

# **OXBOW HATCHERY**



## **PROGRAM MANAGEMENT PLAN 2016**

## **Oxbow Hatchery and Satellites (Upper and Lower Herman Creek Ponds)**

### **INTRODUCTION**

Oxbow Hatchery is located approximately 1 mile east of Cascade Locks, Oregon, off Interstate 84. The site is at an elevation of 100 feet above sea level, at latitude 45° 40' 32" N (45.67556) and longitude 121° 51' 31" W (121.8586). The site area is 33.5 acres, owned by ODFW.

The hatchery obtains its water supply from Oxbow Springs through gravity flow. The water rights are for 40.05 cfs.

Herman Creek Ponds (upper and lower) are operated as satellite facilities. The Upper Herman Creek facility is located on Herman Creek about 1/4 mile east of the main hatchery. The site is at an elevation of approximately 85 feet above sea level, at latitude 45° 40' 38" N and longitude 121° 51' 13" W.

The Lower Herman Creek facility is located near the mouth of Herman Creek approximately 1/2 mile north of the main hatchery. The site is at an elevation of 80 feet above sea level, at latitude 45° 40' 49" N and longitude 121° 51' 36" W.

A total of 4.0 FTE's is used to operate Oxbow Hatchery and the satellite facilities.

### **PURPOSE**

Oxbow Hatchery was originally constructed in 1913 to provide additional rearing facilities for Bonneville Hatchery. It was relocated to its present site in 1937 following the construction of Bonneville Dam. Oxbow operated as a state-funded hatchery until 1952 when it 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 is presently used for interim egg incubation and early rearing of Coho and Spring Chinook. No adult fish are collected or spawned at Oxbow and there are no fish released at this facility. Upper and Lower Herman Creek Ponds are used as interim rearing sites for coho transferred in from other facilities.

### **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.

**Rearing Facilities at Oxbow Hatchery**

Unit Type	Unit Length (ft)	Unit Width (ft)	Unit Depth (ft)	Unit Volume (ft <sup>3</sup> )	Number Units	Total Volume (ft <sup>3</sup> )	Construction Material	Age	Condition	Comment
<u>Oxbow</u>										
Shallow Troughs	15.5	1.4	0.6	13	10	130	fiberglass	1982	good	
Deep Troughs	15.5	1.4	1.3	28	10	280	fiberglass	1982	good	
Canadian Troughs	16	2.5	1.5	49	2	98	fiberglass	1996	excellent	
Canadian Troughs	20	3.0	3.0	160	13	2,080	fiberglass	2000	excellent	
Raceways	80	20	3	4,695	12	56,340	concrete	1953	fair	
Vertical Incubators					416		plastic	2001	excellent	26 stacks of 16 trays; top trays not used
Vertical Incubators					272		plastic and fiberglass	2000	good	17 stacks of 16 trays; top trays not used
Abatement Pond							concrete	1977	fair	Improvements made 2007
<u>Upper Herman Cr.</u>										
Raceways	62	14	3	2,604	2	5,208	concrete	1977	good	
Rearing Ponds	200	50	6	46,900	2	93,800	asphalt	1977	good	
<u>Lower Herman Cr.</u>										
Raceways	100	36	3	10,800	3	32,400	concrete	1938	fair	New concrete bottoms 1993

Oxbow Hatchery participates in both harvest and conservation programs:

Sandy River Spring Chinook: a harvest program used for mitigation for loss of fishing and harvest opportunities due to loss of habitat and migration blockage resulting from the Columbia Basin hydropower system, and to augment fishing and harvest opportunities on the Sandy River.

Tanner Creek Coho: harvest programs that provide mitigation for fishing and harvest opportunities lost due to habitat loss and migration blockage resulting from the Columbia Basin hydropower system.

## 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.

Sandy River (11) Spring Chinook: to mitigate for loss of spring Chinook catch in sport and commercial fisheries that was lost due to habitat degradation and passage impairment resulting from PGE (Marmot Dam-removed in 2007 and no longer requires mitigation) and City of Portland (Bull Run dams) construction and operation of dams on the Bull Run River.

## OBJECTIVES

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

### Spring Chinook:

#### Sandy River (11) Spring Chinook:

Produce 133,000 fingerlings (1,478 pounds) for transfer to Cascade Hatchery.

### Coho:

#### Tanner Creek (14) Stock:

Produce 800,000 smolts (53,334 pounds) for transfer to Clatsop County Fisheries (CCF).

Produce 1,025,000 pre-smolts (34,167 pounds) for transfer to CCF.

Produce 500,000 smolts (14,706 pounds) for transfer to Klaskanine Hatchery.

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***

There are no adult fish collected at this facility. Eggs or fry are received from a number of other hatcheries.

**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.

#### Spring Chinook:

##### Sandy River (11) Spring Chinook:

Rear 133,000 fingerlings to a size of 90 fish/pound for transfer to Cascade Hatchery in July.

#### Coho:

##### Tanner Creek (14) Stock:

Receive 1,760,000 fingerlings at 132 fish/pound from Cascade Hatchery at Upper Herman Creek and Lower Herman Creek in June.

Rear 825,000 pre-smolts to a size of 30 fish/pound for transfer to CCF Youngs Bay Net Pens in late September/early October. All fish are fin-clipped and 25,000 are coded-wire tagged prior to transfer.

Rear 500,000 pre-smolts to a size of 34 fish/pound for transfer to Klaskanine Hatchery in November. All fish are fin-clipped and 30,000 are coded-wire tagged prior to transfer.

Rear 400,000 smolts to a size of 15 fish/pound for transfer to CCF Tongue Point Net Pens in April. All fish are fin-clipped and 25,000 are coded-wire tagged prior to transfer.

Rear 400,000 smolts to a size of 15 fish/pound for transfer to CCF Blind Slough Net Pens in early April. Initial rearing takes place at Oxbow; fish are transferred to Lower Herman Creek for final rearing. All fish are fin-clipped and 25,000 are coded-wire tagged prior to release.

Rear 200,000 pre-smolts to a size of 30 fish/pound at Oxbow for transfer to the CCF South Fork Klaskanine facility in October. All fish are fin-clipped and 25,000 are coded-wire tagged prior to transfer.

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

***Broodstock Selection and Spawning***

There are no adult fish collected or spawned at Oxbow Hatchery or the satellite facilities.

**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 Pathology if losses are increasing. Monthly mortality records are submitted to Fish Pathology 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 Oxbow Hatchery and Satellites***

### Health Monitoring

- Monthly health monitoring examinations of healthy and clinically diseased fish are conducted on each fish lot at the hatchery. The sample 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.
- 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

- Juvenile fish are administered antibiotics orally as needed for the control of bacterial infections and for prevention of diseases.
- Formalin is dispensed into water for control of parasites and fungus on eggs and juveniles. 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.
- Rearing units are sanitized after removing fish and before introducing a new fish stock either by thorough cleaning and use of a disinfectant or by cleaning and leaving dry for an extended time.

### **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 grab 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. Effluent and receiving stream temperatures are measured weekly from April to October.
- 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 Pondered 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, 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 System (HMS): 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.

Streamnet ([www/streamnet.org](http://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).

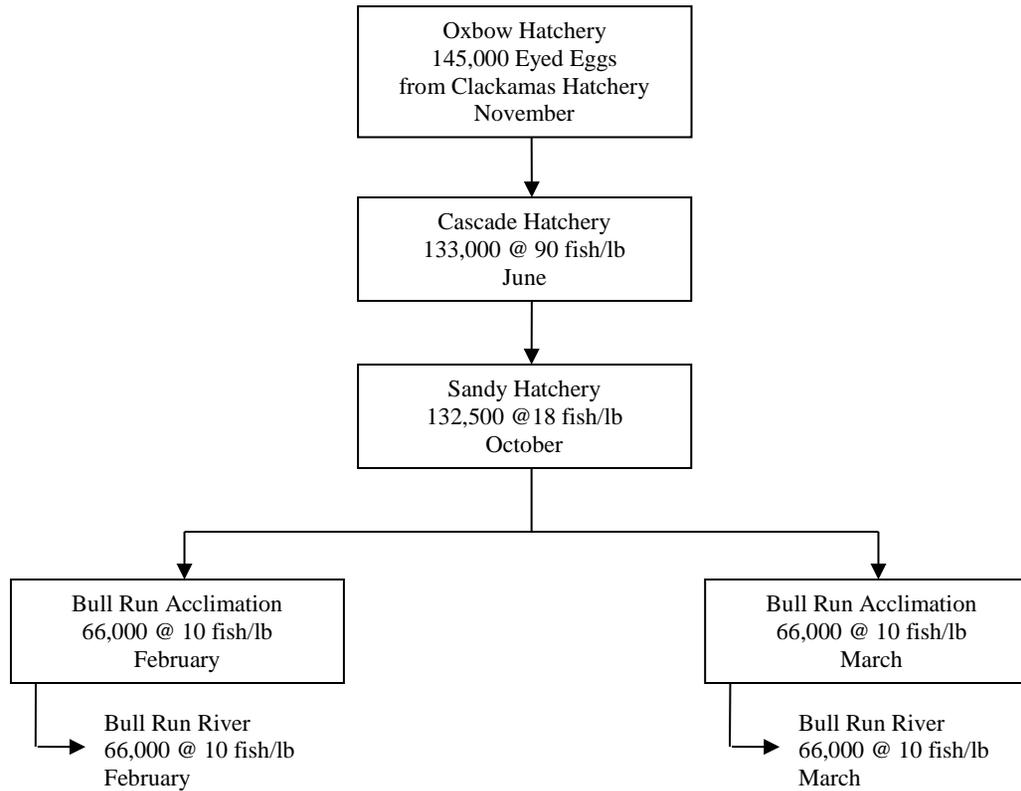
In-Season Communications: Communication with PAC, the Columbia River Inter-Tribal Fish Commission, Washington Department of Wildlife, Washington Department of Fisheries, U.S. Fish and Wildlife Service and Idaho Department of Fish and Game takes place each year to coordinate proper fish and egg transfers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

### ***Communication with the General Public***

Oxbow Hatchery receives approximately 750 visitors per year.



## Oxbow Hatchery Spring Chinook Salmon – Stock 11 (Sandy River)



## Oxbow Hatchery Coho Salmon – Stock 14 (Tanner Creek)

