuals per raceway were inspected no more than 10 days prior to transfer. If any trophonts were detected, the transfer would have been delayed for further treatments and another inspection. This protocol will be followed again in 2010.

National Marine Fisheries Service (NMFS) permit #1188 which expired on December 31, 2005, outlines resident rainbow trout release into anadromous waters in the Salmon River drainage. The permit allows that hatchery reared rainbow trout be released in rivers, streams, and lakes with ESA-listed fish. Stocked fish should average no greater than 250 mm in length with no individual longer than 300 mm in length. The 250 mm size restriction includes fish planted in the Salmon River, Valley Creek, and the Yankee Fork Dredge Ponds. The permit stipulates the upper Salmon River cannot be stocked before June 15 and stocked fish must be adipose fin-clipped. Only fish with the adipose fin-clipped may be kept by anglers, thereby protecting wild fish. Rainbow trout received at SFH in 2008 stocked into the river were adipose clipped by NFH

personnel and then delivered to SFH 21 days later to allow for withdrawal of MS-222 to comply with label directions. *Brent Snider*

McCall FH is scheduled to release 23,450 catchable size rainbow trout, Troutlodge triploids reared at Nampa FH (NFH) into 9-waterbodies located in the Salmon River drainage near McCall, ID. These releases will take place May - September, 2010. McCall FH will also out-plant 7,200 all female Troutlodge kamloop rainbow trout triploid fry into 9-mountain lakes located in the Salmon River drainage as part of the IDFG mountain lake stocking program in 2010. These releases will take place July – September, 2010. *Gene McPherson/ Steve Kammeyer*

5 TABLES

Table 1. Steelhead Adult Return

Collection Location	Stock	Return Year ¹	Hatchery Return			Wild/Natural Return		
			Male	Female	Total	Male	Female	Total
East Fork Weir	EFNat	2008	77	31	108	6	5	11
East Fork Weir	EFNat	2009	72	43	115	8	9	17
East Fork Weir	EFNat	2010 ¹			114			
HC Trap	OxbA	2007/2008	1,725	1,934	3,671 ²	23	35	58
HC Trap	OxbA	2008/2009	1,671	2,096	3,767	19	25	44
HC Trap	OxbA	2010 ¹			11,624			
Pahsimeroi Weir	PahA	2008	3,387	4,475	7,862	22	23	45
Pahsimeroi Weir	PahA	2009	3,156	3,052	6,208	6	24	30
Pahsimeroi Weir	PahA	2010 ¹			19,786			
Rapid River Weir	RR	2008	9	6	15	64	59	123
Rapid River Weir	RR	2009	12	12	24	44	62	106
Sawtooth Weir	SawA	2008	2,256	1,907	4,163	16	7	23
Sawtooth Weir	SawA	2009	1,787	1,492	3,279	20	14	34
Sawtooth Weir	SawA	2010 ¹			12,090			
Squaw Creek Trap	USRB	2008	5	8	13		1	1
Squaw Creek Trap	USRB	2009	10	15	25	1	2	3
Squaw Creek Trap	USRB	2010 ¹			120			
Squaw Creek Angler	USRB	2008	3	7	10			
Squaw Creek Angler	USRB	2009	14	10	24			

¹ Projected 1-Ocean Returns to Lower Granite Dam

² Includes 12 hatchery unknown sex.

Table 2. Steelhead Spawning and Disposition

Collection Location	Stock	Return Year	Females Spawned ¹	Green Eggs Collected ¹	Eyed Eggs Produced ¹	Number Culled	Comments	Number shipped	Life stage	Destination
East Fork Weir	EFNat	2008	51	124,031	100,263			100,263	Eyed	HNFH
East Fork Weir	EFNat	2009	42	212,572	167,775			167,775	Eyed	HNFH
East Fork Weir	EFNat	2010	45	220,000	200,000			200,000	Eyed	
HC Trap	OxbA	2007/ 2008	299	1498020	1289435	15,030		241,545 667,885 327610	Eyed Fry Fry	NSFH NSFH culled
HC Trap	PahA	2008		2,124,234	1906440		Eggs received from 508 females from Pahsimeroi	663,976 445,977 734,363	Eyed Fry Fry	NSFH NSFH Culled
HC Trap	OxbA	2008/ 2009	296	1,586,227	1,385,766	452,528 fry culled		418,483 466,391	eyed fry	NSFH NSFH
HC Trap	OxbA	2009/ 2010	250	1,450,000	1,200,000			440,000 440,000	Eyed Eyed	NSFH NSFH
Pahsimeroi Weir	PahA	2008	895	4,225,652	3,785,297	440,032		1,333,125 506,250 455,625 263,250 561,315 221,700	Eyed Eyed Eyed Eyed Eyed Eyed	NSFH SBT eggbox MVFH HNFH OFH HSFH
Pahsimeroi Weir	PahA	2009	652	2,810,472	2,556,521	42,594		1,317,077 499,520 569,500 127,830	Eyed Eyed Eyed Eyed	NSFH SBT eggbox MVFH HSFH
Pahsimeroi Weir	PahA	2010	580	2,810,472	2,566,521			440,000 440,000	Eyed Fry	
Sawtooth Weir	SawA	2008	567	2,823,300	2,333,978	214,000		1,151,000 513,550 624,654	Eyed Eyed Eyed	HNFH MVFH SBT egg box
Sawtooth Weir	SawA	2009	558	2,932,308	2,466,626		2 females culled	1,487,230 141,000 170,553 520,177	Eyed Eyed Eyed Eyed	HNFH MVFH HSFH SBT eggbox
Sawtooth Weir	SawA	2010	525	2,520,000	2,120,000			2,120,000	Eyed	
Squaw Creek Trap	USRB	2008	14	103,746	68,988			68,988	Eyed	MVFH
Squaw Creek Trap	USRB	2009	25	182,602	121,035			121,035	Eyed	MVFH
Squaw Creek Trap	USRB	2010	140						Eyed	

¹ Females spawned, green eggs collected, eyed eggs produced for BY 2010 are estimates.

Table 3. BY 2008 Steelhead Releases

Fish Hatchery	Agency/ Funding	Species	Stock	Brood Year	Location	Life Stage	Release Date	Program Goal	Release Number	# AD Only	# AD / CWT	# CWT Only	# PIT ²	No Marks/ Tags	Other Marks	Comments
HNFH	FWS/ LSRCP	STH	SawA	2008	Sawtooth Weir	smolt	4/16-5/5	770,000	754,876	673,839	81,037		7,653			Production
HNFH	FWS/ LSRCP	STH	SawA	2008	Yankee Fork	smolt	5/6-5/13	140,000	148,863	148,863			1,571			Production
HNFH	FWS/ LSRCP	STH	SawA	2008	Yankee Fork	smolt	5/6/5/13	140,000	145,187				1,463	145,187		Supplementation
HNFH	FWS/ LSRCP	STH	PahA	2008	L.Salmon R Stinky Springs	smolt	3/30-4/8	160,000	148,493				4,700	148,493		Supplementation
HNFH	FWS/ LSRCP	STH	PahA	2008	L. Salmon R.Hazard	smolt	4/3	40,000	51,797				1,190	51,797		Supplementation
HNFH	FWS/ LSRCP	STH	Dwor B	2008	L.Salmon R Stinky Springs	smolt	4/8-4/10	100,000	86,196	22,155	64,041		4,056			Production
HNFH	FWS/ LSRCP	STH	Dwor B	2008	East Fork Salmon R.	smolt	4/13-4/14	100,000	84,898	17,230	67,668		4,288			Production
MVFB	FWS/ LSRCP	STH	Dwor B	2008	L.Salmon R Stinky Springs	smolt	4/8-4/10	215,000	218,101	156,362	61,739		4,174			Production
MVFB	FWS/ LSRCP	STH	Dwor B	2008	Squaw Ck.	smolt	4/24-4/26	190,000	278,790	220,069	58,721		5,361			Production - HES
MVFB	FWS/ LSRCP	STH	USR B	2008	Squaw Ck.	smolt	4/8-4/10	60,000	57,464	958	56,506		6,932			Production - HES
MVFB	FWS/ LSRCP	STH	EFNa t	2008	E.F. Salmon R. Weir	smolt	30-Apr	90,000	67,821		67,821		1,296			Supplementation
MVFB	FWS/ LSRCP	STH	Dwor B	2008	E.F. Salmon R. Lower River	smolt	4/23-4/26	225,000	217,458	155,989	61,469		4,148			Production
MVFB	FWS/ LSRCP	STH	SawA	2008	Slate Cr.	smolt	4/28-4/30	60,000	62,588				1,194	62,588		Supplementation
MVFB	FWS/ LSRCP	STH	PahA	2008	RedRock	smolt	4/13-4/17	130,000	126,091	95,935	30,156		2,376			Production
MVFB	FWS/ LSRCP	STH	SawA	2008	Slate Cr.	smolt	4/28-4/30	40,000	31,382	523	30,859		433			Production
MVFB	FWS/ LSRCP	STH	PahA	2008	Salmon R. Shoup Bridge	smolt	4/19-4/23	80,000	93,485	93,485			1,788			Production
MVFB	FWS/ LSRCP	STH	SawA	2008	Yankee Fork	smolt	4/29-4/30	60,000	61,994	31,561	30,433		1,342			Fall agreement
MVFB	FWS/ LSRCP	STH	SawA	2008	Yankee Fork	smolt	4/29-4/30	30,000	31,222				1,027	31,222		Supplementation
MVFB	FWS/ LSRCP	STH	SawA	2008	Salmon R. Colston Corner	smolt	4/17-4/18	140,000	124,885	94,100	30,785		2,382			Production
MVFB	FWS/ LSRCP	STH	PahA/ SawA	2008	Salmon R. Tunnel Rock	smolt	4/24-4/27	60,000	62,192	62,192			1,192			Production
MVFB	FWS/ LSRCP	STH	PahA	2008	Salmon R McNabbPoint	smolt	4/19-4/20	120,000	125,167	94,917	30,250		2,388			Production

Fish Hatchery	Agency/ Funding	Species	Stock	Brood Year	Location	Life Stage	Release Date	Program Goal	Release Number	# AD Only	# AD / CWT	# CWT Only	# PIT ²	No Marks/ Tags	Other Marks	Comments
MVFH	FWS/ LSRCP	STH	PahA	2008	Pahsimeroi Weir	smolt	20-Apr	30,000	31,221	520	30,701		595			Production
MVFH	FWS/ LSRCP	STH	SawA	2008	Valley Creek	smolt	30-Apr	50,000	62,336				1,196	62,336		Supplementation
NSFH	IDFG/ IPC	STH	PahA	2008	Pahsimeroi Weir	smolt	4/13-5/3	830,000	825,525	793,949	31,576		10,308			Production
NSFH	IDFG/ IPC	STH	OxbA	2008	L.Salmon R Stinky Springs	smolt	4/2-4/9	275,000	243,727	223,082	20,645		4,175			Production
NSFH	IDFG/ IPC	STH	PahA	2008	L.Salmon R Stinky Springs	smolt	4/9-5/4	170,000	178,849	158,987	19,862		2,581			Production
NSFH	IDFG/ IPC	STH	OxbA	2008	Snake River Hells Canyon	smolt	3/23-4/3	525,000	526,743	506,514	20,229		7,400			Production
PFH	IDFG/ IPC	STH	PahA	2008	Morgan Creek	Eyed egg	5/28	125,000	169,181							Egg box program
PFH	SBT/ LSRCP	STH	PahA	2008	Indian Creek	Eyed egg	5/13	125,000	164,899							Egg box program
PFH	SBT/ LSRCP	STH	PahA	2008	Beaver Creek	Eyed egg	5/20	250,000	166,495							Egg box program
SFH	SBT/ IPC	STH	SawA	2008	Basin Creek	Eyed egg	6/5-6/20	125,000	151,031							Egg box program
SFH	SBT/ IPC	STH	SawA	2008	Yankee Fork	Eyed egg	6/5-6/20	375,000	483,904							Egg box program

Table 4. Projected BY 2009 Steelhead Releases and Marking

Fish Hatchery	Agency/ Funding	Species	Stock	Brood Year	Location	Life Stage	Release Date	Program Goal	Estimated Release Number	# AD Only	# AD / CWT	# CWT Only	# PIT ²	No Marks/ Tags	Other Marks	Comments
HNFH	FWS/ LSRCP	STH	SawA	2009	Sawtooth Weir	smolt	4/13-4/28	790,000	839,615	754,529	85,086		13,385			Production
HNFH	FWS/ LSRCP	STH	SawA	2009	Yankee Fork	smolt	5/5-5/13	220,000	217,527	129,043	88,484		3,780			Production
HNFH	FWS/ LSRCP	STH	SawA	2009	Yankee Fork	smolt	5/5-5/13	220,000	233,365				3,774	233,365		Supplementation
HNFH	FWS/ LSRCP	STH	SawA	2009	Salmon R. TunnelRock	smolt	4/12	60,000	70,229	49,641	20,588		989			Production
HNFH	FWS/ LSRCP	STH	EFNat	2009	E.F. Salmon R. Weir	smolt	4/29-5/4	170,000	125,903			125,903	7,054			Supplementation
MVFH	FWS/ LSRCP	STH	DworB	2009	L.Salmon R Stinky Springs	smolt	4/8-4/10	315,000	349,725	190,847	158,878		5,600			Production
MVFH	FWS/ LSRCP	STH	PahA	2009	L.Salmon R Stinky Springs	smolt	4/6-4/8	200,000	188,652	157,183	31,469		3,400			
MVFH	FWS/ LSRCP	STH	DworB	2009	Squaw Ck.	smolt	4/24-4/26	190,000	189,716	126,145	63,571		3,300			Production - HES
MVFH	FWS/ LSRCP	STH	USRB	2009	Pahsimeroi Weir	smolt	4/8-4/10	120,000	97,226			97,226	7,200			Production - HES
MVFH	FWS/ LSRCP	STH	DworB	2009	E.F. Salmon R. Lower River	smolt	4/23-4/26	325,000	345,396	282,723	62,673		5,600			Production
MVFH	FWS/ LSRCP	STH	PahA	2009	RedRock	smolt	4/13-4/17	120,000	127,193	32,485	94,708		2,100			Production
MVFH	FWS/ LSRCP	STH	PahA	2009	Salmon R. Shoup Bridge	smolt	4/19-4/23	60,000	62,924	31,465	31,459		1,000			Production
MVFH	FWS/ LSRCP	STH	PahA	2009	Salmon R. Colston Corner	smolt	4/17-4/18	150,000	157,185	94,272	62,913		2,600			Production
MVFH	FWS/ LSRCP	STH	PahA	2009	Salmon R McNabbPoint	smolt	4/19-4/20	120,000	120,667	60,316	60,351		2,100			Production
NSFH	IDFG/ IPC	STH	PahA	2009	Pahsimeroi Weir	smolt	4/12-5/2	830,000	830,000	741,072	88,928		13,000			Production
NSFH	IDFG/ IPC	STH	OxbA	2009	L.Salmon R Stinky Springs	smolt	4/1-4/8	275,000	275,000	244,421	30,579		4,300			Production
NSFH	IDFG/ IPC	STH	PahA	2009	L.Salmon R Stinky Springs	smolt	4/8-5/2	170,000	170,000	140,284	29,716		2,700			Production
NSFH	IDFG/ IPC	STH	OxbA	2009	Snake River Hells Canyon	smolt	3/22-4/1	525,000	525,000	436,325	88,675		8,300			Production
SFH	SBT/ LSRCP	STH	PahA	2009	Indian Creek	Eyed egg	5/8	100,000	99,514							Egg box program
SFH	SBT/ LSRCP	STH	PahA	2009	Beaver Creek	Eyed egg	5/8 - 5/21	400,000	397,535							Egg box program
SFH	SBT/ IPC	STH	SawA	2009	Yankee Fork	Eyed egg	5/21-6/16	500,000	520,177							Egg box program

Table 5. Projected BY-2010 Steelhead Releases and Marking

Fish Hatchery	Agency/ Funding	Species	Stock	Brood Year	Location	Life Stage	Release Date	Program Goal	Release Number	# AD Only	# AD / CWT	# CWT Only	# PIT	No Marks/ Tags	Other Marks	Comments
HNFH	FWS/ LSRCP	STH	SawA	2010	Sawtooth Weir	smolt	4/12-5/2	790,000	720,000	640,000	80,000		13,500			Production
HNFH	FWS/ LSRCP	STH	SawA	2010	Yankee Fork	smolt	5/6-5/13	220,000	220,000	140,000	80,000		3,800			Production
HNFH	FWS/ LSRCP	STH	SawA	2010	Yankee Fork	smolt	5/6-5/13	220,000	220,000				3,800	220,000		Supplementation
HNFH	FWS/ LSRCP	STH	SawA	2010	Salmon R. TunnelRock	smolt	12-Apr	60,000					1,000			Production
HNFH	FWS/ LSRCP	STH	EFNat	2010	E.F. Salmon R. Weir	smolt	5/3-5/5	170,000	170,000			170,000	7,100			Supplementation
MVFH	FWS/ LSRCP	STH	DworB	2010	L.Salmon R Stinky Springs	smolt	4/8-4/10	315,000	315,000	195,000	120,000		5,600			Production
MVFH	FWS/ LSRCP	STH	PahA	2010	L.Salmon R Stinky Springs	smolt	4/6-4/8	200,000	200,000	180,000	20,000		3,400			Production
MVFH	FWS/ LSRCP	STH	DworB	2010	E.F. Salmon R. Lower River	smolt	4/23-4/26	325,000	325,000	265,000	60,000		5,600			Production
MVFH	FWS/ LSRCP	STH	USRB	2010	Pahsimeroi Weir	smolt	4/8-4/10	120,000	120,000			120,000	7,200			Production – HES
MVFH	FWS/ LSRCP	STH	PahA	2010	RedRock	smolt	4/13-4/17	120,000	120,000	40,000	80,000		2,100			Production
MVFH	FWS/ LSRCP	STH	SawA	2010	Salmon R. Colston Corner	smolt	4/17-4/18	150,000	150,000	90,000	60,000		2,600			Production
MVFH	FWS/ LSRCP	STH	SawA	2010	Salmon R McNabbPoint	smolt	4/19-4/20	120,000	120,000	60,000	60,000		2,100			Production
MVFH	FWS/ LSRCP	STH	PahA	2010	Salmon R. Shoup Bridge	smolt	4/19-4/23	60,000	60,000	40,000	20,000		1,000			Production
MVFH	FWS/ LSRCP	STH	DworB	2010	Squaw Ck.	smolt	4/24-4/26	190,000	190,000	130,000	60,000		3,300			Production
NSFH	IDFG/ IPC	STH	PahA	2010	Pahsimeroi Weir	smolt	4/12-5/2	830,000	830,000	740,000	90,000		13,000			Production
NSFH	IDFG/ IPC	STH	OxbA	2010	L.Salmon R Stinky Springs	smolt	4/1-4/8	275,000	275,000	245,000	30,000		4,300			Production
NSFH	IDFG/ IPC	STH	PahA	2010	L.Salmon R Stinky Springs	smolt	4/8-5/2	170,000		170,000	30,000		2,700			Production
NSFH	IDFG/ IPC	STH	OxbA	2010	Snake River Hells Canyon	smolt	3/22-4/1	525,000		435,000	90,000		8,300			Production
SFH	SBT/ IPC	STH	PahA	2010	Indian Creek	Eyed egg	May	100,000								Egg box program
SFH	SBT/ IPC	STH	PahA	2010	Beaver Creek	Eyed egg	May	400,000								Egg box program
SFH	SBT/ IPC	STH	SawA	2010	Yankee Fork	Eyed egg	6/5-6/20	500,000								Egg box program

Table 6. Chinook Adult Return.

Collection Location	Stock	Return Year ¹	Marked Hatchery Return				Unmarked Return			
			Jack	Male	Female	Total	Jack	Male	Female	Total
HC Trap	Rapid River	2009	634	515		1,149		4		4
HC Trap	Rapid River	2010				19526 ¹				
Johnson Creek	Johnson Creek	2009	275	104	158	511	65	105	104	274
Johnson Creek	Johnson Creek	2010	137	295	295	727	20	682	682	1,384
Pahsimeroi Weir	Pahsimeroi	2009	3,507 jacks 3 mini-jacks	2,634	2,746 9 jills	8,899	33 jacks	146	147	324
Pahsimeroi Weir	Pahsimeroi	2010				12,535 ¹				
Rapid River	Rapid River	2009	3,285	876	1,257	5,418	5	14	11	30
Rapid River	Rapid River	2010				97,632 ¹				
Sawtooth	Sawtooth	2009	380	1,348	1,828	3,556	77	208	162	447
Sawtooth	Sawtooth	2010				2,108 ¹				
SFSR	SFSR	2009	5,308	1,491	2,386	9,185	108	209	235	552
SFSR	SFSR	2010				40,712 ¹				
Yankee Fork	Sawtooth	2009		25	39	64		26	33	59

¹ Adult return for BY 2010 is projected to the mouth of the Columbia River.

Table 7. Chinook Spawning

Collection Location	Stock	Return Year ¹	Females Spawned	Green Eggs Collected	Eyed Eggs Produced	Number Culled	Comments
Johnson Creek Weir	Johnson Creek	2009	27	127,903	110,595	0	1 female was culled at spawning and not included in totals
Johnson Creek Weir	Johnson Creek	2010 ¹	32	140,000	110,000	4,500	
Pahsimeroi Weir	Pahsimeroi	2009	316	1,382,982	1,269,143	41 females 9 due to BKD	30 were culled since Dave Vendetti's study was canceled
Pahsimeroi Weir	Pahsimeroi	2010 ¹	300	1,350,000	1,147,500	10	
Rapid River Weir	Rapid River	2009	1,288	5,440,512	5,157,504	283,008	Culling was as green eggs from 67 females. 963,868 green eggs from 270 females were transferred to Clearwater Hatchery. Additional culling if highest ELISA eggs will take place before ponding.
Rapid River	Rapid River	2010 ¹	1,080	3,996,000	3,596,000	360,000	
Sawtooth Weir	Sawtooth	2009	518	2,429,273	2,282,484	28 females' eggs culled. Culled eggs not included in green egg total.	
Sawtooth Weir	Sawtooth	2010 ¹					
SFSR Weir	SFSR	2009	401	1,999,933	1,782,742	187,352	
SFSR Weir	SFSR	2009	64	330,859	288,935		Females spawned at SFSR trap with green eggs shipped to Clearwater FH. MCFH reported shipping eggs from 72 females. CFH reported eggs from 64 females with eggs from 4 females culled. 4 females' eggs are unaccounted for.
SFSR Weir	SFSR	2010 ¹	462	2,079,000	1,767,000	111,000	Includes 72-F incub @ CFH

¹BY 2010 are estimates.

Table 8. BY 2007 Spring/Summer Chinook Releases

Fish Hatchery	Agency	Species	Stock	Brood Year	Release Location	Life Stage	Release Date	Program Goal	Release ¹	# AD Only	# AD/ CWT	# CWT	# PIT ¹	No Marks/ Tags	Other Marks	Comments
McCall	IDFG	SUCH	S. F. Salmon	2007	S.F. Salmon Knox Bridge	smolt	3/23-25 2009	1,000,000	1,106,700	844,950	261,750		51,694			
McCall	NPT	SUCH	Johnson Cr.	2007	Johnson Cr Wapiti Ranch	smolt	3/16 -18 2009	100,000	91,080	0	0	89,513	2,097		89,513 VIE	
Sawtooth	IDFG	SPCH	Upper SR	2007	Sawtooth weir	smolt	4/14/2009	1,700,000	274,644	155,107	100,866		18,671			
Pahsimeroi	IDFG	SUCH	Pahsimeroi	2007	Rearing Ponds	smolt	3/30/2009	1,000,000	870,842	817,664	53,178		18,750			
RapidRiver	IDFG	SPCH	Rapid River	2007	Snake R. Hells Canyon	smolt	3/16-3/19 2009	350,000	501,750							
RapidRiver	IDFG	SPCH	Rapid River	2007	Little Salmon R.	smolt	3/20/2009	150,000	200,250							
RapidRiver	IDFG	SPCH	Rapid River	2007	Rapid River	smolt	3/16-4/24 2009	2,500,000	2,503,711	2,308,919	143,018		51,774			

¹ PIT tag totals include fish with other marks and are independent of the totals of other graph columns.

Table 9. Projected BY 2008 Spring/Summer Chinook Releases.

Fish Hatchery	Agency	Species	Stock	Brood Year	Release Location	Life Stage	Release Date	Program Goal	Release ¹	# AD Only ¹	# AD/CWT ¹	# CWT ¹	# PIT ¹²	No Marks/Tags ¹	Other Marks ¹	Comments
McCall	SBT	SUCH	S.F.Salmon	2008	Dollar Cr.	eyed eggs	10/14-15 2008	300,000	322,620					322,620		
McCall	IDFG	SUCH	S.F.Salmon	2008	S.F. Salmon Trap Intake	parr	9/28-29 2009	Excess BY08	180,000	180,000						
McCall	IDFG	SUCH	S.F. Salmon	2008	S.F. Salmon Knox Bridge	smolt	3 2010	1,000,000	1,038,000	834,100	203,900		51,700			
McCall	NPT	SUCH	Johnson Cr	2008	Johnson Cr Wapiti Ranch	smolt	3 2010	100,000 Smolts	99,000	0	0	99,000	4,000	0	50,000 VIE	Half of the smolts will be released in March the other half in April
Pahsimeroi	IDFG	SUCH	Pahsimeroi	2008	Rearing Ponds	smolt	3/31 2010	1,000,000	1,170,000	1,061,318	121,748		21,400			
RapidRiver	IDFG	SPCH	Rapid River	2008	Snake R. Hells Canyon	smolt	3/15-3/18 2010	350,000	500,000	500,000						
RapidRiver	IDFG	SPCH	Rapid River	2008	Little Salmon R.	smolt	3/19 2010	150,000	230,000	230,000						
RapidRiver	IDFG	SPCH	Rapid River	2008	Rapid River	smolt	3/15-4/26 2010	2,500,000	2,500,000	2,343,149	104,851		52,000			
Sawtooth	IDFG	SPCH	Upper Salmon R	2008	Sawtooth weir	smolt	4 2010	1,700,000	1,400,000	1,280,000	120,000		21,400			
Sawtooth	IDFG/ SBT	SPCH	Upper Salmon R	2008	Yankee Fork	smolt	TBD	406,000								
Sawtooth	IDFG/ SBT	SPCH	Upper Salmon R	2008	Upper Yankee Fork	adult	7/30-9/4 2009	Surplus Brood	1,438							

¹ Juvenile release number and mark numbers for BY 2008 are estimates.

² PIT tag totals include fish with other marks and are independent of the totals of other graph columns.

Table 10. Projected¹ BY 2009 Spring/Summer Chinook Releases

Fish Hatchery	Agency	Species	Stock	Brood Year	Release Location	Life Stage	Release Date	Program Goal	Release ¹	# AD Only ¹	# AD/ CWT ¹	# CWT ¹	# PIT ¹²	No Marks/ Tags ¹	Other Marks ¹	Comments
McCall	SBT	SUCH	S.F.Salmon	2009	Dollar Cr.	Eyed eggs	10/7 2009	300,000	326,840					326,840		
McCall	IDFG	SUCH	S.F.Salmon	2009	S.F. Salmon Knox Bridge	smolt	3 2011	1,000,000	1,052,000	852,000		200,000	52,000			
McCall	NPT	SUCH	Johnson Cr.	2009	Johnson Cr Wapiti Ranch	smolt	3/16 - 3/18 2011	100,000	102,578	0	0	102,578	4,000	0	50,000 VIE	Half of the smolts will be released in March the other half in April
Pahsimeroi	IDFG	SUCH	Pahsimeroi	2009	Rearing Ponds	smolt	3/30 2011	1,000,000	1,050,000	930,000	120,000		21,400			
RapidRiver	IDFG	SPCH	Rapid River	2009	Snake R. Hells Canyon	smolt	3/15- 3/18 2010	350,000	500,000	500,000						
RapidRiver	IDFG	SPCH	Rapid River	2009	Little Salmon R.	smolt	3/19 2010	150,000	230,000	230,000						
RapidRiver	IDFG	SPCH	Rapid River	2009	Rapid River	smolt	3/15- 4/26 2010	2,500,000	2,500,000	2400,000	100,000		52,000			
Sawtooth	IDFG/ SBT	SPCH	Upper Salmon R	2009	Upper Yankee Fork	Adult	7/14- 9/2 2009		1,517							
Sawtooth	IDFG/ SBT	SPCH	Upper Salmon R	2009	Yankee Fork	Eyed eggs	10/20- 22 2011		481,717							
Sawtooth	IDFG/ SBT	SPCH	Upper Salmon R	2009	Sawtooth Weirk	smolt	4 2010	1,300,000	1,300,000							
Sawtooth	IDFG/ SBT	SPCH	Upper Salmon R	2009	Yankee Fork	Smolt	4/15 2011	400,000								

¹ Release number and mark numbers for BY 2009 are estimates.

² PIT tag totals include fish with other marks and are independent of the totals of other graph columns.

Table 11. Planned¹ BY - 2010 Spring/Summer Chinook Releases.

Fish Hatchery	Agency	Species	Stock	Brood Year	Release Location	Life Stage	Release Date	Program Goal	Release ¹	# AD Only ¹	# AD/CWT ¹	# CWT ¹	# PIT ¹²	No Marks/Tags ¹	Other Marks ¹	Comments
McCall	SBT	SUCH	S.F.Salmon	2010	Dollar Cr.	Eyed eggs	10 2010	300,000						300,000		
McCall	NPT	SUCH	Johnson Cr.	2010	Johnson Cr Wapiti Ranch	smolt	3/16 - 3/18 2012	100,000		0	0	100,000	4,000	0	50,000 VIE	Half of the smolts will be released in March the other half in April
Pahsimeroi	IDFG	SUCH	Pahsimeroi	2010	Rearing Ponds	smolt	3/30 2012	1,000,000					-			
RapidRiver	IDFG	SPCH	Rapid River	2010	Snake R. Hells Canyon	smolt	3/15- 3/18 2010	350,000								
RapidRiver	IDFG	SPCH	Rapid River	2010	Little Salmon R.	smolt	3/19 2010	150,000								
RapidRiver	IDFG	SPCH	Rapid River	2010	Rapid River	smolt	3/15- 4/26 2010	2,500,000								
Sawtooth	IDFG/SBT	SPCH	Upper Salmon R	2010	Yankee Fork	Adult	7/1-9/1 2010	1700000								

¹ Release number and mark numbers for BY 2008, 2009, 2010, and 2011 are estimates.

² PIT tag totals include fish with other marks and are independent of the totals of other graph columns.

Table 12. BPA, Salmon River Redfish Lake Sockeye Actual and Proposed Releases (including Snake River) 2009 and 2010.

Fish Hatchery	Agency	Species	Stock	Brood Year	Release Location	Life Stage	Release Date	Program Goal	Estimated Release	# AD Only	# Ad/ CWT	# PIT	Other Marks	Comments
Burley Creek	NOAA	SO	Snake River	2005	Redfish Lake	Adult	9/16/09	125	101	101	0	101		Production
Burley Creek	NOAA	SO	Snake River	2006	Redfish Lake	Adult	9/9-16/09	125	190	190	0	190		Production
Eagle	IDFG	SO	Snake River	2006	Redfish Lake	Adult	9/11-16/09	0	391	391	0	391		Production
Oxbow	ODFW	SO	Snake River	2007	Redfish Lake Creek	Smolt	5/7/09	40,000	73,681	0	73,681	10,937	RV	Production
Sawtooth	IDFG	SO	Snake River	2007	Salmon River	Smolt	5/7/09	40,000	99,374	0	99,374	52,551		Production
Sawtooth	IDFG	SO	Snake River	2008	Pettit Lake	Pre-smolt	10/7/09	15,000	14,983	14,983	0	1,018		Production
Sawtooth	IDFG	SO	Snake River	2008	Alturas Lake	Pre-smolt	10/7/09	15,000	9,994	9,994	0	1,019		Production
Sawtooth	IDFG	SO	Snake River	2008	Redfish Lake	Pre-smolt	10/7/09	60,000	34,561	34,561	0	1,018		Production
Eagle/Burley Ck.	IDFG	SO	Snake River	2009	Pettit Lake	Eyed-eggs	11/10 - 12/10/09	50,000	56,909	0	0	0		Production
Eagle/Burley Ck.	IDFG	SO	Snake River	2009	Alturas Lake	Eyed-eggs	12/17/09	0	15,568	0	0	0		Production
Burley Creek	NOAA	SO	Snake River	2005	RedfishLake	Adult	9/10	0	15	15	0	15		Production
Burley Creek	NOAA	SO	Snake River	2006	RedfishLake	Adult	9/10	125	15	15	0	15		Production
Burley Creek	NOAA	SO	Snake River	2007	RedfishLake	Adult	9/10	125	160	160	0	160		Production
Eagle	IDFG	SO	Snake River	2007	Redfish Lake	Adult	9/10	0	200	200	0	200		Production
Oxbow	ODFW	SO	Snake River	2008	Salmon River	Smolt	5/10	35,000	40,000	0	40,000	5,500		Production: CWT only
Sawtooth	IDFG	SO	Snake River	2008	Redfish Lake Creek	Smolt	5/10	35,000	40,000	0	40,000	5,500		Production: CWT only
Oxbow	ODFW	SO	Snake River	2008	Salmon River	Smolt	5/10	50,000	49,500	0	49,500	26,500		Production: CWT only
Sawtooth	IDFG	SO	Snake River	2008	Redfish Lake Creek	Smolt	5/10	50,000	49,500	0	49,500	26,500		Production: CWT only
Sawtooth	IDFG	SO	Snake River	2009	Pettit Lake	Pre-smolt	10/10	15,000	15,000	15,000	0	1,000		Production
Eagle	IDFG	SO	Snake River	2009	Alturas Lake	Pre-smolt	7/10	15,000	15,000	15,000	0	1,000		Production
Sawtooth	IDFG	SO	Snake River	2009	Redfish Lake	Pre-smolt	10/10	60,000	60,000	60,000	0	1,000		Production
Eagle/Burley Cr.	IDFG	SO	Snake River	2010	Pettit Lake	Eyed-egg	11/15-12/15/10	50,000	50,000	0	0	0		Production

Table 13. Summer Steelhead Eyed Egg or Swim Up Fry Requests.

Requesting Hatchery or Program	Source/Hatchery Stock	Current Year Request	Comments
Hagerman NFH	Sawtooth FH - A's Sawtooth FH - E.F. Salmon R Naturals	1,280,000 200,000	Includes 480K for Yankee Fork Via Sawtooth FH
Magic Valley FH	Pahsimeroi FH - A's Sawtooth FH - A's Dworshak - B's Upper Salmon R. - B's	625,000 140,000 1,050,000 140,000	Incubated at Pahsimeroi Via Clearwater FH Via Squaw Pond
Niagara Springs FH	Pahsimeroi FH - A's Oxbow FH - A's	1,104,000 880,000	552,000 Eyed Eggs/Incubated at Pahsimeroi 552,000 Swim Up Fry/Incubated at Pahsimeroi 440,000 Eyed Eggs/Incubated at Oxbow 440,000 Swim Up Fry/Incubated at Oxbow
Shoshone Bannock Tribe	Pahsimeroi FH - A's Sawtooth FH - A's	500,000 500,000	Egg Box Program Egg Box Program

Table 14. Rainbow trout Proposed Releases in 2010.

Fish Hatchery	Agency	Species	Stock	Brood Year	Release Date	Release Location	Program Goal	Estimated Release	Marks	Comments
Nampa/Sawtooth	IDFG	RBT	Trout Lodge	2009	July through September	Sawtooth basin lakes and streams	45,200	45,200	AD	Catchable Redistribution; Triploid
Nampa/McCall	IDFG	RBT	Trout Lodge	2009	May-Sept	S.R. Basin 9-lakes and streams near McCall	23,450	23,450	None	Catchable Redistribution; Triploid
Nampa/McCall	IDFG	RBT	Trout Lodge	2010	July-Sept	S.R. Basin 9-Mtn lakes near McCall	7,200	7,200	None	Fry; Mtn Lake Program; Triploid

6. CONTACTS

Name	Agency	Phone No.	email	Attended Feb. 23, 2010 meeting
Paul Abbott	IPC – Boise	208-388-2353	pabbott@idahopower.com	Yes
Lars Alsager	IDFG-PFH	208-876-4330	Lars.alsager@idfg.idaho.gov	No
Dan Baker	IDFG – EFH	208-939-4114	dan.baker@idfg.idaho.gov	Yes
Duane Banks	ODFW-OFH	541-374-8540	oxbow@gorge.net	No
Travis Brown	IDFG-EFH	208-939-4114	travis.brown@idfg.idaho.gov	No
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John Cassinelli	IDFG-Research	208-465-8404 (239)	john.cassinelli@idfg.idaho.gov	Yes
Jerry Chapman	IDFG – NSFH	208-536-2283	jerrychapman@idfg.idaho.gov	Yes
Kathy Clemens	FWS - IFHC	208-476-9500	kathy_clemens@fws.gov	No
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Shane Knipper	IDFG- Research	208-465-8404		Yes
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Rick Lowell	IDFG - MVFH	208-326-3230	rick.lowell@idfg.idaho.gov	Yes
Scott Marshall	FWS - LSRCP	208-378-5321	scott_marshall@fws.gov	No
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Jarrett Page	IDFG- NSFH	208-536-2283	jarrett.page@idfg.idaho.gov	Yes
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Mike Peterson	IDFG- Research	208-465-8404 (234)	mike.peterson@idfg.idaho.gov	Yes
Craig Rabe	NPT- McCall	208-634-5290	craigr@nezperce.org	Yes
Dick Rodgers	WDFW - LFFH	509-646-9201	rodgerrcr@dfw.wa.gov	No
Tom Rogers	IDFG- Boise	208-287-2776	tom.rogers@idfg.idaho.gov	No
Stuart Rosenberger	IPC - Boise	208-388-6121	SRosenberger@idahopower.com	Yes
Sam Sharr	IDFG- Boise	208-287-2789	sam.sharr@idfg.idaho.gov	No
Brent R. Snider	IDFG - SFH	208-774-3684	brent.snider@idfg.idaho.gov	Yes
Eric Stark	IDFG- Research	208-465-8404	eric.stark@idfg.idaho.gov	No

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Jeremy Trimpey	HNFH	208-837-4896	jeremy_trimpey@fws.gov	Yes
Jason Vogel	NPT-Research	208-843-7145	jasonv@nezperce.org	Yes
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7. APPENDICIES

Appendix 1. Standard Operating Procedures: Steelhead Hatcheries, Traps, and Weirs.

All steelhead *Oncorhynchus mykiss* in Idaho are summer steelhead, determined by time of entry into the Columbia River. All steelhead in a brood year spawn in the spring. Idaho steelhead enter fresh water in one year and spawn the following spring. Idaho has A and B strains of steelhead based on life history characteristics. Generally A-strain steelhead spend one year in the ocean and return to fresh water during the summer. The B-strain steelhead commonly spend two years in the ocean before returning to fresh water in late summer or autumn.

Steelhead for the Salmon River steelhead program are reared at Hagerman National (HNFH), Magic Valley (MVFH), and Niagara Springs (NSFH) fish hatcheries. All 3 hatcheries are located out-of-basin in the Hagerman Valley. HNFH is operated by the U. S. Fish and Wildlife Service (FWS). MVFH and NSFH are operated by IDFG. HNFH and MVFH are funded by the Lower Snake River Compensation Program (LSRCP), while NSFH is funded by Idaho Power Company (IPC).

Eggs for the steelhead program are collected at East Fork Salmon River weir (EF weir), Dworshak National Fish Hatchery (DNFH), Hells Canyon Trap (HC trap), Pahsimeroi Fish Hatchery weir (PFH), Sawtooth Fish Hatchery weir (SFH), and Squaw Creek pond and weir (Squaw Creek).

In order to simplify steelhead rearing at HNFH and MVFH changes in numbers and stocks of fish occurred beginning in BY-2009. Beginning in 2009, Dworshak and Upper Salmon River B stocks are reared at MVFH. HNFH rears primarily Sawtooth A stock, EF natural stock, and occasionally Pahsimeroi A stock. Additionally, Pahsimeroi A steelhead not reared at NSFH are reared at MVFH.

All steelhead reared at HNFH, MVFH, and NSFH are transported to the Snake River below Hells Canyon Dam and Salmon River release sites from late March through early May, and released. Transportation protocols follow IHOT guidelines. Releases are coordinated between hatcheries to minimize highway traffic and safety concerns.

1. Dworshak National Fish Hatchery – Dworshak National Fish Hatchery provides B-Run summer steelhead green eggs to Idaho Department of Fish and Game for their Magic Valley Hatchery program.

Ladder Operation – A fish ladder in the N.F. Clearwater River traps returning adults at the hatchery. The holding pond at the top of the ladder is 15' x 75' x 8'. Broodstock are collected passively using a ladder that enters the hatchery from the North Fork Clearwater River. Adults are collected during two time periods:

Adults begin entering the Clearwater River in the fall. The ladder is opened in October, is kept open until about 500 adults are collected, and is usually closed by early December. The ladder is then reopened in February and is operated intermittently through May, the usual end of the

run, collecting only what we need for broodstock each week.

The Dworshak steelhead program seldom observes a 1:1 sex ratio in adult returns. Our typical sex ratio is about 3 females:1 male. We require about 550 females to provide all the eggs we need for Dworshak's program. To meet all programs supplied with steelhead eggs about 1,200 females are needed, this includes eggs for LSRCF programs including Clearwater State, Magic Valley, and Hagerman NFH. To meet all programs, we need to collect about 4,000 to 4,500 fish total to account for the male to female ratio and pre-spawning mortality. Unfortunately, during the early and late portions of the run, it is not uncommon to be limited in the number of ripe males. During the middle portion of the run, the ratio is usually closer to one on one.

Adult Handling – Broodstock are held in three 15' x 75' x 8' concrete ponds. Adults in these ponds are crowded into a 370 gallon anesthetic tank. From here the fish are lifted to an examining table and are checked for ripeness and either spawned or returned to the holding pond for later examination or outplanting.

Excess broodstock is handled in several ways, depending on the level of excess. First option is to outplant excess steelhead into the South Fork Clearwater River for harvest augmentation and SF tributaries for natural production. If it is early in the season adults are typically released to augment sport harvest then closer to spawning and when the tributaries are accessible fish are released for natural spawning. When fish have to be culled, it is normally done by selecting those fish that are coded-wire tagged. This ensures recovery of the tags for evaluation purposes.

If carcasses are in good condition, they are given to the Nez Perce Tribe for subsistence or the food bank. If the carcasses are unsuitable for human consumption they are given to the IDFG fertilization program or the wildlife programs at either the U of I or WSU to feed eagles or bears and finally, as a last resort, carcasses are taken to the landfill for disposal.

Spawning and Egg Take - Randomly from ripe fish on a certain day, fish collected over the past week are used first, and then if more are needed, ripe fish from previous weeks are selected. No backup males used, fish are spawned randomly on a certain day. Jacks are used as they are randomly taken on the spawning rack. Repeat spawners are used as needed when the number of males returning during steelhead spawning is extremely low.

Adults are crowded from a fish trap at the end of the fish ladder into a crowding channel, moved into a channel basket, and placed into an anesthetic bin. Steelhead adults are anesthetized with carbon dioxide at a rate of 400 to 1000 mg/l solution buffered with 8 to 10 pounds of sodium bicarbonate. Although carbon dioxide is more stressful on the fish than MS-222, carcasses anesthetized with CO² can be used for human consumption. Spinal columns of ripe females are severed using a pneumatic knife. The females are then placed on a table for 1-20 minutes for blood drainage. The ventral side is then cut open using a spawning knife and eggs are collected in disinfected colanders. After ovarian fluid is drained, the eggs are poured into a clean bucket.

Milt from ripe males is stripped into Styrofoam cups and a one-percent saline solution is

added to assist in milt motility. The milt solution is poured onto the eggs and swirled for more complete fertilization. After sufficient time has elapsed for fertilization to take place (one to two minutes), the eggs are rinsed of sperm, blood, and other organic matter.

Egg Incubation- Dworshak NFH provides green eggs to the Idaho Department of Fish and Game for the Magic Valley Hatchery program and does not provide incubation for that program.

Egg and Fry Shipping – After fertilization, green eggs are transferred from Dworshak NFH by the Idaho Department of Fish and Game to Clearwater Hatchery and then to Magic Valley Hatchery. See appropriate sections for those hatcheries for details on egg and fry shipping.

Fish Health – Formalin is applied to adults during holding, as needed, to control fungus. Refer to Magic Valley Hatchery for further fish health information.

Communication – During the spawning season, information on broodstock collection numbers, biological information, spawning numbers, and other information is reported in weekly updated reports and recorded in established databases. A summary of spawning operations and all data are provided in annual spawning reports available from Dworshak NFH.

2. East Fork Salmon River Weir – East Fork Salmon River Weir (EF weir) is used to collect East Fork natural stock eggs. The current goal is to build and maintain a locally-adapted steelhead broodstock in the E.F. Salmon River. Production targets have been set to collect 220,000 eggs to produce 170,000 smolts that are released into the East Fork Salmon River above the weir. Naturally produced adults are brought into the marked brood stock necessitating releasing a portion of the returning marked and unmarked adults above the weir to spawn naturally.

Ladder Operation - Ladder and trap operations begin the last week of March and continue until mid-May. Once the velocity barrier is in place, fish swim into attraction water and into a trapping and holding area.

Adult Handling - Fish are checked daily. At checking, fish are examined for gender, length measured, checked for various marks, radios, CWT, injuries, and readiness to spawn. Subsequent to checking, ripe fish are spawned when ripe males and females are available. Genetic material and scale samples are collected from all unmarked steelhead. Genetic samples are also collected from all spawned adults for Parentage Based Genetics (Appendix 3). Unmarked and marked steelhead and other trapped species are released upstream of the hatchery weir. Any ad-clipped adults are strays, which are killed and checked for CWT.

Due to whirling disease amplification issues, carcasses are not used for nitrification of local waters. Carcasses or unspawned adults are returned to Sawtooth, frozen, and transferred to a rendering plant.

Spawning/Egg Take/Egg Incubation/Egg and Fry Shipping - Target is 45 pair for integrated broodstock of hatchery and natural origin adult fish. Spawning protocol is random 2 males: 1 female with two female's eggs combined priorwater hardening of eggs. Green eggs are transported to Sawtooth FH for eye-up, and then to HNFH for final incubation and rearing.

Fish Health – EF weir will not have 150 females, thus collect from up to 60 females (half of them sample ovarian fluid, half sample tissues (kidney/spleen). Sixty kidney samples are collected for ELISA testing for *RS*. Twenty head wedges are collected and examined for *Myxobolus cerebralis*.

Communication - Coordination of eyed egg shipments among the hatcheries is discussed weekly. Eyed egg requests are finalized at the annual AOP meeting. Weekly communications occurs with IDFG research, hatchery, and Salmon Region personnel, and SBT.

3. Hagerman National Fish Hatchery (HNFH) - HNFH is located in the Hagerman Valley, Idaho along the Snake River. HNFH receives eyed eggs from multiple locations for rearing to smolt. Smolt production capacity is currently 1.36 million at 4.5 per pound. Smolt production capacity has been reduced from original design targets due to increased size at release and reductions in the hatchery water supply.

The HNFH is part of the LSRCF. The LSRCF goal is to return 27,200 adult steelhead for harvest below Lower Granite Dam (LGR) and escape 13,600 adults above Lower Granite Dam and back to the Snake and Salmon river basins. Eggs are collected and eyed at various locations. Eyed eggs are transferred to HNFH for rearing to smolt, then transported to the Salmon River for direct stream release at multiple sites.

Egg Incubation - HNFH receives eyed eggs from SFH and PFH. Eyed steelhead eggs are received with between 370 and 450 TUs. Shipments occur in May and June. Eyed eggs are loaded into upwelling incubators at 20,000 to 30,000 eggs per jar with a flow rate of 6 to 8 gallons per minute (gpm). Sac fry are transferred from incubators into indoor rearing tanks.

Nursery Rearing - Feeding is initiated when 80% of the fry achieve swim-up. Feeding typically begins 15 to 17 days post-hatch. Dry salmon diets are fed at a minimum frequency of once per hour during rearing in the hatchery buildings 8 hours per day. Flows in rearing tanks are ramped up to, and then maintained at 60 gpm. Fish are reared inside to a maximum density index of 0.80 and a maximum flow index of 1.00. Fish are marked from the hatchery buildings in August at approximately 100 fpp and ponded in final rearing raceways.

Raceway Rearing - Fish are reared in 3 flow-through banks of raceways at a maximum density index of 0.20 and a maximum flow index of 1.20. Water exiting upper banks is mixed before entering lower banks. All fish are fed dry extruded floating diets which are placed into demand feeders twice weekly. A length-at-release standard of 180 to 250 mm is established under the NOAA Fisheries 1999 Biological Opinion. Meeting the release size standard is

achieved by adjusting the hatchery constant. Oxygen and ammonia are monitored during periods of peak loading. Water temperature remains a constant 59⁰F.

Fish Health - Pre-liberation inspections are performed at least two weeks prior to the first day of liberation. Prior to release, a 60 fish sample is taken and assayed for IHNV, IPNV, VHSV, *Aeromonas salmonicida*, *Yersinia ruckerii*, *BKD*, and *Myxobolus cerebralis*. Fish health exam forms are provided to the hatchery as well as a summary at year-end.

Fish Release/Transportation – All of the HNFH steelhead smolt releases are trucked. Hauling occurs Monday through Friday during April and early May. IHOT fish transportation guidelines and NZMS HAACP plans are followed. Hauling is coordinated with several hatcheries to minimize traffic and safety concerns.

Communication - HNFH distributes a monthly hatchery production summary, a monthly narrative, and an annual report. HNFH evaluates production programs through a Hatchery Evaluation Team (HET). The HET meets quarterly to plan and coordinate specific studies and program changes or adjustments. The HET will need to review and approve any requests for a particular brood year in advance.

4. Hells Canyon Trap - Idaho Power Company's (IPC) current mitigation goal for A-steelhead production at Hells Canyon Trap (HC trap) and Oxbow FH (OFH) is to trap and spawn a sufficient number of adult steelhead to produce 800,000 smolts at 4.5 per pound. 1.2 million green eggs are necessary to achieve this goal. Approximately 550 adult steelhead are trapped in the fall and held over winter. An additional 50 females or 10% of the broodstock are trapped the following spring. This provides for pre-spawning mortality, culling for disease management and manipulation of run timing. It will also provides a small surplus for use at PFH and SFH in the event that returns to those weirs do not meet production goals. Steelhead spawning occurs in the spring and the resulting eggs and swim up fry are transferred to NSFH beginning in June.

Ladder Operation – The HC Trap is operated as a cooperative effort by IPC and OFH. Fall trapping at the HC Trap takes place in October and November. Trapping in the spring is influenced by flow in the Snake River and the resulting water releases from Hells Canyon Dam. Flow in excess of 50,000 ft³/s at Hells Canyon Dam requires cessation of trapping because the trap is inundated. Trapping resumes in April and continues until the broodstock target (10% of the females) is reached.

Adult Handling - All returning adult steelhead are scanned for CWTs and PIT tags and examined for other marks, tags, and injuries. Adults to be held for broodstock are maintained in holding ponds at OFH until spawning occurs in the spring. Genetic samples are collected from all spawned adults for Parentage Based Genetics (Appendix 1). Depending on run strength, surplus adults may be trapped at HC Trap. Surplus fish are distributed to Idaho, Oregon, and the Nez Perce Tribe in equal proportions. The Idaho and Oregon shares are released to supplement sport fisheries and receive a left operculum punch. In recent years the Nez Perce Tribe distributes their share for subsistence. Additional out-plants may take place

at agreed upon locations if excess fish are trapped. Carcasses from pre-spawning mortality are placed into a garbage dumpster and picked up weekly by the local sanitation company.

Spawning/Egg Take/ Egg Incubation/ Egg and Fry Shipping - HC trap and OFH are responsible for trapping and spawning sufficient steelhead broodstock to provide 440,000 eyed eggs and 440,000 swim-up fry to NSFH. Using a 5 year average fecundity of 5,800 eggs per female and a 5 year average eye-up rate of 82%, approximately 600 adult steelhead broodstock are needed to meet that goal. Spawning occurs twice each week beginning about March 10 and continuing until mid-May. Eggs from one female are drained of ovarian fluid and fertilized with milt from one male. Females with poor egg quality or bloody ovarian fluid are not be used for production. Males expelling bloody or watery milt are not used. Fertilized eggs from two females are combined for water hardening.

Eggs are incubated at regulated well water temperatures ranging from 53°F to 42°F to consolidate egg shipments to NSFH. All eggs will receive an iodophore flush three times a week. Oxbow-A eggs will be reared to the eyed egg or fry stage and then transferred to NSFH for rearing or distribution as directed by the IDFG Fisheries Bureau. Any surplus eggs or fry may be transferred to Hagerman State FH or reared to the fry stage and released into Cascade Reservoir. Eyed eggs are transported in coolers and button-up fry are placed inside large screened tubes, loaded onto a tank trailer or tank truck, and transported to rearing facilities or reservoirs for release.

Fish Health - At least 120 ovarian fluid and 30 tissue (kidney/spleen) samples are collected to assay for viral replicating agents from at least 150 females. Sixty kidney samples are collected for ELISA testing for *RS*. Twenty head wedges are collected and examined for *Myxobolus cerebralis*.

Communication - During steelhead trapping, HC trap data is uploaded daily to the IDFG trap record database for each day the trap is operated. Adult releases are uploaded to the IDFG release database at least weekly. In addition, weekly trap updates are sent to the IPC hatchery biologist.

5. Magic Valley Fish Hatchery (MVFH) - The MVFH LSRCP adult mitigation return goal is to provide 23,320 adult returns for lower river fisheries and 11,660 adult steelhead to Lower Granite Dam. To attain that goal, the planned production is: 650,000 Pahsimeroi/Sawtooth A; 830,000 Dworshak B; and 120,000 Upper Salmon B smolts. Eggs for the program are obtained from adults trapped at SFH, PFH, DNFH, and Squaw Creek.. All stocks are reared to smolt size at MVFH and transported for direct or acclimated stream release at multiple sites in the Salmon River. Smolt production capacity is currently 1.6 million at 4.5 per pound. Smolt production capacity has been reduced from original design targets due to increased size at release and reductions in hatchery water supply.

Egg Incubation - Transfer of eggs occurs between 370 and 450 TUs. As a result of the completion of the new PFH, eggs received from PFH may arrive later due to their ability to incubate with chilled water. Delayed transfer of eggs is beneficial because fish will be off feed for fewer days during the final rearing period. To further ensure egg quality eggs taken at

PFH remain on station until eyed. Egg shipments and deliveries will be coordinated with SFH, PFH, and Clearwater FH.

Eyed eggs are loaded into upwelling incubators at 50,000 to 65,000 eggs per jar with a flow rate of 6 to 8gpm. All stocks are reared in the incubation building.

Nursery Rearing - Sac fry volitionally swim from incubators into indoor rearing tanks and feeding is initiated when approximately 100% of the fry achieve button-up. Feeding typically begins 18 to 21 days post-hatch. Rangen's semi-moist starter salmon diets are fed at a minimum frequency of once per hour during rearing in the hatchery building. After feed size zero, all early rearing diets are changed to dry feed. Starting flows in rearing tanks are set at 100 gpm, and then increased up to 250gpm prior to transfer to outside raceways. Fish are reared inside to a maximum density index of 0.60 and a maximum flow index of 1.19. Fish are transferred at approximately 30,000 fish per outside section for a total of 52 sections. Transfer to outside raceways begins in mid to late July and is completed by early September. Fish will range in size from 115 to 250 fpp.

Raceway Rearing - Fish are reared in four banks of raceways split in half with two west banks and two east banks. Density typically reaches an index of 0.30 and a maximum flow index of 1.20. All fish are fed a Rangen's 470 dry extruded slow sinking diet. This high protein diet is used in an attempt to reduce the incidence of sore-back and to meet TMDL and NPDES limits. Fish are fed on a Five-day-on and Two-day-off schedule to control growth as needed during the fall. Seven-day-a-week feeding resumes as soon as possible in the spring. A length at release target of 180 mm to 250 mm was established under the NOAA Fisheries 1999 Biological Opinion. Steelhead are projected for an average size of 220 mm at release. This is accomplished by adjusting the fish feeding rate. Sample counts are performed monthly on representative ponds, and length frequencies are calculated prior to transport. Dissolved oxygen and total gas saturation are monitored intermittently throughout the rearing cycle. Water temperature remains a constant 58⁰F.

The upper decks are used for initial outside rearing. Screens are placed at the fifty foot keyway and the upper 100 foot section is divided into two rearing sections. Approximately 31,500 fish will be placed in each section. Once outside, fish are hand-fed Rangen's #3 crumble and 2.0mm extruded pellet then graduate to larger sizes as growth continues. For approximately the last seven months of growth, smolts are fed Rangen's 470 extruded slow sinking feed. Feeding duration varies by fish and feed size from as high as six times per day, to as low as three times per day. When fish approach density indexes of 0.30, inventory in the lower 50 feet of the A deck, they will be moved to the lower 100 feet (B section) and the inventory in the upper 50 feet will have the entire A section for the final rearing period. The NOAA Fisheries 180 to 250 mm length at release criteria is met by adjusting the hatchery constant. Sample counts are performed monthly on representative ponds and length frequencies are calculated prior to release

Fish Health - Fish health inspection and diagnostic services will be provided by the EFHL. Diagnostic services will be provided as needed at the request of hatchery personnel. Quarterly on-site inspections will include tests for the presence of viral replicating agents and

general bacterial pathogens. A pre-liberation inspection will be done on all stocks 30-45 days prior to transportation, including an organosomatic index of fish quality. Specific pathogens tested for at pre-liberation will include IHNV, IPNV, VHSV, *RS*, *Aeromonas salmonicida*, *Yersinia ruckerii*, and *Myxobolus cerebralis*.

Fish Release/Transportation - All of the MVFH steelhead smolt releases are trucked. Hauling occurs Monday through Friday during April. IHOT fish transportation guidelines and NZMS risk assessment guidelines are followed. Hauling is coordinated with several hatcheries to minimize traffic and safety concerns.

Communication - MVFH distributes monthly hatchery production summaries and annual reports. These are sent to IDFG Fisheries Bureau personnel, Doug Munson (EFHL Pathologist), Phil Mamer (EFHL Supervisor), and the LSRCP office coordinator. Monthly summaries and annual reports are made available to the contact list (Section 5) by request.

6. Niagara Springs Fish Hatchery (NSFH) - IPC's mitigation goal at NSFH is to annually produce 400,000 pounds of healthy steelhead smolts. This equates to approximately 1.8 million smolts at a mean size of 4.5 fpp. Eggs for the program are obtained from adult returns spawned at PFH and OFH. The fish are reared from eyed eggs and swim-up fry to smolts at NSFH and released into the Pahsimeroi River below the PFH weir, into the Snake River below Hells Canyon Dam, and into the Little Salmon River at Stinky Springs or Hazard Creek.

Egg Incubation - NSFH requests a total of 1,104,000 Pahsimeroi stock eyed eggs and fry from PFH (Table 13). One half of the swim-up Pahsimeroi eggs collected at the PFH are incubated on chilled water at the PFH then shipped to NSFH as eyed eggs. The other half are incubated at PFH on chilled water through hatch and button-up to further retard their rate of development. These are shipped as swimup fry in June. In addition, NSFH requests 440,000 Oxbow-A eyed eggs and 440,000 Oxbow-A swim-up fry from OFH (Table 14). These eggs and fry are also incubated on chilled well water to slow their development. Eyed eggs from both facilities will be shipped to NSFH in June (at approximately 400 TUs) and placed in upwelling incubators inside the hatchery building. Swim-up fry are received in June (at approximately 950 TUs) and ponded directly into the outside raceways. Upon arrival at NSFH, eyed eggs are disinfected with Iodine at 100-ppm for 30 minutes prior to tempering and placing in upwelling incubators. Loading densities in the incubators range from 20,000 to 55,000 eggs, depending on water availability. Incubator flows range between 20 to 25 gpm, depending on water availability.

Nursery Rearing - After hatch, fry exit upwelling incubators directly into nursery rearing vats. Flows in vats will approach 50 gpm. Maximum flow indices should not exceed 0.8lbs/gpm/in, while density indices will peak at 1.13 lbs/ft³/in. in the hatchery building even if we continue to only take ½ of total egg request as eggs and ½ as fry. (Swim-up fry attain a density index of .57 lbs/ft³/in when they leave the incubators for the vats.) Swimup fry received directly from PFH and OFH are tempered in the hauling trailer prior to ponding directly into the outside nursery raceways. Fish hatched at NSFH from Oxbow-A eyed eggs are transferred from indoor vats to outdoor nursery raceways 1 and 3 when they reach

approximately 1,100 to 1,300 fpp. Oxbow-A fry are ponded directly into nursery raceways 5 and 7 at 950 TUs (2,000 fpp). Fish hatched from Pahsimeroi-A eyed eggs and Pahsimeroi-A swim-up fry are ponded in the remaining six nursery raceways, 9 through 19, at similar sizes and TUs, respectively. Rearing space is increased as fish grow and their density index approaches 0.30 lbs/ft³/in. Fry will be hand-fed Rangen's dry feed in the indoor nursery areas. Hand-feeding occurs at least once per hour and will be supplemented by Zeigler belt feeders.

Raceway Rearing - Fish are reared in three banks of raceways at a maximum density index of 0.35 lbs/ft³/in and a maximum flow index of 0.9 lbs/gpm/in. As densities increase in the nursery sections, screens are removed and fish are allowed to move down to the next screened raceway bank. Once the nursery area is lengthened to the 200-ft mark, AD-clipping and CWT marking begins (second week of September) and fish are evenly distributed into all raceways. Steelhead are fed Rangen's dry feeds throughout the early rearing period at Niagara Springs FH. Feed is dispensed by hand-feeding and supplemented with Ziegler belt feeders in the outdoor nursery areas. When fish reach 75 fpp, they are switched to Rangen's slow-sinking 470 extruded diet to allow staff to utilize two bulk tanks, a feed conveyor system, a fines separator and bridge feeders.

At least one-half of the fish are vaccinated with an autogenous *Aeromonas salmonicida* bacterin obtained from Aqua Health Limited. Fish are dipped in an oxygenated, vaccination solution of 18 liters of water to 2 liters of vaccine with a one-percent (1%) salt solution incorporated into the vaccine to reduce stress brought about by physical handling and to increase the uptake of vaccine by the fish. Vaccine will be applied at a rate of 220 lbs of fish per liter of vaccine, for at least 40 seconds. Because of a furunculosis outbreak during brood year 2006, and the lack of outbreaks during years when at least 50% of the population is vaccinated, NSFH will continue to vaccinate all future brood years. Mortalities will be recorded on all the raceways each month after vaccination until stocking.

A length at release standard of 180 to 250 mm is established under the NOAA Fisheries 1999 Biological Opinion. The BY2009 steelhead are projected for an average size of 220 mm at release. This is accomplished by holding the fish off feed and receiving eggs from later spawn dates to decrease fish size and minimize days off feed. Sample counts are performed bimonthly on representative raceways until December and then performed once per month until release. Length frequencies are checked periodically during outside rearing. Approximately 25,000 fish receive PIT tags in January. These computer chips are injected into the body cavities of the fish and information can be accessed as to hatchery origin, length, and weight, and release watershed, date of release, downstream migration, timing, and travel rates. In this manner, an individual fish can be tracked on its seaward migration without sacrificing the fish. CWT retention and fin clip quality checks are performed prior to pulling raceway screens for mixing or shipping. Dissolved oxygen is monitored during periods of peak loading. Water temperature remains a constant 59°F.

Fish Health - Fish health inspection and diagnostic services is provided by personnel at the Eagle Fish Health Laboratory (EFHL). Diagnostic services are provided as needed at the request of hatchery personnel. Quarterly on-site inspections include tests for the presence of

viral replicating agents, *RS* (RS) and other pathogens. To control low levels of coldwater disease (*Flavobacterium psychrophilum*) that typically show up in January, a ten-day treatment with medicated feed (Oxytetracycline) is administered during February and March. Treatments are scheduled to comply with 21-day withdrawal times needed prior to release. A pre-liberation inspection of 60 fish from each stock (Pahsimeroi-A and Oxbow-A) including an organosomatic index of fish quality is done on all lots no more than 30-45 days prior to transportation. Specific pathogens tested for at pre-liberation will include IHNV, IPNV, VHSV, RS, *Flavobacterium psychrophilum*, *Aeromonas salmonicida*, *Yersinia ruckerii* and *Myxobolus cerebralis*.

Fish Release/Transportation - All NSFH steelhead smolts are trucked to release sites using three IPC 5,000-gallon fish tankers. IPC contracts with Neil Ring Trucking, Inc. to haul fish to release locations. Hauling begins about March 19 and concludes the fourth week of April. All fish are hauled in chilled spring water with the temperature adjusted to be within 3 degrees F of the receiving water. Tankers are loaded with approximately 5,000 lbs. of steelhead smolts each, not to exceed 5,500 lbs. Shipping occurs five days per week until all fish are stocked, with one day off in early April to complete a mid-season service on the tankers' generators. To reduce potential traffic and safety issues, releases at the Little Salmon River are coordinated with MFH, MVFH, and HNFH, and Bruce McLeod of the NPT. Releases at the Pahsimeroi River and Snake River sites are coordinated with the PFH and OFH managers.

Communication - NSFH distributes monthly hatchery production summaries, monthly hatchery narratives and annual reports. These are currently not sent to the Contact list (Section 5), but are maintained at the hatchery and IDFG headquarters and are available by request. NSFH program objectives are discussed at the Salmon River AOP, IDFG Anadromous Meetings, hatchery manager meetings and additional meetings to discuss and resolve any issues. In addition, the IPC hatchery biologist and IDFG anadromous hatcheries supervisor maintain close contact with the hatchery manager and staff for consultation as problems arise.

7. Pahsimeroi Weir - IPC's mitigation goal for steelhead production at PFH is to take up to 1,382,400 green eggs to produce 1 million smolts @ 4.5 per pound at NSFH. Using an assumed average fecundity of 4,800 eggs per female and an eye-up rate of 80%, approximately 288 pairs of adult steelhead broodstock are needed to supply NSFH with 1,104,000 eyed eggs. PFH also traps and spawns additional adult steelhead to provide 500,000 eyed eggs for the SBT egg box program and 625,000 for the LSRCP programs at MVFH (Table 14). These additional eggs require the spawning of 292 pairs of adult steelhead.

Ladder Operation - Trapping begins approximately February 20 and continues until a period when no fish are trapped for 10 days (typically mid-May). The trap will be checked weekdays during that period. With large numbers of steelhead expected in 2010 the trap may be checked 7 days a week if necessary.

Adult Handling – At trapping, fish are measured for length, examined for gender, checked for various clips, tags, injuries, and readiness to spawn. All CWT fish are killed the day they are trapped and all pertinent information is recorded.

Tissue samples are collected from all marked steelhead used for broodstock and all unmarked steelhead and wild adult trout that enter the trap. All unmarked steelhead and trout will be released upstream of the weir. Tissue samples are collected for genetic parentage based analysis (Appendix 1).

If predicted adult rack return is greater than 1,500 adults, adult outplants will occur beginning in early March. If the predicted run size is less than the 1,160 needed for egg production, no adult out-plants will be scheduled until 75% of the predicted run is trapped. No adult out-plants will occur prior to March 20, at which point, they will only occur if 20% of the predicted run is trapped and the daily trap numbers are increasing. Surplus hatchery adults are either planted into the Blue Mountain Pond in Challis, ID or the Kid's Pond in Salmon, ID. All steelhead out-planted from the PFH will either receive an operculum punch or caudal punch to identify recaptures. Recaptured fish will be killed and given to the general public or charities.

Each day during spawning operations, carcasses are given to the SBT, the Shoshone Paiute Tribe, the public, and to charitable organizations in accordance with IDFG policy. Current charitable organizations on file at PFH include: American Legion in Challis, Eastern Idaho Community Action Partnership (Idaho Falls and Salmon), the Idaho Food Bank, Montana Food Bank, and the Freedom Resources of Idaho. Due to whirling disease amplification issues, carcasses are not used for nitrification of local waters. Fish not suitable for public or charitable distribution are placed in a refrigeration unit and hauled to a rendering plant in Kuna, ID for disposal.

Spawning/Egg Take/Egg Incubation/Egg and Fry Shipping - In an effort to shift the steelhead run and spawn timing later in the season, which corresponds with historical timing, thirty five percent of eggs collected for NSFH production are collected in May, and not more than 10 percent of the eggs come from steelhead spawned in March.

On spawn days, steelhead in the trap are sorted and checked for readiness to spawn. During sorting, males and females are collected in equal numbers. The ripe females are killed in groups of ten using the SI-5 stunner. Each female is individually incised and eggs are collected in a colander, allowing excess ovarian fluid to drain off. The drained eggs are placed in a bucket and fertilized by one male (one X one cross). The sperm is expressed directly into the bucket of eggs. Females with poor eggs or bloody ovarian fluid are discarded. Males that expel bloody or watery sperm are not be used. Lengths are collected at spawning to evaluate age structure of the broodstock.

Eggs are watered hardened in a 100 ppm solution of Argentyne at the lower PFH, placed in aquaseed tubes, then into coolers of well water and transferred to the upper PFH. Once eggs are received at the upper PFH, egg coolers are disinfected externally with Argentyne at 100 ppm for 15 minutes. Eggs are then tempered for up to 30 minutes as needed, then placed into

incubation trays. Incubator trays will be loaded at the rate of 1 to 3 females per tray. Eggs are incubated on a range of water temperatures varying from 40F to 50F. This is dependent upon when each entity wants eyed-egg shipments and fry. Forty-eight hours after collection until eye-up, all eggs incubated at upper PFH receive 1,667 ppm fifteen minute formalin treatments administered Mondays, Wednesdays and Fridays. A 500 ml iodine California Flush is also administered on Tuesdays, Thursdays, and Saturdays. At eye up, eggs are shocked twice by dropping them into a bucket of water from a height of approximately 16 inches. Dead eggs are picked and enumerated with a Jensorter electronic counter/picker.

A change is being made to the shipping methods to other hatcheries to be as pathogenically sound as possible. PFH staff is requesting that NSFH, MVFH and HNFH eggs be shipped in one time use egg shipping boxes. The boxes are constructed by Radva Corporation and consist of a Styrofoam box with five egg trays. The Styrofoam box is also encased in a cardboard shipping box which will be sealed and banded for egg security.

Fish Health - At least 120 ovarian fluid and 30 tissue (kidney/spleen) samples are collected to assay for viral replicating agents. Sixty kidney samples are collected for ELISA testing for RS. Twenty head wedges are collected and examined for *Myxobolus cerebralis*.

Communication - Steelhead trapping updates are entered on the Hatchery Database Management System daily throughout the run and are available online through the HDMS database website <http://fishandgame.idaho.gov/ifwis/hdmsdownload/defaultpage.aspx>. Records of adult outplants are uploaded to the Department's fish release database as they occur. Pahsimeroi Hatchery personnel coordinate with the SBT, NSFH, and MVFH to determine a schedule to obtain and transfer eyed eggs and fry.

8. Sawtooth Fish hatchery and Weir (SFH) - SFH weir is used to collect Sawtooth-A stock adult steelhead to provide 2,120,000 eyed eggs to MVFH and HNFH to produce smolts for release, and to the Shoshone-Bannock Tribes eggbox program.

Ladder Operation -Ladder and trap operations begin the last week of March and continue until early May. Steelhead swim into fish ladder attraction water, then into a single adult holding pond.

Adult Handling - Fish are sorted on Mondays and Thursdays. At sorting, fish are examined for gender, length measured, checked for various marks, radios, CWT, injuries, and readiness to spawn. Subsequent to sorting, ripe fish are spawned. Unmarked steelhead and other trapped species are released upstream of the hatchery weir. Genetic material and scale samples are collected from all unmarked steelhead and hatchery steelhead for genetic parentage analysis (Appendix 1).

First priority for spawned out carcasses is to Tribal ceremonial and subsistence programs and charitable organizations. Second priority for spawned-out carcasses is to the general public on a first-come-first-served basis. Due to whirling disease amplification issues, carcasses are not used for nutrification of local waters. Any remaining carcasses or unspawned adults are frozen and disposed of through rendering plant operation.

Spawning/Egg Take/ Egg Incubation/ Egg and Fry Shipping - Approximately 525 females will be spawned. Adult brood need is 1350 (assumes ~ 60:40 male:female ratio, 4,800 eggs per female fecundity, and 86% eye-up) to produce the eyed egg request. Spawning protocol is random 1: 1 with two female's eggs combined prior to water hardening of eggs.

All eggs will be water hardened and disinfected with PVP iodine per product label. Prior to transport, eggs will receive a flush with formalin three times per week during incubation. After eggs manifest a strong "eye" the eggs are sorted and enumerated mechanically. Only eyed eggs (no live fish) are transferred to HNFH and MVFH due to concerns with transfer of fish pathogens between stations.

Fish Health - At least 120 ovarian fluid and 30 tissue (kidney/spleen) samples are collected to assay for viral replicating agents from at least 150 females. Sixty kidney samples are collected for ELISA testing for *RS*. Twenty 20 head wedges are collected and examined for *Myxobolus cerebralis*.

Communication - Coordination of eyed egg shipments among the hatcheries is discussed weekly. Weekly communication for egg delivery status is undertaken with SBT Biologists. Twice weekly, run status is updated on the IDFG Webpage. Weekly summaries are provided to interested parties via e-mail. Eyed egg requests are finalized at the annual AOP meeting.

9. Shoshone Bannock Tribes Egg Box Program - The SBT developed supplementation activities aimed at improving the viability of natural steelhead populations. One million eyed steelhead eggs (Table 2) are outplanted in three Upper Salmon River tributaries: 1) Yankee Fork; 2) Indian Creek; and 3) Panther Creek. Eyed-eggs for Yankee Fork come from Sawtooth FH and eyed-eggs for Indian Creek and Panther Creek come from PFH. DNA tissue samples are collected from all steelhead at SFH and PFH to produce eggs for the egg box program for parentage based analysis (Appendix 1). Upon eye-up, eggs are transferred to remote incubators where they are incubated on river water to mimic natural hatch timing in the system.

Egg Incubation – Eyed eggs incubated and obtained from Sawtooth A hatchery stock will be placed into SSI in Yankee Fork. Eggs obtained from PFH are incubated at PFH and placed into stream side incubators (SSI) in Panther and Indian creeks.

SBT staff actively participates in spawning of steelhead adults at SFH. SBT staff collects genetic samples, gametes, and fork length for each parent fish isolated for Yankee Fork. Mating is conducted as 1:1 female to male and eggs are incubated separately from general production gametes. Adults utilized for Panther Creek and Indian Creek are spawned, tissue sampled, and measured at the PFH.

Incubators are standardized with 2-inch PVC pipe with a 3-inch head pipe to collect additional flow from the stream. Each head pipe was fitted with ¼ inch mesh screen to minimize sediment and debris collection. Each incubator consists of a 50-gallon polyurethane cylinder with a sediment tray, gravel, saddles, six egg trays, and one cover tray to contain

eggs until hatching occurs. Each catch tank is a 30-gallon Rubbermaid polyurethane tub with a custom fit cover.

Incubators are monitored twice weekly from initial construction through complete volitional emigration. Staff records water condition, temperature, dissolved oxygen, conductivity, pH, and embryo stage as well as clean and remove debris from head pipe screens.

Upon full volitional emigration, hatch success is estimated from enumerating dead eggs in the incubator and dead fry in the catch tank. Fry seeded is estimated as the number of eggs planted minus the number of dead eggs/fry enumerated

Fish Release/Transportation - Eggs are transferred in bags within iced coolers to constructed incubators within each tributary. Eyed egg outplants are not to exceed 100,000 per upweller unit. Once on site, eggs are proportionately loaded onto six trays within the upweller. Family identity is preserved during egg outplant by recording which broodstock pairs are represented in each streamside incubator.

Communication - PFH, SFH, and SBT personnel coordinate to determine a schedule to obtain and transfer eyed eggs. Results and conclusions from the streamside incubation project are presented in an annual report to the Lower Snake River Compensation Plan.

10. Squaw Creek Pond/Weir - In an effort to provide large, predominantly 2-ocean (B-Run) returning adult steelhead to the upper Salmon River, progeny from steelhead spawned at Dworshak Fish Hatchery have been released into sites in the upper Salmon River. Beginning in brood year 1999, an effort to establish locally adapted B-run steelhead in the upper Salmon River was initiated at Squaw Creek. The goal was to phase out the practice of releasing progeny from adults spawned at Dworshak Fish Hatchery and replace them with progeny produced from a locally adapted Upper Salmon B-run stock (USB). Lack of a permanent trapping facility at Squaw Creek and high harvest rates of returning adults has limited collection of sufficient broodstock to replace the Dworshak releases. In 2009, IDFG initiated a plan to move this program forward by moving the broodstock collection to the PFH. This facility has a structurally secure weir that can be kept in operation through the entire spawning migration. Plans call for releasing 120,000 USB smolts annually at PFH to serve as broodstock when they return as adults. To differentiate between the Pahsimeroi stock, all 120,000 USB smolts will have intact adipose fins but will be 100% CWT. This marking strategy will allow differentiation between the two stocks and also allow the USB fish to escape mark selective fisheries. We estimate that the combination of utilizing a good trapping facility and marking strategy will be sufficient to return enough adults to completely replace the Dworshak outplants in the upper Salmon River with a locally adapted USB stock.

Production depends on available broodstock. Salmon River B-stock program goal is 660,000 smolts. DNFH B stock eggs will provide the difference between Squaw Creek pond /weir and eggs needed to produce 660,000 smolts.

Approximately 140 pair of B-run steelhead adults are needed annually to provide eyed eggs (Table 14) for smolts to be released into the upper Salmon River. Squaw Creek pond is a

steelhead smolt release pond. This pond is no longer used for steelhead smolt releases. The Squaw Creek weir and attached fish trap are used to capture returning upper Salmon River B-run steelhead.

Ladder Operation - A weir and trap box will be put into place in Squaw Creek approximately 200m upstream of the confluence of Squaw Creek with the Salmon River. Trapping occurs from late March through early May, except during periods of extreme high flow or cold temperature. Trap is monitored daily. Trap boxes are also placed in the main Salmon River below Squaw Creek where angler caught adult steelhead can be deposited.

Adult Handling - Steelhead deposited in angler caught trap boxes are collected by IDFG staff daily and taken to East Fork trap holding ponds for sorting and spawning. Females larger than 75cm in length or males larger than 79cm in length are considered B-run steelhead. All ad-clipped B-run steelhead are taken to the EF weir and held for spawning. Squaw Creek and angler caught B-steelhead receive a unique external mark to differentiate from East Fork Natural steelhead. B-steelhead at the EF weir are spawned with other B-steelhead when ripe males and females are available. Fish not meeting the criteria for B-stock fish are considered A-stock fish. These fish are examined for CWT. If a CWT is present, the snout is taken and the carcass is taken to SFH. If no CWT is detected, unmarked fish are released into Squaw Creek above the weir. Ad-clipped steelhead not meeting the size criteria are released into the Salmon River after receiving an opercle punch. Genetic samples are collected from all unmarked fish trapped at the weir and all fish that are spawned (Appendix 1). All unmarked steelhead are released above the Squaw Creek weir.

First priority for spawned out carcasses is to Tribal programs, and charitable organizations. Second priority for spawned-out carcasses, as well as for unspawned steelhead, surplus to spawning need, is to the public on a first-come-first-served basis. Due to whirling disease amplification issues, carcasses are not used for nitrification of local waters. Any remaining carcasses or unspawned adults are returned to Sawtooth, frozen, and then transported to a rendering plant.

Spawning/Egg Take/Egg Incubation/Egg and Fry Shipping – All B-run hatchery steelhead are spawned at EF weir following a 1f:2m mating protocol. Each female's eggs is separated into two equal portions then fertilized with two individual males. Male selection preference first is in-basin 2-ocean B-program, and second is in-basin 1-ocean male B-program (> 68 cm with proper CWT code).

All eggs are water hardened and disinfected with PVP iodine per product label. Prior to transport, eggs will receive a flush with formalin iodophor three times per week during incubation. After eggs manifest a strong "eye" the eggs are sorted and enumerated mechanically.

Fish Health - Sixty kidney samples are collected for ELISA testing for *RS*. Twenty 20 head wedges are collected and examined for *Myxobolus cerebralis*.

Communication - IDFG Research assists SFH personnel in developing trap management plans. Egg production and shipments are coordinated between SFH and MVFH.

Appendix 2. Standard Operating Procedures: Chinook Hatcheries, Traps, and Weirs.

Chinook salmon *Oncorhynchus tshawytscha* are native to the Columbia River drainage and spawn in fresh water during the summer and fall months. Idaho's Chinook enter the fresh water system the same year they spawn, usually beginning in spring of each year. Spawning begins in August and continues as late as November. Spring, Summer, and Fall Chinook are designated by the time of entry into the Columbia River system.

1. Eagle Fish Hatchery (EFH): EFH is responsible for producing captive reared adults for release in the West Fork Yankee Fork and East Fork Salmon River. Approximately 300 eyed eggs are necessary from each stream to achieve adult production goals. Eyed eggs are collected from redds in each stream. Collected eyed eggs are transported to EFH for hatch and rearing. Adult production goals for each stream are to release a minimum of 20 pairs or age 3, age 4 and age 5 adults, annually.

Multiple rearing locations are utilized to accommodate the various life history stages of program fish and the resulting adults may be used in a variety of evaluation programs. After collection, eyed-eggs are incubated and the resulting parr are reared at the IDFG Eagle Fish Hatchery, Eagle, Idaho (Eagle FH) until smoltification. Immature smolts are transferred to the NOAA Fisheries Manchester Research Station, Manchester, Washington (Manchester) for rearing to maturity in seawater. Ultrasound techniques may be used to identify precocial males prior to transfer. Age-2 precocial males may be released into natal streams, have milt cryopreserved, used in hatchery spawning designs, or culled. Maturing adults (age-2 through age-6) are transferred back to Eagle FH for subsequent release into natal streams for volitional spawning or for use in hatchery spawning designs.

Spawning/Egg take/Incubation/Shipping - Eyed-eggs for this project are using hydraulic sampling methods described by McNeil (1964). This system consists of two main components. The first is a gasoline-powered pump attached to a 3.8-cm diameter aluminum probe via flexible tubing. Holes drilled near the top of the probe infuse air into the water-stream through venturi action. The second component is the collection net frame, which consists of a "D" shaped aluminum frame with expanded plastic mesh along its curved portion and netting around the bottom and sides of its straight portion. When the pump is operating, water and air are forced through the probe, which is worked into the substrate within the net frame. The air/water mixture lifts eggs out of the substrate, where they are swept downstream into the net. The expanded plastic screen confines eggs lifted out near the periphery and directs them into the net. In order to minimize disturbance to the redd, sampling is initiated downstream of estimated nest pocket locations and progresses upstream. This prevents fine materials lifted out of the substrate from settling back into the redd and possibly smothering the remaining eggs. Care is also taken to keep personnel below or to the side of the net frame to minimize redd disturbance.

Early Rearing - IDFG and NOAA Fisheries provided daily staffing for the culture of captive-reared Chinook salmon. Project fish were reared using standard fish culture practices and approved therapeutants (for an overview of standard methods see Leitritz and Lewis 1976; Piper et al. 1982; Erdahl

1994; Bromage and Roberts 1995; McDaniel et al. 1994; Pennell and Barton 1996). Fish were fed a standard commercial diet produced by Bio-Oregon, Inc. (Warrenton, Oregon) until they were transferred to Manchester where they were fed a commercial diet manufactured by Skretting (Bellingham, Washington). Rearing tank size, density, and food ration varied with fish age and were managed to promote optimum growth and for the attainment of program objectives and goals. Routine inventories were conducted in which fish were anesthetized, weighed to the nearest 0.1 g, and measured to the nearest 1 mm fork length to track growth and to ensure that projected weights tracked closely with actual weights. All juveniles are PIT tagged to track individual fish through hatchery culture. All juveniles receive a VIE mark to visually identify stock and rearing strategy.

Final Rearing - Chinook salmon smolts are transferred to NOAA Fisheries Manchester Research Station (Manchester) for saltwater rearing through maturation. Chinook salmon are ultrasounded in June to determine which fish are maturing. Maturing adults receive an externally visible tag (Petersen Disc tag, Floy tag, Spaghetti tag, or jaw tag) to assist with post-release spawning behavior observations. Genetics samples are collected from all released adults to track parental contribution in the program. Mature adults are transferred back to Idaho in July and released to natal streams for volitional spawning.

Fish Health - Due to the relatively low number of fish reared annually, pre-transfer fish sampling does not occur prior to transporting juveniles from EFH to the NOAA Fisheries Manchester Research Station. However, all fish that die in the program during the course of any rearing year are assayed for typical viral and bacterial pathogens. To date, spring Chinook salmon have remained relatively disease free for the freshwater portion of their rearing history (the Eagle FH component). Age-1 Chinook salmon are vaccinated prior to shipment to saltwater with intra-peritoneal injections of Vibrogen (Aqua Health, Ltd., Charlottown, P.E.I., Canada) to prevent *Vibrio* spp. and Renogen (Aqua Health Ltd.) to prevent BKD.

Fish Release/Transportation - Maturing Chinook salmon adults are released in July to natal streams. Adults are transferred using truck mounted tanks ranging from 250 gallons to 2,000 gallons. Tanks are loaded not to exceed .75 pounds of fish per gallon of water. All transport tanks are equipped with oxygen systems and recirculating fresh flows. Due to the length of the transport (12 – 16 hours), approximately one half of the water is exchanged with fresh water from Eagle Hatchery. Fish are released directly to natal streams (East Fork Salmon River or West Fork Yankee Fork).

Communication - Eagle FH produces monthly updates provided to IDFG Fisheries Bureau. Chinook Salmon Captive Propagation Technical Oversight Committee (CSCPTOC) meets quarterly providing program updates to participating agencies.

2. Johnson Creek Weir -The goal of the Johnson Creek Artificial Propagation Enhancement (JCAPE) project is to reduce the demographic risk of extirpation of the ESA listed Johnson Creek summer Chinook salmon and begin its recovery through supplementation. A secondary goal is to maintain genetic diversity of the artificially propagated summer Chinook salmon population and the natural population. The intent is to increase adult returns through increased juvenile survival and improved homing in order to preserve and recover the Johnson Creek salmon population.

Supplementation (O&M) Goal - Conduct necessary operations to produce 100,000 smolts annually for release back into Johnson Creek. In order to meet this supplementation goal, up to 40 pairs of natural origin adults are needed to produce 100,000 smolts annually.

Monitoring and Evaluation (M&E) Goal - Establish baseline information on the Johnson Creek summer Chinook salmon population. Monitor and evaluate the effectiveness of supplementation to aid in the recovery of the natural population of Johnson Creek summer Chinook salmon.

Weir operation - The Johnson Creek weir is installed late May/mid June when water flows subside to 700cfs or below. Adult Chinook, encountering the Johnson Creek weir, enter a trap box. The weir contains both upstream and downstream trap boxes to capture upstream and downstream migrating adults. Fish are processed out of the trap boxes daily. The weir is removed when no fish have been captured for seven consecutive days, usually in mid September. *John Gebhards*

Adult handling - Up to 40 pairs of natural origin adults are kept for brood stock, and are taken and held until spawning at the South Fork Salmon River (SFSR) trap. At the SFSR trap, Johnson Creek adults are treated similar to SFSR adults (see MCFH adult handling). Additional natural origin and all hatchery origin adults captured at Johnson Creek weir are either: 1) released upstream for natural spawning; 2) released downstream if captured in the downstream trap box; or 3) euthanized and placed into Johnson Creek for nutrient enhancement (stray AD fin clipped fish only). All fish released above the weir are opercle tagged. Broodstock transported to the SFSR are both opercle and floy tagged.

All adult Chinook (excluding jacks) trapped on Johnson Creek are injected via an intraperitoneal route with 20 mg/kg erythromycin prior to transport to the SFSR Trap or release back into Johnson Creek. A maximum of 40 natural origin Johnson Creek adult pairs (including jacks) are taken for broodstock and transported to the SFSR trap for holding. Eggs from 32 females allow for high BKD culling and to maintain smolt production near 100,000. Broodstock are marked with a numbered tyvek opercle tag and a numbered floy tag to differentiate from SFSR broodstock. *John Gebhards*

Carcass disposition - All trap/weir pre-spawning mortalities and spawned out carcasses are transported back to Johnson Creek and released by NPT fishery personnel for nutrient enhancement. *John Gebhards*

Spawning/egg take plans, mating protocol - Johnson Creek broodstock are spawned at the SFSR trap on the same days as the SFSR broodstock. Spawn pairing is one male to one female. An additional male is used when sperm quantity or quality is questionable.

Johnson Creek origin eggs are transported in individual egg bags to the MCFH for incubation in Heath style incubators trays. Eggs are loaded into trays at one female per tray. Incubation procedures are the same as those used for SFSR production eggs.

During spawning, all brood females are sampled for *RS* by ELISA technology. Eggs from females with optical densities of 0.25 and above are culled from production. Brood fish are

also examined for viral replicating agents and *Myxobolus cerebralis*. Eggs from parents with serious pathogens are culled. The APHIS veterinarian-in-charge is notified of any reportable pathogens. *John Gebhards/Doug Munson*

The JCAPE project has cryopreserved semen available for use in spawning (Appendix A). The use of these samples would follow the guidelines established by the NPT Cryopreservation project and with approval from NOAA Fisheries. *John Gebhards*

Early rearing - After hatch Chinook fry are transferred into two indoor rearing vats with screens initially placed at ½ lengths. Fry are initially reared in two indoor rearing tanks. Hourly hand feeding during the day commences when 80% of fry achieve swim-up. Flows are initially set at 80 gpm then increased to 130 gpm (maximum) when fry are well on feed. Individual vats are extended to full length when the density index reaches 0.40 to 0.45. Following June reserve SFSR salmon ad fin clip marking, the Johnson Creek Chinook are divided into additional vats to reduce rearing densities. All Johnson Creek Chinook receive a CWT in mid-July (MATS) and are moved back into the indoor vats for continued rearing. As density indices approach 0.40 Chinook parr are subdivided into additional vats.

Johnson Creek Chinook parr are moved into the outdoor collection basin in November following VIE elastomer marking. Chinook are hand fed a dry pellet diet with a low phosphorus formulation and fortified with an EIBS vitamin pack (2.5 mm and 3.0 mm feed size). Sample counts are conducted monthly to monitor growth. *John Gebhards*

The JCAPE project is integrated with a comprehensive M&E program that follows a detailed M&E Plan (Vogel et al. 2005). The monitoring and evaluation program quantifies 41 regionally standardized performance measures to evaluate the supplementation program. These standard performance measures help inform decisions on Abundance, Survival-Productivity, Distribution, Genetic, Life History, and Habitat. The evaluation plan utilizes comparative performance tests at multiple life stages and involves treatment vs. natural experiments and repeated measures testing (treatment vs reference). This program, initiated prior to the first releases of supplemented fish, has been collecting baseline life-history characteristic information, to examine survival of the wild fish in Johnson Creek and any potential effects that the supplementation program may have on the natural population.

All Johnson Creek Chinook are CWT tagged, 50,000 receive VIE elastomer tags and approximately 4,000 are PIT tagged. MATS marking trailers are used to insert CWT in July by IDFG personnel. Fishery personnel from the NPT are responsible for VIE elastomer (50,000) and PIT tagging (4,000). A baseline mark quality assessment is conducted by NPT fishery personnel as they PIT tag the smolts. *John Gebhards/Craig Rabe*

The Nez Perce Tribe operates six PIT tag arrays (see Table below) in the South Fork Salmon River Basin (SFSR) to help evaluate the survival of the juvenile releases out of the SFSR and survival back as adults. This PIT tag array also helps provide real time estimates of adults into the SFSR and help evaluate natural and hatchery composition. Information about PIT tag recapture information can be viewed at

["www.ptoccentral.org/dbaccess/InStrmDtctn/InStrmDtctn_query.html"](http://www.ptoccentral.org/dbaccess/InStrmDtctn/InStrmDtctn_query.html).

South Fork Salmon River flat panel passover PIT tag array locations and site codes operated by the Nez Perce Tribe.

Site	GPS	River km	Site Code
Secesh River Upstream	N45.03340 W115.73373	522.303.215.059.003	ZEN A0
Secesh River Downstream	N45.03348 W115.73219	522.303.215.059.003	ZEN B0
EFSFSR Upstream	N44.95756 W115.52892	522.303.215.060.021	ESS A0
EFSFSR Downstream	N44.95583 W115.53801	522.303.215.060.020	ESS B0
Upper SFSR	N44.97840 W115.72700	522.303.215.065	KRS
Lower SFSR	N45.17575 W115.57998	522.303.215.030	SFG

Fish health - Johnson Creek Chinook are reared at MFH and follow MFH fish health protocols. The EFHL provides diagnostic and inspection services to these fish. A pre-liberation sample consisting of 60 randomly collected fish is examined for *Renibacterium salmoninarum* (RS), parasites, and viral replicating agents. Goede's organosomatic index is also performed on these fish. The preliberation sample is performed within 45 days of release. *John Gebhards/Doug Munson*

Communication - The JCAPE project provides weekly updates during the adult trapping and spawning season. These updates are distributed via e-mail. The JCAPE project is responsible for preparing annual brood year reports that are submitted to both NOAA Fisheries and BPA. These reports are not currently sent to the contact list (Section 5), but are available upon request or through BPA's website or from the JCAPE project staff. The JCAPE project is required to prepare and submit as a condition of ESA Section 10 permitting an Annual Operation Plan (AOP) for the JCAPE project to NOAA Fisheries. Once the AOP is approved by NOAA Fisheries, it will be available for upon request. *John Gebhards*

Transportation - Johnson Creek summer Chinook are transported to release site by NPT fisheries personnel. The NPT provide personnel and up to four 1-ton 4x4 trucks with 300 – 400 gallon tanks for transporting smolts to Johnson Creek near Wapiti Ranch for release. One scheduled release trip (3 to 4 trucks per trip) is planned for each day. Release of these smolts is scheduled for mid-March. *John Gebhards*

3. Lemhi River Supplementation Project (LRCSS)

The Lemhi River has been chosen by the ICTRT (2006) as one population that must meet the viability criteria as it provides important connectivity to other Major Population Groups, as a large, downstream population and historically may have supported summer Chinook production. Coordinating parties have committed to reviewing options for the Lemhi River to develop details for objectives, rearing strategies and facilities, release numbers, and a mark plan.

As a result, the Shoshone-Bannock Tribes has initiated planning to implement a hatchery supplementation program in the Lemhi River. Planning for this hatchery would commence with FY 2009 funding and include the development of a Hatchery Genetics Management Plan (HGMP) and a feasibility plan which includes engineering, design, and construction costs. Meanwhile, the Tribes would determine the existing population size, genetics, and applicable information for determining the best available stock for re-introduction. Initiation of this project would promote recovery and production of the ESU and help in achieving an ESU standard where the population is no longer at risk or needs protection.

4. McCall Fish Hatchery (MCFH) and South Fork Salmon (SFSR) weir

MCFH requires 1,380 returning SFSR reserve summer Chinook salmon to support program release objectives of 300,000 eyed eggs (SBT Dollar Creek in-stream incubator boxes), 285,000 green eggs (Crooked River summer Chinook introduction to be reared at Clearwater FH) and a 1.0 million smolt release at Knox Bridge on the SFSR (MCFH production goal). To accomplish this 612 females and 768 males (including 31 jacks) need to be ponded as brood stock. On average this should allow for spawning of 444 females given an average pre-spawning mortality rate of 25%. A 1:1 (male to female) spawning ratio will be used and males will be killed following milt collection. Assuming an effective BKD High culling rate of 6% and an average fecundity of 4,500 eggs per female would provide a total of 1,867,500 green eggs for various program uses. Given an average eye-up rate of 85% and a rearing mortality rate of 4%, post eye-up at MCFH, should meet the release goal of 1,000,000 smolts, 300,000 eyed eggs and 285,000 green eggs. Overall, MCFH's adult return goal is 8,000 SFSR summer Chinook above Lower Granite Dam. Program direction is to adopt an integrated "stepping stone" brood stock management plan in which some natural genetics will be included in the annual smolt production goals (differential marked from reserve production). The integrated brood stock management plan will begin with BY10 egg production. The rearing target of this plan is to build to annual releases of 250,000 differentially marked integration smolts, but may be scaled back according to the number of natural adults available to spawn. Broodstock collection will be determined prior to trapping. Additionally, MCFH rears up to 100,000 Johnson Creek origin summer Chinook salmon, to smolt, annually.

SFSR Weir Operation - Summer Chinook for the MCFH summer Chinook program are collected at the SFSR weir. The SFSR weir is installed after high water when river flows begin to subside. The bridge/weir design allows for placement when the F.S. USGS Krassel Gauging Station staff reading reaches 4.0 to 4.2; typically the second week of June. Hatchery personnel monitor flows physically at the SFSR and on-line to determine the appropriate river stage when to lower weir panels.

During periods of heavy fish movement, access into the trap will be blocked by means of pickets inserted at the end of the ladder once approximately 400 fish have entered the trap to prevent potential smothering. Trapping operations will continue through the end of spawning until no fish have been trapped for 1 week at which point water to the ladder will be shut off and weir panels preventing upstream fish passage will be removed.

Prior to trapping in 2009, Biomark installed a PIT tag array system into the ladder of the South Fork trap. This system consists of four antennas (two top water and two floor orifice) that are designed to detect all fish with PIT tags entering the trap.

Adult Handling - Upstream migration of returning salmon will be stopped by the SFSR weir allowing for adult interception in the adjoining trap. All Chinook are processed through the trap where they are identified by mark type, sexed, measured, scanned for PIT tags and CWT, and any definable injuries are noted. Tissue samples are collected from all natural origin fish released above the weir during trapping, for the genetics baseline. During spawning genetic samples are taken from males and females spawned and recorded in a manner to allow for parental genetic analysis. All snouts collected are sent to the Nampa Research office for CWT extraction and processing. Unmarked adults receive an operculum hole punch prior to being passed upstream to spawn naturally. This is done to help management efforts in evaluating weir efficiency. No salmon processed through the SFSR trap will be injected with erythromycin due to environmental concerns and logistics needed to insure a 30-day withdrawal period is reached prior to in-stream disposal of brood stock carcasses. Salmon intended as brood stock are placed into the holding ponds separated by sex; East holding pond – females, West holding pond – males and sub-divided section for outplants or subsistence redistributions.

All brood females are sampled for *RS* by ELISA technology. Eggs from females with optical densities of 0.250 and above are culled from production. Ovarian fluids from 60 females and kidney/spleen tissues from 30 fish are collected for viral replicating agent examination, while head wedges are collected from 20 fish for *Myxobolus cerebralis* examination. The APHIS veterinarian-in-charge is notified of any reportable pathogen.

All unmarked returning salmon are visibly checked for the presence of any detectable elastomer mark; indicating the fish to be a Johnson Creek supplementation “stray.” Any Johnson Creek strays encountered are segregated, and then transferred to Nez Perce fishery personnel who are responsible for transporting/releasing the fish into Johnson Creek. All unmarked salmon will be scanned using a coded-wire-tag detection wand as part of being processed through the SFSR Trap. On a positive CWT detection, additional attention is exercised to check for the possible presence of an elastomer mark. If no elastomer mark is detected, returning Chinook that have no marks with CWT are killed and the snout collected for coded-wire-tag analysis. *Gene McPherson/ Steve Kammeyer*

Priority use of reserve Chinook, in excess of hatchery needs, is to provide additional harvest opportunity during sport and tribal seasons. The operculum of excess reserve Chinook not intended for use as brood stock are hole punched, double punched if the presence of a CWT is detected, and placed into a subdivided section of the West holding pond until they are either loaded onto a truck for transport to in-basin release sites, primarily downstream near Roaring

Creek (during fisheries), or are dispatched for subsistence purposes to support Tribal and non-Tribal charitable relief organizations. These fish are not injected with erythromycin.

Pre-spawn mortalities are returned to the SFSR for nutrient supplement at a specified location immediately downstream from the trap water intake or are redistributed to upstream sites coordinated through the IDFG Regional Anadromous Fishery Biologist. Prior to disposal external tags are removed and the tail is completely severed from the body to identify these fish for those conducting spawning ground surveys. All female spawning carcasses exhibiting gross internal signs consistent for BKD, as determined by fish pathologists, are frozen and disposed of in a public landfill. *Gene McPherson/Steve Kammeyer*

Spawning/Egg take/Incubation/Shipping - Spawning protocols initiated with BY2009 SFSR summer Chinook production will be continued in response to enhanced egg requests, continued direction to provide genetic samples that will allow for parental genetic analysis and the need to reduce the number of males being held for spawn-taking activities. All reserve salmon will be spawned at a 1:1 (Male to Female) spawning ratio. Integration spawn pairs (natural x reserve) will be spawned at a 2:1 (Male to Female) spawning ratio as a split random cross. Natural males will be dispatched following milt collection used to fertilize of the half the eggs from each of two reserve females. At the time of spawning, genetic samples will be collected from each spawning pair. To facilitate this action, reserve males will be killed following milt collection. A minimum of 444 reserve summer Chinook females will need to be spawned to meet program objectives as: 291 females (to provide for 1,000,000 MCFH smolt production), 85 females (to produce 300,000 eyed eggs for SBT Dollar Creek egg boxes) and 68 females (to provide 285,000 green eggs for the introduction of summer Chinook to Crooked River). Key assumptions made include: 4,500 average fecundity, 6% effective BKD High culling rate and an 85% eye-up rate. Spawn taking activities take place on Tuesdays and Fridays and may begin at primary sort – Tuesday of the 2nd week of August. Spawning is limited to a maximum of 150 females per day. A kidney sample for ELISA BKD analysis will be collected from all females spawned. Ovarian fluid and cranial wedges, number to be determined by fish pathologists, are collected from a portion of the spawned females for viral testing and whirling disease. All eggs collected are linked to an individual egg tray, or genetic samples, based on the ELISA BKD disease sample collected. *Gene McPherson/Steve Kammeyer*

Egg incubation - Hatchery production eggs and eggs spawned for SBT egg boxes are returned to MCFH for incubation in Heath style incubators trays following water hardening at SFSR trap. Green eggs collected for summer Chinook introduction in Crooked River are transported to Clearwater FH for incubation by IDFG personnel following water-hardening at the SFSR trap. Reserve eggs are loaded into trays as two females per tray and any integration production eggs produced will be incubated as 1-female per tray. Formalin is added to each incubation stack to retard fungus development daily at a rate of 1,667 ppm (10-min drip). Formalin treatments are initiated 2 days following spawning and continue until immediately prior to hatch. A light “rodding” of trays to remove sediments begins weekly once eggs accumulate 400 TU’s. At 550-600 TU’s eggs are shocked then picked/ enumerated the following day. Eggs generated from females demonstrating ELISA optical densities greater than 0.250 will be destroyed prior to eye-up and egg enumeration; individual Lot averages will be assigned to these eggs for fecundity and % eye-up. Once eggs have been enumerated additional eggs may

be culled, based on ELISA results, to reduce inventory to achieve a “full capacity” hatchery level. A secondary “pick” is performed following complete egg hatch (1,000 – 1,050 TU’s). Fry are transferred to indoor vats for early rearing at swim-up (1,700 – 1,750 TU’s). *Gene McPherson/Steve Kammeyer*

Fish Health - Chinook salmon reared at this facility are inspected by the EFHL on a quarterly basis for *RS*, viral replicating agents, parasites, and bacterial pathogens. Diagnostic services are provided upon request. A preliberation sample consisting of 60 randomly selected fish is examined for *RS*, viral replicating agents and whirling disease *M. cerebralis*. Goede’s organosomatic index is performed as a part of this preliberation examination. The preliberation examination is performed between 30 and 45 days prior to release. The APHIS veterinarian-in-charge is notified of any reportable pathogen.

Early Rearing - At swim-up summer Chinook fry are transferred into 12 indoor vats with screens initially placed at ½ vat length. Fry are setout in a manner to allow for spawn timing proportionality representation for CWT and individual pond marking. Approximately 90,000 fry are setout in each vat. Hourly hand feeding during the day commences when 80% of set out fry have achieved swim-up. Extruded “BioVita” starter feeds, produced by Skretting/BioOregon, are used during early rearing. Flows are set at 80 gpm then increased to 140 gpm (maximum) when fry are well on feed. Individual vats are extended to full length when the density index reaches 0.50 to 0.55. Approximately ½ of the fry are marked (hand Ad-clipped) into outdoor ponds in early to mid-June (200-350 fpp). At this time remaining fry are subdivided into 5 of the emptied vats to provide space for continued rearing (40,000 to 55,000 in 11 vats). Remaining indoor fry (100 – 150 fpp) are marked (MATS Automated Trailer) into the outdoor ponds during the 3rd week of July with ending individual vat densities ranging from 0.30 – 0.50 (flow indices 0.70 – 1.20).

Final Rearing - Final rearing takes place in one of two outdoor rearing ponds which are partially covered to allow for natural light penetration. Summer Chinook in the ponds are hand fed a dry pellet diet (BioDry-1000 LP w/ EIBS vitamin pack), produced by Skretting/BioOregon, with a low phosphorus formulation and fortified with an EIBS vitamin pack. Sample counts are conducted monthly to monitor growth. No prophylactic erythromycin medicated feed treatments are scheduled. At time of release density and flow indices do not exceed 0.25 and 2.00, respectively. Ponds are connected to a collection basin where fish are crowded for loading onto transport trucks for release.

In response to a request by IDFG fishery research personnel, BY09 parr will be marked into both of the outdoor rearing ponds during June and July mark sessions. Also, fish that receive a CWT will be distributed equally between the outdoor ponds. Currently, all SFSR summer Chinook are Ad-clipped, and approximately 200,000 of these are also CWT. Additionally, 52,000 of the Ad-clipped smolts receive a PIT tag prior to release. The current mark schedule is set to hand AD-clip 540,000 SFSR Reserve parr starting on June 8th; divided between both ponds. The MATS trailer will be used to AD-clip 330,000 and AD-clip w/ CWT 200,000 SFSR Reserve parr beginning on July 20th; also into both ponds. PIT tags will be inserted into 52,000 pre-smolts from Pond 1 in mid-February 2011. In the two weeks prior to release a sample of 300 summer Chinook (crowded with a seine to make selection more random) from

each pond will be checked by MCFH staff to provide a baseline for mark quality, release size and fish condition.

The approximately 52,000 PIT tagged fish are part of the CSS study which began in 1996. A background and summary of the CSS study (10 year retrospective report) can be found at <http://www.fpc.org/documents/CSS/FINAL>. Hatchery staff recovers PIT tags from pre-release mortalities and sweeps raceways with a magnet post release to recover any shed PIT tags.

The Nez Perce Tribe operates six PIT tag arrays (see Table below) in the South Fork Salmon River Basin (SFSR) to help evaluate the survival of the juvenile releases out of the SFSR and survival back as adults. This PIT tag array also helps provide real time estimates of adults into the SFSR and help evaluate natural and hatchery composition. Information about PIT tag recapture information can be viewed at ["www.ptoccentral.org/dbaccess/InStrmDtctn/InStrmDtctn_query.html"](http://www.ptoccentral.org/dbaccess/InStrmDtctn/InStrmDtctn_query.html).

South Fork Salmon River flat panel passover PIT tag array locations and site codes operated by the Nez Perce Tribe.			
Site	GPS	River km	Site Code
Secesh River Upstream	N45.03340 W115.73373	522.303.215.059.003	ZEN A0
Secesh River Downstream	N45.03348 W115.73219	522.303.215.059.003	ZEN B0
EFSFSR Upstream	N44.95756 W115.52892	522.303.215.060.021	ESS A0
EFSFSR Downstream	N44.95583 W115.53801	522.303.215.060.020	ESS B0
Upper SFSR	N44.97840 W115.72700	522.303.215.065	KRS
Lower SFSR	N45.17575 W115.57998	522.303.215.030	SFG
SFSR Trap	N44.66660 W115.70292	522.303.215.110	STR

Communication - Hatchery staff maintains communication with LSRCP coordinators, IDFG Fishery Bureau Staff, IDFG Fish Health Pathologists, IDFG Fish Marking Coordinators, and NPT Fishery Staff through rearing cycle as needed. In addition, monthly production narratives are provided to representatives from each organization. *Gene McPherson/Steve Kammeyer*

As eggs are enumerated MCFH will coordinate with SBT fishery personnel to determine a schedule to transfer eyed eggs. Spawning summaries will be included in the annual run report. *Gene McPherson/Steve Kammeyer*

Prior to initiation of transportation activities the MCFH hatchery manager contacts the Valley County Road Department to notify them of the hatcheries hauling schedule to ensure the Warm Lake road plowing crews are aware of our presence. The MCFH hatchery manager also contacts McCall field offices of the IDFG and NPT, prior to releases, so they were aware of the hatcheries release schedule and the operation of fish sampling screw-traps can be suspended. *Gene McPherson/Steve Kammeyer*

Transportation strategies - The MCFH LSRCP transport truck, MCFH adult transport truck, MFH resident 2-Ton transport truck and two resident transport trucks (from Nampa FH) are utilized to move salmon smolts to the SFSR release site at Knox Bridge. Approximately 8,500 pounds of fish are transported during each release trip and 2 release trips are scheduled each day. At Knox Bridge, water from the SFSR is pumped onto the trucks to provide tempering prior to release. Release takes place using a transfer tube stretching from the roadway to the river. Johnson Creek origin summer Chinook smolts are emptied from the hatchery collection basin before SFSR SU transportation begins.

Adult Outplants - Adults returning to the SFSR vary in terms of numbers, origin, sex ratios, and age class (some years there are lots of jacks). Because of this, it is our desire to have general agreement on what to do with fish that are in excess of harvest, broodstock, and subsistence distribution. Given the variability of the adult returns on an annual basis, the most useful guidance tool is a table that lists out the priorities of where and how the excess fish will be handled. Fish that are out-planted into areas are intended to help boost natural spawning with the anticipation of bringing back more “natural” fish. Fish that are out-planted need to be sexed at the weir to ensure an equal sex ratio. In addition, out-planting of jacks should be limited $\leq 10\%$ of the males, in order to ensure that the fittest individuals are spawning and not to promote jacking, in case that trait is heritable. Last, the timing of out-plants should occur late enough to 1) encourage fish to remain in outplant sites for intended spawning (i.e. after July 25), and 2) to ensure that fish sufficiently mature to decrease chances of fish straying into other tributaries.

The table below provides a prioritized list of release locations and numbers for locations within the larger SFSR drainage. These locations and numbers give adult spawners a chance to seed under utilized habitat in order to maximize spawner success, with the anticipation of bringing back more natural adults in future years. In order to ensure that monitoring and evaluation programs have the correct evaluation tools, all out-planted fish need to be differentially marked with a unique opercle punch pattern to differentiate 1) fish recycled for the fishery, 2) fish out-planted into upper mainstem SFSR, and 3) fish out-planted into EFSFSR (three distinct marks). In addition, for fish out-planted into the EFSFSR a genetic sample will be taken (the opercle punch is adequate), in order to evaluate the fish that may spawn in Johnson Creek. The NPT has an ongoing genetic parentage study for all returning adults to Johnson Creek.

The table presumes that prior to out-planting, harvest, broodstock, and subsistence distribution needs are satisfied. Out-planting will occur after the upper mainstem South Fork Salmon River reaches the Nez Perce Tribe minimum viable number of 1,000 spawners. Releases should occur late enough to encourage fish to remain in outplant sites for intended spawning (i.e. after July 25) to ensure that fish sufficiently mature to decrease chances of fish straying into other tributaries(SFSR-South Fork Salmon River, EFSFSR – East Fork South Fork Salmon River, 2LOP- Two left opercle punches, 2ROP- Two right opercle punches).

Out-plant table for excess adult Chinook fish from upper mainstem South Fork Salmon River weir, listed by priority, stream, location, numbers, and applied marks.

Prioritization of Out-plants	Out-plant Stream	Release Location	Number Out-Planted		Core Mark
			Male	Fem Pairs Total	
1	SFSR	Goat Creek/Roaring Creek	200	400	2LOP
2	EFSFSR	Above Glory Hole	200	400	2ROP
3	EFSFSR	Below Glory Hole	200	400	2ROP
4	SFSR	Goat Creek/Roaring Creek	200	400	2LOP
5	EFSFSR	Above Glory Hole	200	400	2ROP
6	EFSFSR	Below Glory Hole	200	400	2ROP
7	EFSFSR	Above Glory Hole	200	400	2ROP
8	EFSFSR	Below Glory Hole	200	400	2ROP
		SFSR Total	400	800	
		EFSFSR Total	1,200	1,800	
		Grand Total	1,600	2,600	

5. Pahsimeroi Hatchery (PFH) and weir - The mitigation goal for PFH is to release up to 1,000,000 summer Chinook smolts annually into the Pahsimeroi River. Approximately 300 pair of adult summer Chinook are required to meet this mitigation when considering a pre-spawning mortality rate of 3% to 5%, 4,500 eggs/female fecundity, an estimated 85% eye-up rate, and culling of bacterial kidney disease positive adults at an expected rate of 3%.

PFH is composed of upper and lower facilities. Adults are trapped at the Lower PFH. Eggs are incubated and fish are reared at the Upper PFH.

Weir operation - The PFH weir and trap operates to collect summer Chinook from approximately June 15 through October 1. The trap is checked weekdays and usually is not checked on weekends. Additionally, the ladder is shut off during heavy weekend fish periods to avoid overloading the adult fish trap. With surplus salmon expected this year the trap may be checked 7 days a week. *Todd Garlie*

Adult Handling – At trapping, fish are measured for length, examined for gender, checked for various clips, tags, and injuries. Snouts are removed from all fish containing CWT's and are sent to the Nampa Research office for CWT extraction and processing. Tissue samples are collected from all marked Chinook used for broodstock and all unmarked Chinook that enter the trap. Tissue samples are collected for genetic parentage based analysis. All unmarked Chinook will be released upstream of the weir.

If enough Chinook return to provide a fishery, out-plant sites will be determined by the IDFG Fisheries Bureau and Salmon Region biologists. Additional surplus will be outplanted to the Salmon Kid's Creek pond, Blue Mountain Meadow pond, or selected for charitable/tribal fish giveaways. Surplus fish killed for charitable/tribal giveaways are not injected with erythromycin. Once the fish reach a point where they can no longer be used for food and fisheries are closed, surplus fish are killed and stored in a refrigerated trailer unit until they are transferred to a rendering plant in Kuna, ID. Neither excess adult fish nor carcasses are transferred out of the upper Salmon River Basin due to whirling disease concerns.

A total of 300 pairs of broodstock are needed to meet mitigation goals and only up to 10% of these can be jacks. The decision process for ponding broodstock is determined by historical hatchery run timing records. The run timing is broken into weekly increments on a percentage basis and a corresponding percentage of broodstock are ponded each week based on these records. Only these ponded broodstock fish are injected with erythromycin. Fish in excess of these weekly percentages are given away to charitable/tribal entities based on their availability. When entities are not available or fish numbers exceed what the entities can handle, fish are outplanted/recycled.

Each fish that is ponded for broodstock receives an intra-peritoneal injection of erythromycin at a rate of 20 mg/kg body weight for BKD management. All brood females are sampled for RS by ELISA technology.

Salmon ponded for broodstock are treated with 60 minute 167 ppm flow-through formalin treatments 3 times per week between July 1 and August 1. As water temperatures increase during August, formalin treatments are increased to 5 days per week from August 1 through September 15, as needed, to control mycotic infections and to prevent outbreaks of ICH. Fish are selected at random for broodstock in an attempt to represent the run.

Spawning/egg take/ mating protocol - The first sort and spawn generally occurs around September 1 each year. Spawning occurs twice per week, usually on Monday and Thursday. A spawning ratio of 1:1 is used. Jacks are limited to 10% of the spawning population. The spawning goal is to collect approximately 1,283,000 green eggs to yield the mitigation target of 1,000,000 smolts at release. Pre-spawning mortality of adult summer Chinook salmon will be categorized by suspected cause.

Eggs from females with ELISA optical densities of 0.25 and above are culled from production. Sixty ovarian fluid samples and 30 tissue samples (kidney/spleen) are collected from 90 females and examined for viral replicating agents. Twenty head wedges are removed

from returning adult salmon to ascertain *Myxobolus cerebralis* prevalence. The APHIS veterinarian-in-charge is notified of any reportable pathogens detected in brood fish sampling.

Egg incubation - All eggs are collected at Lower PFH. Following water hardening, eggs are transferred to Upper PFH in Aqua Seed tubes for incubation and early rearing on well water and secondary rearing on river water. All eggs are incubated to eye-up at PFH using well water chilled to 44°F. The incubator trays are loaded at the rate of one female per tray. From 48 hours after spawning until eye-up, eggs at Pahsimeroi FH are treated three times a week with a 1,667-ppm formalin treatment to prevent fungal growth on the eggs. A 500 ml iodine California Flush is also administered on Tuesdays, Thursdays, and Saturdays. At eye up, the eggs are shocked twice by dropping them into a bucket of water from a height of approximately 16 inches. Dead eggs are picked and enumerated with a Jensorter electronic counter/picker.

Early rearing - Early rearing takes place in the Upper PFH vat room on 50°F well water. Rearing is segregated according to lineage designation and BKD status as stated above. Fry are ponded directly into 1,280 cubic foot, 80' long indoor vats, with each vat having a mix of progeny by age class and run timing based on lot number. Approximately 65,000 fry are ponded into each vat. All 18 vats are used to rear approximately 1,180,000 fry. Hand feeding begins two days after ponding to allow for proper sealing of egg yolk prior to exposure to feed. Currently, all vats are hand fed with the exception of four vats which are fed by belt feeders. All vats are supplied with pathogen-free well water. Flow indices are kept below 1.0 lbs/gpm/in and density indices are kept below 0.3 lbs/ft³/in. Target size for ponding is 100 fpp to achieve a refractory WD size prior to exposure to river water containing the WD causative agent. Feeding regime is regulated to achieve this size by May 20 when ad clipping and CWT marking occurs. Following marking, fish are moved outside into two covered rearing ponds.

Final rearing - Feeding regimes vary based on size of fish and rearing water temperature. Beginning June 1, a 28-day erythromycin medicated feed treatment is administered to the entire population to prophylactically treat for BKD. Due to the perennial infestation of *Ichthyophthirius multifiliis*, prophylactic treatments of formalin, at a 167 mg/l are applied five times per week during July and August to limit mortalities to this parasite. Fish are reared until they reach their release size of approximately 15 fpp.

Beginning in 2007, large scale representative PIT tagging was implemented at PFH and has been ongoing since that time. Fish released will be 100% AD clipped, receive approximately 120,000 CWT's, and 21,400 PIT tags (Table 6). The large PIT tag group will be part of the CSS study which began in 1996. IPC provides 15,000 PIT tags and CSS provides approximately 6,400 tags. A background and summary of the CSS study (10 year retrospective report) can be found at <http://www.fpc.org/documents/CSS/FINAL>.

The fish are scheduled to be released at the end of March each year. Screens are removed and the fish are allowed to volitionally move out of the two rearing ponds and into the Pahsimeroi River. After two weeks of volitional release, remaining fish are forced out of the rearing ponds by hatchery personnel. Final release numbers are determined using sample counts along

with marking numbers minus mortality. Pre-liberation condition factors and mark quality assessments are conducted prior to release.

Juvenile fish health - Chinook salmon reared at this facility are inspected by EFHL on a quarterly basis for *RS*, viral replicating agents, parasites, and bacterial pathogens such as *Aeromonas*, and *Flavobacterium psychrophilum*. Diagnostic services are provided upon request. A pre-liberation sample consisting of 60 randomly collected fish are examined for *RS*, *Myxobolus cerebralis*, and viral replicating agents. Goede's organosomatic index is also performed. The preliberation sample is performed within 45 days of release.

Egg inventory numbers are available to EFHL in December to facilitate erythromycin medicated feed pre-mix needs.

Communication - Pahsimeroi FH distributes trapping and spawning updates three times per week during the summer Chinook run. These data summaries are provided electronically to a distribution list. Trapping information is also uploaded to the Hatchery Data Management System daily and is available online through the HDMS database website <http://fishandgame.idaho.gov/ifwis/hdmsdownload/defaultpage.aspx>.

Monthly inventory summaries are provided to an electronic distribution list which includes IDFG Fisheries Bureau, LSRCP, and IPC offices.

Fish Release/Transportation - None, direct release.

6. Rapid River Hatchery (RRFH) and weir and Oxbow Hatchery (OFH) and Hells Canyon (HC) trap

Approximately, 2,500 spring Chinook salmon are needed annually for broodstock for the RRFH spring Chinook salmon program. This number includes jacks and accounts for pre-spawning mortality at the 20-year average as well as average female culling required by disease management constraints and average fecundity. This brood level provides 3.4 million green eggs and 3.0 million smolts at an average of 88% eyed egg-to-smolt survival to meet the smolt release goals. *Ralph Steiner*

Rapid River Fish Hatchery is composed of the hatchery complex and Rapid weir located approximately 2 miles downstream from the hatchery complex. HC trap and OFH operate as part of the RRFH program. All spring Chinook salmon are reared at the Rapid River Hatchery released volitionally into Rapid River or transported for release to the Snake River at Hells Canyon and the Little Salmon River. Marked adult spring Chinook salmon are trapped at HC trap and transported to RRFH where they are held and mixed with marked adult spring Chinook salmon collected at Rapid River weir. *Ralph Steiner*

RRFH weir operation -The RRFH weir management related to broodstock collection is determined by projected number of returning salmon. Collection of broodstock and fish disposition are modified to accommodate projected return as projections are refined throughout adult migration. The adult trapping facility is put into operation approximately March 16.

Spring Chinook arrive at the trap beginning in May. Trapping continues through the first week of September. When trapping ceases, the adult trap is reconfigured to allow migration around the weir. During trapping extreme conditions may occur, and the trap may be closed until trapping can resume. *Ralph Steiner*

HC trap operation - The HC Trap operates three days/week Monday – Wednesday as flows permit (less than 50k ft³/s). Trapping for spring Chinook salmon begins in May and continues to into July. HC trap operation is affected by projected return to RRFH. The trap is operated by IPC and adults are transported to OFH for holding or distribution. Spring Chinook salmon to be held for spawning will be held at OFH for transport to RRFH weekly or more often depending on water temperatures. Fish to be transported to RRFH are loaded into a 1,000-gallon tanker and transported by IPC personnel. All fish entering the trap are electronically scanned for PIT tags and scrutinized for jaw tags, VIE tags, radio transmitters, and fin clips. Adult spring Chinook salmon to be held for broodstock receive an intra-peritoneal injection of Erythromycin base injectable Gallimycin-100 at a rate of 20 mg/kg to limit pre-spawning mortality due to bacterial kidney disease (BKD). After being added to RRFH broodstock, monitoring is consistent with practices at RRFH. *Ralph Steiner*

The carcasses will be frozen until the end of the spawning season and then hauled to a cold storage facility.

Carcasses from holding and trapping mortality are placed into a garbage dumpster and picked up weekly by the local sanitation company. They will be transported to the Halfway transfer station and eventually to an approved ODEQ landfill. *Kent Hills/Ralph Steiner*

Adult handling - Upon arrival into the trap, all marked hatchery fish to be added to broodstock are anesthetized, counted, intra-peritoneally injected with Erythromycin base injectable Gallimycin-100 at a rate of 20 mg/kg, and transported to the hatchery holding ponds for broodstock. Arriving marked spring Chinook salmon are not sexed at this time because dimorphism is not expressed when they arrive at the trap. Marked spring Chinook salmon are held for broodstock to fill RRFH mitigation needs and to supply eggs to other programs. The broodstock includes a cross section of the run. Formalin treatments will be applied at 167 mg/L seven days a week. *Ralph Steiner*

Pre-spawning mortality of adult spring Chinook salmon will be categorized by suspected cause. Formalin treatments will start upon ponding of broodstock. Formalin treatments will be applied at 167 mg/L seven days a week. *Ralph Steiner*

If broodstock needs are exceeded, fish will be provided to tribal and humanitarian organizations. Surplus fish may also be transported back into the Salmon River or Little Salmon River to re-enter fisheries, or be transported to other drainages to provide fishing opportunity or for supplementation. These hatchery fish will be loaded directly from the fish trap and will not be anesthetized or injected. The decision to release hatchery fish will be made based on the number of rack returns, run size as projected by IDFG, and on the overall condition of fish trapped earlier in the run. *Ralph Steiner*

Ancillary species will enter the fish trap. All steelhead entering the trap will be sexed, measured, scanned for CWT and PIT tags, and given a right operculum punch to identify recaptures. Wild steelhead will be sampled for DNA and scales, and released into Rapid River above the weir. Hatchery steelhead including unmarked hatchery fish (determined by morphology) will be released into the Little Salmon River about a mile above the confluence of Rapid River unless they scan positive for CWT. When a CWT is detected hatchery steelhead will be sacrificed and the snout collected. Bull trout entering the trap will be measured and processed based on protocol supplied by the United States Forest Service (USFS) Rocky Mountain Research Center. Unmarked Chinook salmon will be counted, sexed, measured, given a right operculum punch, sampled for DNA, and released above the weir. *Ralph Steiner*

Dispersed fish will not be anesthetized or treated with antibiotics. Unmarked Chinook salmon will be counted, sexed, measured, given a caudal fin right operculum punch to identify recaptures, and released into the Snake River below Hells Canyon Dam. They will not be anesthetized or treated with antibiotics. *Kent Hills/Ralph Steiner*

All steelhead entering the trap will be sexed, measured, scanned for CWT and PIT tags, and given a right operculum punch to identify recaptures. Hatchery steelhead including unmarked hatchery fish (determined by morphology) will be released into the Little Salmon River about a mile above the confluence of Rapid River unless they scan positive for CWT. Unmarked Chinook salmon will be counted, sexed, measured, given a right operculum punch, sampled for DNA, and released above the weir. *Ralph Steiner*

RRFH Spawning/Egg take/Incubation/Shipping - Beginning approximately August 10, all adults are collected, and sorted by sex. All ripe females are spawned each spawn-day. Spawning takes place twice each week for each holding pond and continues through mid-September. The RRFH employs a random cross of two males/female, as recommended in the Integrated Hatchery Operations Team (IHOT) guidelines for genetic management. All eggs from females exhibiting gross signs of pathology are discarded after consultation with staff from the Eagle Fish Health Laboratory (EFHL) on-site. After fertilization, the eggs are transported to the incubation building for water hardening. Eggs are water hardened/disinfected with a 100-mg/L solution of iodine. All brood females are sampled for BKD and the samples are analyzed by ELISA technology at EFHL. Spawned female carcasses are marked with a numbered tag, matched with an egg bucket number, and a tray number to facilitate tracking for ELISA BKD analysis. A total of 90 fish are sampled by a combination of 30 tissue samples (kidney/spleen) and 60 ovarian fluid samples for viral replicating agents. The Animal and Plant Health Inspection Service (APHIS) veterinarian-in-charge is notified of any reportable pathogens detected in adult or production fish sampling. *Ralph Steiner*

Carcasses are measured, scanned for PIT tags and CWT. Females are scanned for PIT tags before spawning to ensure that any PIT tags that are deposited in egg containers are not missed. *Ralph Steiner*

Egg inventory numbers are available to EFHL to facilitate erythromycin medicated feed pre-mix orders. *Doug Munson*

Single female/tray incubation is the standard however it is necessary to load two females/tray and/or transfer green eggs to OFH for initial incubation to achieve a goal of 3.4 million eyed eggs. Upon receiving ELISA results, eggs are segregated or culled based on titers >0.249. Hatchery personnel are in regular communication with staff from the EFHL for guidance on culling and segregation. Beginning on the fourth day of incubation, all egg lots are treated with formalin three times each week at 1,667 mg/L for 15 minutes. This continues until each egg lot accumulates 800 daily thermal units (TU). At eye-up (approximately 500 TU), all egg lots are shocked and picked using a Jensorter™ model BM-4 picker/counter then returned to the cleaned incubators. A second pick is performed at 750 TU. Hatch occurs about 800 TU. At 1,000 TU, all egg lots undergo another pick off to remove dead eggs or fry and eggshells. At 1,500 TU fry undergo a fourth pick off and swim-up fry are ponded at 1,750 TU. After eggs have accumulated 300 TU incubator trays are rodded weekly or more often if necessary throughout the incubation period to remove silt. *Ralph Steiner*

OFH Egg incubation – Due to space limitations at RRFH it is routinely necessary to transport green eggs from RRFH to OFH for incubation. Eggs for transport will be placed in egg tubes and water hardened in coolers filled with 100-mg/L iodophore for 30 minutes. Then, iodophore is displaced from the coolers with well water. About one gallon of ice is added, and the coolers sealed for transport. When the green eggs arrive at OFH they are disinfected in 100-mg/L iodophore then placed in vertical incubation stacks at a rate of one female/tray. Green eggs are incubated to eye-up, enumerated, picked, and returned to RRFH. When they arrive at RRFH they are disinfected in 100-mg/L iodophore and placed in vertical stack incubators. The EFHL will notify OFH with the results ELISA BKD analysis and culling will take place at OFH. *Kent Hills/Ralph Steiner*

Early Rearing - Fry are moved from vertical stack incubators to eleven outside raceways. Density and flow indices do not exceed 0.49 lb/ft³/in and 1.11 lb/gal/min/in, respectively. In mid June, when the fingerlings are marked, they are moved to the final rearing ponds. *Ralph Steiner*

One prophylactic feeding of erythromycin-medicated feed will be applied to juveniles with a target dose of 100 mg/kg. *Ralph Steiner*

Fish are sampled biweekly for weight. Samples are comprised of at least 300 fish/rearing unit. At the end of each month, 60 fish sub-samples are measured to determine average total length and condition factor. *Ralph Steiner*

Final Rearing - Rearing continues in the rearing ponds until mid April. Final rearing density and flow indices do not exceed 0.22 lb/ft³/in and 2.25 lb/gal/min/in respectively at the beginning of release. *Ralph Steiner*

The fish are sampled biweekly for weight. Samples are comprised of at least 300 fish/rearing unit. At the end of each month, 60 fish sub-samples are measured to determine average total length and condition factor. Starting the month marking was completed and continuing until release, a quality check of adipose fin (AD) clips is performed on the sub-samples and fish are categorized as full clip, partial clip, or no clip. *Ralph Steiner*

Fish released will be 100% AD clipped, receive approximately 100,000 CWT's. Approximately 52,000 fish are PIT tagged as part of the CSS study. IPC provides 20,000 PIT tags and CSS provides approximately 32,000 tags. Seventy percent of PIT-tagged fish within the release are treated as run-at-large (monitor mode) at each Columbia River hydro-system collection facility. The balance of the PIT tagged fish are diverted back to the river (default bypass mode) for reach survival estimates. A background and summary of the CSS study (10 year retrospective report) can be found at <http://www.fpc.org/documents/CSS/FINAL>. (Appendix 2) *John Cassinelli*

Pursuant to US vs. OR 2008 – 2017 Management Agreement Table B1, release sites will include Rapid River, the Snake River below Hells Canyon Dam, and the Little Salmon River. For production at or above 3.0 million, releases will be 2.5 million into Rapid River and alternating releases of 100,000 to Hells Canyon and 50,000 to Little Salmon River (footnote 11 to Table B1 US vs. OR 2008-2007 Management Agreement).

Volitional release at Rapid River begins about March 15 and ends about April 24. In most years about 99% of the smolts emigrate volitionally. The remaining smolts are seined from the ponds.

RRFH Fish Health - Spring Chinook salmon reared at this facility are inspected by EFHL personnel on a quarterly basis for *RS*, viral replicating agents, parasites, and bacterial pathogens such as *Aeromonas*, and *Flavobacterium psychrophilum*. Diagnostic services are provided upon request. A preliberation sample consisting of 60 randomly collected fish is examined for *RS*, *Myxobolus cerebralis*, and viral replicating agents. Goede's organosomatic index is also performed. The preliberation sample is performed within 45 days of release. *Ralph Steiner*

OFH Fish Health - Juvenile spring Chinook salmon are not reared at OFH. All juveniles are reared at RRFH. *Ralph Steiner*

Communication – Trapping information is updated on site and uploaded to the IDFG Fisheries Bureau via the hatchery database (HDMS) daily and to IPC weekly. The Fisheries Release Database is updated and uploaded at least weekly. PIT tag files are uploaded to PTAGIS as the run progresses. As incubation and rearing progresses, Monthly Production Summaries and a Monthly Narrative Report are submitted to the IDFG Anadromous Fish Hatchery Supervisor and IPC. Release groups are reported to the IDFG Fisheries Bureau via the IDFG Fish Release Database and to the IDFG Research Bureau via the Data Entry Form for Release Database. *Ralph Steiner*

Transportation - IPC tanker trucks transport smolts for release at the USFS boat ramp below Hells Canyon Dam and Pinehurst Bridge on Little Salmon River. Transport takes place in oxygenated Rapid River water at a loading density of 0.6 lbs/gallon. *Ralph Steiner*

6. Sawtooth Hatchery (SFH) and weir - The LSRCP has a mitigation goal to provide adult returns of 19,445 adult Chinook above Lower Granite Dam annually. The SFH was constructed from 1983-1985 and began operations in 1985 to contribute to this adult spring Chinook salmon goal to return 11,310 to the SFH, 6,090 to the East Fork Salmon River and 2,045 to Valley Creek (based on a SAR of 0.87%). The original production design for SFH was for 2.3 million smolts including 1.3 million smolts in the Salmon River at SFH, 700,000 for the East Fork Salmon River and 300,000 smolts released in Valley Creek. The Valley Creek component of the program has never been pursued and the East Fork Salmon River component was changed in 1998 to a natural production program. Approximately, 1,000 broodstock are needed for the SFH spring Chinook salmon program. This number includes jacks and accounts for pre-spawning mortality. This brood level will provide 1.9 million green eggs at 4,500 egg fecundity and 1.7 million smolts at an average of 88% eyed egg-to-smolt survival to meet the SFH component. Currently, SFH has sufficient specific, pathogen-free water to rear 600,000 parr to 7 cm target size prior to transfer to final rearing on raw river water.

Prior to trapping in 2010, Biomark installed a PIT tag array system into the ladder of the Sawtooth trap. This system consists of four antennas (two top water and two floor orifice) that are designed to detect all fish with PIT tags entering the

Prior to full Yankee Fork Chinook Salmon Supplementation Program operations, SFH will rear Yankee Fork smolts under normal hatchery operations. Tribal staff will participate with IDFG personnel in spawning activities, genetic tissue collection, tagging operations, and loading and transport of smolts and adults to the Yankee Fork. Smolt releases in the Yankee Fork will be represented across the entire run. Adult outplants excess of broodstock may occur in area waters including Yankee Fork Salmon River. The Tribes will operculum punch, genotype, and phenotype adult hatchery-origin Chinook salmon outplanted in the Yankee.

SFH Weir operation - Depending on spring runoff conditions, ladder and trap operations will begin between mid-May and mid-June and continue through Labor Day weekend. Generally, the weir can be fully placed into operation as a descending Salmon River USGS hydrograph located near the mouth of the Yankee Fork Salmon River discharge reading approaches 3,000 cfs. Adult broodstock need is approximately 1,000 fish. *Brent Snider*

Adults are treated with formalin three to seven days per week depending on river water temperatures and fish health. Genetic samples are collected from all unmarked fish and all hatchery spawned broodstock. *Brent Snider*

Adult handling - Trapped fish are removed daily, examined for marks, gender, injuries, brood stock treated with injectable erythromycin (Gallimycin 100), and either placed into one of three adult holding ponds or released directly into the Salmon River above the hatchery, depending upon what mark or gender the fish may have. Unmarked Chinook are released above the hatchery intake after daily trap operations have ended. Hatchery-origin marked fish are defined as fish with either an adipose fin-clip only (AD), adipose clip/Coded Wire Tag (AD/CWT), or CWT only. Unmarked fish are defined as fish with no external markings or CWT. Brood fish for reserve group production made up of marked hatchery fish while proposed integrated smolt production will

incorporate unmarked natural fish. Previous smolt supplementation groups were produced from hatchery and natural spawn crosses.

Adult Chinook salmon identified as brood stock are injected with a 20 mg/kg intra-peritoneal injection of erythromycin to control *Renibacterium*. To reduce prespawning mortality due to *Ichthyophthirius multifiliis*, broodstock holding water will be treated with 167 mg/l formalin for up to 7 days per week. Once water temperatures exceed 65°F, an extended formalin treatment of 40 mg/l for 6 hours will be implemented if *I. multifiliis* is detected (under veterinary extra-label prescription). All brood females are sampled for *RS* by ELISA technology. Eggs from females with optical densities of 0.25 and above are culled from production, except when adult return fails to provide adequate number of eggs for full hatchery production. Sixty Chinook released above the SFH weir to spawn naturally are sampled through carcass recovery efforts for viral replicating agents to ascertain IHNV prevalence, estimate risk of horizontal infection to SFH production fish, and to facilitate the decision process in regards to the timing of fish production events. Brood Chinook salmon are examined for viral replicating agents (60 fish by ovarian fluid sample and 30 fish will have kidney/spleen sample taken for viral assay). A 20 fish sample is collected to monitor *Myxobolus cerebralis* prevalence. The APHIS veterinarian-in-charge will be notified if reportable pathogens are detected. Pre-spawning mortality of adult spring Chinook salmon will be categorized by suspected cause.

Neither excess adult Chinook, nor carcasses, will be transferred out of the upper Salmon River Basin due to whirling disease concerns except directly to approved rendering plants.

Adult Chinook surplus to brood need are ponded separate from broodstock and made available for Tribal ceremonial and subsistence and charitable organizations and adult outplants to SBT YFCSS. Excess Chinook are not treated with injectable erythromycin, anesthetized with MS-222 or treated with formalin.

Carcass disposition - Carcasses are placed into totes in the back of a refrigerated freezer trailer. At the end of the season these carcasses will be taken to a rendering plant.

Spawning/egg take plans, mating protocol - Approximately, 500 females and 500 males are needed for broodstock for the SFH spring Chinook salmon program. Marked hatchery fish are spawned with marked hatchery fish across brood years where possible using the following spawning protocol; > 100 pairs then 1m: 1f random cross, 50 to 100 pair then 2m : 1f split random cross , 25 to 50 pair then 3m: 1f split random cross and < 25 pair then 4m : 1f split random cross. The split random cross includes eggs from one female being split in equal groups of one, two, three to four then each group fertilized by one male. After fertilization the eggs are recombined into a single group for incubation and water hardening. If cryopreserved sperm is needed fill out request form (Appendix A) Assistance will be provided to NPT cryopreservation program. *Brent Snider/Bill Young*

Egg Incubation - Eggs are water hardened and following label directions of buffered PVP iodine. Formalin will be added daily to each incubation stack to retard fungus development at a rate of 1,667 ppm (15-min drip). Formalin treatments are initiated 2 days following spawning and continue until immediately prior to enumeration. After eggs manifest a strong

“eye” the eggs are sorted and enumerated mechanically. Likely two female’s eggs will be incubated in a single incubation tray. *Brent Snider*

Early Rearing- At swim-up summer Chinook fry are transferred into 14 indoor vats with screens initially placed at full vat length. Approximately 128,00 fry are set out in each vat. Hourly hand feeding during the day commenced when 80% of set out fry achieved swim-up. Extruded “BioVita” starter feeds, produced by Skretting/ BioOregon, will be used during early rearing. Flows were set at 50 gpm then increased to 110 gpm (maximum) when fry were well on feed. When density index reaches 0.50 to 0.55 approximately ½ of the fry will be transferred into an outdoor pond about mid February. At this time remaining half fry will be reared inside and the other half reared outside. Remaining indoor fry (100 – 150 fpp) will be marked (MATS Automated Trailer) into outside raceways beginning the third week of May.

Final Rearing - Final rearing takes place in one of fourteen outside raceways. These raceways are supplied with raw, river water. Outside fish marking begins the third week of May. If needed, final marking will begin mid-September. The target density index and flow index at release are 0.15-0.20 and 1.0 – 1.6 respectively. At release the hatchery mitigation smolts are crowded into the connected raceway tailrace then crowded from the tailrace to the Salmon River via a buried 24 inch pipeline.

Standard protocol is to sample count at least monthly for growth monitoring during their rearing cycle, and approximately one week before release. Length frequencies and condition factors will be determined from a representative sample prior to release. A fin clip quality check and CWT retention check will be completed before release.

One prophylactic feeding of erythromycin-medicated feed is planned for juveniles with a target dose of 100 mg/kg for 28 days.

IDFG tagging and research personnel PIT tag fish in March. Research personnel monitor PIT tag detection at dams. Starting in 2007, large scale representative PIT tagging was implemented at Sawtooth and has been ongoing since that time. PIT tags are provided by LSRCP and the Comparative Survival Study (CSS). The contribution of in-river tags from CSS is expected to continue into the future. A background and summary of the CSS study (10 year retrospective report) can be found at <http://www.fpc.org/documents/CSS/FINAL>. Hatchery staff recovers PIT tags from pre-release mortalities and sweeps raceways with a magnet post release to recover any shed PIT tags. Returning adult fish pass through a PIT array located in the hatchery trap ladder and are scanned by a PIT antenna mounted in measuring board. (Appendix 2)

Fish Health - Chinook salmon reared at this facility are inspected by EFHL personnel on a quarterly basis for *RS*, viral replicating agents, parasites, and bacterial pathogens such as *Aeromonas*, and *Flavobacterium psychrophilum*. Diagnostic services will be provided upon request. A preliberation sample consisting of 60 randomly collected fish is examined for *RS*, *Myxobolus cerebralis*, and viral replicating agents. Goede’s organosomatic index is also performed on these fish. This sample is taken within 45 days of release. The APHIS veterinarian-in-charge is notified if reportable pathogens are detected. *Doug Munson*

Egg inventory in December will be available to EFHL so as to make predictions for erythromycin medicated feed pre-mix needs. *Doug Munson*

Transportation strategies - Smolt destined for the Yankee Fork Salmon River (YFSR) as part of Shoshone-Bannock Tribal Chinook Supplementation program will be transported according to IHOT guidelines. Smolts will be transported before last week of April using contract drivers part of HNFH transportation contract. Trucks will release smolts into a pipeline with outflow positioned over the YFSR near mouth of Jordan Creek.

Communication - Final plans are determined when fish run projection is clear. Discussion with ISS project leaders, IDFG, SBT, and LSRCP is ongoing. Planning coordination occurs with NPT for cryopreservation program. Monthly hatchery narrative reports are available to all requesting to be included on the distribution list. Summary run report, Annual Operation and Maintenance report and final Brood Year report are available after completion and upon request. Weekly adult trapping information is available on the IDFG website.

7. Shoshone Bannock Tribes Egg Box Program - The SBT initiated an in-stream egg incubation program in Dollar Creek, a tributary of the South Fork Salmon River to maintain, rehabilitate, and enhance salmon population viability. Eyed summer Chinook eggs are placed into hatch-boxes in late fall, incubated in stream water, and allowed to volitionally emigrate at approximately the same time as fry in the natural system. This supplementation activity is designed to mimic natural production and develop a naturally spawning tributary component of the SFSR.

Egg incubation – Rearing to the eyed stage follows the procedures and guidelines at McCall Fish Hatchery. Eggs destined for the Tribes eggbox program will be incubated separately, but following regular hatchery procedures. Eggs are transferred in bags within iced coolers to Dollar Creek. Once placed into in-stream hatch boxes, incubation will occur on stream water in the natural environment. Eggboxes are distributed throughout incubation areas. Eggboxes are planted following standard Tribal protocols. At least one recording thermograph is installed at the location of the middle eggbox site. Temperature information from the thermograph will be used to ascertain time of hatching and emigration from the eggboxes. When fry are estimated to have vacated the eggboxes in substantial numbers, eggboxes are examined and number of remaining dead eggs enumerated to estimate hatch success rate.

Communication - McCall FH and SBT personnel will coordinate to determine a schedule to spawn, obtain, and transfer eyed eggs. Results and conclusions from the in-stream incubation project will be presented in an annual report to the Lower Snake River Compensation Plan.

8. Yankee Fork Supplementation Project (YFCSS) - The Yankee Fork Chinook Salmon Supplementation (YFCSS) program was established to increase the number of threatened Snake River spring/summer Chinook salmon through development of a locally adapted salmon run in the Yankee Fork Salmon River using Upper Salmon River stock. The goal of the YFCSS is to maintain, rehabilitate, and enhance salmon population viability with harvest potential, aid to spatial distribution, and contribute to diversity. In addition,

supplementation action in Yankee Fork is necessary to prevent near-term extinction, avoid further losses of genetic variation, and promote recovery of the ESA listed population.

Weir operation - Two portable picket weirs are installed on the Yankee Fork Salmon River annually. The lower weir is located just below Pole Flat Campground (approximately 3.5 miles upstream of confluence) to trap returning natural-origin and hatchery-origin adults. The upper weir is installed just above 5 Mile Creek to hold transported hatchery adults for natural spawning. Construction of the weirs occurs in mid to late June when flow drops to a level for safe installation. The lower weir is removed generally in September after seven consecutive days of no trapping occurrences. The upper weir is not removed until after spawning is complete to ensure no downstream migration of hatchery-origin adults.

Adult Handling - All fish are lengthed and right operculum punched at the lower weir for genetic tissue (DNA) and mark-recapture analysis to estimate total adult Chinook salmon escapement above the weir. All natural adults trapped at the weir are processed and immediately released above for natural distribution and spawning. Hatchery adults are transported and released at three sites above the upper weir for natural spawning. All mortalities are removed and data is collected on date, time, sex, cause of death (if known), and body condition. Mortalities are placed in the mainstem Yankee Fork spawning habitat to replenish depleted marine nutrients in the system.

If determined hatchery returns to Sawtooth are sufficient to meet the broodstock goal of 1.7 million Chinook smolts, surplus adults above broodstock needs may be outplanted in area waters including Yankee Fork Salmon River. Tribal and IDFG personnel will coordinate to transport and release Sawtooth hatchery adult Chinook salmon above the Five-Mile weir in three locations. Sawtooth adult outplants are left operculum punched (for further genetic evaluations).

Carcass disposition – Trap boxes will be checked daily, seven days a week trap tenders. Mortalities will be removed and data will be collected on date, time, sex, cause of death (if known), and body condition. Biological samples will be collected and placed in proper containers for later analysis. Mortalities will then be spread across the spawning habitat to help replenish depleted marine nutrients in the system.

Spawning/egg take plans, mating protocol - TBD with final approval of HGMP.

Egg Incubation - Incubation for the YFCSS program will occur in the interim at the Sawtooth Fish Hatchery under normal guidelines and operations.

Early Rearing - Rearing for the YFCSS program will occur in the interim at the Sawtooth Fish Hatchery under normal guidelines and operations.

Final Rearing - Rearing for the YFCSS program will occur in the interim at the Sawtooth Fish Hatchery under normal guidelines and operations.

Fish Health - Chinook salmon reared at this SFH are inspected by EFHL personnel on a quarterly basis for *RS*, viral replicating agents, parasites, and bacterial pathogens such as *Aeromonas*, and *Flavobacterium psychrophilum*

Fish Release/Transportation – Yankee Fork smolt releases and transportation is currently to be determined and will be finalized in a Memorandum of Agreement between the Tribes, IDFG, and LSRCP. Outplanted adults are transported using a 300 gallon tank mounted on a three-quarter ton truck. The tank has one compartment of 300 gallon capacity and was modified to include an oxygen tank, diffuser, and circulating pump. The tank is filled with water pumped directly from Yankee Fork or acquired at the SFH. Normal hauling guidelines are followed for adult fish, which is approximately one pound of fish per gallon of water.

Communication – The Tribes will coordinate with IDFG and SFH personnel on all activities related to the YFCSS program. The YFCSS will complete weekly, monthly, and annual reports to the cooperating agencies during in-season management and post-season analysis, respectively.

Appendix 3. Sockeye Hatcheries and Weirs: Standard Operating Procedures.

1. Eagle Fish Hatchery/Burley Creek Fish Hatchery: Approximately 400 – 500 eyed-eggs are needed to meet and maintain genetic diversity for broodstock replacement goals for the Eagle Hatchery Sockeye salmon captive broodstock program. A replicate group of eyed-eggs is transferred to Burley Creek FH (NOAA Fisheries Manchester Marine Lab in Washington State) as a spread the risk strategy. Spawn crosses made from each brood year will also meet production goals in the Salmon River Basin. Production goals may be adjusted annually based on recommendations provided by the Stanley Basin Sockeye Technical Oversight Committee (SBSTOC) to agency policy staff. Current production goals for the Salmon River Basin are: 50,000 eyed-eggs to Pettit Lake released in November/December; 75,000 pre-smolts released in October (45,000 Redfish Lake, 15,000 Pettit Lake and 15,000 Alturas Lake); and 250 captive reared adults released in September. Note: Production rearing (pre-smolts and smolts) is included in Sawtooth FH and Oxbow FH summaries.

Ladder operation - Fish weirs on Salmon River at Sawtooth FH and Redfish Lake Creek are monitored from mid-July through mid-September. All anadromous sockeye trapped are returned to Eagle FH for temporary holding or will be released directly to Redfish Lake. *Brent Snider/Dan Baker*

Adult fish health - Adults returned to Eagle FH to be incorporated into the spawning matrix are sampled for all viral and bacterial pathogens. Special precautions are taken to isolate/quarantine this group from the captive population. *Doug Munson*

Adult outplanting/markings - Returning adults will be incorporated into the spawning matrix at Eagle FH and/or released with captive reared adults to Redfish Lake. *Dan Baker/Mike Peterson*

Adult monitoring and evaluation - Monitoring and evaluation - All adults released are monitored after release to determine spawning behavior information (spawn timing, spawning locations, number of redds developed, etc.). This information is collected using radio transmitters, visual observations and snorkeling over spawning areas. Adults released to Redfish Lake may receive radio transmitters to monitor their activities after release. Visual observation and snorkeling over known spawning areas will also be used to evaluate spawning behavior. *Mike Peterson*

Spawning/egg take plans, mating protocol - Returning anadromous adults that are not released will be incorporated into the captive broodstock spawning matrix at Eagle FH. The spawning matrix used at Eagle FH is a 1 x 3 matrix. Crosses are made based on least related individuals determined from micro satellite analysis. Every attempt is made to represent all males in the population equally. *Dan Baker*

Carcass disposition - All carcasses as a result of spawning or pre-spawn mortalities will be disposed of at the local rendering plant. *Dan Baker*

Egg incubation - Eggs will be incubated at 8 degrees Celsius until the eyed-stage. Survival to eye will be calculated and eyed –eggs will be used in a variety of release strategies (depending on pathology results of the males and females used in the spawn crosses). *Dan Baker*

Juvenile fish health - Due to the relatively low number of fish reared annually, pre-transfer fish health sampling does not occur prior to transporting juveniles from Eagle FH to Manchester or adult sockeye from Manchester back to Idaho. However, all fish that die in the program during the course of any rearing year are assayed for typical viral and bacterial pathogens. To date, sockeye salmon have remained relatively disease free. *Doug Munson/Mark Peterson*

Communication - Eagle FH produces monthly updates provided to IDFG Fisheries Bureau. Stanley Basin Sockeye Technical Oversight Committee (SBSTOC) meets quarterly providing program updates to participating agencies. *Dan Baker/Mike Peterson/Carlin McAuley*

2. Oxbow (Oregon) Fish Hatchery: Oxbow FH is operated by Oregon Department of Fish and Wildlife (ODFW). Oxbow FH was identified by SBSTOC members as a facility that could rear an additional 80,000 sockeye to the smolt stage. With modifications to the facility, the smolt production goal would be 150,000 smolts annually. Eyed-eggs are currently transferred to the facility in November/December to meet production goals. After an 18 month rearing cycle the juveniles will be transferred to Idaho and released in the Salmon River Basin.

Fish health - Fish that die in the program during the course of any rearing year are assayed for typical viral and bacterial pathogens. To date, sockeye salmon have remained disease free. Two, 60 fish samples will be tested during culture for viral and bacterial pathogens. All pathology guidelines will be met before juveniles are transferred back to Idaho. *Doug Munson/Tony Amandi*

Monitoring and evaluation - All smolts have been CWT tagged and 11,000 will be PIT tagged before release. Survival to Lower Granite Dam will be evaluated as well as smolt to adult survival from different release strategies. *Mike Peterson*

Communication - Eagle FH produces monthly updates provided to IDFG Fisheries Bureau. Stanley Basin Sockeye Technical Oversight Committee (SBSTOC) meets quarterly providing program updates to participating agencies. *Dan Baker/Mike Peterson*

3. Sawtooth Fish Hatchery: Sawtooth FH is used as a rearing station for the sockeye pre-smolt and smolt production. Eyed-eggs are transferred to Sawtooth in November and December to meet production goals. Current production goals at Sawtooth are 75,000 pre-smolts for Salmon River Basin Lakes in October and up to 100,000 smolts for Salmon River Basin released in May.

Fish health - Fish that die in the program during the course of any rearing year are assayed for typical viral and bacterial pathogens. To date, sockeye salmon have remained disease free. A 60 fish sample will be tested before release for viral and bacterial pathogens. All pathology guidelines will be met before pre-smolts are released. *Doug Munson*

Monitoring and evaluation - All smolts have been CWT tagged and 53,000 will be PIT tagged before release. Survival to Lower Granite Dam will be evaluated as well as smolt to adult survival from different release strategies. *Mike Peterson*

Communication - Eagle FH produces monthly updates provided to IDFG Fisheries Bureau. Stanley Basin Sockeye Technical Oversight Committee (SBSTOC) meets quarterly providing program updates to participating agencies. *Dan Baker/Mike Peterson*

Appendix 4. Snake River Germplasm Repository Cryopreserved Semen Request Form

Snake River Germplasm Repository Committee
Bill Young
P.O. Box 1942, 125 South Mission St
McCall, ID 83638
Phone: (208) 634-5290
Fax: (208) 634-4097

Snake River Germplasm Repository Cryopreserved Semen Request Form

Name: _____Affiliation:

Phone number: (_____)_____Address:

Date of request: _____Date need by:

Species/stock requested: _____Hatchery or wild/natural:

Number of individuals: _____Number of straws needed: _____0.5ml
_____5.0ml

Reason for request (clearly demonstrate need or type of hatchery program):

Fertilization experience using cryopreserved semen:

Name, address, and phone number of person samples should be delivered to:

Please use additional pages as necessary.

The salmon managers of the Snake River Basin are concerned with how cryopreserved samples are being used and retain the right to refuse samples for inappropriate use of the threatened salmonid species gametes. The Nez Perce Tribe can arrange to deliver and assist in the fertilization of eggs. Please call Bill Young at the McCall Field Office (address above) to coordinate transfer. The Nez Perce Tribe also may request data on the performance of the semen (percent of eggs fertilized, post-thaw sperm motility, etc.).

Signature: _____ Date: _____

Appendix 5. Parentage Based Tagging (PBT)

Similar to the last two years, the Idaho Department of Fish and Game is requesting fin tissue samples from all hatchery steelhead and Chinook salmon spawned at Snake River hatchery facilities in Idaho, Washington, and Oregon. The goal of obtaining a genetic sample from all hatchery broodstock stems from a request in 2008 by our anadromous fish managers to investigate the feasibility of PBT as a complement, or perhaps even an alternative to, the coded-wire tagging program that is currently in place to track hatchery stocks by cohort. The concept of PBT was originally proposed by Anderson and Garza (2005) and involves the annual genotyping of all broodstock at each hatchery of interest, creating a parental genotype database. Progeny from any of these parents (collected at any point in their life cycle), if genotyped, could be assigned back to their parents, thus identifying the hatchery they originated from and exact brood year they were produced in. Over the last two years, with the help of hatcheries in Idaho, Washington, and Oregon, we were successful in obtaining fin clips from most of the steelhead and Chinook salmon spawned throughout the Snake River basin (Tables 1 and 2). All facilities have provided information on sex and sample date for each fish sampled. Some facilities have provided individual cross information for many or all of the crosses they performed.

In 2008, we were successful in completing a small PBT pilot study involving the Magic Valley Hatchery. By genotyping (17 microsatellite loci) all parents that produced eggs for Magic Valley in 2008 (N = 1033) as well as a representative sample of ~100 juveniles from each of the five stocks reared at the hatchery (Sawtooth, Pahsimeroi, Upper Salmon B's (Squaw Creek), E.F. Salmon River and Dworshak) we were able to demonstrate 100% accuracy in assigning juveniles to their correct stock of origin (Table 3).

During this year we have two primary goals. The first is to work closely with the Columbia River Intertribal Fish Commission (project # 2008-907-00) and other GAPS and SPAN labs to identify a Single Nucleotide Polymorphism (SNP) marker set that will afford sufficient resolution to address both PBT needs in the Snake River basin and Genetic Stock Identification needs in the Columbia River basin. SNP markers were chosen for future work, over microsatellites, because it is believed that SNPs may have the potential of providing increased resolution to discriminate closely related stocks, are easily standardized among laboratories and amenable to cost-effective, high-throughput, automated genotyping. We are currently seeking funds to complete this work (and create the first PBT parental genetic baselines in the Snake River basin) through the Fast Track FCRPS BiOp Project proposal process. Our second goal over the next year is to complete a third year of genetic sampling for all Snake River hatchery steelhead and Chinook salmon that are spawned at each hatchery. Similar to previous years, our lab will provide all ethanol vials and sampling equipment, but will rely largely on existing hatchery or other program personnel to take fin tissue samples, record sex and record spawn/sample date. A general sampling protocol follows:

Sampling Protocol-

1. Using forceps and scissors or a scalpel, remove a small amount of tissue:

- a. fin tissue – about the size of your little finger nail (any fin will work, just make sure that it is free of fungus and that you are sampling “live” tissue)
2. Carefully wipe instruments with a Kimwipe or paper towel and rinse in ethanol or clean water between each sample.
3. Place tissue into 2 ml tubes with 100% non-denatured ethanol (blue cap tubes = males, red cap tubes = females), and store in a cool location. Store only one sample per sample tube.
4. Label individual sample tubes with field number. Provide an excel data sheet with individual sample tube number, sex identification, and any other available data (length, field ID, pit tag ID, etc.)
5. If possible, record every individual cross by genetic sample number, sex and date.

We greatly appreciate everyone’s help with this effort over the last couple of years and appreciate your continued support in 2010. Please contact the Eagle Fish Genetics Lab (Matthew Campbell, 208-939-6713, matthew.campbell@idfg.idaho.gov) if you have any questions/comments.

Table 1. Total steelhead hatchery broodstock genetically sampled in 2008 and 2009 in the Snake River basin. *Early January egg takes missed.

Snake River Hatcheries	2008	2009
LSRCP/IDFG Sawtooth (IDFG)	639	519
LSRCP/IDFG Sawtooth (SBT)	454	457
LSRCP/IDFG Sawtooth (EFSR)	119	132
LSRCP/IDFG Sawtooth (USB/Squaw)	35	53
Idaho Power/IDFG,Oxbow F.H.	927	600
Idaho Power/IDFG, Pahsimeroi F.H.	1530	1304
LSRCP/IDFG/USFWS Dworshak/C.W.	1420*	1775
LSRCP/ODFW-Wallowa F.H.	0*	460
LSRCP/WDFW-Lyons Ferry	0*	215
LSRCP/WDFW-L.F. (Tucannon)	0*	25
LSRCP/WDFW-L.F. (Touchet)	0*	29
LSRCP/WDFW-L.F. (G.R. cottonwood)	169	100
Total	5293	5669

Table 2. Total Chinook salmon hatchery broodstock genetically sampled in 2008 and 2009 in the Snake River basin.

Snake River Hatcheries	2008	2009
Idaho Power/IDFG, Rapid River	2902	2098
LSRCP/USFWS, Dworshak	1216	908
LSRCP/IDFG, Clearwater (powell)	702	871
LSRCP/IDFG, Clearwater (SF)	1234	872

LSRCP/IDFG, Sawtooth	1200	1010
Idaho Power/IDFG, Pahsimeroi	714	628
LSRCP/WDFW-L.F. (Tucannon)	131	175
LSRCP/IDFG, McCall (SFSR)	1920	946
LSRCP/ODFW, Imnaha	248	226
LSRCP/ODFW/NPT, Lostine	108	109
LSRCP/ODFW, Catherine Creek	57	81
LSRCP/ODFW, Grande Ronde	27	116
LSRCP/ODFW, Lookingglass Creek	150	65
Total	10609	8105

Table 3. Number and percentage of juveniles assigned to a parent pair (95% confidence) and assigned correctly to stock. Accuracy of spawn records are also shown.

Hatchery Stock	Juveniles Genotyped	Juveniles Assigned	# assigned correctly to stock	% assigned correctly to stock	# matching cross spawn records	% matching spawn cross records
Upper B./Squaw	92	92	92	100.0%	N/A	N/A
Sawtooth	93	91*	91	100.0%	85	93.4%
Dworshak	93	93	93	100.0%	93	100.0%
E.F. Salmon	93	85**	85	100.0%	N/A	N/A
Pahsimeroi	93	93	93	100.0%	N/A	N/A
G.R. Cottonwood	91	91	91	100.0%	91	100.0%
Lyons Ferry	93	0†	N/A	N/A	N/A	N/A

*The two juveniles that did not assign came from take #8, of which one parent was not genotyped (no fin clip in tube).

**The 8 juveniles that did not assign to a parent pair were assigned a father (0 mismatches) but no mother. All can be explained by one female parent not genotyped (no fin clip in tube #10).

†As expected. No Lyon Ferry adults were sampled or genotyped.

Appendix 6. Passive Integrated Transponder (PIT) Tags

PIT tags are used to evaluate metrics associated with juvenile and adult migration. Detectors within juvenile bypass systems and adult ladders at Snake and Columbia River dams allow biologists to utilize information resulting from individual PIT tag detections.

PIT tag detectors in juvenile bypass systems are used to deflect migrating juveniles into barges or back to the river depending on the time of year or the specifics of a study design. For juveniles, PIT tags are most commonly used to evaluate travel time, passage timing, survival from release to a specific dam, and to compare survival rates for alternative forms of outmigration (see CSS). All PIT tagged hatchery fish outmigrating from Idaho facilities are subject to Separation by Code (SbyC).

PIT tag detectors in adult ladders are highly efficient at detecting PIT tags in returning adult fish. In addition to detectors at the dams, adults can also be detected at various in-river arrays that exist in locations like the South Fork Salmon River. Adults are also scanned for PIT tags at hatchery racks. For returning adults, PIT tags are generally used for hatchery specific run timing, stock composition, in-season harvest management, smolt to adult return rate estimates, estimating stray rates, and to provide a known-age component at hatchery racks. Due to differences in rearing conditions, sample sizes, release locations, etc., PIT tags are not typically used to make statistical comparisons between hatcheries or between raceways within a hatchery unless a specific study design exists.

Coded wire tags (CWT): Coded wire tags are used to evaluate metrics associated with adult returns. Because CWT's are universally accepted and easy to detect and read, they are often used for evaluating recovery rates in ocean and freshwater systems, estimating stray rates, harvest rates in mixed stock fisheries, and stock and age composition in fisheries and at hatcheries. Although not a common practice, CWT's can also be used to identify hatchery origin fish in the absence of an adipose clip. Adult fish checked during creel censuses as well as returning to racks are all typically scanned for a CWT. Snouts recovered in Idaho fisheries and at IDFG and IPC hatcheries are processed in the CWT lab at IDFG's Nampa Research office. Though CWT tagging rates are relatively high when compared to other tag types, the recovery rate of CWT's is very low. Because of such low recovery rates and differences in rearing conditions, sample sizes, release locations, etc., CWT's are not used to make statistical comparisons between stocks, nor are they used to evaluate differences within a hatchery unless a specific study design exists.