
MCKENZIE HATCHERY

**A COMPILATION AND SUMMARY OF
FISH AUDITS FOR SPRING CHINOOK
(SOUTH SANTIAM, MCKENZIE, AND
WILLAMETTE RIVER STOCKS)**

JULY 1998

**HATCHERY EVALUATION REPORT
SUMMARY FOR**

McKenzie Hatchery

- **Spring Chinook (South Santiam River Stock)**
- **Spring Chinook (McKenzie River Stock)**
- **Spring Chinook (Willamette River Stock)**

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

SUMMARY REPORT PREPARED BY:
DON SAMPSON
SAMPSEL CONSULTING SERVICES
FOR THE
NORTHWEST POWER PLANNING COUNCIL
JULY 1998

Original IHOT Audit Reports Prepared by:

Montgomery Watson
2375 130th Avenue NE
Suite 200
Bellevue, WA 98005
January 1997
BPA Project Number 95-2
Contract Number 95AC49468

CONTENTS

Section 1 Executive Summary.....	1
Section 2 Facility Description	5
Section 3 Remedial Actions	7
Section 4 Hatchery Contribution to Fisheries, Spawning Grounds and Hatcheries	14
Section 5 Annual Operating Expenditures	17

Executive Summary

This report presents the compilation of findings of the independent audit of the McKenzie River Hatchery - Spring Chinook (South Santiam, McKenzie, and Willamette River Stocks) programs. 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 the McKenzie River approximately 22 miles east of Springfield, Oregon. The hatchery is operated by the Oregon Department of Fish and Wildlife and used for adult collection, incubation, and rearing of spring chinook.

Background

The hatchery audit was 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) was contracted along with Montgomery Watson to complete the hatchery 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.

McKenzie River Hatchery - Spring Chinook (South Santiam, McKenzie, and Willamette River Stocks) Results

The McKenzie River facility includes two ponds for adult holding, 30 concrete raceways, 8 Canadian troughs, and incubation facilities. The hatchery was totally reconstructed in 1975. It is funded jointly by the U.S. Army Corps of Engineers and the Oregon Department of Fish & Wildlife as mitigation for the development of the Blue River and Cougar reservoirs on the upper McKenzie River. The goal of the hatchery is to provide spring chinook for sport fishing in the McKenzie and Molalla rivers.

Spring Chinook (South Santiam River Stock)

The McKenzie River Hatchery - Spring Chinook (South Santiam 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 adult return and develop goals for eyed-egg to fry survival and smolt-to-adult survival for the IHOT Operation Plan. The audit found that the hatchery was not in compliance with water quality monitoring requirements, pathology-free water criteria, alarm requirements, feed preparation and feeding protocols, and double-screening, which are all facilities requirements. The hatchery needed to develop a smoltification goal and monitoring program and specific incubation and rearing standards for the IHOT Operations Plan. The hatchery was not meeting all of the transportation requirements. The hatchery did not have a genetics M&E program.

The specific areas in which the McKenzie River Hatchery - Spring Chinook (South Santiam 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:

- Conduct IHOT QA/QC tests for feed preparation
- Develop alarm log
- Develop approved genetics M&E plan
- Develop eyed-egg to fry survival goal for IHOT Operations Plan
- Develop goal for smolt-to-adult survival for IHOT Operations Plan
- Develop smoltification goal and monitor
- Develop specific incubation and rearing standards for the IHOT Operations Plan
- Document adult contribution
- Double screen raceways for South Santiam Stock
- Follow IHOT protocols for removing moist pellets from freezer just prior to feeding
- Follow IHOT protocols for tempering of transport water prior to release
- Follow IHOT requirements for checking alarms
- Follow IHOT requirements for disinfection of transport vehicle interior and exterior
- Follow IHOT requirements for disinfection of transportation equipment and personnel before and after use
- Install alarms for raceways and water treatment area
- Monitor and record DO and TGP
- Provide disease-free water for early rearing (400 gpm)
- Provide rearing or acclimation in the subbasin

- Review release strategy in terms of the need to provide acclimation
- Run analysis for water quality 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.

Spring Chinook (McKenzie River Stock)

The McKenzie River Hatchery - Spring Chinook (McKenzie River Stock) program was in general compliance with most of the performance measures. In the area of program objectives, the hatchery was not meeting its adult return, pre-spawning survival, green-egg to eyed-egg goals and needed to develop goals for eyed-egg to fry survival and smolt-to-adult survival for the IHOT Operation Plan. The audit found that the hatchery was not in compliance with water quality monitoring requirements, pathology-free water criteria, alarm requirements, feed preparation and feeding protocols, which are all facilities requirements. The hatchery needed to develop a smoltification goal and monitoring program. The hatchery was not meeting all of the transportation requirements. The hatchery did not have written spawning protocols or a genetics M&E program.

The specific areas in which the McKenzie River Hatchery - Spring Chinook (McKenzie 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:

- Conduct IHOT QA/QC tests for feed preparation
- Develop alarm log
- Develop approved genetics M&E plan
- Develop eyed-egg to fry survival goal for IHOT Operations Plan
- Develop goal for smolt-to-adult survival for IHOT Operations Plan
- Develop smoltification goal and monitor
- Develop written spawning protocols
- Follow IHOT protocols for removing moist pellets from freezer just prior to feeding
- Follow IHOT protocols for tempering of transport water prior to release
- Follow IHOT requirements for checking alarms
- Follow IHOT requirements for disinfection of transport vehicle interior and exterior
- Follow IHOT requirements for disinfection of transportation equipment and personnel before and after use
- Improve pre-spawning survival
- Install alarms in adult holding, raceways, and water treatment area
- Maximize fertilization to improve green-egg to eyed-egg survival
- Monitor and record DO and TGP
- Provide 800 gpm of disease-free water for incubation and early rearing
- Run analysis for water quality 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.

Spring Chinook (Willamette River Stock)

The McKenzie River Hatchery - Spring Chinook (Willamette 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 adult return and develop goals for eyed-egg to fry survival and smolt-to-adult survival for the IHOT Operation Plan. The audit found that the hatchery was not in compliance with water quality monitoring requirements, pathology-free water criteria, alarm requirements, and feed preparation and feeding protocols, which are all facilities requirements. The hatchery was not meeting all of the transportation requirements. The hatchery did not have a genetics M&E program and needed to develop spawning protocols.

The specific areas in which the McKenzie River Hatchery - Spring Chinook (Willamette 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:

- Conduct IHOT QA/QC tests for feed preparation
- Develop alarm log
- Develop approved genetics M&E plan
- Develop eyed-egg to fry survival goal for IHOT Operations Plan
- Develop spawning protocols and document compliance with spawning protocols
- Develop specific incubation standards for the IHOT Operations Plan
- Document adult contribution
- Follow IHOT protocols for removing moist pellets from freezer just prior to feeding
- Follow IHOT requirements for checking alarms
- Follow IHOT requirements for disinfection of transport vehicle interior and exterior
- Follow IHOT requirements for disinfection of transportation equipment and personnel before and after use
- Improve green-eyed to eyed-egg survival
- Improve pre-spawning survival
- Install alarms for raceways and water treatment area
- Install alarms in adult holding ponds
- Monitor and record DO and TGP
- Provide disease-free water for early rearing (800 gpm)
- Run analysis for water quality 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:	McKenzie River Fish Hatchery
Stock/Species:	Spring Chinook
Operating Agency:	Oregon Department of Fish & Wildlife
Funding Agency:	COE ODW&F
Location:	The hatchery is located along the McKenzie River approximately 22 miles east of Springfield, Oregon.
Address:	43863 Greer Drive Leaburg, OR 97489
Hatchery Manager:	Mr. Dave Rogers
Phone:	(541) 896-3513
Fax:	(541) 896-3826
Purpose:	The hatchery was totally reconstructed in 1975. It is jointly funded by the U.S. Army Corps of Engineers and the Oregon Department of Fish & Wildlife as mitigation for the development of Blue River and Cougar reservoirs on the upper McKenzie River. The goal of the hatchery is to provide spring chinook for sport fishing in the McKenzie and Molalla rivers.

Production Goal:

Spring Chinook (McKenzie River Stock)

Produce 983,350 smolts (105,950 lb) for release into the McKenzie River

Produce 975,00 fingerlings (4,875 lb) for release into the McKenzie River

Spring Chinook (South Santiam River Stock)

Produce 200,000 fingerlings (2,000 lb) for release into the Calapooia River

Produce 100,000 smolts (12,500 lb) for release into the Molalla River

Spring Chinook (Willamette River Stock)

Produce 775,000 fingerlings (31,000 lb) for transfer to CEDC net pens

Water Supply:

Water rights total 31,500 gpm from two sources: the McKenzie River and Cogswell Creek. All raceways are supplied with single-pass water.

Facilities:

Adult Holding:	2 concrete brood ponds - 20,250 cf each
Incubation:	40 full stacks of vertical tray incubators (640 trays)
Early Rearing:	8 fiberglass Canadian troughs - 89 cf each
Raceways:	30 concrete raceways - 3,338 cf each
Rearing Ponds:	None
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 categories range 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:

Table 2. 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 McKenzie River Hatchery - Spring Chinook (South Santiam, McKenzie, and Willamette River Stocks)

This section presents the corrective actions required to bring the McKenzie River Hatchery - Spring Chinook (South Santiam, McKenzie, and Willamette River Stocks) programs into compliance with IHOT performance measures. The remedial actions described here are suggestions developed by the Montgomery Watson Audit Team. 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 McKenzie River Hatchery - Spring Chinook (South Santiam River Stock)

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		
Document adult contribution	----	4a
Develop eyed-egg to fry survival goal for IHOT Operations Plan	----	4e
Develop goal for smolt-to-adult survival for IHOT Operations Plan	----	4h
Follow IHOT requirements for checking alarms	----	6
Develop alarm log	----	6
Conduct IHOT QA/QC tests for feed preparation	----	12
Follow IHOT protocols for removing moist pellets from freezer just prior to feeding	----	12
Develop specific incubation and rearing standards for the IHOT Operations Plan	----	18-19
Develop smoltification goal and monitor	----	22a1
Reveiw release strategy in terms of the need to provide acclimation	----	22c
Follow IHOT requirements for disinfection of transportation equipment and personnel before and after use	----	23
Follow IHOT requirements for disinfection of transport vehicle interior and exterior	----	23
Follow IHOT protocols for tempering of transport water prior to release	----	23
Develop approved genetics M&E plan	----	43

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

Type 3 – Remedial actions requiring changes in monitoring coverage or interval		
Monitor and record DO and TGP	----	5b
Run analysis for water quality parameters, turbidity, alkalinity, hardness, nitrite, and contaminants	----	5c-5g
Type 4 – Remedial actions requiring significant capital expenditures		
Provide disease-free water for incubation and early rearing (400 gpm)	\$300,000	5h, 28
Install alarms for raceways and water treatment area	\$20,000	6
Double screen raceways for South Santiam Stock	\$4,500	10
Provide rearing or acclimation in the subbasin	\$1.0 million	22b, 37
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 McKenzie River Hatchery - Spring Chinook (McKenzie River Stock)

Remedial Action Required	Cost	PMs¹
Type 1 - Non-compliance issues resulting from items beyond human control or Performance Measures not relevant for this hatchery		
Improve adult returns	----	
Install security alarms	----	6
Type 2 - Remedial actions requiring changes in agency policies or procedures		
Maximize fertilization to improve green-egg to eyed-egg survival	----	4d
Develop eyed-egg to fry survival goal for IHOT Operations Plan	----	4e
Develop goal for smolt-to-adult survival for IHOT Operations Plan	----	4h
Follow IHOT requirements for checking alarms	----	6
Develop alarm log	----	6
Conduct IHOT QA/QC tests for feed preparation	----	12

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

Remedial Action Required	Cost	PMS¹
Follow IHOT protocols for removing moist pellets from freezer just prior to feeding	----	12
Develop smoltification goal and monitor	----	22a1
Follow IHOT requirements for disinfection of transportation equipment and personnel before and after use	----	23
Follow IHOT requirements for disinfection of transport vehicle interior and exterior	----	23
Follow IHOT protocols for tempering of transport water prior to release	----	23
Develop written spawning protocols	----	42
Develop approved genetics M&E plan	----	43

Remedial Action Required	Cost	PMs ¹
Type 3 - Remedial actions requiring changes in monitoring coverage or interval		
Monitor and record DO and TGP	----	5b
Run analysis for water quality parameters, turbidity, alkalinity, hardness, nitrite, and contaminants	----	5c-5g
Type 4 - Remedial actions requiring significant capital expenditures		
Provide 800 gpm of disease-free water for incubation and early rearing	\$500,000	5h, 28
Install alarms in adult holding, raceways, and water treatment area	\$20,000	6
Type 5 - Remedial actions that may require significant capital expenditures but are not clearly definable at this time		
Improve pre-spawning survival	----	4b

Table 3c. Remedial Actions Required at McKenzie River Hatchery - Spring Chinook (Willamette River Stock)

Remedial Action Required	Cost	PMs ²
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		
Document adult contribution	----	4a, 24
Develop eyed-egg to fry survival goal for IHOT Operations Plan	----	4e
Install alarms in adult holding ponds	----	6
Follow IHOT requirements for checking alarms	----	6
Develop alarm log	----	6
Conduct IHOT QA/QC tests for feed preparation	----	12
Follow IHOT protocols for removing moist pellets from freezer just prior to feeding	----	12

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
Develop specific incubation standards for the IHOT Operations Plan	----	18
Follow IHOT requirements for disinfection of transportation equipment and personnel before and after use	----	23
Follow IHOT requirements for disinfection of transport vehicle interior and exterior	----	23
Develop spawning protocols and document compliance with spawning protocols	----	
Develop approved genetics M&E plan	----	43

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 quality parameters, turbidity, alkalinity, hardness, nitrite, and contaminants	----	5c-5g
Type 4 - Remedial actions requiring significant capital expenditures		
Provide disease-free water for early rearing (800 gpm)	\$500,000	5h, 28
Install alarms for raceways and water treatment area	\$20,000	6
Type 5 - Remedial actions that may require significant capital expenditures but are not clearly definable at this time		
Improve pre-spawning survival	----	4b
Improve green-egg to eyed-egg survival	----	4d

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 McKenzie River Hatchery - Spring Chinook (South Santiam, McKenzie, and Willamette River Stock) program 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: McKenzie River Hatchery - Spring Chinook (South Santiam River Stock)

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:
McKenzie River Hatchery - Spring Chinook (McKenzie River Stock)**

Year	Fisheries¹ (Broodyear)	Spawning Grounds¹ (Broodyear)	Hatchery¹ (Broodyear)	Total Combined Contribution² (Broodyear)	Smolt to Adult Survival (percent)
1981					
1982					
1983					
1984					
1985	1,600	?	2,678	4,278	1.09
1986	284	?	675	959	1.56
1987	1,776	?	6,373	8,149	1.13
1988	460	?	1,035	1,495	0.61
1989	50	?	178	228	0.26
1990					
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 4c. Adult Contribution to Fisheries, Spawning Grounds, and Hatcheries:
McKenzie River Hatchery - Spring Chinook (Willamette River Stock)**

Year	Fisheries¹ (Broodyear)	Spawning Grounds¹ (Broodyear)	Hatchery¹ (Broodyear)	Total Combined Contribution² (Broodyear)	Smolt to Adult Survival (percent)
1983					
1984					
1985					
1986					
1987	No information provided	No information provided	No information provided	No information provided	No information provided
1988	No information provided	No information provided	No information provided	No information provided	No information provided
1989	No information provided	No information provided	No information provided	No information provided	No information provided
1990	No information provided	No information provided	No information provided	No information provided	No information provided
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 McKenzie River Hatchery are presented in Table 5 by program. The detailed breakdown of the Spring Chinook (McKenzie (South Santiam, and Spring Chinook and Willamette River Stock) program expenditures at this hatchery are presented in separate tables (Tables 6a, 6b, and 6c).

Table 5. Annual Operating Expenses - McKenzie River Hatchery

Program	1994	1995	1996
1. Spring Chinook (McKenzie River Stock)	\$431,914	\$398,171	\$408,692
1. Spring Chinook (South Santiam River Stock)	\$69,518	\$64,087	\$65,781
3. Spring Chinook (Willamette River Stock)	\$13,618	\$40,189	\$26,638
4.			
5.			
Total Hatchery Costs	\$515,050	\$502,447	\$501,111

Table 6a. Detailed Expenditures at McKenzie River Hatchery by Program

Spring Chinook (McKenzie River Stock)

Component	1994	1995	1996
Personnel Costs	\$213,878	\$227,219	\$219,882
Operational Costs	\$284,607	\$215,503	\$234,452
Capital Costs	\$14,250	\$4,750	\$0
Indirect Costs	\$72,474	\$71,928	\$75,327
Lumped Hatchery Costs ¹			
Lumped Third-Party Costs			
Total Hatchery Costs	\$501,432	\$462,258	474,473
Source of Funds			
COE	50%	50%	50%
ODF&W	50%	50%	50%
Program Production (lb)	107,950	107,950	107,950
Total Production (lb)	125,325	125,325	125,325
Program as Percent of Total	86.1%	86.1%	86.1%
Program Costs	\$431,914	\$398,171	\$408,692

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 McKenzie River Hatchery by Program
Spring Chinook (South Santiam River Stock)**

Component	1994	1995	1996
Personnel Costs	\$213,878	\$227,219	\$219,882
Operational Costs	\$284,607	\$215,503	\$234,452
Capital Costs	\$14,250	\$4,750	\$0
Indirect Costs	\$72,474	\$71,928	\$75,327
Lumped Hatchery Costs ¹			
Lumped Third-Party Costs			
Total Hatchery Costs	\$501,432	\$462,258	474,473
Source of Funds			
COE	50%	50%	50%
ODF&W	50%	50%	50%
Program Production (lb)	17,375	17,375	17,375
Total Production (lb)	125,325	125,325	125,325
Program as Percent of Total	13.9%	13.9%	13.9%
Program Costs	\$69,518	\$64,087	\$65,781

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 McKenzie River Hatchery by Program
Spring Chinook (Willamette River Stock)**

Component	1994	1995	1996
Personnel Costs			
Operational Costs			
Capital Costs			
Indirect Costs			
Lumped Hatchery Costs ¹			
Lumped Third-Party Costs			
Total Hatchery Costs			
Source of Funds			
Program Production (lb)			
Total Production (lb)			
Program as Percent of Total			
Program Costs	\$13,618	\$40,189	\$26,638

w:\co\ihot audits\oregon\klas.-will\mckenzie - final.doc

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