

BONNEVILLE HATCHERY



OPERATIONS PLAN 2012

Bonneville Hatchery

INTRODUCTION

Bonneville Hatchery is located 4 miles west of Cascade Locks, off of Interstate 84 (Exit 40) within the Bonneville Dam Complex. The site is at an elevation of approximately 46 feet above sea level, at latitude 45° 38' 00" N (45.6334) and longitude 121° 57' 20" W (121.9568). The site area is 22.46 acres.

The hatchery water supply is obtained from two sources: Tanner Creek and wells. Water from Tanner Creek is supplied by gravity; however, it sometimes freezes in December and January so it is not a reliable water supply during those months. Water is reused through the adult capture and holding system.

The facility is staffed with 18.5 FTE's.

Rearing Facilities at Bonneville Hatchery

| Unit Type | Unit Length (ft) | Unit Width (ft) | Unit Depth (ft) | Unit Volume (ft ³) | Number Units | Total Volume (ft ³) | Construction Material | Age | Condition | Comment |
|----------------------------------|------------------|-----------------|-----------------|--------------------------------|--------------|---------------------------------|-----------------------|------|-----------|---------------------------------|
| <u>Bonneville Hatchery</u> | | | | | | | | | | |
| Two Adult Holding/ Rearing Ponds | 123 | 76 | 7 | 65,436 | 1 | 65,436 | concrete | 1975 | good | Dimension for each side |
| Adult Holding/ Rearing Pond | 165 | 27 | 6 | 26,730 | 1 | 26,730 | concrete | 1975 | good | Not a good adult holding option |
| Raceways | 75 | 16.8 | 3 | 3,780 | 28 | 105,840 | concrete | 1975 | good | Converted Burrows ponds |
| Raceways | 80 | 20 | 3 | 4,800 | 30 | 144,000 | concrete | 1950 | fair | 4 raceways unusable |
| Deep Troughs | 14 | 1.08 | 1.42 | 21 | 60 | 1,288 | fiberglass | 1984 | good | |
| Vertical Incubators | | | | | 1216 | | fiberglass | 1975 | fair | 76 stacks of 16 trays |
| Vertical Incubators | | | | | 1216 | | plastic | 1985 | good | 76 stacks of 16 trays |
| Rearing Troughs | 16 | 3 | 3 | 144 | 9 | 1296 | fiberglass | 2005 | excellent | |
| Rearing Troughs | 16 | 2.6 | 2 | 85 | 3 | 256 | Fiberglass | 1991 | good | |
| <u>Captive Brood Facility</u> | | | | | | | | | | |
| Circular Tanks | | 10 | | | 4 | | fiberglass | 1998 | excellent | |
| Circular Tanks | | 20 | | | 15 | | fiberglass | 1998 | excellent | |

PURPOSE

Bonneville Hatchery was constructed in 1909 and was originally funded by the state of Oregon. In 1957, the facility was remodeled and expanded as part of the Columbia River Fisheries Development Program (Mitchell Act)—a program to enhance declining fish runs in the Columbia River Basin. The hatchery underwent another renovation in 1974 as part of the U.S. Army Corps of Engineers' (USACE) mitigation of fish losses from the construction of the John Day Dam. In 1998 construction was completed on the Captive Broodstock Facility for the Grande Ronde Basin spring Chinook supplementation program. The hatchery currently receives funding from both the National Marine Fisheries Service (NMFS) and USACE.

Bonneville Hatchery is Oregon Department of Fish and Wildlife's largest hatchery facility and has a diverse fish production program. It is used for adult collection, egg incubation and rearing of fall Chinook upriver brights (URB), and adult collection and spawning of coho. It is also used for rearing of tule fall Chinook, summer steelhead, winter steelhead and coho (coho egg incubation occurs at Cascade Hatchery). The hatchery has excellent egg and fingerling quarantine facilities that are often used to assist other hatchery programs in the basin.

PROGRAM TYPES

The ODFW Hatchery Management Policy defines hatchery programs as either harvest or conservation programs. Harvest programs operate to enhance or maintain fisheries without impairing naturally reproducing populations. Conservation programs operate to maintain or increase the number of naturally produced fish without reducing the productivity of naturally reproducing populations.

Bonneville Hatchery has both harvest and conservation programs:

Sandy River (011) Coho: a harvest program funded by the Mitchell Act to mitigate for the loss of fishing and harvest opportunities due to habitat loss and migration blockage resulting from the Columbia Basin hydropower system.

Tanner Creek (014) Coho: a harvest program funded by the Mitchell Act to mitigate for the loss of fishing and harvest opportunities due to habitat loss and migration blockage resulting from the Columbia Basin hydropower system.

White Salmon (060) Tule Fall Chinook: a harvest program funded by USACE and U.S. Fish and Wildlife Service (USFWS) to mitigate for the loss of fishing and harvest opportunities due to habitat loss and migration blockage resulting from the Columbia Basin hydropower system.

Umatilla River (091) Fall Chinook: a combined harvest and conservation program to mitigate for the loss of fishing and harvest opportunities and to aid in the re-introduction of fall Chinook to the Umatilla River.

URB (045 and 095) Fall Chinook: a harvest program funded by USACE to mitigate for the loss of fishing and harvest opportunities due to habitat loss and migration blockage resulting from construction and operation of John Day Dam on the Columbia River.

Grande Ronde Basin Spring Chinook: a conservation captive brood program, funded by the Bonneville Power Administration, in which portions of imperiled wild populations are reared for their entire life cycle in a hatchery environment to maximize survival and the number of progeny produced.

South Santiam (024) Summer Steelhead: a harvest program funded by the Mitchell Act to mitigate for loss of fishing and harvest opportunities due to habitat loss in the Columbia Basin and the Clackamas and Sandy Rivers.

Sandy River (011) Winter Steelhead: a harvest program funded by the Mitchell Act to mitigate for the loss of fishing and harvest opportunities in the Columbia Basin and the Sandy River.

Clackamas River (122) Winter Steelhead: a harvest program funded by the Mitchell Act to mitigate for the loss of fishing and harvest opportunities in the Columbia Basin and the Clackamas River.

GOALS

Coho: Hatchery goal associated with the Mitchell Act funding is to produce lower river coho that will contribute to NE Pacific and Columbia River Basin commercial and sport fisheries while providing adequate escapement for hatchery production.

White Salmon (060) Tule Fall Chinook: The primary goal of the program is to produce lower river fall Chinook for harvest by commercial, tribal and recreational fishers in the ocean and lower Columbia River, while providing adequate escapement for hatchery production. A secondary goal is to maintain a genetic repository for tule fall Chinook native to the lower Columbia River.

Umatilla River (091) Fall Chinook: The primary goal of the Umatilla River fall Chinook program is to reintroduce fall Chinook for harvest in the Umatilla and Columbia rivers while rebuilding and maintaining adequate hatchery and natural production.

URB Fall Chinook: The USACE mitigation agreement is to produce no more than 263,000 pounds of juvenile fall Chinook, a production level equivalent to the loss of 15,000 wild fall chinook spawners caused by John Day Dam. The remaining mitigation for John Day Dam (production for 15,000 fall chinook spawners) is achieved at Spring Creek National Fish Hatchery.

Grande Ronde Basin Spring Chinook: The short-term goal is to use captive broodstock technology and conventional supplementation to prevent the extinction (preservation/conservation) of three wild chinook populations in the Grande Ronde Basin, provide a future basis to reverse the decline in stock abundance of Grande Ronde River chinook salmon, and ensure a high probability of

population persistence well into the future once the causes of basin wide population declines have been addressed. Associated objectives include:

- 1) To prevent extinction of native wild chinook populations in the Lostine, upper Grande Ronde River and Catherine Creek,
- 2) Maintain genetic diversity of indigenous artificially propagated chinook populations,
- 3) Maintain genetic diversity in wild chinook populations specifically the Minan and Wenaha rivers,
- 4) Reintroduce spring/summer Chinook into Lookingglass Creek with Catherine Creek stock, which is indigenous to the Grande Ronde sub-basin,

An intermediate goal of this program is the restoration of spring Chinook salmon in the Grande Ronde sub-basin using three indigenous stocks.

The long-term goal of this program is recovery, de-listing, and to mitigate for fish losses occurring as a result of the construction and operation of the four Lower Snake River Dams.

South Santiam (024) Summer Steelhead: Meet the PGE mitigation agreement goal and the City of Portland mitigation goal, contribute to the Columbia River sport fisheries, and meet subbasin fishery management goals.

Sandy River (011) Winter Steelhead: Provide sport harvest opportunities on hatchery winter steelhead in the Sandy River, while minimizing intentional risks to naturally producing populations.

Clackamas River (122) Winter Steelhead: Provide sport harvest opportunities on hatchery winter steelhead in the Clackamas River, while minimizing intentional risks to naturally producing populations

OBJECTIVES

Objective 1: Foster and sustain opportunities for sport, commercial, and tribal fishers consistent with the conservation of naturally produced native fish.

Fall Chinook:

Washington (045) Upriver Bright Stock:

Produce 3,500,000 fingerlings (28,000 pounds) for transfer to Ringold Acclimation in Washington.

Little White Salmon (060) Tule Stock

Produce 2,800,000 smolts (35,000 pounds) for on-station release.

Umatilla River (091) Stock:

Produce 480,000 smolts (40,000 pounds) for acclimation and release into the Umatilla River.

Columbia River (095) Upriver Bright Stock:

Produce 2,000,000 smolts (44,444 pounds) for on-station release.

Produce 2,500,000 fingerlings (20,000 pounds) for transfer to Little White Salmon NFH.

Spring Chinook:

Upper Grande Ronde (080) Stock:

Produce 290,000 eggs for transfer to Oxbow Hatchery.

Coho:

Sandy River (011) Stock:

Produce 500,000 smolts (31,250 pounds) for transfer to Sandy Hatchery.

Tanner Creek (014) Stock:

Produce 3,897,000 eggs for Cascade Hatchery.

Acclimate 725,000 smolts (48,333 pounds) for on-station release.

Summer Steelhead:

South Santiam River (024) Stock:

Produce 175,000 smolts (38,889 pounds) for Clackamas Hatchery.

Produce 80,000 smolts (17,778 pounds) for Sandy Hatchery.

Winter Steelhead:

Sandy River (011) Stock:

Rear 170,000 smolts (28,333 pounds) for Sandy Hatchery.

Clackamas River (122) Stock:

Produce 100,000 smolts (16,667 pounds) for acclimation and release into the Clackamas River.

- Objective 2: Contribute toward the sustainability of naturally produced native fish populations through the responsible use of hatcheries and hatchery-produced fish.
- Objective 3: Maintain genetic resources of native fish populations spawned or reared in captivity.
- Objective 4: Restrict the introduction, amplification, or dissemination of disease agents in hatchery produced fish and in natural environments by controlling egg and fish movements and by prescribing a variety of preventative, therapeutic and disinfecting strategies to control the spread of disease agents in fish populations in the state.
- Objective 5: Minimize adverse ecological impacts to watersheds caused by hatchery facilities and operations.
- Objective 6: Communicate effectively with other fish producers, managers and the public.

CURRENT PRACTICES TO ACHIEVE OBJECTIVES

The sections that follow describe the current hatchery practices associated with anadromous fish production at this facility. Because ODFW hatcheries are managed to maximize use of the hatchery rearing space, hatchery operations are dynamic and subject to annual change depending upon statewide program needs.

The Native Fish Conservation Policy, the Fish Hatchery Management Policy, the Fish Health Management Policy and Hatchery Genetic Management Plans provide guidelines for the management of wild and hatchery fish in Oregon. These policies describe the brood collection, rearing, release, and health management strategies currently used at this facility.

Objective 1: Foster and sustain opportunities for sport, commercial, and tribal fishers consistent with the conservation of naturally produced native fish.

Adult Collection

Fall Chinook:

Washington (045) URB Stock: Adult collection takes place at Priest Rapids Hatchery in Washington. Adults return to the hatchery from October through November.

Little White Salmon (060) Tule Stock: Adult collection takes place at Spring Creek National Fish Hatchery in Washington. Adults return to the hatchery from late August through September. Peak spawning occurs in mid-September.

Umatilla River (091) Stock: Adults are collected at Umatilla River (Three Mile Dam) from October until December 1st. Peak spawning occurs in November.

Columbia River (095) URB Stock: Adults arrive at the hatchery between August and November. Peak spawning occurs during November.

Spring Chinook:

Upper Grande Ronde (080) Stock: Eyed eggs from Lookingglass Hatchery are taken to Wallowa Hatchery for initial rearing to smolt size. Smolts are reared to adults at Bonneville Captive Brood Facility. Adults are spawned at the Bonneville Captive Brood Facility in September and October.

Coho:

Sandy River (011) Stock: No adults are collected at the hatchery. See Sandy Hatchery Plan for details.

Tanner Creek (014) Stock: Adults arrive at the hatchery between August and November. Peak spawning occurs during November.

Summer Steelhead:

South Santiam River (024) Stock: No adults are collected at the hatchery. See South Santiam Hatchery Plan for details.

Winter Steelhead:

Sandy River (011) Stock: No adults are collected at the hatchery. See Sandy Hatchery Plan for details.

Clackamas River (122) Stock: No adults are collected at the hatchery. See Clackamas Hatchery Plan for details.

Objective 2: Contribute toward the sustainability of naturally produced native fish populations through the responsible use of hatcheries and hatchery-produced fish.

Rearing and Release Strategies

Rearing and release strategies are designed to limit the amount of ecological interactions occurring between hatchery and naturally produced fish. Fish are reared to sufficient size that smoltification occurs within nearly the entire population, which will reduce the retention time in downstream migration. Rearing on parent river water, or acclimation to parent river water for several weeks, is used to ensure strong homing to the hatchery, thus reducing the stray rate to natural populations. Various release strategies are used to ensure that fish migrate from the hatchery with least amount of interaction with native populations. The specific rearing and release strategies used at this hatchery are outlined below.

Fall Chinook:

Washington (045) URB Stock:

Rear 2,500,000 fish to a size of 125 fish/pound for transfer to Ringold Acclimation in Washington beginning in late April. All fish are fin-clipped and 200,000 are coded-wire tagged prior to transfer.

Rear 1,500,000 fish to a size of 125 fish/pound for transfer to Ringold Acclimation in Washington beginning in early May. All fish are fin-clipped prior to transfer.

White Salmon (060) Tule Stock:

Rear 2,800,000 fish to a size of 80 fish/pound for on-station release into Tanner Creek in late April. All fish are fin-clipped and 150,000 are coded-wire tagged prior to release.

Umatilla River (091) Stock:

Rear 240,000 smolts to a size of 12 fish/pound for transfer in mid-February to Pendleton Acclimation site for acclimation and release into the Umatilla River. All fish are coded-wire tagged prior to transfer. This is the conservation program release.

Rear 240,000 smolts to a size of 12 fish/pound for transfer in mid-February to Pendleton Acclimation site for acclimation and release into the Umatilla River. All fish are fin-clipped and coded-wire tagged prior to transfer. This is the harvest program release.

Columbia River (095) URB Stock:

Rear 2,500,000 fish to a size of 125 fish/pound for transfer to Little White Salmon National Fish Hatchery in mid-May. All fish are fin-clipped and 150,000 are coded-wire tagged prior to transfer.

Rear 2,000,000 fish to a size of 45 fish/pound for on-station release in late July. All fish are fin-clipped and 50,000 are coded-wire tagged prior to release.

Spring Chinook:

Upper Grande Ronde (080): This is an egg program only.

Coho:

Sandy River (011) Stock:

Rear 500,000 smolts to a size of 16 fish/pound for transfer in late February to Sandy Hatchery for acclimation and release in mid-April (250,000) and mid-May (250,000). 25,000 fish are fin-clipped and coded-wire tagged for each release.

Tanner Creek (014) Stock:

Receive 725,000 fish at a size of 17 fish/pound from Upper Herman Creek Ponds in late March and rear to a size of 15 fish/pound for release on-station into Tanner Creek in early May. All fish are marked, and 25,000 are coded-wire tagged prior to release.

Summer Steelhead:

South Santiam River (024) Stock:

Rear 175,000 smolts to a size of 4.5 fish/pound for transfer to Clackamas Hatchery in late April. All fish receive a right maxillary clip and an adipose clip prior to transfer.

Rear 80,000 smolts to a size of 4.5 fish/pound for transfer to Sandy Hatchery in late April. All fish receive a right maxillary clip and an adipose clip prior to transfer.

Winter Steelhead:

Sandy River (011) Stock:

Rear 170,000 smolts to a size of 6 fish/pound for transfer to Sandy Hatchery in late March. All fish receive a right maxillary clip and an adipose clip prior to transfer.

Clackamas River (122) Stock:

Rear 50,000 smolts to a size of 6 fish/pound for transfer to Cassidy (25,000) and Foster Creek (25,000) acclimation sites in early April. All fish receive a right maxillary clip and an adipose clip prior to transfer.

Rear 50,000 smolts to a size of 6 fish/pound for transfer to Clackamas Hatchery in early April for acclimation and release into the Clackamas River. All fish receive a right maxillary clip and an adipose clip prior to transfer.

Objective 3: Maintain genetic resources of native fish populations spawned or reared in captivity.

Broodstock Selection and Spawning

Oregon's Native Fish Conservation Policy and Hatchery Genetic Management Plans outline broodstock selection and spawning protocols for some fish stocks. The following practices are currently being used at Bonneville Hatchery:

Fall Chinook:

Washington (045) URB Stock: No adults are collected at the hatchery; broodstock selection and spawning take place at Priest Rapids Hatchery in Washington. Eggs are transferred to Bonneville in early December.

White Salmon (060) Tule Stock: No adults are collected at the hatchery; broodstock selection and spawning take place at Spring Creek National Fish Hatchery. Adults are spawned throughout the run using a 1: 1 male to female spawning ratio; jacks make up 4% of the males spawned. Eggs are transferred to Bonneville in late October.

Umatilla River (091) Stock: No adults are collected at the hatchery, but are collected at Three Mile Dam (Umatilla River). The hatchery goal is to spawn fish from throughout the run using a 1:1male to female ratio. Jacks will be incorporated into the broodstock at a rate of one for every 10 adult males.

Columbia River (095) URB Stock: Adults are collected throughout the run and spawned at 1:1 male to female spawning ratio. Any mainstem Columbia River URB stock is approved for broodstock use at this facility.

Spring Chinook:

Upper Grande Ronde (080): Adults are selected for ripeness and spawned using a matrix system based on the total numbers of males and females available.

Coho:

Sandy River (011) Stock: No adults are spawned at the hatchery. See Sandy Hatchery Plan for details.

Tanner Creek (014) Stock: Adults are collected throughout the run and spawned at a 1:1 male to female spawning ratio. Only hatchery adults are used as broodstock.

Rainbow Trout:

Cape Cod Triploid (072T) Stock: Broodstock is maintained at Roaring River Hatchery.

Summer Steelhead:

South Santiam River (024) Stock: No adults are spawned at the hatchery. See the South Santiam Hatchery Plan for details.

Winter Steelhead:

Sandy River Wild (011W) Stock: No adults are spawned at the hatchery. See the Sandy Hatchery Plan for details.

Clackamas River Wild (122) Stock: No adults are spawned at the hatchery. See the Clackamas Hatchery Plan for details.

Objective 4: Restrict the introduction, amplification, or dissemination of disease agents in hatchery produced fish and in natural environments by controlling egg and fish movements and by prescribing a variety of preventative, therapeutic and disinfecting strategies to control the spread of disease agents in fish populations in the state.

Fish Health Management Programs—All Stocks

ODFW has adopted a Fish Health Management Policy that describes measures that minimize the impact of fish diseases on the state's fish resources. The primary objective of fish health management programs at ODFW hatcheries is to produce healthy smolts that will contribute to the fishery and return sufficient numbers of adults to continue propagation of the stocks and provide supplementation if desired. Equally important is to prevent the introduction, amplification or spread of fish pathogens that might negatively affect the health of both hatchery and naturally reproducing stocks.

ODFW has implemented both disease control and disease prevention programs at all of its facilities to achieve these objectives. These programs include the following standard elements:

Disease Control (Reactive)

- Perform necropsies of diseased and dead fish to diagnose the cause of loss.
- Prescribe appropriate treatments and remedies to disease. This includes recommending modifications in fish culture practices, when appropriate, to alleviate disease-contributing factors.
- Apply a disease control policy as stated in the Oregon Administrative Rules which dictates how specific disease problems will be addressed and what restrictions may be placed on movements of diseased stocks.
- Conduct applied research on new and existing techniques to control disease epizootics.

Disease Prevention (Proactive)

- Routinely remove dead fish from each rearing container and notify ODFW Fish Health Section if losses are increasing. Monthly mortality records are submitted to Fish Health Section from each hatchery.

- Routinely perform examinations of live fish to assess health status and detect problems before they progress to clinical disease or mortality.
- Implement disease preventative strategies in all aspects of fish culture to produce a quality fish. This includes prescribing the optimal nutritional needs and environmental conditions in the hatchery rearing container based on historical disease events. It also involves the use of vaccines or antibiotics in order to avoid a disease problem.
- Use a disease prevention policy that restricts the introduction of stocks into a facility. This will help avoid new disease problems and fish pathogens not previously found at the site.
- Use sanitation procedures that prevent introduction of pathogens into and/or within a facility.
- Conduct applied research on new and existing disease prevention techniques.
- Utilize pond management strategies (e.g., Density Index and Flow Index guidelines) to help optimize the quality of the aquatic environment and minimize fish stress that can be conducive to infectious and noninfectious diseases. For example, a Density Index is used to estimate the maximum number of fish that can occupy a rearing unit based on the rearing unit's size. A Flow Index is used to estimate the rearing unit's carrying capacity based on water flows.

Fish Health Activities at Bonneville Hatchery

Health Monitoring

- Monthly health monitoring examinations of healthy and clinically diseased fish are conducted on each fish lot at the hatchery. More frequent monitoring is necessary from April through August. Monitoring samples includes a minimum of 10 moribund/dead fish (if available) and 4-6 live fish per lot.
- All fish are given a health inspection no longer than 6 weeks before fish are released or transferred. This exam may be in conjunction with the routine monthly visit.
- Examinations for *Myxobolus cerebralis*, agent of whirling disease, are conducted annually on 60 fish held for a minimum of 180 days at the facility.
- At spawning, a minimum of 60 ovarian fluids and 60 kidney/spleen/pyloric caeca (based on a minimum sampling at the 5% incidence level) are examined for viral pathogens from each salmon lot. If prespawning mortality is above normal, necropsies are conducted on dead adult fish for bacteria, parasites and other causes of death.
- Whenever abnormal behavior is reported or observed, or mortality exceeds 0.1% per day over five consecutive days in any rearing container, the fish pathologist will examine the

affected fish, make a diagnosis and recommend the appropriate remedial or preventative measures.

- Reporting and control of specific fish pathogens are conducted in accordance with the Fish Health Management Policy. Results from each examination mentioned above are reported on the ODFW Fish Health or Virus Examination forms.

Fish and Egg Movements

- Movements of fish and eggs are conducted in accordance with the Fish Health Management Policy.

Therapeutic and Prophylactic Treatments

- Adult fall Chinook are injected with antibiotics for the control of bacterial diseases.
- At spawning, eggs are water-hardened in iodophor for disinfection. A second iodophor disinfection is given to eggs which are incubated in mass in the deep troughs. This treatment is given after the eggs are shocked and is administered as a flush treatment.
- Juvenile fish are administered antibiotics orally as needed for the control of bacterial infections and for prevention of diseases.
- Hydrogen Peroxide is dispensed into water for control of parasites and fungus on eggs, juveniles and adults. Treatment dosage and exposure time varies with species, life stage and condition being treated.
- Only approved or permitted therapeutic agents are used for treatments:
 - ❖ FDA labeled and approved for use on food fish
 - ❖ Allowed by the FDA as an Investigational New Animal Drug
 - ❖ Obtained by extra-label prescription from a veterinarian
 - ❖ Allowed by the FDA as low regulatory priority or deferred regulatory status
 - ❖ Approved by the FDA through USFWS for fish listed under the federal Endangered Species Act.

Sanitation

- All eggs brought to the facility are surface-disinfected or water-hardened in buffered iodophor.
- Disinfection footbaths (or other means of disinfection) are provided at the incubation facility's entrance and exit areas while embryos are incubating in the facility.

- All equipment (e.g., nets, tanks, rain gear, boots) is disinfected with iodophor between uses with different fish/egg lots or different rearing containers.
- Dead fish are disposed of promptly and in a manner that prevents introduction of disease agents to the waters of the state.
- Rearing units are cleaned on a regular basis.
- Fish transport trucks are disinfected between the hauling of different fish lots.

Objective 5: Minimize adverse ecological impacts to watersheds caused by hatchery facilities and operations.

Environmental Monitoring

Primarily, environmental monitoring is conducted at ODFW facilities to ensure these facilities meet the requirements of the National Pollution Discharge Elimination Permit administered by the Oregon Department of Environmental Quality. It is also used in managing fish health. On a short-term basis, monitoring helps identify when changes to hatchery practices are required. Long-term monitoring provides the ability to quantify water quality impacts resulting from changes in the watershed (e.g., logging, road building and urbanization). The following environmental parameters are currently monitored at all ODFW hatcheries:

- Total Suspended Solids (TSS) – measured quarterly. Two composite samples are collected, one during normal operations and one during cleaning. Some facilities may take more samples because of multiple outfalls.
- Settleable Solids (SS) – measured quarterly. Two composite samples are collected, one during normal operations and one during cleaning. Some facilities may take more samples because of multiple outfalls.
- pH – measured quarterly when settleable solids are measured.
- Total Ammonia and Total Phosphorus – measured quarterly during the first 12 months of the permit when settleable solids are measured.
- Water Temperatures – daily maximum and minimum water temperatures are measured within the hatchery. Temperature units are recorded for egg development in some hatcheries.
- Dissolved Oxygen (DO) – measured only when conditions warrant (e.g., periods of low flows and high temperatures).

- Air Temperatures – maximum and minimum temperatures are recorded daily at some stations, but there are no special monitoring requirements.
- Flow Logs – changes in water flows through the hatchery ponds are recorded weekly.

Objective 6: Communicate effectively with other fish producers, managers and the public.

Coordination/Communication within ODFW

Annual Fish Production Meetings: ODFW conducts meetings throughout the state to set annual fish production goals for all public hatcheries in Oregon. These meetings involve the participation of ODFW research, management and fish culture staff as well as representatives from applicable federal agencies and tribes.

Record Keeping: The following records are kept at all ODFW hatcheries:

- Anadromous Adult Transaction Report – details the collection and disposition of all adult fish handled at the facility.
- Mark Recovery Report – details sex, fish length and tag information from all marked adult fish that are captured.
- Egg and Fry Report – records all egg and fry movements, treatments, etc.
- Monthly Poned Report – updates hatchery operations from the previous month (i.e., current number of fish, size, transfers or releases, feed conversion, mortality, medication, etc.).
- Monthly Progress Report – document summarizing operational activities for the hatchery and all satellite facilities (e.g., fish culture, fish health, fish distribution, maintenance and safety).
- Fish Loss and Treatment Report – records disease problems and daily mortality.
- Fish Loss Report/Investigation – when 1,000 or more juveniles or 10 or more adult fish are accidentally lost in a single accident.
- Predator Mortality Report – documents any fish predators that may die at the hatchery facility.
- Fish Liberation Reports – details information regarding all fish releases (e.g., fish numbers, size, location, method of release, marks, etc.).

- Coded–Wire Tag Release Reports – record of all juvenile fish released with coded-wire tags.
- Length Frequency Record – details fish lengths of all anadromous fish released (based on a sample of the releases).
- Chemical use, feed use report, waste discharge monitoring, purchasing, budget, hazardous materials, safety, vehicles, equipment, maintenance and alarm logs.
- Visitor Log – some facilities record the daily visitor use of the facility; however, this is not a requirement.

Hatchery Management Information System (HMIS): Computerized system to collect, report, summarize and analyze hatchery production data. This system is a tool to be used in production control at all hatchery management levels.

Interagency Coordination/Communication

Production Advisory Committee (PAC): The Columbia River PAC is comprised of representatives from the regulatory management agencies and tribes. This group meets monthly to discuss anadromous fish production issues and to provide an opportunity for communication among the anadromous fish hatchery managers.

Technical Advisory Committee (TAC): The Columbia River TAC is comprised of regulatory fish harvest technicians. This group provides management direction used in establishing hatchery fish production goals. TAC meets monthly.

Pacific Northwest Fish Health Protection Committee (PNFHPC): This group is comprised of representatives from U.S. and Canadian fish management agencies, tribes, universities, and private fish operations. The groups meets twice a year to monitor regional fish health policies and to discuss current fish health issues in the Pacific Northwest.

In-River Agreements: State and tribal representatives meet annually to set Columbia River harvests as part of the *U.S. v. Oregon Agreement*. Periodic meetings are also held throughout the year to assess if targets are being met.

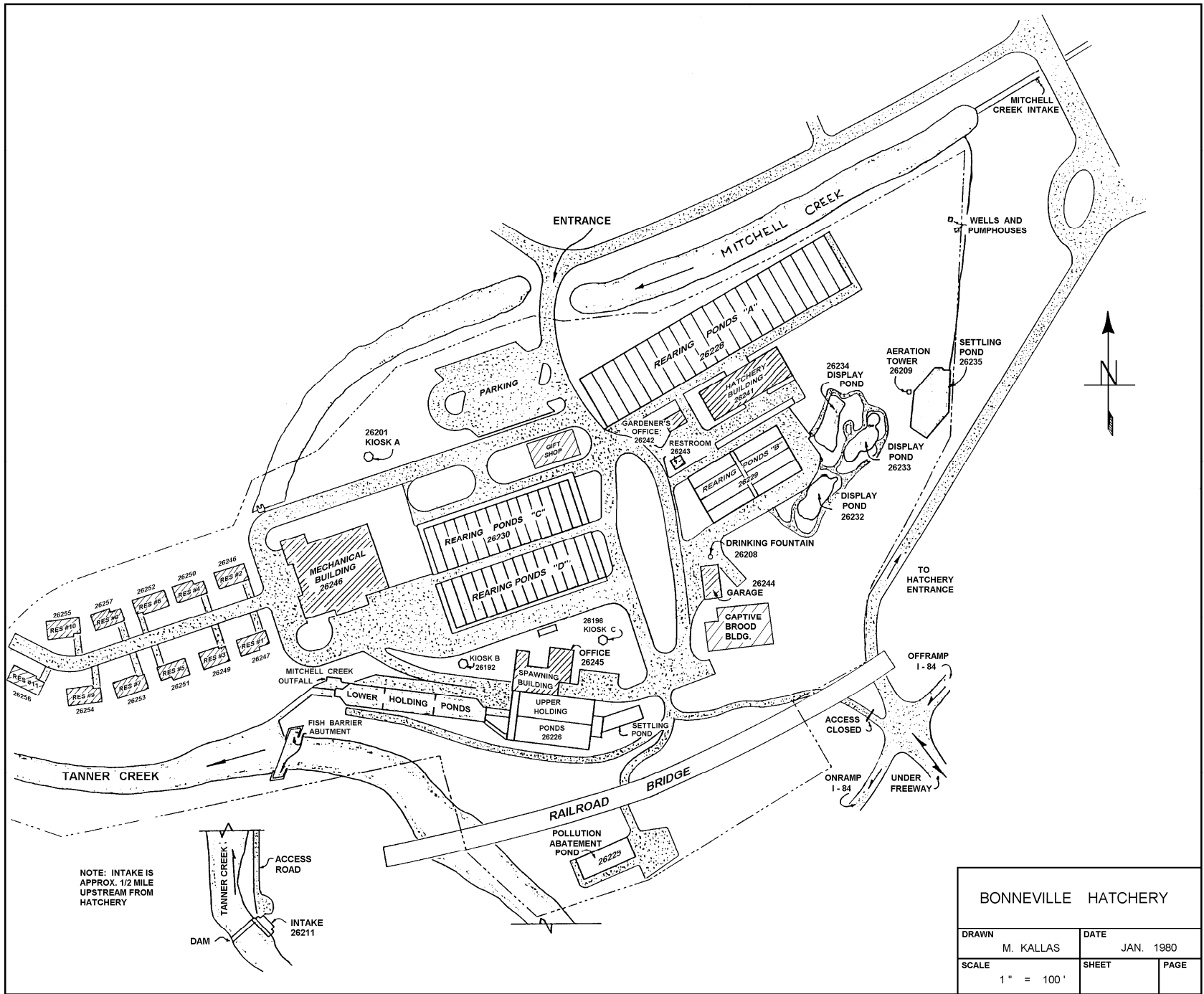
In-Season Communications: Communication with PAC, the Columbia River Inter-Tribal Fish Commission, Washington Department of Wildlife, Washington Department of Fisheries, U.S. Fish and Wildlife Service and Idaho Department of Fish and Game takes place each year to coordinate proper fish and egg transfers in an effort to meet basin-wide goals at all facilities, where applicable.

Streamnet (www/streamnet.org): Hatchery return data are input into StreamNet, a cooperative information management and data dissemination project focused on fisheries and aquatic related data and data related services in the Columbia River basin and the Pacific Northwest. StreamNet is

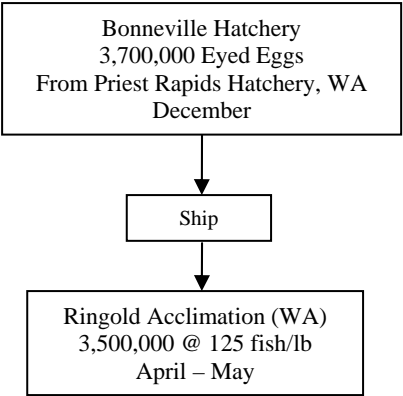
funded through the Northwest Power and Conservation Council's Fish and Wildlife Program by the Bonneville Power Administration and are administered by the Pacific States Marine Fisheries Commission. The data are maintained and disseminated through the Pacific States Marine Fisheries Commission (PSMFC).

Communication with the General Public

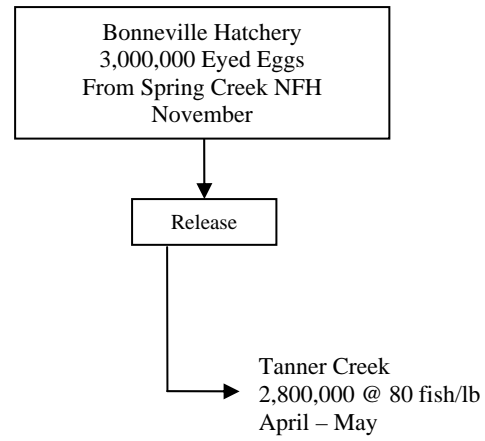
Bonneville Hatchery receives approximately 500,000 visitors each year.



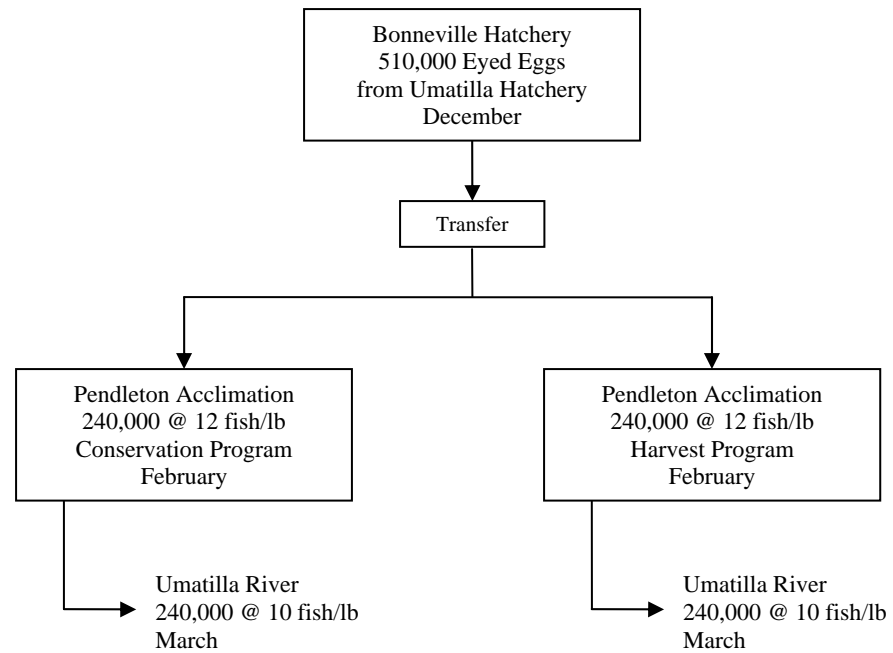
Bonneville Hatchery
URB Fall Chinook Salmon – Stock 45 (Washington Upriver Bright)



**Bonneville Hatchery
Tule Fall Chinook Salmon – Stock 60 (Spring Creek NFH)**



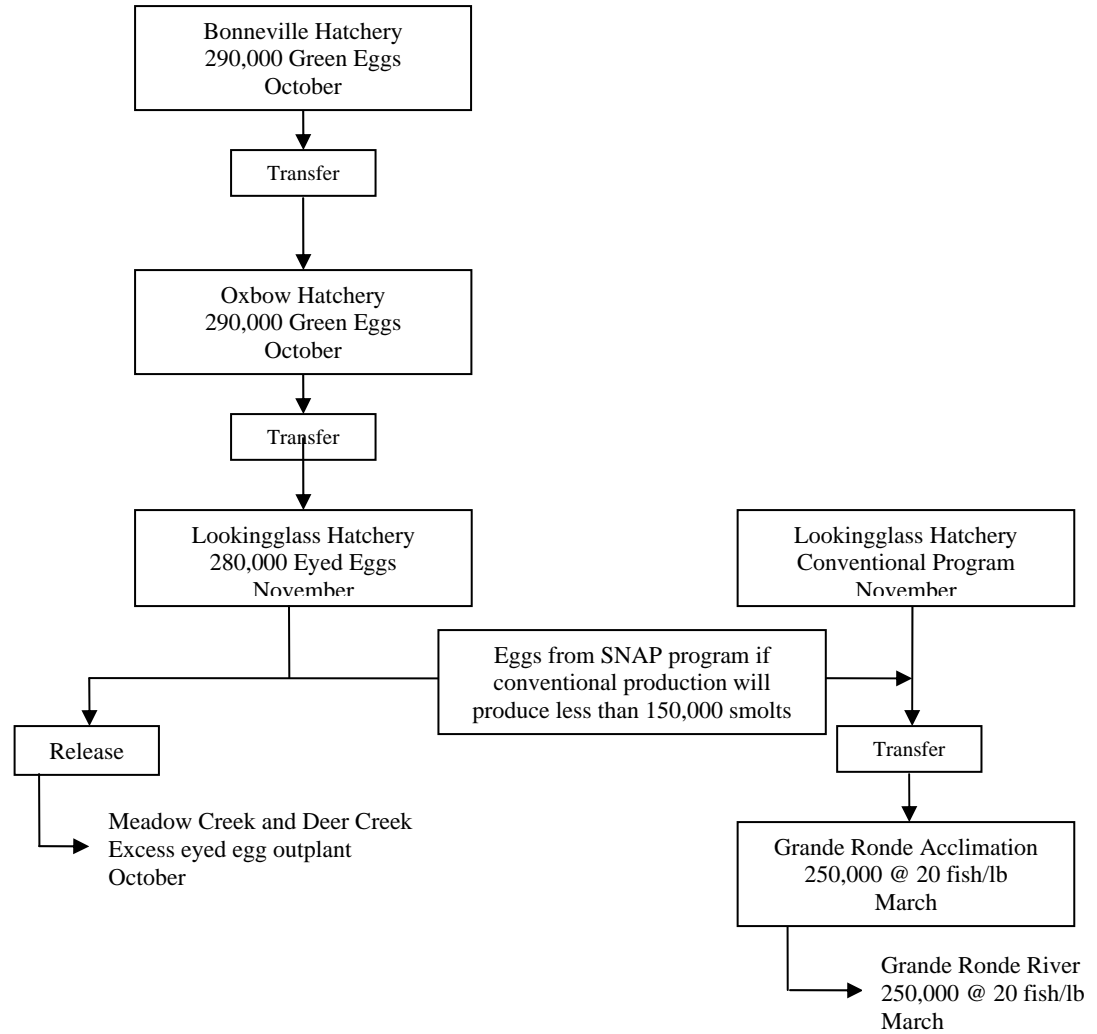
Bonneville Hatchery
URB Fall Chinook Salmon – Stock 91 (Umatilla River)



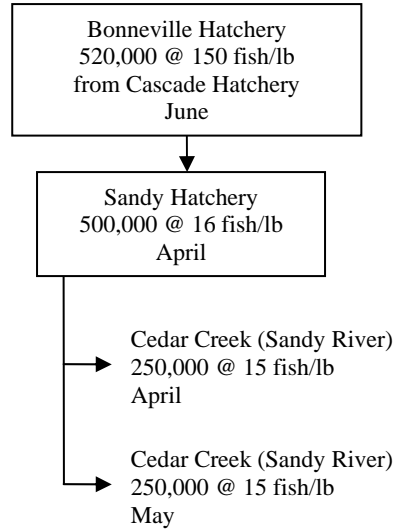
Bonneville Hatchery
URB Fall Chinook Salmon – Stock 95 (Upriver Bright)



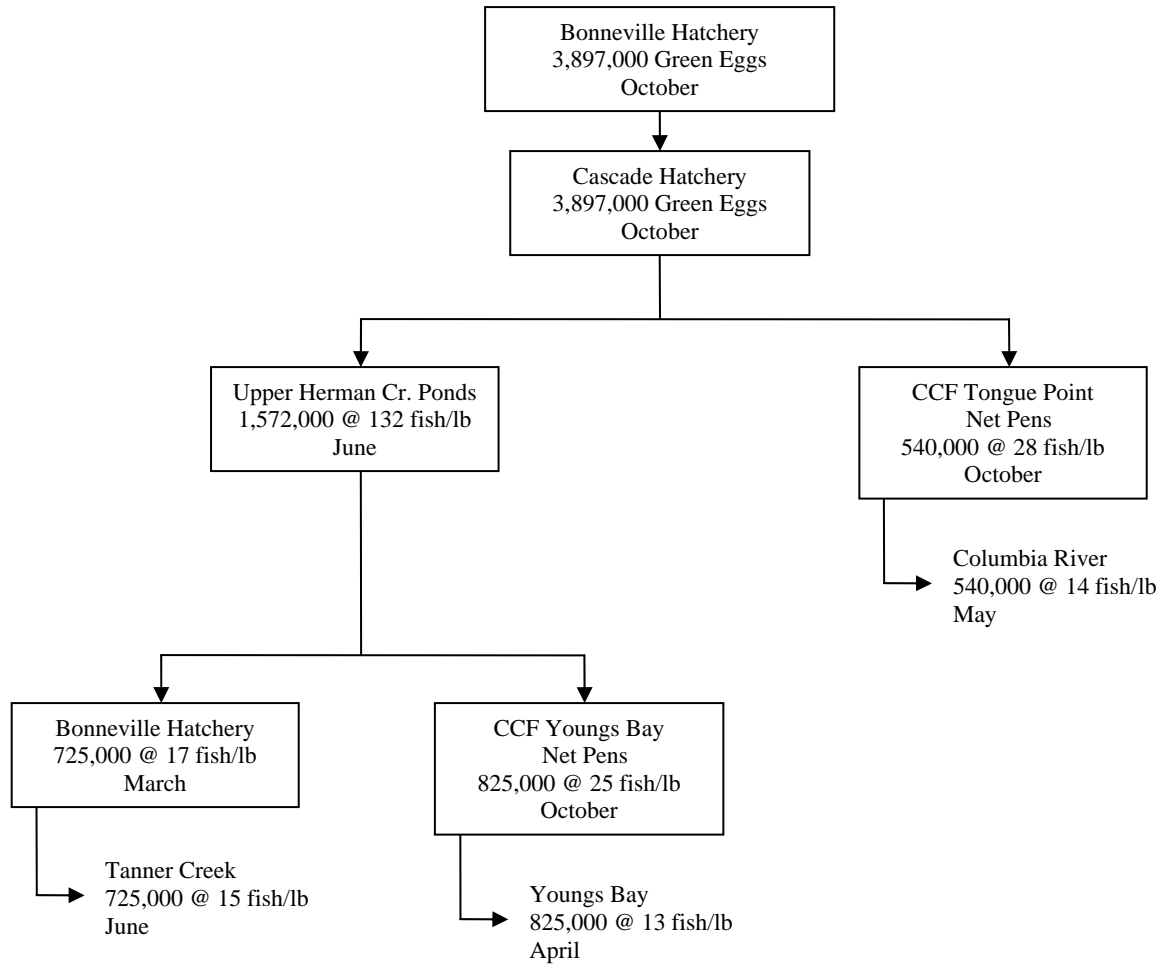
Bonneville Hatchery
Spring Chinook Salmon – Stock 80 (Upper Grande Ronde)
Safety Net Adult Program



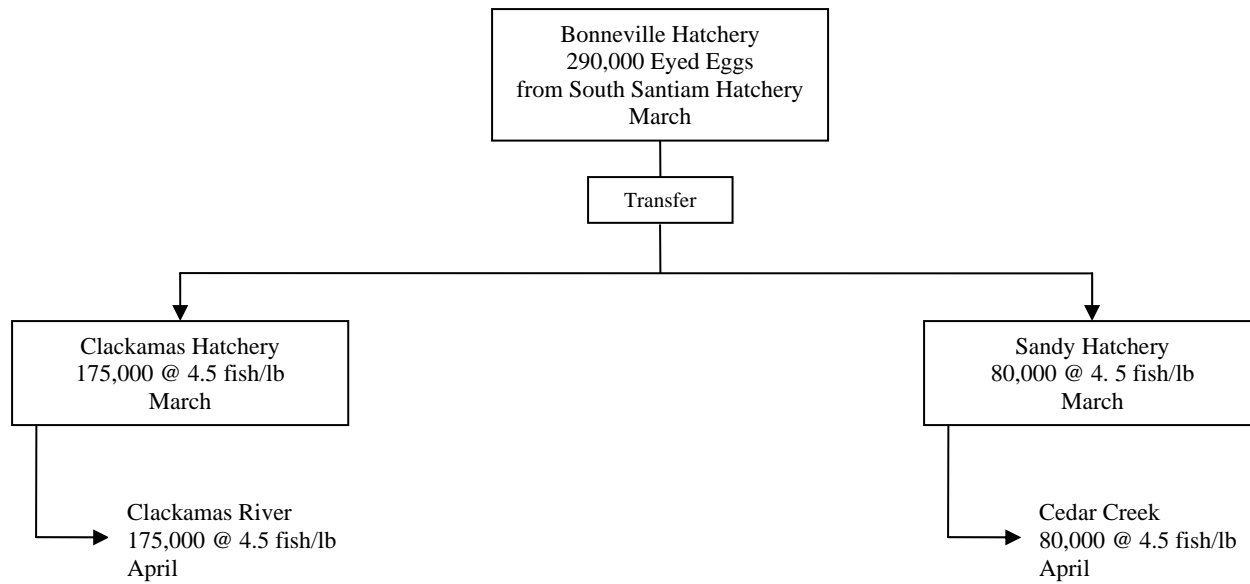
**Bonneville Hatchery
Coho Salmon – Stock 11 (Sandy River)**



**Bonneville Hatchery
Coho Salmon – Stock 14 (Tanner Creek)**



**Bonneville Hatchery
Summer Steelhead – Stock 24 (South Santiam River)**



Bonneville Hatchery
Winter Steelhead – Stock 11 (Sandy River)

Bonneville Hatchery
175,000 @ 30 fish/lb
from Oak Springs Hatchery
October

Transfer

Sandy Hatchery
170,000 @ 6 fish/lb
March

Cedar Creek
170,000 @ 6 fish/lb
April

Bonneville Hatchery
Winter Steelhead – Stock 122 (Clackamas River)

