
WALLOWA HATCHERY

A COMPILATION AND SUMMARY OF
IHOT AUDITS FOR SUMMER STEELHEAD
(GRANDE RONDE AND IMNAHA STOCKS)

JULY 1998

**HATCHERY EVALUATION REPORT
SUMMARY FOR**

Wallowa Hatchery

- **Summer Steelhead (Grande Ronde Stock)**
- **Summer Steelhead (Imnaha Stock)**

**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 two separate Hatchery Evaluation Reports for Summer Steelhead (Grand Ronde and Imnaha Stocks) 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 Spring Creek, a tributary of the Wallowa River, 1 mile east of Enterprise, Oregon and is operated by the Oregon Department of Fish and Wildlife. Site elevation is 3,700 feet above sea level. Big Canyon and Little Sheep Creek acclimation facilities are operated as facilities. The hatchery is used for adult collection, egg incubation, and acclimation of Summer Steelhead (Grande Ronde Stock) and Summer Steelhead (Imnaha Stock).

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) 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.

Wallowa Hatchery - Summer Steelhead (Grande Ronde and Imnaha Stock) Results

The Wallowa Hatchery facility includes one pond for adult holding, 2 acclimation ponds, and 2 separate incubation facilities. The satellite facilities include adult holding and acclimation ponds. The hatchery was renovated in 1985 as part of the Lower Snake River Compensation Program (LSRCP) - a program to mitigate for spring chinook and summer steelhead losses caused by the four federal dams constructed on the lower Snake River.

SUMMER STEELHEAD (GRAND RONDE STOCK)

The hatchery was in general compliance with most of the performance measures. In the area of program objectives, the hatchery was not meeting its adult return goal. The audit found that the hatchery was not in compliance with the following facilities requirements: predation control, alarm annunciator system, and water quality monitoring. The hatchery needs to develop incubation and rearing standards, smoltification goals, and follow the IHOT fertilization standards. In the compliance area for fish health policy, the hatchery was not using footbaths in the incubation area.

The specific areas in which the Wallowa Hatchery - Summer Steelhead (Grande Ronde Stock) 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:

- Begin routine testing of alarms using IHOT recommendations
- Conduct IHOT feed QA/QC testing
- Cover 2 acclimation ponds at Wallowa Hatchery with bird netting
- Develop green-egg to eyed survival goal
- Develop specific acclimation standards for the Operation Plan
- Develop specific incubation standards for the Operation Plan
- Develop genetics M&E program for IHOT.
- Follow IHOT and LSRCP fertilization protocols
- Follow IHOT disinfection policies for transportation
- Improve communication between evaluation biologists and hatchery manager
- Install footbaths in incubation areas
- Monitor DO and TGP
- Replace annunciator panel for hatchery alarms
- Review density and loading criteria or change hatchery operations
- Review smoltification goal and monitoring plan
- Run analysis for alkalinity and hardness

- Run analysis for chemistry parameters
- Run analysis for contaminants
- Run analysis for nitrite
- Run analysis for turbidity

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

SUMMER STEELHEAD (IMNAHA STOCK)

The Wallowa hatchery was in general compliance with most of the performance measures. In the area of program objectives, the hatchery was not meeting its adult return goal. The audit found that the hatchery was not in compliance with the following facilities requirements: alarm annunciator system and water quality monitoring. The hatchery needs to develop incubation and rearing standards, smoltification goals, and follow the IHOT fertilization standards. In the compliance area for fish health policy, the hatchery was not using footbaths in the incubation area.

The specific areas in which the Wallowa Hatchery - Summer Steelhead (Imnaha Stock) 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:

- Begin routine testing of alarms using IHOT recommendations
- Conduct IHOT feed QA/QC testing
- Develop green-egg to eyed survival goal
- Develop smoltification goal and monitoring plan
- Develop specific acclimation standards for the Operation Plan
- Develop specific incubation standards for the Operation Plan
- Develop genetics M&E plan for IHOT
- Follow IHOT and LSRCF protocols for fertilization
- Follow IHOT disinfection policies for transportation
- Improve communication between evaluation biologists and hatchery manager
- Install footbaths in incubation areas
- Monitor DO and TGP
- Replace annunciator panel for hatchery alarms
- Review density criteria for acclimation
- Run analysis for alkalinity and hardness
- Run analysis for chemistry parameters
- Run analysis for contaminants
- Run analysis for nitrite
- Run analysis for turbidity

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

Facility Description

Name:	Wallowa Hatchery
Stock/Species:	Summer Steelhead, Grande Ronde Stock Summer Steelhead, Imnaha Stock Rainbow trout
Operating Agency:	Oregon Department of Fish and Wildlife
Funding Agency:	Lower Snake River Compensation Program (Steelhead only) ODF&W (Rainbow Trout)
Location:	Enterprise, Oregon
Address:	Wallowa Hatchery 82199 Wallowa Fish Hatchery Lane Enterprise, OR 97828
Hatchery Manager:	Mr. Greg Davis
Phone:	(541) 426-4467
Fax:	(541) 426-8029
Purpose:	<p>Wallowa Hatchery began operation in 1920 as a resident trout hatchery. In 1985, the hatchery was renovated as part of the Lower Snake River Compensation Program (LSRCP) - a program to mitigate for spring chinook and summer steelhead losses caused by the four federal dams constructed on the lower Snake River.</p> <p>This hatchery provides fish for ocean and river fisheries and eggs to other programs.</p>

Production Goal:

Summer Steelhead (Grande Ronde Stock)

Collect 2,33 million eggs for transfer to Irrigon Hatchery
Collect 425,000 eggs for transfer to Lyons Ferry Hatchery
Acclimate 612,500 smolts (122,500 pounds) from Irrigon Hatchery for on-station release.
Acclimate 375,000 smolts (75,000 pounds) from Irrigon Hatchery release into Deer Creek (Big Canyon facility)

Summer Steelhead (Imnaha Stock)

Collect 480,000 eggs for transfer to Irrigon Hatchery
Acclimate 200,000 smolts (40,000 pounds) from Irrigon Hatchery release into Little Sheep Creek (Little Sheep Creek facility)

Rainbow Trout

Produce 118,000 legal-sized fish for release into Imnaha system and 5,000 fingerlings for release into lakes

Total steelhead production: 125,500 pounds

Water Supply:

Gravity water supply from Wallowa River and Spring Creek
Two wells
Two springs (upper and lower)
Water rights for the entire hatchery totals 23,813 gpm

Facilities:

Incubation: 57 4-stack vertical tray (Grande Ronde Stock)
15 4-stack vertical tray (Imnaha Stock)

Adult Holding: 1 concrete pond - 1350 cf

Raceways: none used for steelhead

Rearing Ponds: 2 concrete acclimation ponds - 50,400 cf each

Satellite Facilities: Big Canyon
1 adult holding pond - 1,350 cf
2 concrete acclimation ponds - 18,000 cf each

Little Sheep Creek
1 adult holding pond - 2880 cf
1 concrete acclimation ponds - 39,000 cf

Section3

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 Wallowa Hatchery - Summer Steelhead (Grande Ronde and Imnaha Stock)

This section presents the corrective actions required to bring the Wallowa Hatchery - Summer Steelhead (Grande Ronde and Imnaha Stocks) programs 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 (Tables 3a and 3b).

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.

Table 3a. Remedial Actions Required at Wallowa Hatchery - Summer Steelhead (Grande Ronde Stock)

Remedial Action Required	Cost	PMs ¹
<p>Type 1 - Non-compliance issues resulting from items beyond human control or Performance Measures not relevant for this hatchery</p> <p>Improve adult return</p> <p>Modify temperature of hatchery water supply</p> <p>Modify NPDES permits to consider influent concentrations</p>	<p>---</p> <p>---</p> <p>---</p>	<p>4c,4g,4h</p> <p>5a</p> <p>14</p>
<p>Type 2 - Remedial actions requiring changes in agency policies or procedures</p> <p>Develop green-egg to eyed survival goal</p> <p>Begin routine testing of alarms using IHOT recommendations</p> <p>Follow IHOT and LSRCP protocols for fertilization</p> <p>Develop specific incubation standards for the Operation Plan</p> <p>Develop specific acclimation standards for the Operation Plan</p> <p>Change density and loading criteria or change hatchery operations</p> <p>Develop smoltification goal and monitoring plan</p> <p>Follow IHOT disinfection policies for transportation</p> <p>Install footbaths in incubation areas</p> <p>Develop genetics M&E program for IHOT</p>	<p>---</p>	<p>4d</p> <p>6</p> <p>17,42</p> <p>18</p> <p>19</p> <p>19,22a2</p> <p>22a1</p> <p>23</p> <p>28</p> <p>43</p>

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

Remedial Action Required	Cost	PMS ¹
Type 3 - Remedial actions requiring changes in monitoring coverage or interval		
Monitor DO and TGP	---	5b
Run analysis for chemistry parameters	---	5c
Run analysis for turbidity	---	5d
Run analysis for alkalinity and hardness	---	5e
Run analysis for nitrite	---	5f
Run analysis for contaminants	---	5g
Conduct IHOT feed QA/QC testing	---	14
Type 4 - Remedial actions requiring significant capital expenditures		
Replace annunciator panel for hatchery alarms	\$45,000	6
Cover 2 acclimation ponds at Wallowa Hatchery with bird netting 25,200 sf @ \$1.50.sf	\$40,000	11
Type 5 - Remedial actions that may require significant capital expenditures but are not clearly definable at this time		
None	---	

Table 3a. Remedial Actions Required at Wallowa Hatchery - Summer Steelhead (Imnaha Stock)

Remedial Action Required	Cost	PMS ¹
Type 1 - Non-compliance issues resulting from items beyond human control or Performance Measures not relevant for this hatchery		
Improve adult return	---	4c,4h
Modify temperature of hatchery water supply	---	5a

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 Wallowa Hatchery - Summer Steelhead (Grande Ronde and Imnaha Stocks) programs 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 4a. Adult Contribution to Fisheries, Spawning Grounds, and Hatcheries:
Wallowa Hatchery - Summer Steelhead (Grande Ronde Stock)**

Year	Fisheries ¹ (Broodyear)	Spawning Grounds ¹ (Broodyear)	Hatchery ¹ (Broodyear)	Total Combined Contribution ¹ (Broodyear)	Smolt to Adult Survival (percent)
1981	see Irrigon Hatchery	see Irrigon Hatchery	see Irrigon Hatchery	see Irrigon Hatchery	see Irrigon Hatchery
1982	see Irrigon Hatchery	see Irrigon Hatchery	see Irrigon Hatchery	see Irrigon Hatchery	see Irrigon Hatchery
1983	see Irrigon Hatchery	see Irrigon Hatchery	see Irrigon Hatchery	see Irrigon Hatchery	see Irrigon Hatchery
1984	see Irrigon Hatchery	see Irrigon Hatchery	see Irrigon Hatchery	see Irrigon Hatchery	see Irrigon Hatchery
1985	see Irrigon Hatchery	see Irrigon Hatchery	see Irrigon Hatchery	see Irrigon Hatchery	see Irrigon Hatchery
1986	see Irrigon Hatchery	see Irrigon Hatchery	see Irrigon Hatchery	see Irrigon Hatchery	see Irrigon Hatchery
1987	see Irrigon Hatchery	see Irrigon Hatchery	see Irrigon Hatchery	see Irrigon Hatchery	see Irrigon Hatchery
1988	see Irrigon Hatchery	see Irrigon Hatchery	see Irrigon Hatchery	see Irrigon Hatchery	see Irrigon Hatchery
1989	see Irrigon Hatchery	see Irrigon Hatchery	see Irrigon Hatchery	see Irrigon Hatchery	see Irrigon Hatchery
1990	see Irrigon Hatchery	see Irrigon Hatchery	see Irrigon Hatchery	see Irrigon Hatchery	see Irrigon Hatchery
1991	see Irrigon Hatchery	see Irrigon Hatchery	see Irrigon Hatchery	see Irrigon Hatchery	see Irrigon Hatchery
1992	see Irrigon Hatchery	see Irrigon Hatchery	see Irrigon Hatchery	see Irrigon Hatchery	see Irrigon Hatchery

**Table 4b. Adult Contribution to Fisheries, Spawning Grounds, and Hatcheries:
Wallowa Hatchery - Summer Steelhead (Imnaha Stock)**

Year	Fisheries ¹ (Broodyear)	Spawning Grounds ¹ (Broodyear)	Hatchery ¹ (Broodyear)	Total Combined Contribution ² (Broodyear)	Smolt to Adult Survival (percent)
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¹ Data obtained from Missing Production Groups Annual Report or from the Regional Mark Information System database.

¹ Total combined adult contribution; presented when it is not possible to subdivide the contribution into fisheries, spawning grounds, and hatchery contributions.

1981	see Irrigon Hatchery				
1982	see Irrigon Hatchery				
1983	see Irrigon Hatchery				
1984	see Irrigon Hatchery				
1985	see Irrigon Hatchery				
1986	see Irrigon Hatchery				
1987	see Irrigon Hatchery				
1988	see Irrigon Hatchery				
1989	see Irrigon Hatchery				
1990	see Irrigon Hatchery				
1991	see Irrigon Hatchery				
1992	see Irrigon 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.

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 Wallowa Hatchery are presented in Table 5 by program. The detailed breakdown of program expenditures for summer steelhead at this hatchery is presented in separate tables (Table 6a, 6b, and 6c).

Table 5. Annual Operating Expenses - Wallowa Hatchery

Program	1994	1995	1996
1. Summer Steelhead, Grande Ronde Stock	\$169,000	\$176,206	\$187,643
2. Summer Steelhead, Imnaha Stock	\$53,496	\$38,679	\$49,880
3. Rainbow Trout (State Funds)	\$111,108	\$111,108	\$97,125
4.			
5.			
Total Hatchery Costs	\$333,604	\$325,993	\$334,648

Table 6a. Detailed Expenditures at Wallowa Hatchery by Program
Summer Steelhead, Grande Ronde Stock

Component	1994	1995	1996
Personnel Costs	\$103,082	\$107,313	\$121,879
Operational Costs	\$61,469	\$64,275	\$75,634
Capital Costs	\$24,518	\$8,173	0
Indirect Costs	\$33,831	\$35,124	\$40,010
Lumped Hatchery Costs ¹			
Lumped Third-Party Costs	0	0	0
Total Hatchery Costs	\$222,900	\$214,885	\$237,523
Source of Funds			
100% LSRCP			
Program Production (#)	812,000	1,037,000	1,029,000
Total Production (#)	1,0650,000	1,268,000	1,298,000
Program as Percent of Total	76%	82%	79%
Program Costs	\$169,000	\$176,206	\$187,643

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

**Table 6b. Detailed Expenditures at Wallowa Hatchery by Program
Summer Steelhead, Imnaha Stock**

Component	1994	1995	1996
Personnel Costs	\$103,082	\$107,313	\$121,879
Operational Costs	\$61,469	\$64,275	\$75,634
Capital Costs	\$24,518	\$8,173	0
Indirect Costs	\$33,831	\$35,124	\$40,010
Lumped Hatchery Costs ¹			
Lumped Third-Party Costs	0	0	0
Total Hatchery Costs	\$222,900	\$214,885	\$237,523
Source of Funds			
Program Production (#)	253,000	231,000	269,00
Total Production (#)	1,0650,000	1,268,000	1,298,000
Program as Percent of Total	24%	18%	21%
Program Costs	\$53,496	\$38,679	\$49,880

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

**Table 6c. Detailed Expenditures at Wallowa Hatchery by Program
Rainbow Trout (State Program)**

Component	1994	1995	1996
Personnel Costs	\$79,661	\$79,661	\$70,463
Operational Costs	\$31,447	\$31,447	\$26,662
Capital Costs	0	0	0
Indirect Costs	0	0	0
Lumped Hatchery Costs ¹			
Lumped Third-Party Costs	0	0	0
Total Hatchery Costs	\$111,108	\$111,108	\$97,125
Source of Funds			
State of Oregon			
Program Production (#)			
Total Production (#)			
Program as Percent of Total	100%	100%	100%
Program Costs	\$111,108	\$111,108	\$97,125

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