
ROARING RIVER HATCHERY

A COMPILATION AND SUMMARY OF
IHOT AUDIT FOR SUMMER
STEELHEAD

JULY 1998

**HATCHERY EVALUATION REPORT
SUMMARY FOR**

**Roaring River Hatchery
- Summer Steelhead**

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

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JULY 1998

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March 1997

BPA Project Number 95-2
Contract Number 95AC49468

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Executive Summary

This report compiles a summary of the findings of the Hatchery Evaluation Reports for Summer Steelhead at Roaring River Hatchery. The original Hatchery Evaluation Reports, prepared by Montgomery Watson, presented each species and program separately and include the complete findings. Details on the audit compliance status for each species and program are included in the original reports. 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.

The Hatchery is located along Roaring River (tributary to Crabtree Creek of the South Santiam River in the Willamette Basin) about 18 miles northeast of Albany, Oregon. The hatchery is operated by the Oregon Department of Fish and Wildlife and used for rearing of Summer Steelhead.

Background

The 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). 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)*. That document 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.

Roaring River Hatchery - Summer Steelhead Results

The Roaring River facility includes two ponds for adult holding, 23 concrete raceways, 5 circular ponds, 10 fiberglass Canadian troughs, 10 wooden troughs, and incubation facilities. The hatchery was constructed in 1964 to mitigate for fish losses caused by construction of hydroelectric facilities on the Snake River in Hells Canyon.

The Roaring River Hatchery - Summer Steelhead program was in general compliance with most of the performance measures. In the area of program objectives, the hatchery did not have a Monitoring and Evaluation Plan in place and was not documenting its adult return or smolt-to-adult survival. The audit found that the hatchery was not in compliance with the temperature criteria for rearing, water quality monitoring requirements, alarm criteria, double screening requirements, and QA/QC tests for feed quality, which are all facilities requirements. The hatchery needed to develop specific rearing standards for the IHOT Operations Plan, smoltification goals, and a smoltification monitoring program. The hatchery needed to provide rearing or acclimation in the subbasins. The hatchery was not meeting all of the disinfection requirements for transport vehicles. The hatchery did not have a Genetics Monitoring and Evaluation Program.

The specific areas in which the Roaring River 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 IHOT QA/QC tests for feed preparation
- Develop alarm log
- Develop approved genetics M&E program
- Develop fish contribution study program for IHOT
- Develop hatchery M&E plan
- Develop smoltification goal and monitor
- Develop specific rearing standards for the IHOT Operations Plan
- Disinfect equipment and personnel before and after use
- Document adult contribution and smolt-to-adult survival
- Double-screen 1 raceway
- Follow IHOT protocols for disinfection of the interiors and exteriors of the transport vehicles
- Monitor DO and TGP and record
- Provide rearing or acclimation in the subbasins
- Review IHOT temperature criteria for rearing
- Review release strategy and need to acclimate
- 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:	Roaring River Fish Hatchery
Stock/Species:	Summer Steelhead
Operating Agency:	Oregon Department of Fish & Wildlife
Funding Agency:	Oregon Department of Fish & Wildlife
Location:	The Hatchery is located along Roaring River (tributary to Crabtree Creek of the South Santiam River in the Willamette Basin) about 18 miles northeast of Albany, Oregon.
Address:	42279 Fish Hatchery Drive Scio, OR 97374
Hatchery Manager:	Mr. Don Faulhaber
Phone:	(541) 394-2496
Fax:	
Purpose:	Roaring River Hatchery was constructed in 1924 and is operated with State funds. In 1987, six new rearing ponds were constructed to replace the original ponds. The goal of the hatchery is to increase the sport catch of summer steelhead in the Molalla River, Santiam River mainstem, and North Santiam River.
Production Goal:	Summer Steelhead Produce 65,000 smolts (14,440 pounds) for release into the Molalla River Produce 121,000 smolts (26,889 pounds) for release into the Santiam River
Water Supply:	Water rights total 11,225 gpm from Roaring River. Some water is pumped through a filter system to insure a clean supply for incubation and early rearing. Water is reused from the upper to lower ponds.
Facilities:	
Adult Holding:	2 concrete brood ponds - 7,380 cf each

Incubation:	16 full stack vertical incubators (256 trays)
	10 troughs - 8.3 cf each
Early Rearing:	7 Canadian troughs - 70 cf each
	3 Canadian troughs - 53 cf each
	2 circular tanks - 85 cf each
Raceways:	1 concrete raceway - 7,828 cf each
	1 concrete raceway - 4,992 cf each
	6 concrete raceways - 7,547 cf each
	12 concrete raceways - 4,900 cf each
	3 concrete raceways - 2,357 cf each
Rearing Ponds:	3 circular ponds - 502 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 Roaring River Hatchery - Summer Steelhead

This section presents the corrective actions required to bring the Roaring River Hatchery - Summer Steelhead program into compliance with IHOT performance measures. 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 ($\pm 40\%$).

More importantly, 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.

Table 3. Remedial Actions Required at Roaring River Hatchery - Summer Steelhead

Remedial Action Required	Cost	PMS¹
Type 1 - Non-compliance issues resulting from items beyond human control or Performance Measures not relevant for this hatchery		
Install security alarms	----	6
Type 2 - Remedial actions requiring changes in agency policies or procedures		
Develop hatchery M&E plan		3
Document adult contribution and smolt-to-adult survival		4a, 4h
Review IHOT temperature criteria for rearing		5a
Develop alarm log		6
Conduct IHOT QA/QC tests for feed preparation		12
Develop specific rearing standards for the IHOT Operations Plan		19
Develop smoltification goal and monitor		22a1
Review release strategy and the need to acclimate	----	22c
Disinfect equipment and personnel before and after use		23
Follow IHOT protocols for disinfection of the interiors and exteriors of the transport vehicles		23
Develop fish contribution study program for IHOT		24
Develop approved genetics M&E program	----	43
Type 3 - Remedial actions requiring changes in monitoring coverage or interval		
Monitor DO and TGP and record	----	5b
Run analysis for water chemistry parameters, turbidity, alkalinity, hardness, nitrite, and contaminants	----	5c-5g

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

Remedial Action Required	Cost	PMs ¹
Type 4 - Remedial actions requiring significant capital expenditures Double-screen 1 raceway Provide rearing or acclimation in the subbasins (2 ponds)	\$500 \$2.0 million	22b
Type 5 - Remedial actions that may require significant capital expenditures but are not clearly definable at this time None	----	

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 Roaring River Hatchery - Summer Steelhead program contribution of adult fish to fisheries, local fisheries, spawning grounds, and hatcheries (Table 4). 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:
Roaring River 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	No information available	No information available	No information available	No information available	No information available
1988	No information available	No information available	No information available	No information available	No information available
1989	No information available	No information available	No information available	No information available	No information available
1990	No information available	No information available	No information available	No information available	No information available
1991					
1992					

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.

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

The total expenditures for the Roaring River Hatchery are presented in Table 5 by program. The detailed breakdown of program expenditures at this hatchery are presented in separate tables (Table 6).

Table 6. Annual Operating Expenses - Roaring River Hatchery

Program	1994	1995	1996
1. Summer Steelhead	\$85,069	\$85,069	\$84,700
2.			
3.			
4.			
5.			
Total Hatchery Costs	\$85,069	\$85,069	\$84,700

Table 6. Detailed Expenditures at Roaring River Hatchery by Program

Summer Steelhead

Component	1994	1995	1996
Personnel Costs	\$173,841	\$173,841	\$171,681
Operational Costs	\$92,000	\$92,000	\$93,050
Capital Costs			
Indirect Costs			
Lumped Hatchery Costs ¹			
Lumped Third-Party Costs			
Total Hatchery Costs	\$265,841	\$265,841	\$264,731
Source of Funds			
Program Production (lb)			
Total Production (lb)			
(a) Program as Percent of Total	32%	32%	32%
Program Costs	\$85,069	\$85,069	\$84,700

(a) Based on FY96 percentage.

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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.