LYONS FERRY COMPLEX
ANNUAL OPERATION PLAN

For the Period of

OCTOBER 1, 2009 – SEPTEMBER 30, 2010

Prepared by:

Washington Department of Fish and Wildlife

Nez Perce Tribe

Confederated Tribes of the Umatilla Indian Reservation

And funded by:

Lower Snake River Compensation Plan

LOWER SNAKE RIVER COMPENSATION PLAN
Hatchery Program

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A. Facilities

Lyons Ferry Complex (LFC; See **Figure 1**) includes Lyons Ferry Hatchery (LFH), Tucannon Hatchery (TFH), Cottonwood Acclimation Facility (Cottonwood AF), Dayton Acclimation Facility (Dayton AF), and Curl Lake Acclimation Pond (Curl Lake AP).

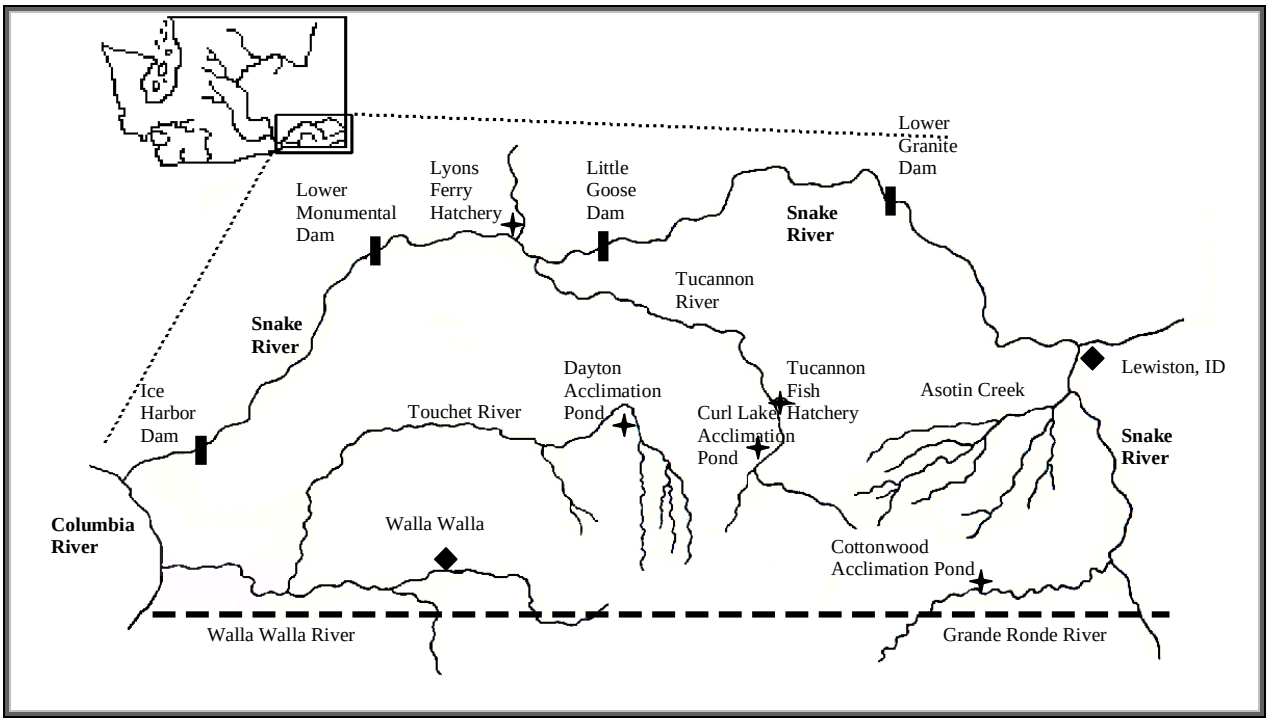

Figure 1. Map of the Lower Snake River Compensation Plan (LSRCP) LFC Facilities, and major rivers and streams in Southeast Washington.

LSRCP funded fish production in Washington began in 1983, with the construction of trout and steelhead rearing facilities at the LFH. Construction of salmon facilities and steelhead acclimation sites followed, and was completed in 1985. Major upgrades at TFH also occurred at that time, and operation of that facility has been funded by LSRCP every since. Production at all facilities has been directed toward meeting established program goals of returning 18,300 adult fall Chinook, 1,152 adult spring Chinook, 4,656 adult summer steelhead, and providing 67,500 angler days of fishing opportunity from 80,000 pounds of rainbow trout production, currently planted at 3 fish per pound (fpp). In addition to these LSRCP production goals, Washington Department of Fish and Wildlife (WDFW) funds a jumbo-sized (1.5 pounds each) rainbow trout program at TFH.

1. Lyons Ferry Hatchery

The LFH is located along the Snake River at river mile (RM) 59.1, directly below the confluence of the Palouse River in Franklin County, Washington. Initially it was operated as two separate facilities. Washington Department of Wildlife (WDW) operated the north hatchery, producing steelhead and rainbow trout. Washington Department of Fisheries (WDF) operated the south hatchery, rearing spring and fall Chinook. A merger of the two agencies in 1994 led to a merging of the two facilities, and has since been operated by WDFW through LSRCP funding as LFH.

Facilities include two incubation buildings with office space and feed storage, plus adult fish trapping, holding and spawning structures. A visitor center provides interpretive information for guests of the hatchery. There are eight residences on-site for staff to fulfill security and emergency response needs.

The LFH rearing facilities include twenty-eight raceways at 10 ft x 100 ft x 2.8 ft and nineteen raceways at 10 ft x 88.5 ft x 3.5 ft. These raceways were covered in 2" square mesh netting in 2005 and 2006. There are three rearing lakes now covered in 2" netting (completed in 2008), holding ~ 590,000 cubic feet (ft^3) of water each, approximately 1,100 ft x 90 ft x 10 ft in size. Netting has been added to these lakes and raceways to reduce predation losses. The adult holding facilities include three 83 ft x 10 ft x 5 ft adult raceways with enclosed spawning facilities incorporated over the center of these ponds. With the addition of new walls in the adult ponds in summer 2009, there are now four 8.5 ft x 150 ft x 4.3 ft and four 10 ft x 150 ft x 4.3 ft adult salmon holding ponds, which also accommodate sub-yearling rearing when not needed for adult holding in the spring of the year. In 2005, channels were cut into two of these ponds, creating three temporary holding areas in each of the two modified ponds to accommodate marking and tagging of the subyearlings reared there. Screens were fabricated to fit the channels. Six 3.25 ft x 16 ft x 2.6 ft fiberglass tanks were added below the north side raceways in 2006, allowing for decreased densities and improved flexibility in all stocks during early rearing. The incubation facilities include 112 full stacks (2 units of 8 trays each) of vertical incubators in the south trough room, and 88 shallow eyeing/hatching troughs and four 3.75 ft x 27.5 ft x 2 ft intermediate rearing troughs in the north trough room.

Water is supplied to LFH from the Marmes pump station, which has emergency power backup generation. The Marmes pump (wells) facility has three 300 horsepower (hp) pumps, four 200 hp pumps and one 75 hp pump. The well water right for LFH is 53,200 gallons per minute (gpm), or 118.5 cubic feet per second (cfs) of flow, and water temperature is a constant 52^o F.

2. Tucannon Hatchery

The TFH is located along the Tucannon River, between the towns of Dayton and Pomeroy Washington, at RM 36 in Columbia County. Fish production began in 1949 by the Washington Department of Game. In 1983, construction began to remodel the hatchery as part of a transfer of ownership to LSRCP. In November 1986 construction was complete, and LSRCP has funded operations there ever since.

The TFH includes a combined incubation and office building, back-up power generation building, feed storage shed, shop, domestic water building, two well houses and a spring water

collection building. There is also a river intake and trapping facility located upstream of Rainbow Lake, along the Tucannon River. There are two residences for staff on site to fulfill security and emergency response needs.

The TFH is supplied with three different water sources. River water is captured from the Tucannon River and ranges in temperatures from 33 to 60 ^{o} F during use by the hatchery. The intake is located one half mile upstream of the hatchery. This water travels down an open channel into Rainbow Lake. From the outlet of Rainbow Lake the water travels through an 18" above ground pipeline to the hatchery. This pipeline was completely replaced in 2005. Rainbow Lake functions as a reservoir to provide the hatchery with cooler water in the summer months and warmer water in the winter months. It also provides a pool of water to draw from when encountering adverse intake conditions, resulting in temporary loss of water flows. An estimated 8 hours of water supply is currently available, however, a proposed dredging project will increase its capacity and supply. The water right for this source is 16 cfs. Well water is pumped from two separate sources to an aeration tower, and then gravity fed to the rearing units and the domestic pump building. The combined well water right is 2 cfs, with well #2 running around 54 - 57^{o} F and well #3 running a constant 61^{o} F. Spring water is pumped from an underground collection site to the same aeration tower and gravity fed to rearing units. The water right for this source is 5.3 cfs, and has a stable temperature of 51 or 52^{o} F.

The rearing vessels at TFH include 40 concrete 1 ft x 15ft x .5 ft shallow troughs, six concrete round ponds approximately 40 ft in diameter with a maximum of 2,660 ft^{3} of rearing area each, two concrete 10 ft x 80 ft x 3 ft raceways, one concrete 15 ft x 136 ft x 5 ft raceway, and one earthen rearing pond with a maximum of 136,221 ft^{3} of rearing space. The pond is approximately 170 ft x 200 ft x 6.5 ft in size.

3. Cottonwood Acclimation Facility

Cottonwood AF is located along the Grande Ronde River at RM 28.7, directly above the confluence with Cottonwood Creek in Asotin County, Washington. Construction was completed in February 1985.

This facility includes an adult trapping facility on Cottonwood Creek, and a small storage building. Cottonwood AF has a concrete bottom with earthen walls and holds ~357,000 ft^{3} of water. It has a water right of 2,694 gpm (6 cfs) for the period January 1st through July 1st. It is supplied with water from Cottonwood Creek through a gravity water supply system, with the intake integrated into the adult trapping facility located ~ 0.10 miles above the pond. Water temperatures range from 34 to 52^{o} F during operation of the facility. It also has a small trailer for use by staff required to be on-site at all times while the pond is in operation. It is presently used for acclimation and release of Wallowa stock summer steelhead into the Grande Ronde River.

4. Dayton Acclimation Facility

Dayton AF is located along the Touchet River at RM 53 in Columbia County, Washington. There is an adult trapping facility on the Touchet River just upstream of the acclimation pond at RM 53.3.

Construction of the Dayton AF was completed in October 1986. This pond is asphalt lined and holds ~ 200,000 ft^3 of water. The water right to this pond is 2,694 gpm (6 cfs) for the period of Jan 1st – May 15th of each year. It is supplied with water from the Touchet River through a gravity water supply system, with the intake located at the newly constructed adult trapping and bypass facility just upstream of the pond. Water temperatures during operations for steelhead acclimation range from 34 to 52° F. The pond is located adjacent to the Snake River Lab evaluation office and has a storage garage for equipment and feed. It also has a small trailer for use by staff required to be on-site at all times while the pond is in operation. It is presently used for acclimation and release of LFH stock summer steelhead into the Touchet River. The new intake, trap and water supply structure serves multiple functions. During the summer months, local irrigators can now collect water from the intake in place of river dredged dams.

5. Curl Lake Acclimation Pond

Curl Lake AP is located along the Tucannon River at RM 41 in Columbia County, Washington. The construction of Curl Lake AP was completed in February 1985. Curl Lake AP is an earthen pond holding ~ 784,000 ft^3 of water. It has a water right of 2,694 gpm (6 cfs). It is supplied with water from the Tucannon River through a gravity water supply system. It is currently utilized for acclimation of spring Chinook yearlings for release into the Tucannon River. Water temperatures at this time of year range from 34 to 48 ° F. Chinook acclimation in Curl Lake AP started in 1997. After the spring Chinook are released, the pond is stocked with resident trout for fishing. It is emptied after fishing season ends October 31st each year, and recharged by hatchery staff prior to spring Chinook acclimation the following January.

6. Other Acclimation Facilities

In addition to WDFW acclimation sites, LFC provides up to 465,000 yearling and 1,740,000 sub-yearling fall Chinook to three acclimation facilities operated by the Nez Perce Tribe (NPT): Pittsburg Landing and Captain John's Rapids on the Snake River between Asotin and Hells Canyon Dam, and Big Canyon on the Clearwater River. Size at transfer to the NPT AF's is 12 fpp for yearlings and 65 - 75 fpp for sub-yearlings. Size at release goal for acclimated fall Chinook yearlings is 10.0 fpp, and 50 fpp for sub-yearlings. Sub yearling size goals at transfer have been difficult to achieve due to increased marking, tagging and egg take strategies.

B. Fish Production Summary

Annual hatchery production is intended to meet LSRCP adult return goals for several species. Current production levels are set to meet the adult return goals for hatchery steelhead most years while minimizing any adverse effects on ESA listed salmon and steelhead (**Table 1**). Production levels for salmon and steelhead at LFH have been approved through the *U.S. v Oregon* (*US v OR*) 2008-2017 Management Agreement; LFH Fall Chinook salmon production priorities contained in Tables B4A and B4B. LFH is planning BY2008 fall Chinook production based on

table *B4B* (**Table 3**). Spring Chinook production is now solely comprised of a conventional program. With the phase out of the captive broodstock program in 2006, the conventional smolt release program goal will be increased to 225,000 smolts per year (as agreed to under US v OR), for release in 2009. LFH utilizes two steelhead stocks (Lyons Ferry and Wallowa) for mitigation objectives under LSRCP, and is testing two natural broodstocks in the Touchet and Tucannon Rivers. Numbers of fish released in 2008 were annual goals proposed for 2009, (**Table 2**) representing the program as negotiated by the co-managers.

It is important to stress that *any* change to a specific program at LFH or TFH will potentially impact the other programs, so "current capacity" values shown in **Table 1** represent rearing limits *as the programs are structured today*. Additionally, restrictions anywhere within the rearing cycle will determine program size. Restrictions can be rearing vessels, water, tagging groups and schedules, fish management decisions regarding harvest or adult return contribution and carrying capacity, etc.

Monitoring and Evaluation (M&E) has been ongoing since 1983 and 1985 for trout and salmon programs respectively. Recent emphasis has centered on meeting Endangered Species Act (ESA) permitting and recovery planning requirements. Hatchery Scientific Review Group recommendations may also affect management decisions in the coming years. Routine monitoring includes length, weight, K factor, external fin evaluation, tag retention and fish health examinations. Pre-release quality control checks on fin clips, tag retention, etc. is completed on all WDFW releases by WDFW staff.

Table 1. LFC production capacities (historical design versus current).

Facility	Location River (Mile)	Water Source	Species	Designed Capacity (#Fish)	Designed Capacity (Pounds)	Current Capacity (#Fish)	Current Capacity (Pounds)
Lyons Ferry	Snake (58)	Wells	Fall Chinook Spring Chinook Steelhead Rainbow TOTALS	9,160,000 132,000 931,200 260,000 **10,483,200**	101,800 8,800 116,400 84,000 **311,000**	3,100,000 289,000 609,500 310,000 **4,308,500**	116,167 9,633 119,570 51,600 **296,970**
Tucannon	Tucannon (36)	Wells, Springs, Tucannon R.	Spring Chinook Rainbow Steelhead TOTALS	132,000 210,000 -0- **342,000**	8,800 39,285 -0- **53,335**	282,000 198,000 90,000 **570,000**	18,800 49,100 20,000 **87,900**
Cottonwood AF	Grande Ronde (28.7)	Cottonwood Creek	Steelhead	250,000	31,250	250,000	55,556
Curl Lake AP	Tucannon (41)	Tucannon R.	Steelhead Spring Chinook	160,000 -0-	32,000 -0-	-0- 480,000	-0- 32,000
Dayton AF	Touchet (53)	Touchet R.	Steelhead	125,000	25,000	112,500	25,000

Table 2. LFC plants and transfers by brood years (BY) – three-year profile.

Species	Year slated for release/transfer				
	2009 Goal	2009 Actual Plants and Transfers	2010 Goal [a]	Fish/Eggs on Hand For 2010 Goal	2011 Tentative Plan [b]
Fall Chinook					
Yearling releases:	**BY 2007**	**BY 2007**	**BY 2008**	**BY 2008**	**BY 2009**
LFH-on station	450,000	455,152	450,000	500,000	450,000
NPT (transfer)	465,000	452,459	465,000	495,000	465,000
Sub-yearling releases:	**BY 2008**	**BY 2008**	**BY 2009**	**BY 2009**	**BY 2010**
LFH-on station	200,000	200,733	200,000	Unknown	200,000
NPT (transfer)	1,420,000	1,419,496	1,420,000	Unknown	1,420,000
Direct- Snake River near Couse Cr (CCD)	200,000	200,744	200,000	Unknown	200,000
Direct-Grande Ronde River near .state line	-0-	181,400	-0-	-0-	-0-
Eyed Egg Transfers:	**BY 2008**	**BY 2008**	**BY 2009**	**BY 2009**	**BY 2010**
Oxbow - IPC	211,000	210,000	211,000	Unknown	211,000
Umatilla - IPC	842,000	835,600	842,000	Unknown	842,000
Irrigon - Direct – Grande Ronde R.	421,000	420,000	421,000	Unknown	421,000
Umatilla-ACOE	345,220 [d]	345,200	345,220[d]-	Unknown	345,220[d]-
Spring Chinook					
Conventional	**BY 2007** 225,000	**BY 2007** 114,681	**BY 2008** 225,000	**BY 2008** 175,053	**BY 2009** 225,000
Summer Steelhead (Stock)					
	BY 2008	**BY 2008**	**BY2009**	**BY 2009**	**BY 2010**
On Station (LFH)	60,000	65,050	60,000	65,000	60,000
Tucannon (LFH)	100,000	105,995	100,000	105,000	100,000
Touchet (LFH)	85,000	86,115	85,000	86,000	85,000
Walla-Walla (LFH)	100,000	108,951	100,000	105,000	100,000
Cottonwood (Wallowa)	160,000	170,232	160,000	167,181	160,000
Tucannon (Endemic)	50,000	2,344	50,000	63,135	50,000
Touchet (Endemic)	50,000	49,656	50,000	60,182	50,000
Touchet (Endemic 2-yr)	7,500	*5,697*	5,500	5,500	Unknown
Spokane Rainbow Trout					
Mitigation	**BY 2007**	**BY 2007**	**BY 2008**	**BY 2008**	**BY 2009**
Catchables	236,725	227,920	234,100	237,376	234,935
Jumbo's	500	581	1,000	1,056	1,000
Fry-Idaho Fish and Game (IDFG), transfer	160,000	170,125	160,000	156,900	160,000
State Program					
Jumbo's	4,000	4,180	4,500	4,896	4,500
Legals	200	200	200	200	200
Kamloops RB Trout					
Fingerling -IDFG, transfer	50,000	53,970	50,000	53,422	50,000

[a] all fall Chinook subyearling and egg goals in this column are based on full adoption of the Snake River Fall Chinook Hatchery Management Plan (SRFMP). [b] all fall Chinook goals in this column are based on full adoption of the SRFMP.

c these fish were transferred to Dworshak National Fish Hatchery (DNFH) at 100 fpp.

[d] Amount of fish to transfer to get a 328,000 release. In addition the ACOE has requested that number to be increased to 417,000 (or 438893 at transfer) but an agreement has not been made by US v Oregon parties at this time.

[e] Rearing location to change for brood year 2010. Pending future discussions.

II. SNAKE RIVER FALL CHINOOK

The fall Chinook production program at LFH is the cornerstone of a highly coordinated and integrated artificial program for Snake River fall Chinook, implemented through the LSRCP program, the Idaho Power Company (IPC) Hells Canyon Mitigation Agreement, and the Nez Perce Tribal Hatchery (NPTH). Broodstock for the program at LFH are collected at Lower Granite Dam (LGR) and at LFH.,

The *US v OR* 2008-2017 Management Agreement included two tables that determined priority release locations and numbers for fall Chinook production at LFH; production priorities contained in Tables *B4A* and *B4B*. A policy decision has been made to use *B4B* from that agreement. For this AOP, LFH is planning BY2009 fall Chinook production based on table *B4B* (**Table 3**).

The LFH was initially designed to release 9.16 million fall Chinook subyearlings (**Table 1**) at around 90 fpp. Currently this facility produces 1.8 million subyearlings at approximately 50 fpp, and another 900,000 yearlings at 10-12 fpp. Additionally, this facility traps and spawns returning adult fall Chinook to meet egg take needs elsewhere, which includes providing over 1,000,000 eggs annually for the IPC program. Marking and tagging will occur there as well. These fish will be released into the Grande Ronde River in Washington as subyearlings by ODFW. The co-managers will coordinate release timing and location. ODFW fish health staff as coordinated between the two Agencies will conduct viral testing of the females providing eggs for this program. Steve Roberts has assumed the ELISA sampling responsibility for both agency. This production was historically conducted at LFH, however co managers recognized the opportunity to shift the program to Oregon, reducing densities and creating some flexibility at LFH. Both facilities are funded by LSRCP, so budgets were adjusted accordingly, and the co managers have agreed to this change in production.

Table 3. Revised production table listing Snake River fall Chinook salmon production priorities for LFH per the *UsvOR* Management Agreement, Table *B4B*, and agreed upon by members of the SRFMP for Brood Years 2008-2017.

Priority	Production Program				
	Rearing Facility	**Number**	**Age**	**Release Location(s)**	**Marking**
1	Lyons Ferry	450,000	1+	On station	225KAdCWT 225K CWT
2	Lyons Ferry	150,000	1+	Pittsburg Landing	70K AdCWT 80K CWT only
3	Lyons Ferry	150,000	1+	Big Canyon	70K AdCWT 80K CWT only
4	Lyons Ferry	150,000	1+	Captain John Rapids	70K AdCWT 80K CWT only
5	Lyons Ferry	200,000	0+	On station	200K AdCWT
6	Lyons Ferry	500,000	0+	Captain John Rapids	100K AdCWT 100K CWT only 300K Unmarked
7	Lyons Ferry	500,000	0+	Big Canyon	100K AdCWT 100K CWT only 300K Unmarked
8	Lyons Ferry	200,000	0+	Pittsburg Landing	100K AdCWT 100K CWT only
9	Oxbow	200,000	0+	Hells Canyon Dam	200K AdCWT
10	Lyons Ferry	200,000	0+	Pittsburg Landing	200K Unmarked
11	Lyons Ferry	200,000	0+	Direct stream evaluation Near Captain John Rapids	200K AdCWT
12	DNFH/Umatilla	250,000	0+	Transportation Study[a]	250K PIT Tag only
13	Irrigon[b]	200,000	0+	Grande Ronde River	200K AdCWT
14	DNFH/Umatilla	78,000	0+	Transportation Study[a]	78K PIT tag only
15	Umatilla	200,000	0+	Hells Canyon Dam	200K AdCWT
16	Irrigon[b]	200,000	0+	Grande Ronde River	200K Unmarked
17	Umatilla	600,000	0+	Hells Canyon Dam	600K Ad only
TOTAL	**Yearlings**	**900,000**			
	Subyearlings	**3,528,000 (of which 328,000 are for Transportation Study)**			

[a] USACOE Transportation Study wild surrogate groups direct stream released into the Clearwater and mainstream Snake River

[b] for logistical purposes, fish are reared at Irrigon in lieu of Lyons Ferry. (LSRCP)

A. Fish on Hand

Brood Year 2008

On September 1, 2009, LFH had an estimated 998,000 (BY08) juvenile Snake River fall Chinook on hand. The program goal is to provide 465,000 yearlings to NPT acclimation sites and 450,000 yearlings for release at LFH in the spring of 2010. Due to higher than expected egg survival and fecundity estimates, there will be a surplus of nearly 80,000 yearlings. After the surplus was identified in May 2009, the co-managers agreed to increase the 2010 on-station release at Lyons Ferry to 500,000, and increase the 2010 transfers to the FCAP facilities to 495,000, or 10,000 to each acclimation site.

Table 4. Proposed BY 2008 Snake River fall Chinook tagging, transfers and releases.

Site	Proposed Transfer	Proposed Release	Size (fpp)	Age	Mark/CWT/ Elastomer	PIT Tags	Transfer/Release Date
LFH	500,000	500,000	10	1+	275K AD CWT 225K CWT only	27,778	April 2010
Capt. John	165,000	160,000	12	1+	80K AD CWT 80K CWT Only	5,000	Feb - 2010 (transfer)
Pittsburg Landing	165,000	160,000	12	1+	80K AD CWT 80K CWT Only	5,000	Mar - 2010 (transfer)
Big Canyon	165,000	160,000	12	1+	80K AD CWT 80K CWT Only	5,000	Mar - 2010 (transfer)

B. Trapping

Brood Year 2009

The trapping goal is 3,057 (which includes 1,3230 females) adults and 198 jacks based upon stray rates and pre-spawning mortalities encountered in 2008 (Appendix A), and We anticipate that 70% of the females needed for brood will be trapped at Lower Granite. Refer to Appendix B for goal, however, trap rate may be adjusted. These numbers are all based on a 12% trap rate. This goal is the total number of fish that need to be trapped to meet egg take goals through priority 17 (Table 3). These goals are exclusive to stray culling requirements to meet the stray rate proportion of <5%. Generally, between 3,000 and 5,000 fish are trapped. Collection occurs at LFH and LGR. In effect, trapping is estimated for LGR, and then the remaining numbers of fish needed to meet egg take goals are trapped at LFH. If changes occur in season, the percent trapped at LGR will not change, rather the trapping at LFH changes. Excess adults trapped at NPTH may be used to supplement LFH production shortages of LGR and volunteer adult returns. Based on prior fecundity averages, 1,015 females from LGR and 308 female volunteers at LFH will be needed for program this year.

1. Lyons Ferry Hatchery

Trapping at LFH begins in early September, and continues throughout the spawning season, generally ending by late November or early December. All Snake River fall Chinook that voluntarily enter LFH may be retained for spawning. Once the number of fish needed to trap at LFH is estimated, a trapping schedule will be set to reflect the number of fish that need to be trapped weekly, based upon fall Chinook counts at Lower Monumental Dam. When the weekly target is met, no more fish will be retained until the following week. If the hatchery trap is run for steelhead collection and no fall Chinook are needed at the time, the fish will be recycled back to the river. If both fall Chinook and steelhead targets for the week have been met, . The trap will be operated daily to allow detection of PIT tag returns to Lyons Ferry. This will be pass through trapping, only. An array will be installed in the trap flume to detect PIT tagged fish returning to the hatchery. . Refer to Lyons Ferry trapping protocol (**Appendix C**).
Coho salmon are occasionally identified at LFH during fall Chinook trapping and spawning operations. WDFW does not propagate coho salmon in the Snake River, but will contact NPT representatives for proper disposition of these fish. This year, all coho will be returned to the river.

2. Lower Granite Dam

Trapping at LGR may begin as early as August 18 if river water temperatures are less than 70 ^{o} F. Trapping has occurred at a predetermined sampling rate up to 12% of each hour, twenty-four hours per day. Collected fish are divided between the LFH and NPTH (usually 70:30 ratio) as agreed upon annually, with a predetermined hauling schedule shared between both facilities to meet this need. This hauling schedule is adjusted as appropriate. The goal will focus on females in calculating the 70:30 split. The trapping/sampling protocol is described more completely in Appendix B.

C. Spawning

Brood Year 2009

Spawning protocols will be consistent with that listed in the draft SRFMP. Spawning will occur weekly, generally on Tuesdays and Wednesdays, starting the third or fourth week in October. It will continue until late November or early December, as necessary to meet egg-take goals. All recovered CWTs will be read or elastomer tags identified during spawning to ensure separation of LFH origin fish from unknown fish. Origin determinations based on scale analysis will be used for untagged fish. Origin based on genetic determination was used in 2007.

LFH origin fish (determined by CWT, VIE, DNA or scale analysis) will be retained for broodstock. Natural Origin Snake River fish will be incorporated into the broodstock at a target rate of up to 30% (per the SRFMP), provided that this number does not exceed 20% of the natural origin spawning population. Stray (non-LFH origin) hatchery fish as determined by CWT will be culled if not needed by other Columbia Basin hatcheries.

Unless production goals are at risk, all known strays will be culled. Strays may be included in broodstock up to 5%. This limit may be adjusted if necessary to meet production goals and if approved by the co managers. Changes regarding a higher stray rate usage in the broodstock, which may limit the integration efforts, are currently being discussed. If not needed, strays will

be destroyed. It is suggested that unmarked/untagged fish from LGR be used preferentially over unmarked fish at LFH, as they are more likely to be of Snake River origin. This action will be examined on an annual basis. It is the intent of WDFW to minimize use of out-of-basin fish in the broodstock.

No fish less than 57 cm will be included in the broodstock. Fork length determinations were adjusted based on size at age of CWT fish recovered in 2008. A proposal to increase the percentage of four and five year old fish in the broodstock to off set the higher harvest rate of these fish in lower river fisheries was agreed upon by all members

Our mating protocol is to minimize hatchery stray incorporation into Lyons Ferry Hatchery broodstock while incorporating potentially as many wild fall Chinook as possible. Mating will occur in a 1 x 1 cross. A mating matrix is listed in Appendix C. Because the spawning population is large (>1,000), increasing genetic diversity is not presently a concern. Males may be split and used on multiple females if needed.

Fertilized eggs will be water hardened for one hour in 100-ppm iodophore, and incubated in vertical stack incubators. Progeny from below-low enzyme linked immuno-sorption assay (ELISA) females are used for the yearling programs[1]. Disposition of eggs from females yielding moderate or high titers during ELISA sampling is determined by co-managers as appropriate. These eggs are used for subyearling programs, or may be culled. Progeny of females not ELISA sampled are only used for subyearlings.

Assuming full production of **Table 3**, IPC will receive 1,053,000 eyed eggs (842,000 for Umatilla Hatchery + 211,000 for Oxbow Hatchery.

ODFW's Irrigon Hatchery will receive up to 421,000 eyed eggs to meet a release goal of 400,000 subyearlings into the Grande Ronde River and 345,000 eyed eggs for the USACOE Transportation Study. These transfers are listed in **Table 6**.

There is the potential that surplus Snake River origin adults may be available at the broodstock collection stations once egg take goals have been met. These fish will be returned to the river to continue their upstream migration, or out-planted into natural spawning areas. All LGR origin adults with CWT must be retained for sampling. Adults and jacks released below LGR will be externally marked to ensure they do not compromise run reconstruction efforts at LGR. **Table 5** lists the areas that have been identified for each broodstock facility as suitable for disposition of surplus adults.

1 See Section **X**. for a description of this criterion.

Table 5. Identified Areas for fall Chinook juvenile and Adult out planting as presented in the June 1, 2006 Draft SRFMP.

Facility	Out plant Locations		
	Adults/jacks	Fry	Subyearlings
Lyons Ferry Hatchery	-Tucannon River -Grande Ronde River -Mainstream Snake River	-Tucannon River -Mainstream Snake River near LFH -Mainstream Snake River above LGR	-Mainstream Snake near Captain John Rapids -Big Canyon -Grande Ronde River -Mainstream Snake downstream of Clearwater River
NPTH	-Lower mainstream Clearwater River -South Fork Clearwater River	-Lower mainstream Clearwater River	-Lower mainstream Clearwater River

D. Rearing

Brood Year 2009

Eggs are reared in the vertical incubators, and are treated with formalin to reduce fungus on a daily basis. They are shocked at eye-up around 550 temperature units (TU's), and handpicked shortly thereafter. After eggs are picked, folded Vexar sheets are added to each tray for substrate. Formalin treatments stop just before hatch, and after complete yolk-sac absorption by hatched fry (at around 1900 TU's), they are transferred to raceways for rearing. Head troughs providing well water to the incubators are alarmed, and visual inspections of flow through the trays along with head trough levels are conducted daily.

LFH production fry are moved to outside raceways at ~1,600 fpp. In addition to standard raceways, adult salmon holding raceways are also utilized for subyearling fall Chinook rearing. By utilizing these larger ponds, densities in other raceways are dramatically reduced. Chronic Bacterial Gill Disease has occurred in recent years at LFH and is possibly related to significant increases in the LFH program. The Bacterial Gill problem is similar to that encountered during the initial years of operation at LFH, when extremely high numbers of subyearlings were programmed. As a result of these density related concerns, the current density index for fall Chinook subyearlings at or smaller than 100 fpp hopefully will not exceed 0.09. Density values can increase on a sliding scale to a maximum value of 0.14 for yearlings at 10-12 fpp. These density index goals were developed to improve fish quality and survival.

Yearling fall Chinook are given a 28 day prophylactic treatment using feed treated with erythromycin to reduce the potential for Bacterial Kidney Disease (BKD) outbreaks.

E. Tagging, Transfers, and Releases

Brood Year 2009

In addition to the eyed egg transfers identified in Section D., this section outlines the anticipated subyearling and yearling production for BY2009 assuming full production of Table 3. All tagging, transfers, and releases are listed in Table 5.

A total of 200,000 subyearlings are 100% coded-wire tagged and adipose fin clipped in April for release from LFH into the Snake River in early June. There will be no additional PIT tags. Captain John Acclimation Facility receives 500,000 subyearlings in May, as does Big Canyon Acclimation Facility, from LFH. Both groups are comprised of 100,000 CWT, 100,000 AD CWT, and 300,000 unmarked fish. Pittsburg Landing will receive 400,000 subyearlings in May. This group is comprised of 100,000 CWT, 100,000 AD CWT, and 200,000 unmarked fish. All marking and tagging is completed by WDFW in March and April, prior to transfer. Pit tagging may occur prior to and/or post transfer to acclimation sires. These fish are acclimated and released in June by NPT.

An additional 200,000 subyearlings may be direct stream released into the Snake River at Couse Creek, near Captain John Rapids. These fish are part of a study to compare survival of fish released directly versus those acclimated prior to release. We will coordinate with the NPT to assure that the direct release will correspond with the Captain John acclimated release, scheduled for June. All of these fish will be AD-CWT marked and include 3,500 PIT tags slated for bypass study

ODFW will also direct stream release 400,000 subyearlings into the Grande Ronde River near the Washington border. This group of fish is identified as priorities 13 & 16 (**Table 4**). They will be transferred to Irrigon Hatchery from LFH as eyed eggs, reared and tagged there, then released into the Grande Ronde River in Washington in early June. 200,000 fish will be AD CWT marked (*priority 13*), and 200,000 will be unmarked and untagged. The co-managers will coordinate exact release location and timing.

A yearling release of 450,000 fish from LFH directly into the Snake River at 10 fpp is programmed for 2011. All of these fish will be marked and/or tagged during September 2010 (half AD+CWT, and half CWT only), and transferred into Lake Two. A portion of these fish may also be PIT tagged (as many as 30,000) at the same time to better estimate escapement of adults through the hydro system to LFH, LGR, and the Tucannon River (**Table 6**). Those fish receiving a PIT tag will not be VIE tagged. Fish will be released over a 4-day period from the rearing pond into the Snake River during the period of April 1-15, 2011, depending on river flows and dam spills . Since all three lakes share a common release structure, the fall Chinook release must be coordinated with steelhead releases.

Three yearling groups of 155,000 will be marked and/or tagged at LFH in September 2010 (AD+CWT; CWT only; and up to 45,000 PIT tags), then transferred to Captain John, Big Canyon, and Pittsburg Landing acclimation sites (at ~ 12 fpp) for final rearing and release by NPT in April 2011 at a target of 10 fpp. Prior to release, NPT staff will PIT tag an additional 4,000 fish randomly at each site (19,000 total PIT tags for each group) for emigration timing and survival through the hydro-system. This tagging will be coordinated with the COE transportation

study. If COE transportation tagging does not occur tagging will be conducted at the acclimation sites. The IPC sub-yearling program for Oxbow and Umatilla receive eggs from Lyons Ferry in January-February. These fish will be reared, marked and tagged in Idaho prior to releases in early June.

Table 6. Proposed BY2009 Snake River fall Chinook tagging, transfers and releases.

Site	Transfer Goal	Release Goal	Size (fpp)	Age	Mark/CWT/ Elastomer	PIT Tags	Transfer/Release Date
Oxbow (IPC)	211,000	200,000	Eyed Eggs	0+	100% AD CWT	14,706	Jan – Feb 2010 (transfer)
Umatilla (IPC)	842,000	800,000	Eyed Eggs	0+	200K AD CWT 600K AD Only	14,706 44,118	Jan – Feb 2010 (transfer)
DNFH/research	345,200	328,000	Eyed Eggs	0+	Unknown	328,000	Jan – Feb 2010 (transfer)
LFH	200,000	200,000	50	0+	100% AD CWT	-0-	May – Jun 2010
Grande Ronde Direct - Irrigon	421,000	400,000	Eyed Eggs	0+	200K ADCWT 200K Unmarked	14,706 14,706	Jan – Feb 2010 (transfer)
Capt. John	500,000	100,000 100,000 300,000	50 50 50	0+ 0+ 0+	CWT Only AD CWT Unmarked	36,765	Mar – Jun 2010
Big Canyon	500,000	100,000 100,000 300,000	50 50 50	0+ 0+ 0+	CWT Only AD CWT Unmarked	36,765	Mar – Jun 2010
Pittsburg Landing	400,000	100,000 100,000 200,000	50 50 50	0+ 0+ 0+	CWT Only AD CWT Unmarked	29,412	Mar – Jun 2010
Direct near Capt. John	200,000	200,000	50	0+	100% AD CWT	14,706	June 2010
LFH	450,000	450,000	10	1+	225K AD CWT 225K CWT Only	30,000	April 2011
Capt. John	155,000	150,000	12	1+	70K AD CWT 80K CWT Only	19,000	Feb - 2011 (transfer)
Pittsburg Landing	155,000	150,000	12	1+	70K AD CWT 80K CWT Only	19,000	Mar - 2011 (transfer)
Big Canyon	155,000	150,000	12	1+	70K AD CWT 80K CWT Only	19,000	Mar - 2011 (transfer)

F. Research

The ACOE has requested up to 345,220 eyed eggs from LFH for use in an in-river/transportation study. The fish will serve as surrogates for natural fish. Eggs for this study may be shipped to Umatilla Hatchery Hatchery for incubation and rearing. Then transferred to Dworshak National Hatchery for acclimation and release. All of the fish would be PIT tagged prior to release, as funded and contracted by the ACOE. Additionally, the ACOE requested 250,000 per the *USvOR* agreement. PIT-tags will be divided between all subyearling production releases in the Snake River basin, acting to represent the hatchery component of the in river/transportation study. The LFH portion of these fish will be PIT tagged at LFH, as contracted and funded by the ACOE, and coordinated with hatchery staff. This is the fourth year of the five-year study.

The co-managers recognize that acclimation prior to release is expected to provide fish performance advantages, however current facility limitations within the basin preclude acclimation of all subyearling groups. A direct versus acclimated study is being conducted by the USFWS, WDFW and NPT to scientifically evaluate the merit of direct stream releases of fall Chinook subyearlings versus acclimated releases. BY09 will be the fifth year of this five-year direct release study. The study will determine if new acclimation facilities in the Snake River basin should be constructed, or are unnecessary. It compares fish performance between groups of the same size (current release size goal is 50 fish/lb), but reared and released under different conditions. Rearing protocols will conform to standard practices, with a focus on maintaining acceptable growth rates, environmental quality, and fish health. Since the managers agree that fish size is critical to the survival of subyearling fall Chinook, size at release will be the primary determinant of release date. Normal acclimation time at CJR is three weeks, and normal release is expected around May 21-25 each year. The acclimation group will be transported to CJR approximately three weeks prior to scheduled release at a projected average size of 75 mm (70 fish/lb). 36,765 PIT tags will be inserted into a random sample of fish within this group prior to release. A second group will be reared at LFH and direct stream released at Couse Creek, just downriver from CJR. They will also have 14,706 randomly inserted PIT tags within this release group. Every effort will be made to meet fish size, and period of acclimation, but the cooperators recognize the potential for early release if fish health will be compromised by environmental or facility conditions. If an early release occurs, the cooperators will coordinate releases as closely as possible.

This study will provide managers with performance comparisons between CJR acclimated and directly released LFH reared subyearling fall Chinook including: (1) passage date at LGR, (2) travel time to LGR, (3) survival from release to the tailrace of LGR, (4) growth and condition measured from release to LGR, (5) smolt-to-adult return rates (SAR's) measured from release to LGR, and (6) spawner fidelity to the Snake River. LGR will be the primary evaluation point for accomplishing all of these objectives with the exception of objective 6.

III. TUCANNON SPRING CHINOOK

The Tucannon River Spring Chinook supplementation program is again solely comprised of conventional in-river broodstock sources. Returning adults trapped at the TFH comprise the conventional broodstock component. The conventional release goal was increased to 225,000 beginning with the 2006 brood year, the final brood year progeny from the interim captive brood program were released.

A. Fish on Hand

Brood Year 2008

On September 1, 2009 LFH had an estimated 175,071(BY08) juvenile spring Chinook on hand. These fish will be transferred to TFH in October from LFH, and released as yearlings at 9 fpp and 15 fpp from Curl Lake AP into the Tucannon River in April 2010

B. Tagging, Transfers, and Releases

Brood Year 2008

In September 2009, the BY08 progeny will be 100% CWT/VIE (½ purple and ½ blue non-fluorescent) tagged with no fin clip (**Table 7**). There are 85,353 tagged fish for one group, and 89,700 from the other group. Each size group for the evaluation study were marked with a separate tag code, along with separate colored elastomer tags. The elastomer tags will be helpful to identify the different fish size groups when sampled, prior to release and during migration.

Both fish groups will be transferred to TFH in October for final rearing and release. At TFH, both groups are reared in concrete round ponds or raceways on river water, except when well water is added mid-winter to maintain water temperatures near 40^0 F. Checks for elastomer and CWT retention are conducted prior to transferring the fish to Curl Lake AP in February. For 2009, the target release goal is 85,000 @ 9 fpp & 89,500 @ 15 fpp (174,500 total). All fish will be released from Curl Lake AF in March or April.

For Brood Year 2009, increased PIT tagging may be incorporated while the VIE tags may be reduced or eliminated. PIT tags up to 10,000 for program is proposed.

Table 7. Proposed BY 2008 Tucannon River spring Chinook tagging, transfers and releases.

Site (Type)	BY08 Goal	Expected at release	Size (fpp)	Age	Mark/CWT/ Elastomer	PIT Tags	Transfer/Release Date
Curl Lake AP (Conventional)	112,500	89,500	15	1+	100% CWT VIE	2,500	Mar – Apr 2010
Curl Lake AP (Conventional)	112,500	85,000	9	1+	100% CWTVIE VIE	2,500	Mar – Apr 2010

C. Spawning

Brood Year 2009

The egg take *estimate* for BY2009 is 272,000 green eggs, the program egg take goal. Spring Chinook adults, trapped at TFH were spawned during September 2009 at LFH. A 2 x 2 spawning matrix protocol is followed as approved by WDFW Evaluation staff. Fertilized eggs will be water hardened in 100-ppm iodophore for one hour. All spring Chinook carcasses are frozen after spawning, and hauled to the upper Tucannon River for nutrient enhancement, if viral samples test negative.

D. Rearing

Brood Year 2009

The production estimate for BY2009 is 225,000 smolts. Eggs are treated with formalin daily to reduce fungus and reared in vertical incubation trays. At eye-up, they are shocked, handpicked, and substrate is added to each tray. Upon complete yolk-sac absorption (~1600 fpp), they are transferred to outside raceways for introduction to feed and final rearing at LFH.

A prophylactic aquamycin treatment is used to control BKD. This treatment lasts 28 days, and is typically applied in May and June, through feed with 3.0% aquamycin.

Six intermediate fiberglass tanks were purchased and installed in 2006, giving culturists greater early-rearing space for all programs. This not only reduced densities, it also allows individual spawn groups to be grown together in size before mixing in outside raceways. It also means fish are moved to the raceways at a much larger size, possibly increasing survival to release. Staff also installed an in-line site tube in the venturi vacuum hose, which allows culturists to physically observe the hose to make sure no fish are accidentally vacuumed during routine pond cleaning. Finally, staff have researched various screen seals, and are now using one type for all stocks, proven to be most effective during rearing.

E. Trapping

Brood Year 2010

Trapping for the Spring Chinook broodstock program is conducted exclusively at the TFH adult trap, located just upstream of the hatchery and adjacent to the Rainbow Lake intake. Up to 170 fish (85 wild and 85 hatchery adults) will be collected for broodstock, while remaining adults and one-ocean fish are counted and released upstream. One-ocean age (jacks) fish will be included in the brood at a rate not to exceed 15% of the adult males although this rate may be exceeded during low run years. The discussion to reduce jack passage is ongoing and will be re-evaluated per the HGMP. This increased limit is necessary to meet the release target of 225,000 yearling smolts. WDFW will collect captive broodstock progeny when run size limits endemic and hatchery origin broodstock collection goals. However, their use in broodstock will be limited. The priority will be to collect natural and hatchery origin broodstock to meet program goals. WDFW may also retain all of the adult, ESA-listed, Snake River spring/summer Chinook salmon that return to the Tucannon River Fish Hatchery adult trap each year if the total annual adult returns to the trap is less than 105 fish. If the total annual adult returns to the trap are 105 fish or more, WDFW is authorized to retain up to 70 percent of the adult, ESA-listed, Snake River spring/summer Chinook salmon that return to the trap each year and must release at least 30 percent of the adult, ESA-listed, Snake River spring/summer Chinook salmon that return to the trap above the hatchery trap for natural spawning. Adults collected for spawning are transferred by truck to LFH for holding. All adults are injected in the dorsal sinus at transfer with oxytetracycline and erythromycin. Females only are re-injected with erythromycin every 30 days until spawning begins. Adults will receive formalin treatments every-other day to control fungus and decrease pre-spawning mortality.

F. Research

In an effort to compare returns based on release size, release numbers will be split in half at marking and reared to two different release sizes. For this fourth study year, one group will have a target release size of 9 fpp and the other will be at 15 fpp. Studies and practical experience at other facilities suggests a larger release size may increase survival rates. The need to explore monitoring alternatives on adult movement above Lower Granite Dam to increase the population is being evaluated. Pending discussion with LSRCP, this study may be modified to include increased PIT tags while reducing VIE tags.

Beginning May 1st, 2010, adult fish will be trapped and released at Lyons Ferry utilizing a pass through PIT tag array for monitoring potential success of Tucannon Spring Chinook trapping. The PIT tag data will be shared with the co managers on impacts to other stocks returning to the basin simultaneously. This information should also provide as an option for future trapping of Tucannon Spring Chinook in low return years and to identify adults by-passing the Tucannon River. The trapping activity will be evaluated day-to-day for success and/or potential negative impacts to other stocks.

IV. SUMMER STEELHEAD - GENERAL

The LFC currently uses three stocks of steelhead in the Snake River basin, (LFH, Tucannon, and Wallowa) and two stocks in the Walla-Walla basin (Touchet and LFH). The LFH and Wallowa stocks are both non-endemic stocks that were originally collected from outside their respective release points. The Wallowa stock was originally collected by Oregon Dept of Fish and Wildlife from Lower Snake River dams (likely comprised of both A- and B-run fish from Oregon and Idaho), and then released in the Wallowa River in the Grande Ronde Basin. The LFH stock was derived primarily from a combination of Wells (upper Columbia River) and returning Wallowa stock fish to LFH. The Tucannon and Touchet stocks are both native to their respective streams, though each has had some degree of genetic introgression from the LFH over the years. All of these stocks are collected from a variety of traps located throughout SE Washington (see each stocks description below for specific trapping locations).

The National Marine Fisheries Service's 1999 Biological Opinion ruled that continued use of LFH and Wallowa steelhead stocks constituted jeopardy to listed steelhead populations in the Snake and Columbia rivers. Concerns about within and out-of-basin straying, and swamping of natural populations by these two hatchery stocks, led NMFS to propose the development of endemic broodstocks where possible, and eventual elimination of non-endemic stocks. Following that ruling, WDFW and the co-managers were responsive to the BIOP by initiating endemic broodstock programs in the Tucannon and Touchet rivers, and have since followed with a decrease in production of the LFH and Wallowa steelhead stocks.

Each endemic broodstock program began with the 2000 BY, with the original goal of collecting 16 pairs for spawning. Adjustments have been made to the broodstock collections because fecundity and survival values were higher than originally estimated.

The original evaluation was to utilize adult traps on the Tucannon and Touchet rivers to evaluate the returns and determine success of each program (smolt-to-adult survival rates of the endemic program compared to Lyons Ferry stock releases). However, adult traps have been only partially successful in trapping fish due to high stream flow events. As such, we are now using PIT tags to evaluate each program (smolt-to-adult returns). Anywhere from 8,000 to 10,000 PIT tags have been incorporated into each endemic stock group since 2004. Returns to date from PIT tags indicate that smolt-to-adult survivals to Bonneville Dam of the endemic stock groups have increased (Touchet = 0.45% (2004-2007 release years), Tucannon = 1.0% 2004-2007 release years). We expect the smolt-to-adult survivals to increase in the next year or so as rearing modifications at LFH have enabled the endemic stock fish to be released near program size goals (4.5 fish/lb) for the last 2-3 years. Release size goals were generally not met during the first 3-4 years of the program. Based on the return information to date, WDFW feels there is not enough information available at this time to make an informed decision about stopping the endemic programs or expanding them.

WDFW will commit to be partial organizers for a meeting to address endemic steelhead programs in the LSRCP program in early 2010. At that time, updated HGMPs and WDFW's Steelhead Management Plan for SE Washington will be nearly complete. All of these documents will be critical in determining the future nature of the LSRCP steelhead program in Washington. A summary report of the endemic programs to date will be provided to all co-managers prior to any such meeting.

V. LYONS FERRY SUMMER STEELHEAD

The LFH stock program was initiated to provide sport fishery opportunities for summer steelhead in the Snake River, it's tributaries, and also includes off-site mitigation in the Walla-Walla Basin. Releases of the LFH stock into the project area have been very successful and adult returns have been reduced in recent years because of ESA concerns.

A. Fish On Hand

Brood Year 2009

On September 1, 2009 LFH had 348,000 (BY09) LFH stock summer steelhead juveniles on hand. These fish were marked in late August into Lake #1 and will be planted as yearlings into the Snake, Touchet, Tucannon, and Walla-Walla Rivers. The egg take goal was reduced for BY09 to 460,000 eggs (106 females) from 520,000 (121 females) because of the higher egg and fry survival over the previous three seasons.

B. Tagging, Transfers, and Releases

Brood Year 2009

In August, all LFH stock summer steelhead were adipose fin clipped and transferred to Lake One. In mid-winter, some of these fish are transferred back to raceways to receive additional marks or tags, as determined by WDFW evaluation and Fish Management staff (**Table 8**). About 87,000 fish are transferred to Dayton AF in mid-February. They are reared for around 2.5 months, with volitional release into the Touchet River completed by the end of April. In mid-April, 100,000 are trucked to the Walla-Walla River for direct stream release. Also in mid-April, the lower Tucannon River receives 100,000 of these fish by direct stream release. Finally, 60,000 are released from LFH directly into the Snake River in mid-April.

Table 8. Proposed 2009 LFH stock summer steelhead tagging, transfers and releases.

Site	BY09 Goal	Size (fpp)	Age	Mark/CWT/ Elastomer	PIT Tags	Transfer/Release Date
LFH on station release into the Snake River	40,000 20,000	4.5	1+	AD Only ADLV CWT	-0- 1,500	April 2010
Dayton AF release into the Touchet River	65,000 20,000	4.5	1+	AD Only ADLV CWT	-0- 3,500	Transfer to Dayton AF in February 2010, release in April 2010
Direct stream release into the Tucannon River	80,000 20,000	4.5	1+	AD Only ADLV CWT	-0- 3,500	April 2010
Direct stream release into the Walla Walla River	80,000 20,000	4.5	1+	AD Only ADLV CWT	-0- 3,500	April 2010

C. Trapping

Brood Year 2010

The LFH stock adults are trapped on-station from volunteers that swim into the fish ladder. The LFH trapping goal is to operate between 1 September and 15 November, which provides adequate adults for the program. Trapping protocols have been set to collect 1,650 fish (~150 fish/week over the time period cited). Fish are held in large adult holding raceways adjacent to the trap until sorting and spawning. All retained steelhead will be sorted in late November each year. Fish not needed for broodstock or CWT recoveries will be returned to the Snake River for the active fishery. Pending further discussions, an additional 200 fish may be retained for broodstock for replacing the Wallowa stock in the Cottonwood Creek program.

D. Spawning

Spawning will occur in January-February on a weekly basis. Spawning protocol calls for a 2:1 male to female spawner ratio, with each male only being used one time. The intent is to increase the genetic diversity (effective population size N_e) of the hatchery-reared population, and ensure successful fertilization of eggs. Due to lower IHN virus detection and improved egg survival over the past few years, 106 females will be spawned to produce approximately 460,000 green eggs. This amount is lower than previous egg goals of 520,000. Eggs or fry excess to projected program needs will continue to be destroyed or planted as fry in area lakes. All carcasses from spawned fish will be buried on site. All unspawned fish that were retained for broodstock are sacrificed to obtain coded-wire tag or run information.

E. Rearing

After spawning, fertilized eggs are water hardened in 100-ppm iodophore. They are incubated in down-welling iso-incubation buckets (one fish per bucket). After shocking, they are handpicked and weighed down in hatching baskets suspended over shallow troughs. After hatch and swim-up, they are introduced to feed, and transferred to outside raceways at roughly 500 fpp in April. They are reared in these raceways until marking (tagging is completed later) and transferred to Lake # 1.

F. Research

At this time, there is no direct research associated with the LFH stock summer steelhead at the hatchery (i.e. time or size at release studies, growth studies, etc.). However, starting in 2008, all LFH stock release groups received PIT tags (roughly based on proportional release size and expected number of adults returning). Returns from these PIT tags groups will be analyzed separately or as an aggregate to estimate total returns for mitigation accounting purposes. This is partially in response to an anticipated lack of creel personnel in the future to recover CWTs from the summer steelhead fishery.

VI. TOUCHET SUMMER STEELHEAD

The Touchet River summer steelhead is considered an endemic program, meaning all production is derived from natural parentage broodstock. These adults are trapped on the Touchet River at the Dayton AF intake structure and transferred to LFH for holding and spawning. Their progeny are planted in the North Fork of the Touchet River as yearlings each spring.

A. Fish on Hand

Brood Year 2009

On September, 2009, LFH had 59,031 (BY09) Touchet River summer steelhead juveniles on hand. These fish will ultimately be direct stream released into the Touchet River at Baileysburg Bridge, roughly 1.5 miles upstream from the Dayton AF, in April 2010

Brood Year 2008

On September 1, 2009, LFH had 5,688 (BY08) Touchet River summer steelhead 2-year smolts on hand. These fish were retained for a study on survival of 2-year smolts. The fish will be released with Brood Year 2009 smolts into the Touchet River at Baileysburg.

B. Tagging, Transfers, and Releases

Brood Year 2009

In January, all Touchet River endemic stock steelhead are CWT, with no external fin clips. They are reared in the raceways until release in April or May at Baileysburg Bridge on the North Fork of the Touchet River. Prior to release, evaluation staff PIT tags 8,000 fish in this group. This will allow for improved data gathering, as these fish are currently not marked for harvest in the sport fishery. The use of PIT tags is an alternate means to calculate smolt-to-adult survivals for program evaluation

Also, during this tagging event, a portion (~5,000-10,000) of the population will be designated for the two-year smolt program. The number of fish chosen for the program will be based on fork length size distribution of the population just prior to tagging. Fish designated for this program will be rearing in intermediate tanks and circular ponds in the old captive brood rearing enclosure. Approximately 5,000 of these fish will be PIT tagged in the spring of 2011, and released with the one-year smolts from the 2010 brood year.

The BY09 expected at release will likely be around 55,000-60,000 depending on how many are placed into the 2-year program.

Brood Year 2008

In February 2010, the 2-year smolts will receive PIT tags for monitoring survival during migration following release in April. These fish received a separate coded CWT during the tagging event for all Brood Year 2008 in February 2009, for monitoring survival.

C. Trapping

Brood Year 2010

Trapping of BY09 Touchet River endemic stock begins in January or February (depending on seasonal weather) at the Dayton AF adult trap, located adjacent to the pond intake, and is generally completed by mid-April. WDFW evaluation staff checks the trap daily, transferring only a portion of unmarked adults to LFH based on broodstock needs. All trapped LFH stock fish are transferred to Dayton Juvenile Pond to remove them from the river and provide additional fishing opportunities.

Current survival estimates indicate that 15 spawned females should provide enough eggs to meet the smolt production goal. Therefore, WDFW evaluation staff target collecting 16 females and 20 males for the broodstock (natural origin), with all other wild fish passed upstream for natural spawning. Hatchery fish (endemic origin) are passed above the trap to spawn naturally in the Touchet River. We will spawn a minimum of three (3) females, or the progeny will be released as unmarked/untagged fry.

D. Spawning

Based on fecundity survival estimates, LFH typically spawns 15 females to provide 65,000 green eggs for the program. Fish in excess to the interim program smolt goals (maximum 50,000 smolts) will be planted into the Touchet River as fingerlings in the fall. Spawning usually occurs in March and April. A Matrix type spawning protocol is employed to increase the effective breeder population (N_b), due to the relatively small founding population for this program. The intent of this protocol is to spawn two males with each female, increasing genetic diversity and successful fertilization of eggs. If not enough males are ripe to achieve this goal; 1:1 spawning is employed. A minimum of three spawned females are needed for each production cycle to occur.

E. Rearing

After spawning, fertilized eggs are water hardened in 100-ppm iodophore. They are incubated in down-welling iso-incubation buckets (one fish per bucket). After shocking, they are handpicked and weighed down in hatching baskets suspended over shallow troughs. After hatch and swim-up, they are introduced to feed, and transferred to intermediate raceways at around 500 fpp in June. They are transferred again to outside raceways at roughly 200 fpp in July. In January, these fish will be size selected into three rearing groups (larges, smalls, and two-year – see below in Research). By sorting into different size groups, culturists can adjust growth rates to minimize size variance at release. Additionally, a number of non-traditional fish culture techniques are being employed on this stock to ensure release size goals are met.

F. Research

Over the last few years, evaluation staff have annually PIT tagged portions of the Touchet River endemic stock group (by size) prior to release. PIT tags are being used to document smolt-to-adult survival rates. Results to data show that the group that is released per program goals and release time, have survived nearly twice the rate as those released later and sometimes at a

smaller size. This, and trapping data, suggests this could be a continual problem in the Touchet River stock. As such, a proposal to conduct a two-year smolt program on a portion of the population to see if they can survive better was implemented for Brood Year 2009. The study proposes to again retain 10-20% of the 2009 population, as was performed for the Brood Year 2008 population. These fish will again be reared in other rearing containers currently not being used for the other priority stocks at LFH. This will be the second of three years initially proposed for research, and will continue to PIT tag both one and two-year smolt programs for the comparison.

VII. TUCANNON SUMMER STEELHEAD

The Tucannon River summer steelhead is considered an endemic program, meaning all production is derived from natural parentage. The adults for this program are collected at a temporary trap on the lower Tucannon River or from Tucannon FH, and their progeny planted in the upper Tucannon River as yearlings.

A. Fish on Hand

Brood Year 2009

On September 1, 2009, 59,417 (BY09) Tucannon River summer steelhead juveniles were on hand at LFH. The program goal is 50,000 smolts released. The BY09 production increased from BY08 in part to increased trapping success at the Rainbow Lake intake trap. A new structure was built by hatchery staff for deterring adults from jumping the sheet pile adjacent to the fish ladder. Clear vinyl panels were hung on a moveable aluminum cross beam four feet above the sheet pile cap. This diversion structure contributed to the increased success of adult steelhead trapping for Brood Year 2009, with hopes for future success in meeting program goals.

Following the low return of Brood Year 2008, managers agreed that should low production numbers (i.e. less than 8,000 fish at smolt release, ~3 females at trapping) occur in the future, the fish will not be reared full term, but released as parr/fingerlings in the upper Tucannon River. Less than 8,000 fish production would not allow enough fish for evaluations to occur. .

Because in-hatchery survival of endemic origin fish is unknown, up to 75,000 smolts may be released in any given year. If greater than 75,000 smolts are anticipated for production, up to 25,000 fingerlings could be released into the upper Tucannon River basin in the fall before normal migration.

B. Tagging, Transfers, and Releases

In September, all Tucannon River endemic steelhead are CWT tagged, with no external fin clips at LFH (Table 10). In February of 2010, these fish are moved to the TFH. They are reared there until release as yearlings in April or early May. Releases have been roughly five miles upstream of the TFH, at or near Camp Wooten. Prior to release, evaluation staff will PIT tag 8,000 fish in this group. This will allow for improved data gathering because these fish are currently not marked for harvest in the sport fishery. The use of PIT tags is an alternative means to calculate smolt-to-adult survivals for program evaluation. Refer to **Table 9** for BY09 goal.

Table 9. Proposed BY 2009 Tucannon River summer steelhead tagging, transfers and releases.

Site	BY09 Goal	Expected at release	Size (fpp)	Age	Mark/CWT/ Elastomer	PIT Tags	Transfer/Release Date
Tucannon River	50,000	60,000	4.5	1+	100% CWT	***8,000***	April 2010

C. Trapping

Brood Year 2010

Current survival estimates indicate that 13 spawned females should provide enough eggs to meet the smolt production goal. Therefore, we will collect 15 females and 21 males (natural origin) for the broodstock. As in the past, all hatchery origin fish (LFH stock) collected at the TFH adult trap will not be passed upstream. Instead they will be marked and released downstream (or taken back downriver below Marengo if the lower trap is moved upstream) to spawn naturally. All endemic and wild fish captured at the TFH will be passed upstream for natural spawning.

D. Spawning

The number of eggs per female is approximately 5,600. Based on fecundity, survival estimates, and potential IHN positive females, LFH typically spawns 15 females to provide 84,000 green eggs for the program. Spawning has occurred from February to early April. Matrix spawning is employed, due to the relatively small founding population for this program. The intent of this protocol is to spawn two males with each female, increasing genetic diversity and helping ensure successful fertilization of eggs. If not enough males are ripe to achieve this goal; a 1:1 spawning matrix is employed. As stated above, a minimum of 3 females spawned is needed to continue with production for that year.

E. Rearing

After spawning, fertilized eggs are water hardened in 100-ppm iodophore. They are incubated in down-welling iso-incubation buckets (one fish per bucket). After shocking, they are handpicked and weighed down in hatching baskets suspended over shallow troughs. After hatch and swim-up, they are introduced to feed, and transferred to intermediate raceways at around 500 fpp in June. They are transferred again to outside raceways at roughly 200 fpp in July. In September, they are size-selected during marking and split into two raceways. By sorting into two size groups, culturists can adjust growth rates to minimize size variance at release. Additionally, a number of non-traditional fish culture techniques are being employed on this stock to ensure release size goals are met.

F. Research

At this time, there is no direct research associated with the Tucannon River endemic stock summer steelhead at the hatchery (i.e. time or size at release studies, growth studies, etc..). As indicated above, PIT tags along with a CWTs, will give us juvenile migration and SAR data.

Other research/monitoring activities are centered on the adult trap (passage issues, location of trap), and getting age composition data from the wild fish.

VIII. WALLOWA SUMMER STEELHEAD

The Wallowa stock program was initiated to provide a fishery for summer steelhead in the Grande Ronde River (for both Oregon and Washington anglers). It has been an extremely successful program in that regard, and adult returns have warranted a program reduction from a 250,000 yearling release goal to the current program of 160,000 yearlings. Due to successful SAR survival, another program reduction may be an option to reduce the number of excess returning adults.

A. Fish on Hand

Brood Year 2009

On September 1, 2009 LFH had 166,074 (BY09) Wallowa stock summer steelhead juveniles on hand. Due to high levels of IHN positive females spawned at Cottonwood Creek (54%), 40,000 eyed eggs from the Wallowa Hatchery were transferred to LFH in early May for meeting program goals. All of these fish will be marked and moved to Lake Three in early September. In early February 2010, these fish will be transferred to the Cottonwood AF. After acclimation at the Cottonwood AF, they are released as yearlings at 4.5 fpp into the Grande Ronde River in April.

B. Tagging, Transfers, and Releases

Brood Year 2009

In September 2009, these fish were all adipose fin clipped, and 20,000 will receive left ventral clips and a coded wire tag. (**Table 10**). After marking and tagging, they are transferred to Lake #3 at the LFH. In February, they are transferred to the Cottonwood AF for final rearing and release into the Grande Ronde River. A total of 6,000 juveniles will be PIT tagged prior to release in April, 2,000 of those PIT tags will be used as part of the Comparative Survival Study (CSS) for steelhead production above Lower Granite Dam. (Fish Passage Center).

Table 10. Proposed BY 2009 Wallowa stock summer steelhead tagging, transfers and releases.

Site	BY08 Goal	Expected at release	Size (fpp)	Age	Mark/CWT/ Elastomer	PIT Tags	Transfer/Release Date
Cottonwood AF on the Grande Ronde River	140,000 20,000	150,000 20,000	4.5	1+	AD Only ADLV CWT	-0- 4,000 + 2,000	Transfer to Cottonwood AF in Feb, release in April 2010 2,000 PIT tags are part of the CSS study from the Fish Passage Center

C. Trapping

Brood Year 2010

Trapping of returning Wallowa stock adults occurs on Cottonwood Creek (a small tributary to the Grande Ronde River) beginning in March each year. This creek also supplies water to the Cottonwood AF. Trapping occurs from March through April. Because of potential low egg survival and/or IHN virus (both of which have been experienced in the past), about 50 complete spawned females are needed to provide 220,000 green eggs for the program of 160,000 smolts. The preference will be to half-spawn 100 females if adult returns are available. This will provide for better genetic variability. Unmarked steelhead are not retained for spawning, but passed upstream to spawn naturally**.** All spawned carcasses will be taken above the trap in Cottonwood Creek and scattered for nutrient enhancement, or returned to LFH to be buried. If low water flows in the creek do not allow returning adults access to the trap, two alternate strategies may be employed. First, the acclimation pond outlet creek can be modified to allow adult capture there. Surplus hatchery origin adults may be removed from the creek at the trap to reduce the potential impacts of IHN to the spawning population and to juvenile hatchery fish being held in the AF.

Pending further discussions, surplus adults and adult passage will be addressed prior to commencing trapping.

A proposal to kill all marked, un-spawned surplus fish for BY10 may be implemented by AOP committee following release of this report. Any unmarked fish will continue to be passed upstream.

D. Spawning

Spawning generally occurs in late March and early April on a weekly basis. All fish are spawned at the Cottonwood Creek trap site, with the gametes transported to LFH for fertilization, incubation, and rearing. A 1:1 male to female mating ratio will continue to be employed whenever possible (see research section below). Second, excess adults from ODFW's Wallowa Hatchery may be used to provide eggs for this program, as occurred in 2005 and 2009. Eggs/fry excess to projected program needs will be destroyed or planted in area lakes.

E. Rearing

After spawning, fertilized eggs are water hardened in 100-ppm iodophore. They are incubated in down-welling iso-incubation buckets (one fish per bucket). After shocking, they are handpicked and weighed down in hatching baskets suspended over shallow troughs. After hatch and swim-up, they are introduced to feed, and transferred to outside raceways at roughly 500 fpp in June.

F. Research

For the last four years, evaluation staff has conducted a study examining the effect of partially spawning females in the broodstock. Data collected in 2009 were similar to previous years, with the majority (85%) of partially spawned fish depositing their eggs in the stream post release.

This compares to 87% in 2006, 75% in 2007 and 67% in 2008. A final summary report from all four years is expected to be complete in the coming year. 2009 was the final year of the study.

IX. SPOKANE AND KAMLOOPS RAINBOW TROUT

Rainbow trout are reared and planted in both southeast Washington and Idaho, to meet LSRCP mitigation goals in both states for lost fishing opportunity as a result of construction and operation of the lower Snake River dams. A small State funded program at the TFH rears rainbow to1½ pounds each, providing a unique fishing opportunity in local lakes.

A. Fish on Hand

Brood Year 2008

On September 1, 2009 LFH and TFH had a combined total of 240,285 Spokane stock rainbow trout on hand. LFH also had 53,585 triploid Kamloops stock rainbow trout on hand. These fish, marked in late August, will be shipped to IDF&G in October 2009.

B. Tagging, Transfers, and Releases

In past years, LFH received approximately 52,000 Kamloops stock rainbow trout from TFH in July of each year, as mentioned above. They are reared in raceways until August or September, when they are adipose fin clipped and either a right or left ventral fin clipped (alternating years –

Table 11). In October, IDFG transports and plants the entire population (usually around 50,000 fish) in Idaho Rivers, at 15 fpp. For 2010, a reduction in the program of 50,000 fingerlings to 13,200 catchables or 3,300 jumbos at the current pounds of production has been proposed. The outplants into the Clearwater basin will be discontinued by Idaho due to a lack of creel data supporting the program. A decision on fish stock and production for Idaho was not reached at the time of this AOP.

No Spokane stock rainbow trout are tagged or fin clipped at LFH. From the raceways, IDFG receives 160,000 fry and transports these fish to designated Idaho waters in April or May, at around 60-80 fpp (

Table 12). About 97,500 Spokane stock rainbow trout catchables (2.5 fpp) and 1,000 jumbos (1.5 lbs each) are planted by LFH drivers into various lakes in southeast Washington. Planting begins in February and is completed in March. In 2009, the total catchable plant allotment was reduced by 1,700 (approx. 97,500 total) and the jumbo plant allotment was increased by 500 (1,000 total)**.**

At the TFH, approximately 137,400 Spokane stock rainbow trout are planted into various lakes in southeast Washington as catchables. Planting typically begins in April, and is completed sometime in July. The jumbo trout (usually around 4,100) are planted February through May each year, supplementing catchable plants.

Table 11. 2009 Kamloops rainbow trout tagging, transfers and releases.

Site	Number	Size (fpp)	Age	Mark/CWT/ Elastomer	PIT Tags	Transfer/Release Date
Idaho Rivers	50,000	15	0+	ADLV or ADRV	None	Transfer to and planted by IDFG October 2009

Table 12. 2009 Spokane rainbow trout tagging, transfers and releases.

Site	Number	Size (fpp)	Age	Mark/CWT/Elastomer	Pit Tags	Transfer/release Date
Idaho Reservoirs	160,000	60 – 80	0+	None	None	Transfer to and planted by IDFG in April/May 2010
SE Washington Lakes	234,935 1,000	2.5 – 4 1	1+ 1+	None None	None None	Planted in February through July 2010
SE Washington Lakes	4,500 200	1.5 lbs ea 3.0 / fpp	1+	None	None	Planted in February through May 2010

C. Rearing

Eggs for Washington's legal and jumbo programs, along with Idaho's fry plants come from WDFW's Spokane Hatchery (Spokane stock). After receiving these eggs in December and January, a small portion (1,750) is transferred from TFH to regional education programs. Eggs for Idaho's fingerling program are Kamloops stock, from IDFG's Hayspur Hatchery. These eggs are shipped to the TFH in January each year.

180,000 eyed rainbow eggs are received at LFH in December for Idaho fry plants in May. After trough rearing, they are transferred to outside standard raceways in March. 140,000 Spokane eyed rainbow eggs, destined as catchables and jumbos, are received at LFH in January. This number was increased in 2009 due to recent years of fry loss due to cold-water disease in the stock. Early rearing is conducted in either shallow troughs or intermediate raceways, before transfer to outside standard raceways in April. The following year, they are planted at roughly 3 fpp into local southeast Washington lakes, usually in February and March.

175,000 eyed rainbow eggs (Spokane stock) are received at the TFH in January each year. Of these, 141,000 are destined for planting as catchables(3.5 fpp – 137,500 planting goal), and 500 are destined for planting as jumbos (1.5 pounds each – 4,000 planting goal). The legal program group is started in shallow troughs, intermediate reared in outside round tanks, and final reared in the earthen rearing pond. The jumbos start in shallow troughs as well, and finish in the round tanks. The entire jumbo program is funded by WDFW.

65,000 Kamloops eyed rainbow eggs are received at the TFH in January. After initial rearing in troughs, they are transferred to outside circular tanks for intermediate rearing. In late June, at 75 fpp, they are transferred to LFH for marking and final rearing.

X. FISH HEALTH

A. Guiding Policies

All fish production at LFH is conducted according to the co-managers Salmonid Disease Control Policy and Integrated Hatchery Operations Team (IHOT) fish health policy. Specifically, all lots of fish are monitored for fish health, all broodstock are inspected annually, strict hatchery sanitation procedures and fish culture practices (rearing criteria) are followed, and egg and fish transfer and release requirements are met. Bacterial Kidney Disease (BKD) management strategies for spring and fall Chinook salmon and Infectious Hematopoietic Necrosis (IHN) management strategies for steelhead trout stocks are employed. No management strategy for BKD specific to spring Chinook is currently employed within the LFC. 1,054 adults sampled in 2007.

Currently, IHN in Chinook salmon is not a concern at LFH. The strains of IHN found in the Columbia River Basin have been problematic for sockeye, steelhead and rainbow trout, but not for Chinook salmon. Therefore, standard hatchery practices of egg disinfection and use of pathogen-free rearing water during early rearing have been sufficient fish health measures.

The fish health specialist will respond to all fish disease outbreaks at the request of the fish hatchery staff.

B. Monitoring

The fish health specialist will visit LFH and TFH at least once a month. Mortality records and fish in all rearing containers will be inspected. Approximately 5 - 10 fish of each species may be killed and examined at the discretion of the fish health specialist.

At spawning, all broodstock will be tested for viral pathogens. Ovarian fluid and kidney/spleen samples from at least 60 females will be tested.

C. Specific Fish Health Management

1. BKD Management – Fall Chinook

All female fall Chinook broodstock will receive a pre-spawning injection with erythromycin. All females for use in the yearling production, the IPC program and any others slated for out of state transport will be tested for BKD via ELISA. WDFW categorizes BKD-ELISA optical densities as follows:

- Below-low = < 0.11,
- Low = 0.11 to 0.199,
- Moderate = 0.20 to 0.44,
- High = 0.45 or greater.

Progeny of negative (below low) females will be selected for the yearling fall Chinook program. Eggs from below low and low females will be selected for shipment to Idaho and Oregon. Progeny of all low, moderate and high BKD-ELISA females and untested females may be utilized in the sub-yearling fall Chinook program.

All yearling fall Chinook fry will receive one 28 day Aquamycin feeding in late spring.

2. BKD Management – Spring Chinook

All female fall Chinook broodstock will receive a pre-spawning injection with erythromycin. All female spring Chinook will be tested for BKD using ELISA assay. No segregation or culling will occur.

Spring Chinook fry will receive one 28 day Aquamycin feeding in late spring.

3. IHN Management – Summer Steelhead

All female steelhead broodstock will be tested for IHN virus via cell culture, and the IHN virus levels in the ovarian fluid will be determined.
Eggs from LFH and Wallowa stock females with high levels of IHN virus ($>10^3$) will be destroyed. Eggs from negative and low IHN virus (10^1 to 10^3) females will be reared separately.

Eggs from the Tucannon and Touchet endemic programs with high levels of IHN virus ($>10^3$) may be destroyed, reared separately, or planted into their respective streams as fry, pending agreement among the co-managers. Eggs from negative and low IHN virus (10^1 to 10^3) females will be reared separately.

If IHN outbreaks occur in any fish-rearing vessel, fish from the affected rearing container will be promptly isolated and may be destroyed.

4. Broodstock and Egg Fungus Management

All Chinook and steelhead broodstocks will be treated with formalin every other day to control external fungus. All eggs will be treated with formalin daily to control fungus. Treatments will be started 24 hours after fertilization. Treatment of chinook eggs will halt at 7 days before hatch. Steelhead egg treatments will stop when the eggs are transferred to baskets for hatching. Rainbow trout are received eyed and are not treated with formalin.

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XI. COMMUNICATION

The list of people on the following table (**Table 13**) are either directly involved in the operation of the LFC, or in related programs and facilities.

Table 13. Contact List.

Name	Agency	Position	Phone	E-mail
Policy				
Pete Hassemer	IDFG	Anadromous Coordinator	208-334-3791	phassemer@idfg.state.id.us
Craig Burley	WDFW	Anadromous Program Mgr	360-902-2784	BURLECCB@dfw.wa.gov
Dave Johnson	NPT	Fisheries Dept. Manager	208-843-7320 Ext 2442	davej@nezperce.org
Gary James	CTUIR	Fisheries Program Mgr.	541-276-4109	garyjmes@ctuir.com
Production				
Becky Johnson	NPT	Production Coordinator	208-843-7320 Ext 2433	beckyj@nezperce.org
Brian Zimmerman	CTUIR	Production Supervisor	541-966-2376	BrianZimmerman@ctuir.com
Bruce McLeod	NPT	Acclimation Facilities	208-843-7320 Ext 2403	brucem@nezperce.org
Chris Starr	LSRCP	Fishery Biologist	208-378-5329	chris_starr@fws.gov
Dick Rogers	WDFW	LFHC Supervisor	509-646-3454	rogerrcr@dfw.wa.gov
Doug Maxey	WDFW	LFHC Supervisor	509-843-1430	maxeydwm@dfw.wa.gov
Steve Rodgers	NPT	NPTH Hatchery Manager	208-843-7384 Ext 3502	stever@nezperce.org
Heather Bartlett	WDFW	Hatcheries Division Mgr.	360-902-2662	BARTLHRB@dfw.wa.gov
Kent Hills	IDFG	Oxbow Hatchery	541-785-3459	oxbowfh@pinetel.com
Mike Key	NPT	FCAP	208-843-7320 Ext 2486	mikek@nezperce.org
Paul Abbott	IPC	Hatchery Biologist	208-388-2353	pabbott@idahopower.com
Zach Penny	NPT	Coho Recovery	208-843-7320 Ext 2430	zachp@nezperce.org
Scott Patterson	ODFW	Hatchery Coordinator	541-963-2138 Ext 22	scott.d.patterson@state.or.us
Jon Lovrak	WDFW	LFC Manager	509-646-9201	lovrajgl@dfw.wa.gov
Evaluation				
Bill Arnsberg	NPT	M & E, NPTH	208-476-7296	billa@nezperce.org
Debbie Milks	WDFW	Fall Chinook Biologist	509-382-1710	milksdjm@dfw.wa.gov
Jay Hesse	NPT	Research Coordinator	208-843-7145 Ext 3552	jayh@nezperce.org
Joe Bumgarner	WDFW	Steelhead Biologist	509-382-1710	bumgajdb@dfw.wa.gov
Joseph Krakker	LSRCP	Fishery Biologist	208-378-5323	joe_krakker@fws.gov
Mark Schuck	WDFW	Evaluations	509-382-1004	schucmls@dfw.wa.gov
Michael Gallinat	WDFW	Spring Chinook Biologist	509-382-4755	gallimpg@dfw.wa.gov
Steve Yundt	LSRCP	Research Program Mgr.	208-378-5227	steve_yundt@fws.gov
Jason Vogel	NPTH	Research Division	208-843-7145	jasonv@nezperce.org
Brett Farman	NOAA	Fisheries Biologist	503-231-6222	brett.farman@noaa.gov
Stuart Rosenberger	IPC	Hatchery M&E Biologist	208-388-6121	srosenberger@idahopower.com
Management				
Ed Larson	NPT	Production Director	208-843-7320 Ext 2440	edl@nezperce.org
Gary James	CTUIR	Fisheries Program Mgr.	541-276-4109	garyjmes@ctuir.com
Glen Mendel	WDFW	Fish Management	509-382-1005	mendegwm@dfw.wa.gov
John Whalen	WDFW	Region 1 Fish Mgmt.	509-892-7861 Ext 304	whalejtw@dfw.wa.gov
Scott Marshall	LSRCP	LSRCP Coordinator	208-378-5298	scott_marshall@fws.gov
Tom Rogers	IDFG	Hatcheries Supervisor	208-334-3791	trogrs@idfg.state.id.us
Fish Health				
Kathy Clemens	USFWS	Supervisory Fish Biologist	208-476-9500	kathy_Clemens@fws.gov
Sam Onjuka	ODFW	Fish Pathologist	541-962-3823	odfwfp@eou.edu
Steve Roberts	WDFW	Fish Health Specialist	509-892-1001 Ext 300	robersdr@dfw.wa.gov

Appendix A: 2009 Requests for Fall Chinook Production Fish/Eggs
(2009 Broodyear)

2008-2017 US v Oregon	Priority under USvOR (SRFMP)	Who	Release site	Age	# for release	transfer	Survival to release or transfer (revised 9/27/07)	Expanded for loss prior release (1/F)	Estim # green eggs to meet priority	SRL Calcs	Total estim eggtake which will cover needs through this priority
1	1	WDFW	onstation	yearlings	450,000		91.4%	1.09406	492,325	91.4% mean survival, 2005-2007BY	492,325
4	4	NPT	CJ	yearlings	150,000	155,000	91.4%	1.09406	164,108	80.9% mean survival, 2004-2000BY	984,650
3	3	NPT	BC	yearlings	150,000	155,000	91.4%	1.09406	164,108		820,542
2	2	NPT	PIT	yearlings	150,000	155,000	91.4%	1.09406	164,108		656,434
				900,000						984,650	
5	5	WDFW	onstation	subs	200,000		95.9%	1.04267	208,533	95.9% mean survival, 2005-2007BY	1,193,184
6	6	NPT	CJ	subs	500,000	507,143	95.9%	1.04267	521,333	91.2% mean survival, 2004-2000BY	1,714,517
7	7	NPT	BC	subs	500,000	507,143	95.9%	1.04267	521,333	divided 20K b/t FCAP to acct	2,235,849
11	11	WDFW	direct-Snake R. (CCD)	subs	200,000		95.9%	1.04267	208,533	for loss from transfer to rel	3,080,932
8	8	NPT	PIT	subs	200,000	202,857	95.9%	1.04267	208,533		2,444,383
10	10	NPT	PIT	subs	200,000	202,857	95.9%	1.04267	208,533		2,872,399
				1,800,000						1,876,799	
12	12	DNFH/Irrigon	Transportation	eyed eggs	250,000	263,125	96.1%	1.04020	273,704	96.1% mean survival, 2005-2007BY	3,354,636
13	13	WDFW/Irrigon	GRR-direct rel	eyed eggs	200,000	210,500	96.1%	1.04020	218,963	4.99% eye-rel loss	3,573,599
16	16	WDFW/Irrigon	GRR-direct rel	eyed eggs	200,000	210,500	96.1%	1.04020	218,963	4.99% eye-rel loss	4,096,920
14	14	DNFH/Irrigon	Transportation	eyed eggs	78,000	82,095	96.1%	1.04020	85,396	4.99% eye-rel loss	3,658,994
9	9	IPC-Oxbow	HC Dam	eyed eggs	200,000	211,000	96.1%	1.04020	219,483	5.2% eye-rel loss	2,663,866
15	15	IPC-Umatilla	HC Dam	eyed eggs	200,000	210,500	96.1%	1.04020	218,963	4.99% eye-rel loss	3,877,957
17	17	IPC-Umatilla	HC Dam	eyed eggs	600,000	631,500	96.1%	1.04020	656,889	4.99% eye-rel loss	4,753,809
				1,728,000						1,892,360	

4,428,000 released — **4,753,809 green eggs to meet needs through priority 17**

number of Snake River origin females needed to spawn: 1321 (Estimated using 3400 eggs/F)

For 2009….. Scenario #2-presumes 70% of females for broodstock will be trapped at LGR

LGR trapping
- 1015 females
- 1015 Males

LFH trapping
- 308 females
- 719 males

In order to get 308 females we need to trap 1027 fish b/c 30% are females

Appendix B: 2009 Fall Chinook Trapping/Sampling Protocol

by

Debbie Milks, WDFW
Bill Arnsberg, NPT
August 13, 2009

Executive summary:

The tagging/sampling protocol for broodstock shipped to LFH and NPTH will be the same.

The trapping rate will be set at 12%. The gates will open for 1.8 minutes, 4 times/hour.

Basics: Scan all FCH for wire and PIT tags. Any fish hauled to LFH or NPTH must be given 1-ROP punch. If you release a fish give it 1-LOP.

Take scales on every other untagged fish (50%) that is NOT PIT tagged, regardless if it is released or hauled to LFH or NPTH.

Note: ALL WIRE TAGGED FISH > 40 cm SHOULD BE HAULED TO LFH or NPTH.
Every 9th WIRE TAGGED fish <41cm should be euthanized, frozen, and retained for LFH or NPTH.

Scales sampled at the LGR Trap for LFH and NPTH broodstock will be mounted by staff from the NPT. Please give scales to NPT driver when they pick up their broodstock.

WDFW is providing 2 staff for helping with the broodstock collection activities at LGR.

Data collected from spring/summer chinook should be put on the same form that is used for FCH. Please note Spring or Summer under comments. If you are getting jacks suspected of being summers we will need to subsample those fish for wires as well. Please call before you sample those fish.

Protocol:

Minijack criteria: Minijacks are fish 40 cm or less.

Jack and Male criteria: JACKS ARE 56-41 cm, MALES are AT LEAST 57 cm fork length
Females: We have verified females as small as 49 cm during processing.
ALL FEMALES ARE TO BE HAULED REGARDLESS OF SIZE!

1) COLLECT & HAUL: All wire tagged FCH adults and jacks. Please give 1-ROP punch.

2) COLLECT&EUTHANIZE& HAUL: 1 out of 9 WIRE TAGGED minijacks (40 cm or less). Please bag and freeze these fish and give to LFH/NPT driver when they come for broodstock.

3) PASS: 8 out of 9 WIRE TAGGED mini-jacks (40cm or less), give 1-LOP punch.

4) COLLECT & HAUL: ALL untagged FEMALES and MALES >56 cm. Please give 1-ROP punch. Take scales on every other untagged fish that does not have a PIT tag until September 28 then increase the sampling to 100%.

5) COLLECT & HAUL: 1 out of 10 unmarked/untagged (NO PIT tag present) FCH jacks: give 1-ROP punch. Here we are targeting wild jacks.

6) PASS: 9 out of 10 untagged FCH jacks (NO PIT tag present), give 1-LOP punch, and take scales on every other untagged fish that does not have a PIT tag.

7) PASS: ALL untagged FCH jacks WITH PIT tags, give 1-LOP punch.

8) PASS: all UNTAGGED mini-jacks (40cm or less), give 1-LOP. Take scales on every other fish that does not have a PIT tag

9) COLLECT & HAUL: All AD Only (no wire) adult FCH, give 1-ROP punch, and take scales on every other fish that does not have a PIT tag.

10) PASS: All AD Only (no wire) jack FCH, give 1-LOP punch, and take scales on every other fish that does not have a PIT tag.

11) PASS: all AD Only (nowire) minijack FCH, give 1-LOP punch and take scales on everyother fish that does not have a PIT tag

More detailed information regarding trapping/sampling:

1) Trapping at LGR Dam
    a. Trapping/Sampling Protocol based upon water temperature in the ladder at the beginning of the day.
        i. Begin trapping August 18 if temperatures allow
        ii. Water temps at or below 70^{o} F
            1. Set automatic trapping gates to sample 12% of the entire run, 24 hours a day
                a. Any fish that are retained for broodstock must receive 1-ROP. If a fish to be retained is accidentally punched on the left side, give 1-ROP also and make a note in the comments column.
                b. Any fish released must receive 1-LOP and be scale sampled. Place scales in an envelope for age and origin determinations. If these fish are caught again DO NOT scale sample, but enter in data as recapture.

    b. Data and Verification
        i. Please note the times you check the trap and when the trap is empty (you are caught up).
        ii. Please write hauling destination (LFH or NPTH) on top of each data form)

iii. Circle sampling or data recording errors and briefly note in comments column (examples: released with 1-ROP, forgot to scale sample, both sides punched, forgot to record or missing digit in PITTag, sample envelope numbers either out of numerical order or skipped for some reason).
iv. Briefly check over data forms prior to faxing, sometimes erasures and cross-outs are not transmitted clearly through the fax machine.

c. Hauling of broodstock
    i. Injections at LGR Adult Trap
        1. All fish collected for broodstock (both LFH and NPTH) will be injected as directed by hatchery staff.
    ii. WDFW and NPT will haul fish from LGR Dam (70% go to LFH and 30% go to NPTH).
        1. Fish will be divided weekly unless otherwise agreed to.
        2. It was agreed that trucks would be at LGR at 10am when the 70 degree protocol was in effect.
d. Research
        1. No U of I radio tagging this year.
        2. NOAA sort-by-code fish.
            a. These fish will be used as broodstock at LFH and NPTH.
            b. Doug Marsh will run a program to indicate which fish were trapped during the 12% and which fish were outside of the trapping period (sort-by-code)
            c. Doug will provide a sampling protocol for his fish. These fish may be used for broodstock.
            d. NOAA staff will be in charge of mounting scales collected for NOAA studies
e. Coordination of trapping data and CWT decoding of hauled fish
    i. Fax paper copy of data to LFH, NPT, and SRL daily or whenever fish are hauled.
    ii. Data entry, verification, and finalization by January 14.
        1. WDFW will enter, verify, and finalize the LGR Adult Trap trapping data.
    iii. All database files at seasons end must be sent to NPT (Bill Arnsberg), WDFW (Debbie Milks), and TAC (Stuart Ellis and Henry Yuen).
f. Video monitoring of sort-by-code fish
    i. No video monitoring in 2009
    ii. At seasons end Doug Marsh will let us know what the realized trap rate was for the season (set at 12% then adjusted for time gates left open for sbyc fish).

Appendix C: 2009 Trapping Protocol at LFH

Begin trapping the first week of September.

Fall Chinook

Adults:->56cm

-goal is 1027 fish (308 females)

-should have 48% of females by October 6 at sorting

Jacks: 56-41 cm

-(sample 100 fish)

Mini-Jacks:

-Do not trap any.

We will use PIT tag detections to estimate yearling return of BY07 fish. Since the return is mini-jacks is primarily (99%) on-station yearlings this will cover or data needs.

Coho:

Coho will be returned to the river.

2009 Trapping Schedule at LFH

Adults	Jacks (56-41cm)	Date
19	1	9/1-9-6
132	2	9/7-13
304	2	9/14-20
314	3	9/21-27
332	14	9/28-10/4
298	21	10/5-11
206	5	10/12-18
183	22	10/19-25
183	26	10/26-11/1
161	2	11/2-8
92	2	11/9-15
69	1	11/16-22
?	0	11/23-29

2009 SortingPlan

LGR pond: work the LGR Pond first

Count females, males(>56) cm, jacks (45-56cm), small jacks (<45)

Double check number and side of operculum punches

For fish that do not have 1-ROP:

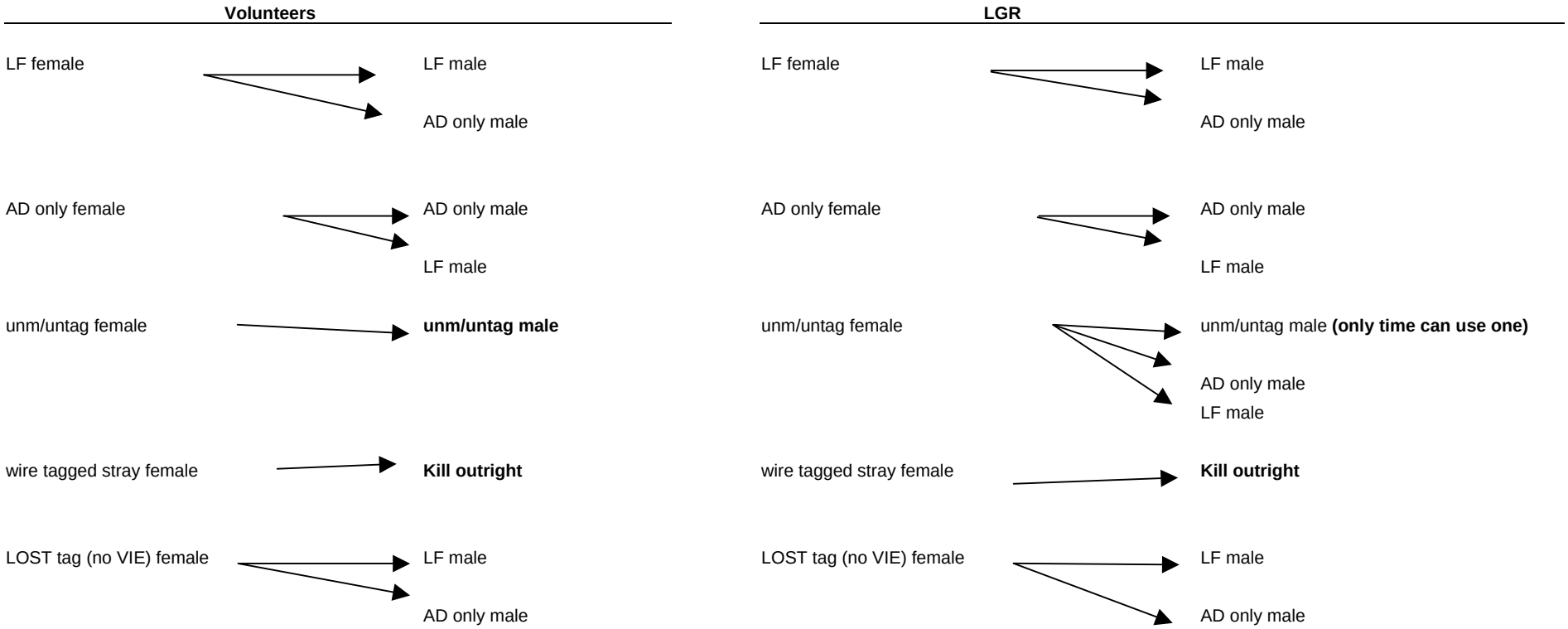
Give 1-ROP punch and make note of sex, clips, wire of that fish, and what operculum punches they had.

LFH pond: Count females, males (> 56 cm), jacks (45-56cm), and small jacks (<45cm)

-We are dividing jacks by fork length because spawning protocol says we will not use jacks less than 45cm in matings. We are also trying to figure out the % of small jacks in the jack estimate of what was trapped.

Appendix D: 2009 Mating Matrix for Spawning at LFH

(2009 Broodyear)



Incorporate jacks (1salts, >56cm) in broodstock up to 15%.

Only spawn males >56

Split age 5 males and use on two females (age will be verified by CWT)

Culling fish to reduce strays:

wire tagged STRAYS (LGR and LFH trapped)

Lost wire males will not be used in spawning.

Appendix E: BY 2009 Fall Chinook Pit Tag Allocation (*UsvOr* agreement)

Table 1. Summary of PIT tag allocation in release year 2010 Snake River fall Chinook salmon hatchery production. Based on sample sizes of 250,000 tags for subyearling and 328,000 tags for surrogates. Applies 2008-2017 USvOR Agreement Table B4B, a 46/54 split of subyearling tags, and a 50/50 split of surrogate tags to T0 and C1 passage routes. (***to be updated following finalBY09 eggtake***)

Priority	Production Program				PIT Tag #'s Transport if Collected	PIT Tag #'s Bypass if Collected	Tagging Timeframe (tagging at rearing facilities)	Release numbers upstream of Lower Granite available for PIT tagging		Tagging Lead / Uploading
								Subyearlings	3,400,000	
								Yearlings	450,000	
	Rearing Facility	Number	Age	Release Location(s)				Subyearling Sample Size	250,000	
					TIC	BIC		250,000 and 46 / 54 split		
1	Lyons Ferry	450,000	1+	On station	30,000	0	January 18 25	**30,000**		WDFW/WDFW
2	Lyons Ferry	150,000	1+	Pittsburg Landing	15,000	4,000	January 30-31	**19,000**		BIOMARK/NPT
3	Lyons Ferry	150,000	1+	Big Canyon	15,000	4,000	January 29-30	**19,000**		BIOMARK/NPT
4	Lyons Ferry	150,000	1+	Captain John Rapids	15,000	4,000	January 28-29	**19,000**		BIOMARK/NPT
5	Lyons Ferry	200,000	0+	On station	0	0	Early to mid-April	**0**		WDFW/WDFW
6	Lyons Ferry	500,000	0+	Captain John Rapids	16,912	19,853	Early to mid-April	**36,765**		BIOMARK?/NPT
7	Lyons Ferry	500,000	0+	Big Canyon	16,912	19,853	Early to mid-April	**36,765**		BIOMARK?/NPT
8	Lyons Ferry	200,000	0+	Pittsburg Landing	6,765	7,941	Early to mid-April	**14,706**		BIOMARK?/NPT
9	Oxbow	200,000	0+	Hells Canyon Dam	6,765	7,941	Early to mid-April	**14,706**		IPC-IDFG/IDFG
10	Lyons Ferry	200,000	0+	Pittsburg Landing	6,765	7,941	Early to mid-April	**14,706**		BIOMARK?/NPT
11	Lyons Ferry	200,000	0+	Direct stream evaluation Near Captain John Rapids	6,765	7,941	Early to mid-April	**14,706**		BIOMARK?-WDFW?/NPT/WDFW
12	DNFH/Umatilla	250,000	0+	Transportation Study[a]	125,000	125,000	Late May -early June	**250,000**		BIOMARK?/NOAA
13	Irrigon	200,000	0+	Grande Ronde River	6,765	7,941	Early to mid-April	**14,706**		BIOMARK?-WDFW?/NPT?WDFW?
14	DNFH/Umatilla	78,000	0+	Transportation Study[a]	39,000	39,000	Late June-July	**78,000**		BIOMARK?/NOAA
15	Umatilla	200,000	0+	Hells Canyon Dam	6,765	7,941	Early to mid-April	**14,706**		BIOMARK?/NPT
16	Irrigon	200,000	0+	Grande Ronde River	6,765	7,941	Early to mid-April	**14,706**		BIOMARK?-WDFW?/NPT?WDFW?
17	Umatilla	600,000	0+	Hells Canyon Dam	20,294	23,824	Early to mid-April	**44,118**		BIOMARK?/NPT
NPTH 1	NPTH	500,000	0+	NPTH	0	3,000	April-May	**3,000**		NPT/NPT
NPTH 2	NPTH	200,000	0+	Lukes Gulch	6,765	7,941	April- May	**14,706**		NPT/NPT
NPTH 2	NPTH	200,000	0+	Ceder Flats	6,765	7,941	April -May	**14,706**		NPT/NPT
NPTH 3	Irrigon	500,000	0+	North Lapwai Valley	0	3,000	April	**3,000**		NPT/NPT
above 17	DNFH/Umatilla	TBD	0+	Transportation Study	0	0		**0**		above 17
TOTAL	**Yearlings**	**900,000**					**TOTAL PIT**	**671,000**	PIT Yrlngs.	PIT Sub-Yrlngs.
	Subyearlings	**4,538,000 (of which 328,000 are for Transportation Study)**							**87,000**	**584,000**