
OAK SPRINGS HATCHERY

A COMPILATION AND SUMMARY OF
IHOT AUDITS FOR SUMMER STEELHEAD
AND WINTER STEELHEAD

JULY 1998

**HATCHERY EVALUATION REPORT
SUMMARY FOR**

- Oak Springs Hatchery**
- **Summer Steelhead**
- **Winter Steelhead (Clackmas)**
- **Winter Steelhead (Hood)**

**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 three separate Hatchery Evaluation Reports for Summer Steelhead and Winter Steelhead (Clackamas and Hood River Stocks) programs at Oak Springs 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 on the Deschutes River about 9 miles from Maupin, Oregon and is operated by the Oregon Department of Fish and Wildlife. The hatchery is used for incubation and rearing of summer steelhead, rearing of winter steelhead, and maintenance of two resident rainbow trout broodstock.

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.

Oak Springs Hatchery - Summer Steelhead and Winter Steelhead (Clackamas and Hood River Stocks) Results

The Oak Springs facility includes 4 ponds for rainbow trout broodstock holding, 8 concrete raceways, 2 Burrow's ponds, 5 circular ponds 14 rearing ponds, and incubation facilities. The facility, which is operated with state funds, produces steelhead and resident trout.

SUMMER STEELHEAD

The Oak Springs 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 contribution. The audit found that the hatchery was not in compliance with water quality monitoring requirements, alarm requirements, double screening of rearing units, predation control requirements, and in-basin acclimation or rearing, which are all facilities requirements. The hatchery needed to develop specific incubation and rearing standards for the IHOT Operations Plan, develop a smoltification goal and monitoring plan, and conduct fishery contribution studies. The hatchery was not in compliance with incubation standards and needed to verify compliance with rearing standards. The hatchery was not in compliance with all the feed storage, transportation, and hatchery sanitation procedures.

The specific areas in which the Oak Springs 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:

- Check flow alarm daily and other alarms weekly
- Check temperature of moist pellets at delivery
- Conduct fishery contribution studies
- Conduct IHOT QA/QC tests for feed preparation
- Develop alarm logs
- Develop smoltification goal and monitor
- Develop specific incubation and rearing standards for IHOT Operations Plan
- Develop written hatchery M&E plan
- Disinfect fish pumps, nets, egg sorters, waders, boots, rain gear, hoses, and other equipment
- Document adult contribution
- Follow IHOT loading and flow criteria for incubation

- Follow IHOT protocols for disinfection of vehicle interiors and exteriors
- Follow IHOT temperature criteria for transport
- Install security alarms
- Install alarms on intake, large rearing ponds, raceway headboxes and rearing ponds
- Install foot baths
- Install outside system and buzzer
- Install telephone pages
- Insulate feed hoppers and bulk storage facilities
- Monitor and record DO and TGP
- Provide double screens on raceways and ponds
- Provide effective predation control
- Provide rearing or acclimation in the subbasins
- Run analysis for water chemistry parameters, turbidity, alkalinity, hardness, nitrite, and contaminants
- Verify compliance with rearing standards
- Wear protective garments when handling fish eggs or cultural water

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

WINTER STEELHEAD (CLACKAMAS RIVER STOCK)

The Oak Springs Hatchery - Winter Steelhead (Clackamas River Stock) program was in general compliance with most of the performance measures. The audit found that the hatchery was not in compliance with water quality monitoring requirements, alarm requirements, double screening of rearing units, predation control requirements, and in-basin acclimation or rearing, which are all facilities requirements. The hatchery needed to develop specific rearing standards for the IHOT Operations Plan, and develop a smoltification goal and monitoring plan. The hatchery needed to verify compliance with rearing standards. The hatchery was also not in compliance with all the feed storage, transportation, and hatchery sanitation procedures.

The specific areas in which the Oak Springs Hatchery - Winter Steelhead (Clackamas River 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:

- Check flow alarm daily and other alarms weekly
- Check temperature of moist pellets at delivery
- Conduct IHOT QA/QC tests for feed preparation
- Develop alarm logs
- Develop smoltification goal and monitor
- Develop specific rearing standards for IHOT Operations Plan
- Follow IHOT protocols for disinfection of vehicle interiors and exteriors

- Follow IHOT temperature criteria for transport
- Install security alarms
- Install alarms on intake, large rearing ponds, raceway headboxes and rearing ponds
- Install outside system and buzzer
- Install telephone pages
- Insulate feed hoppers and bulk storage facilities
- Monitor and record DO and TGP and record
- Provide double screens on raceways and ponds
- Provide effective predation control
- Provide rearing or acclimation in the subbasins
- Review production goal or size goal to meet size goal
- Run analysis for water chemistry parameters, turbidity, alkalinity, hardness, nitrite, and contaminants
- Verify compliance with rearing standards
- Wear protective garments when handling fish eggs or cultural water

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

WINTER STEELHEAD (HOOD RIVER STOCK)

The Oak Springs Hatchery - Winter Steelhead (Hood River Stock) program was in general compliance with most of the performance measures. In the area of program objectives, the hatchery needed to document its pre-spawning survival, egg-take. The audit found that the hatchery was not in compliance with water quality monitoring requirements, alarm requirements, double screening of rearing units, predation control requirements, and in-basin acclimation or rearing, which are all facilities requirements. The hatchery needed to develop specific rearing standards for the IHOT Operations Plan, and develop a smoltification goal and monitoring plan. The hatchery needed to verify compliance with rearing standards. The hatchery was also not in compliance with all the feed storage, transportation, and hatchery sanitation procedures.

The specific areas in which the Oak Springs Hatchery - Winter Steelhead (Hood River 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:

- Check flow alarm daily and other alarms weekly
- Check temperature of moist pellets at delivery
- Conduct fishery contribution studies
- Conduct IHOT QA/QC tests for feed preparation
- Develop alarm logs
- Develop smoltification goal and monitor
- Develop specific rearing standards for IHOT Operations Plan
- Disinfect fish pumps, nets, egg sorters, waders, boots, rain gear, hoses, and other equipment
- Document pre-spawning mortality, egg take.
- Follow IHOT protocols for disinfection of vehicle interiors and exteriors
- Follow IHOT temperature criteria for transport
- Install security alarms
- Install alarms on intake, large rearing ponds, raceway headboxes and rearing ponds
- Install outside system and buzzer

- Install telephone pages
- Insulate feed hoppers and bulk storage facilities
- Monitor and record DO and TGP
- Provide double screens on raceways and ponds
- Provide effective predation control
- Provide rearing or acclimation in the subbasins
- Run analysis for water chemistry parameters, turbidity, alkalinity, hardness, nitrite, and contaminants
- Verify compliance with rearing standards
- Wear protective garments when handling fish eggs or cultural water

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

Facility Description

Name:	Oak Springs Hatchery
Stock/Species:	Summer Steelhead Winter Steelhead (Clackamas River Stock) Winter Steelhead (Hood River Stock) Rainbow Trout
Operating Agency:	Oregon Department of Fish and Wildlife
Funding Agency:	ODFW
Location:	The hatchery is located on the Deschutes River about 9 miles from Maupin, Oregon
Address:	85001 Oak Springs Road Maupin, OR 97037
Hatchery Manager:	Mr. Randy Robart
Phone:	(541) 395-2546
Fax:	(541) 395-2595
Purpose:	The facility, which is operated with state funds, produces steelhead and resident trout.

Production Goal:

Summer Steelhead

Produce 225,000 fingerlings (2,350 lb) for transfer to South Santiam Hatchery

Produce 170,000 fingerlings (1,250 lb) for transfer to Gnat Creek Hatchery

Produce 270,000 fingerlings (1,000 lb) for transfer to South Santiam Hatchery

Produce 75,000 smolts (15,000 lb) for release into the Salmon/Zigzag River System

Produce 60,460 smolts (12,000 lb) for release into the Hood River

Winter Steelhead (Clackamas River Stock)

Produce 40,000 smolts (8,000 lb) for transfer to Clackamas River

Winter Steelhead (Hood River Stock)

Produce 50,000 smolts (10,000 lb) for transfer to Hood River

Rainbow Trout

Produce 3,820,000 eggs and 131,134 lb of fish for various ODFW programs

Water Supply:

The present water delivery system can deliver approximately 11,670 gpm to the hatchery. Some mixing with re-use water occurs from one pond series to another.

Facilities:

Adult Holding:	2 brood ponds for rainbow trout broodstock - 10,818 cf each 2 lower ponds for rainbow trout broodstock - 7,207 cf each
Incubation:	12 16-tray vertical stack incubators - 192 trays
Early Rearing:	4 - 19 foot Canadian troughs
Raceways:	2 Burrow ponds - 2680 cf each 8 raceways - 3,481 cf each
Rearing Ponds:	5 circular ponds - 2,120 cf each 9 north ponds - 9,433 cf each 5 lower ponds for rainbow trout - 7,207 cf each
Satellite Facilities:	None

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 Oak Springs Hatchery - Summer Steelhead and Winter Steelhead (Clackamas and Hood River Stocks)

This section presents the corrective actions required to bring the Oak Springs Hatchery - Summer Steelhead and Winter Steelhead (Clackamas and Hood River 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, 3b, and 3c).

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 Oak Springs Hatchery - Summer Steelhead

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>None</p>	----	
<p>Type 2 - Remedial actions requiring changes in agency policies or procedures</p> <p>Develop written hatchery M&E plan</p> <p>Document adult contribution</p> <p>Check flow alarm daily and other alarms weekly</p> <p>Develop alarm logs</p> <p>Conduct IHOT QA/QC tests for feed preparation</p> <p>Check temperature of moist pellets at delivery</p> <p>Develop specific incubation and rearing standards for IHOT Operations Plan</p> <p>Follow IHOT loading and flow criteria for incubation</p> <p>Verify compliance with rearing standards</p> <p>Develop smoltification goal and monitor</p> <p>Follow IHOT protocols for disinfection of vehicle interiors and exteriors</p> <p>Disinfect fish pumps, nets, egg sorters, waders, boots, rain gear, hoses, and other equipment</p> <p>Wear protective garments when handling fish eggs or cultural water</p>	<p>----</p> <p>----</p> <p>----</p> <p>----</p> <p>----</p> <p>----</p> <p>----</p> <p>----</p> <p>----</p> <p>----</p> <p>----</p> <p>----</p> <p>----</p> <p>----</p> <p>----</p> <p>----</p> <p>----</p>	<p></p> <p>3</p> <p>4a</p> <p>6</p> <p>6</p> <p>12</p> <p>12</p> <p>18-19, 22a2</p> <p>18</p> <p>19</p> <p>22a1</p> <p>23</p> <p>23</p> <p>23</p>

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

Remedial Action Required	Cost	PMS ¹
Type 2 (Continued) - Remedial actions requiring changes in agency policies or procedures		
Follow IHOT temperature criteria for transport	----	23
Conduct fishery contribution studies	----	24
Install foot baths	----	28
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
Type 4 - Remedial actions requiring significant capital expenditures		
Install alarms on intake, large rearing ponds, raceway headboxes and rearing ponds	\$60,000	6
Install security alarms	\$20,000	6
Install outside system and buzzer	\$2,000	6
Install telephone pages	\$2,000	6
Provide double screens on raceways and ponds	\$7,000	10
Insulate feed hoppers and bulk storage facilities	\$10,000	12
Provide rearing or acclimation in the subbasins (2 ponds)	\$2.0 million	22b
Type 5 - Remedial actions that may require significant capital expenditures but are not clearly definable at this time		
Provide effective predation control	----	11

Table 3b. Remedial Actions Required at Oak Springs Hatchery - Winter Steelhead (Clackamas River Stock)

Remedial Action Required	Cost	PMS ²
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¹ PMS are performance measures that were extracted from the IHOT 1995 report.

² PMS are performance measures that were extracted from the IHOT 1995 report.

Remedial Action Required	Cost	PMS ²
<p>Type 1 - Non-compliance issues resulting from items beyond human control or Performance Measures not relevant for this hatchery</p> <p>None</p>	----	
<p>Type 2 - Remedial actions requiring changes in agency policies or procedures</p> <p>Check flow alarm daily and other alarms weekly</p> <p>Develop alarm logs</p> <p>Conduct IHOT QA/QC tests for feed preparation</p> <p>Check temperature of moist pellets at delivery</p> <p>Develop specific rearing standards for IHOT Operations Plan</p> <p>Verify compliance with rearing standards</p> <p>Develop smoltification goal and monitor</p> <p>Review production goal or size goal to meet size goal</p> <p>Follow IHOT protocols for disinfection of vehicle interiors and exteriors</p> <p>Wear protective garments when handling fish eggs or cultural water</p> <p>Follow IHOT temperature criteria for transport</p>	<p>----</p> <p>----</p> <p>----</p> <p>----</p> <p>----</p> <p>----</p> <p>----</p> <p>----</p> <p>----</p> <p>----</p> <p>----</p> <p>----</p> <p>----</p>	<p></p> <p>6</p> <p>6</p> <p>12</p> <p>12</p> <p>19, 22a2</p> <p>19</p> <p>22a1</p> <p>22a5</p> <p>23</p> <p>23</p> <p>23</p>

Remedial Action Required	Cost	PMS¹
Type 3 - Remedial actions requiring changes in monitoring coverage or interval		
Monitor and record DO and TGP	----	5b
Run analysis for water chemistry parameters, turbidity, alkalinity, hardness, nitrite, and contaminants	----	5c-5g
Type 4 - Remedial actions requiring significant capital expenditures		
Install alarms on intake, large rearing ponds, raceway headboxes and rearing ponds	\$60,000	6
Install security alarms	\$20,000	6
Install outside system and buzzer	\$2,000	6
Install telephone pages	\$2,000	6
Provide double screens on raceways and ponds	\$7,000	10
Insulate feed hoppers and bulk storage facilities	\$10,000	12
Provide rearing or acclimation in the subbasins	\$2.0 million	22b
Type 5 - Remedial actions that may require significant capital expenditures but are not clearly definable at this time		
Provide effective predation control	----	11

Table 3a. Remedial Actions Required at Oak Springs Hatchery - Winter Steelhead (Hood River Stock)

Remedial Action Required	Cost	PMS²
Type 1 - Non-compliance issues resulting from items beyond human control or Performance Measures not relevant for this hatchery		
None	----	
Type 2 - Remedial actions requiring changes in agency policies or procedures		

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

² PMS are performance measures that were extracted from the IHOT 1995 report.

Remedial Action Required	Cost	PMS²
Document pre-spawning mortality, egg take	----	4b, 4c
Check flow alarm daily and other alarms weekly	----	6
Develop alarm logs	----	6
Conduct IHOT QA/QC tests for feed preparation	----	12
Check temperature of moist pellets at delivery	----	12
Develop specific rearing standards for IHOT Operations Plan	----	19, 22a2
Verify compliance with rearing standards	----	19
Develop smoltification goal and monitor	----	22a1
Follow IHOT protocols for disinfection of vehicle interiors and exteriors	----	23
Disinfect fish pumps, nets, egg sorters, waders, boots, rain gear, hoses, and other equipment	----	23
Wear protective garments when handling fish eggs or cultural water	----	23
Follow IHOT temperature criteria for transport	----	23
Conduct fishery contribution studies	----	24

Remedial Action Required	Cost	PMS¹
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
Type 4 - Remedial actions requiring significant capital expenditures		
Install alarms on intake, large rearing ponds, raceway headboxes and rearing ponds	\$60,000	6
Install security alarms	\$20,000	6
Install outside system and buzzer	\$2,000	6
Install telephone pages	\$2,000	6
Provide double screens on raceways and ponds	\$7,000	10
Insulate feed hoppers and bulk storage facilities	\$10,000	12
Provide rearing or acclimation in the subbasins	\$2.0 million	22b
Type 5 - Remedial actions that may require significant capital expenditures but are not clearly definable at this time		
Provide effective predation control	----	11

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 Oak Springs Hatchery - Summer Steelhead and Winter Steelhead (Clackamas and Hood River Stocks) programs contribution of adult fish to fisheries, local fisheries, spawning grounds, and hatcheries (Tables 4a, 4b, and 4c). 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: Oak Springs Hatchery - Summer Steelhead

Year	Fisheries ¹ (Broodyear)	Spawning Grounds ¹ (Broodyear)	Hatchery ¹ (Broodyear)	Total Combined Contribution ² (Broodyear)	Smolt to Adult Survival (percent)
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.

**Table 4b. Adult Contribution to Fisheries, Spawning Grounds, and Hatcheries:
Oak Springs Hatchery - Winter Steelhead (Clackamas River Stock)**

Year	Fisheries¹ (Broodyear)	Spawning Grounds¹ (Broodyear)	Hatchery¹ (Broodyear)	Total Combined Contribution² (Broodyear)	Smolt to Adult Survival (percent)
1985					
1986					
1987	Reported at Clackamas Hatchery	Reported at Clackamas Hatchery	Reported at Clackamas Hatchery	Reported at Clackamas Hatchery	Reported at Clackamas Hatchery
1988	Reported at Clackamas Hatchery	Reported at Clackamas Hatchery	Reported at Clackamas Hatchery	Reported at Clackamas Hatchery	Reported at Clackamas Hatchery
1989	Reported at Clackamas Hatchery	Reported at Clackamas Hatchery	Reported at Clackamas Hatchery	Reported at Clackamas Hatchery	Reported at Clackamas Hatchery
1990	Reported at Clackamas Hatchery	Reported at Clackamas Hatchery	Reported at Clackamas Hatchery	Reported at Clackamas Hatchery	Reported at Clackamas Hatchery
1991					
1992					

**Table 4c. Adult Contribution to Fisheries, Spawning Grounds, and Hatcheries:
Oak Springs Hatchery - Winter Steelhead (Hood River Stock)**

Year	Fisheries³ (Broodyear)	Spawning Grounds¹ (Broodyear)	Hatchery¹ (Broodyear)	Total Combined Contribution⁴ (Broodyear)	Smolt to Adult Survival (percent)
1984					

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.

³ Data obtained from Missing Production Groups Annual Report or from the Regional Mark Information System database.

⁴ Total combined adult contribution; presented when it is not possible to subdivide the contribution into fisheries, spawning grounds, and hatchery contributions.

1985					
1986					
1987	Information not available	Information not available	Information not available	Information not available	Information not available
1988	Information not available	Information not available	Information not available	Information not available	Information not available
1989	Information not available	Information not available	Information not available	Information not available	Information not available
1990	Information not available	Information not available	Information not available	Information not available	Information not available
1991					
1992					

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

Table 6. Annual Operating Expenses - Oak Springs Hatchery

Program	1994	1995	1996
1. Summer Steelhead	\$73,835	\$75,863	\$161,661
2. Winter Steelhead (Clackamas River Stock)	\$19,091	\$19,091	\$37,429
3. Winter Steelhead (Hood River Stock)	\$19,067	\$23,936	\$46,985
4.			
5.			
Total Hatchery Costs	\$111,993	\$118,890	\$246,075

Table 6a. Detailed Expenditures at Oak Springs Hatchery by Program

Summer Steelhead

Component	1994	1995	1996
Personnel Costs	\$219,923	\$219,923	\$220,865
Operational Costs	\$125,111	\$125,111	\$139,555
Capital Costs	\$0	\$0	\$360,420
Indirect Costs	\$60,654	\$60,654	\$75,521
Lumped Hatchery Costs ¹			
Lumped Third-Party Costs			
Total Hatchery Costs	\$405,687	\$405,687	\$796,361
Source of Funds			
ODFW	100%	100%	100%
Program Production (lb)	30,900	31,750	34,481
Total Production (lb)	170,000	170,000	170,000
Program as Percent of Total	18.2%	18.7%	20.3%
Program Costs	\$73,835	\$75,863	\$161,661

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 Oak Springs Hatchery by Program
Winter Steelhead (Clackamas Stock)**

Component	1994	1995	1996
Personnel Costs	\$219,923	\$219,923	\$220,865
Operational Costs	\$125,111	\$125,111	\$139,555
Capital Costs	\$0	\$0	\$360,420
Indirect Costs	\$60,654	\$60,654	\$75,521
Lumped Hatchery Costs ¹			
Lumped Third-Party Costs			
Total Hatchery Costs	\$405,687	\$405,687	\$796,361
Source of Funds			
ODFW	100%	100%	100%
Program Production (lb)	8,000	8,000	8,000
Total Production (lb)	170,000	170,000	170,000
Program as Percent of Total	4.7%	4.7%	4.7%
Program Costs	\$19,091	\$19,091	\$37,429

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 Oak Springs Hatchery by Program
Winter Steelhead (Hood River Stock)**

Component	1994	1995	1996
Personnel Costs	\$219,923	\$219,923	\$220,865
Operational Costs	\$125,111	\$125,111	\$139,555
Capital Costs	\$0	\$0	\$360,420
Indirect Costs	\$60,654	\$60,654	\$75,521
Lumped Hatchery Costs ¹			
Lumped Third-Party Costs			
Total Hatchery Costs	\$405,687	\$405,687	\$796,361
Source of Funds			
ODFW	100%	100%	100%
Program Production (lb)	8,000	10,000	10,000
Total Production (lb)	170,000	170,000	170,000
Program as Percent of Total	4.7	5.9	5.9
Program Costs	\$19,067	\$23,936	\$46,985

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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.