
CHELAN HATCHERY

A COMPILATION AND SUMMARY OF
IHOT AUDIT FOR SUMMER STEELHEAD

JULY 1998

**HATCHERY EVALUATION REPORT
SUMMARY REPORT**

**Chelan Hatchery
- Summer Steelhead**

**A Summarized Compilation of Independent Audits Based on
Integrated Hatchery Operations Team (IHOT) Performance
Measures**

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Executive Summary

This report compiles a summary of the findings of the independent audit of the Chelan Hatchery - Summer Steelhead program. The original Hatchery Evaluation Report, prepared by Montgomery Watson, include the complete findings. Details on the hatchery audit compliance status are included in the original report. The Hatchery Evaluation Reports were based upon audits conducted in 1996-1997 as part of a 2-year effort that will include 67 hatcheries and satellite facilities located on the Columbia and Snake River system in Idaho, Oregon, and Washington. The hatchery operating agencies include the U.S Fish and Wildlife Service, Idaho Department of Fish and Game, Oregon Department of Fish and Wildlife, and Washington Department of Fish and Wildlife.

Chelan Hatchery is located on the Columbia River above Rocky Reach Dam near Chelan Falls, Washington. The hatchery is operated by Washington Department of Fish and Wildlife. The hatchery is used for incubation and early rearing of summer steelhead.

Background

The hatchery audit is being conducted as a requirement of the Northwest Power Planning Council (NPPC) "Strategy for Salmon" and the Columbia River Basin Fish and Wildlife Program. Under the audit, the hatcheries are evaluated against policies and related performance measures developed by the Integrated Hatchery Operations Team (IHOT) in January 1995. IHOT is a multi-agency group established by the NPPC to direct the development of new basinwide standards for managing and operating fish hatcheries. The Bonneville Power Administration (BPA) contracted with Montgomery Watson to act as an independent contractor for the audit.

IHOT has established five basic policies that cover: (1) hatchery coordination, (2) hatchery performance standards, (3) fish health, (4) ecological interaction, and (5) genetics. The audit focuses on all these policies, with the exception of hatchery coordination. These policies are set forth in *Policies and Procedures for Columbia Basin Anadromous Salmonid Hatcheries (IHOT 1995)*, which is the source for the performance measures that are the basis of this audit.

The Audit Process

The audit was based on the facility management's response to a 109-page questionnaire. This audit form was completed through a five-step process in which:

- Information was obtained from headquarters.
- The hatchery manager was asked to fill out and return the audit form.
- A 1-2 day site audit visit was conducted to inspect facilities, review hatchery records, discuss audit form responses, and develop remedial action plans.
- A compliance report was developed to document the compliance status of each performance measure. This report was then shared with the hatchery manager and IHOT representative.
- This hatchery evaluation report was written to document compliance with IHOT performance measures and develop cost estimates for remedial actions when needed.

Chelan Hatchery - Summer Steelhead Results

The Chelan facility includes 1 pond for adult holding, 16 concrete raceways, 2 portable vinyl lined raceways, 8 intermediate raceways, 4 spawning channels, and incubation facilities. Chelan Hatchery began operation in 1965 as a mitigation for Rocky Reach Dam.

SUMMER STEELHEAD

The Chelan Hatchery - Summer Steelhead program was in compliance with few of the performance measures. This was primarily a result of failing to fill out the audit form and/or provide the required information to the audit team.

The specific areas in which the Chelan Hatchery - Summer Steelhead program requires remedial actions based on the IHOT performance measures are listed below. These remedial actions are listed in alphabetical order without intent of ranking or otherwise assigning priority:

- Conduct fishery contribution studies
- Construct 4 more 10' x 100' concrete raceways
- Develop alarm log
- Develop approved genetics monitoring and evaluation program
- Develop monitoring and evaluation plan
- Develop specific incubation and rearing standards for IHOT Operations Plan
- Document adult contribution, eyed-egg to fry survival, fry-to-smolt survival, smolt production, and smolt-to-adult survival
- Document compliance with density and loading criteria for rearing
- Document compliance with IHOT DO and TGP criteria
- Document compliance with IHOT incubation and rearing temperature criteria
- Follow IHOT QA/QC tests for feed preparation
- Follow IHOT requirements for checking water flow alarms daily
- Follow IHOT requirements for disinfection of equipment used to collect dead fish prior to its use in another pond
- Follow IHOT requirements for disinfection of the exterior and interior of the transport vehicles
- Follow IHOT temperature criteria for hauling
- Install foot baths in incubation facilities
- Install security alarms
- Install telephone pages
- Review IHOT Operations Plan and discuss with staff
- Run analysis for water chemistry parameters, turbidity, alkalinity, hardness, nitrite, and contaminants

Non-compliance issues resulting from items beyond human control or Performance Measures not relevant to this hatchery were not listed above.

Facility Description

Name:	Chelan Hatchery
Stock/Species:	Summer Steelhead Rainbow Trout Kokanee
Operating Agency:	Washington Department of Fish and Wildlife
Funding Agency:	Chelan PUD
Location:	Chelan Hatchery is located on the Columbia River above Rocky Reach Dam near Chelan Falls, Washington.
Address:	Chelan Fish Hatchery Washington Department of Fish and Wildlife HCR 80, Box 52 Chelan, WA 98816
Hatchery Manager:	Mr. Steve Robards
Phone:	(509) 884-8301
Fax:	(509) 886-0823
Purpose:	Chelan Hatchery began operation in 1965 as a mitigation for Rocky Reach Dam. Chelan PUD owns the hatchery and funds its operation and maintenance.
Production Goal:	Summer Steelhead Produce 200,000 smolts for off-station release from Turtle Rock Hatchery
Water Supply:	Water rights total 14,812 gpm from three sources: a well field, the Columbia River, and springs. Columbia River water is no longer used due to concerns over IHN. Spring water averages about 500 gpm. Average total water use is about 3,000 gpm, of which 2,500 gpm is well water.
Facilities:	
Adult Holding:	1 concrete adult holding raceway - 3,600 cf
Incubation:	80 shallow troughs - 7 cf each

Early Rearing:	80 shallow troughs - 7 cf each
	8 intermediate raceways - 214 cf each
Raceways:	16 standard raceways - 2,308 cf each
	2 vinyl portable raceways - 1,651 cf each
Rearing Ponds:	4 spawning channels - 29,000 cf each
Satellite Facilities:	None

Section 3

Remedial Actions

Based on the compliance status for each performance measure, remedial actions were developed. The required remedial actions are organized into five categories. The types of categories range across a spectrum from those actions that are beyond human control, to those that require a change in agency policy or procedures, to those that involve a significant capital cost to put in place. The following are the five types of remedial actions identified under phase 1 of the audit:

The Five Types of Remedial Actions

Type	Description
1	Non-compliance issues resulting from items beyond human control or Performance Measures not relevant for this hatchery
2	Remedial actions requiring changes in agency policies or procedures
3	Remedial actions requiring changes in monitoring coverage or interval
4	Remedial actions requiring significant capital expenditures
5	Remedial actions that may require significant capital expenditures but are not clearly definable at this time

Remedial Actions at Chelan Hatchery - Summer Steelhead

This section presents the corrective actions required to bring the Chelan Hatchery - Summer Steelhead program into compliance with IHOT performance measures. The remedial actions described here are suggestions developed by the Montgomery Watson Audit Team. The remedial actions and associated cost estimates have not been analyzed or prioritized by the respective operating agencies, fishery managers, or IHOT. There may be additional remedial actions, not included in this report, proposed by the respective operating agencies. For some non-compliance areas, other remedial actions could be proposed. The required remedial actions are cross-referenced to each IHOT performance measure that was not in compliance. Where appropriate, the costs associated with the remedial actions are also presented (Table 3).

The cost estimates presented in this section are based on professional experience from similar projects. In most cases, only a lump-sum figure is presented, and detailed take-off lists have not been prepared. The cost estimates are essentially order of magnitude estimates ($\pm 40\%$).

The suggested remedial activities may also present several levels of action. Optional actions have been listed for several problems. These optional actions are desirable for either operational or safety considerations.

Remedial Action Required	Cost	PMs ¹
<p>Type 3 - Remedial actions requiring changes in monitoring coverage or interval</p> <p>Document compliance with IHOT DO and TGP criteria</p> <p>Run analysis for water chemistry parameters, turbidity, alkalinity, hardness, nitrite, and contaminants</p>	<p>----</p> <p>----</p>	<p>5b</p> <p>5c-5g</p>
<p>Type 4 - Remedial actions requiring significant capital expenditures</p> <p>Install security alarms</p> <p>Install telephone pages</p> <p>Construct 4 more 10' x 100' x 4" concrete raceways</p>	<p>\$5,000</p> <p>\$5,000</p> <p>\$260,000</p>	<p>6</p> <p>6</p> <p>9</p>
<p>Type 5 - Remedial actions that may require significant capital expenditures but are not clearly definable at this time</p> <p>None</p>	<p>----</p>	

¹ PMs are performance measures that were extracted from the IHOT 1995 report.

Hatchery Contribution to Fisheries, Spawning Grounds, and Hatcheries

This section presents the audit findings for the Chelan Hatchery - Summer Steelhead program contribution of adult fish to fisheries, local fisheries, spawning grounds, and hatcheries. Data is reported by broodyear. A broodyear refers to the adult contribution from the eggs produced from a single group of spawning adults. For some species, this may include fish caught as 2-, 3-, 4-, 5-, and 6-year old fish. Because of the return distribution and data processing delays, the complete adult contribution for a given broodyear may not be available until 4 to 5 years after the fish have been released from the hatchery.

**Table 4. Adult Contribution to Fisheries, Spawning Grounds, and Hatcheries:
Chelan Hatchery - Summer Steelhead**

Year	Fisheries ¹ (Broodyear)	Spawning Grounds ¹ (Broodyear)	Hatchery ¹ (Broodyear)	Total Combined Contribution ² (Broodyear)	Smolt to Adult Survival (percent)
1982					
1983					
1984					
1985					
1986					
1987	See Turtle Rock Hatchery	See Turtle Rock Hatchery	See Turtle Rock Hatchery	See Turtle Rock Hatchery	See Turtle Rock Hatchery
1988	See Turtle Rock Hatchery	See Turtle Rock Hatchery	See Turtle Rock Hatchery	See Turtle Rock Hatchery	See Turtle Rock Hatchery
1989	See Turtle Rock Hatchery	See Turtle Rock Hatchery	See Turtle Rock Hatchery	See Turtle Rock Hatchery	See Turtle Rock Hatchery
1990	See Turtle Rock Hatchery	See Turtle Rock Hatchery	See Turtle Rock Hatchery	See Turtle Rock Hatchery	See Turtle Rock Hatchery
1991	See Turtle Rock Hatchery	See Turtle Rock Hatchery	See Turtle Rock Hatchery	See Turtle Rock Hatchery	See Turtle Rock Hatchery

¹ Data obtained from Missing Production Groups Annual Report or from the Regional Mark Information System database.

² Total combined adult contribution; presented when it is not possible to subdivide the contribution into fisheries, spawning grounds, and hatchery contributions.

1992					
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Annual Operating Expenditures

The level and detail of annual operating expenditures varies widely depending on hatchery, operating agency, and funding source. When provided, expenditures were presented in terms of personnel costs, operating costs (power, feed, and supplies), capital costs, indirect costs charged to the federal government, third-party costs, and other costs. These cost components were summed to determine a total hatchery annual cost. Based on discussion with the hatchery manager, the percent of total hatchery costs allocated to a given program was estimated. The total hatchery costs and the percent of hatchery costs allocated to a given program were used to compute the cost of a given program. Table 5 shows the annual operating expenses for the Chelan Hatchery - Summer Steelhead program. The detailed breakdown of program expenditures at this hatchery are presented in separate tables (Tables 6).

Table 5. Annual Operating Expenses: Chelan Hatchery - Summer Steelhead

Hatchery	1994	1995	1996
1. Chelan Hatchery	No information provided	No information provided	No information provided
2.			
3.			
4.			
5.			
Total Program Costs	See Turtle Rock Hatchery	See Turtle Rock Hatchery	See Turtle Rock Hatchery

Table 6a. Detailed Expenditures at Chelan Hatchery by Program

Summer Steelhead

Component	1994	1995	1996
Personnel Costs			
Operational Costs			
Capital Costs			

Indirect Costs			
Lumped Hatchery Costs ¹			
Lumped Third-Party Costs			\$11,816
Total Hatchery Costs	No information provided	No information provided	No information provided
Source of Funds			
Program Production (lb)			
Total Production (lb)			
Program as Percent of Total			
Program Costs	No information provided	No information provided	No information provided

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¹ When it was not possible to obtain a detailed cost breakdown from an agency or third party, the undivided costs were entered here.