

**ADF&G**

**Division of Commercial Fisheries Special Publication No. 32**

---

---

**Northern Southeast Alaska Comprehensive Salmon  
Plan: 1996 Update and 5-Year Action Plan for  
Salmon Enhancement and Rehabilitation**

by

**ADF&G Private Nonprofit Program Staff**

November 1997

---

---

Alaska Department of Fish and Game

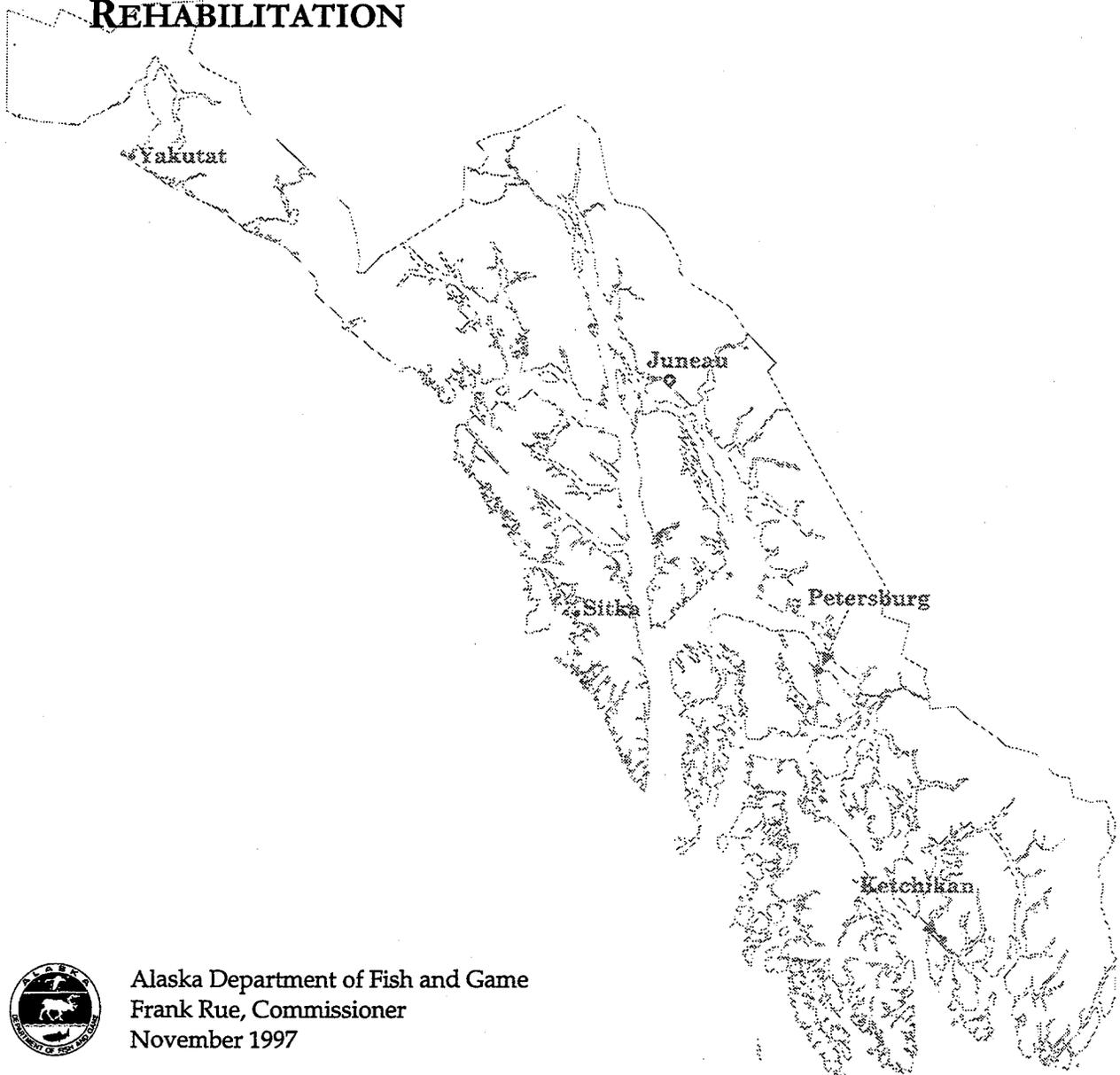
Division Commercial Fisheries





# Northern Southeast Alaska Comprehensive Salmon Plan

1996 UPDATE AND 5-YEAR ACTION PLAN  
FOR SALMON ENHANCEMENT AND  
REHABILITATION



Alaska Department of Fish and Game  
Frank Rue, Commissioner  
November 1997

**Northern Southeast Alaska Comprehensive Salmon Plan  
1996 Update and 5-Year Action Plan  
For Salmon Enhancement and Rehabilitation**

**Prepared by Planning, Permitting, and Development Program Staff  
Commercial Fisheries Management and Development Division  
for the Northern Southeast Regional Planning Team**

**and**

**Frank Rue, Commissioner  
Alaska Department of Fish and Game  
P.O. Box 25526, Juneau, Alaska 99802**

**November 1997**

# TABLE OF CONTENTS

	<u>Page</u>
List of Tables . . . . .	ii
Section 1. Introduction . . . . .	1
Background . . . . .	3
Reference Documents . . . . .	3
1996 Progress Report . . . . .	4
Definitions/Explanations . . . . .	5
Section 2. Northern Southeast Alaska Enhancement Projects	
Chinook . . . . .	7
Coho . . . . .	19
Sockeye . . . . .	31
Pink . . . . .	37
Chum . . . . .	47
Section 3. Northern Southeast Alaska Habitat Protection/Improvement Projects . . . . .	61
Section 4. Gap Analysis . . . . .	65
Section 5. 5-Year Action Plan . . . . .	69
Introduction. . . . .	71
Project Narratives . . . . .	75
Chinook . . . . .	75
Coho . . . . .	77
Sockeye . . . . .	83
Pink . . . . .	87
Chum . . . . .	88
All Species . . . . .	89
Section 6. 20-Year Action Plan Projects . . . . .	93
Project Narratives for the 1996 20-Year Action Plan . . . . .	96
Section 7. U.S./Canada Pacific Salmon Treaty Enhancement Program for Southeast Alaska . . . . .	103
Background . . . . .	105
Current Status . . . . .	105
Acknowledgements . . . . .	113

## LIST OF TABLES

### Chinook Salmon:

Page

Table 1.	1996 Status of northern Southeast enhancement projects-summary . . . . .	9
Table 2.	Sheldon Jackson College . . . . .	10
Table 3.	Little Port Walter Research Station . . . . .	11
Table 4.	Medvejie Central Incubation Facility . . . . .	12
Table 5.	Hidden Falls Hatchery . . . . .	13
Table 6.	Snettisham Hatchery . . . . .	14
Table 7.	Gastineau Hatchery . . . . .	15
Table 8.	Port Armstrong Hatchery . . . . .	16
Table 9.	Burro Creek Hatchery . . . . .	17
Table 10.	Other stocking projects . . . . .	18

### Coho Salmon:

Table 11.	1996 Status of northern Southeast enhancement projects-summary . . . . .	21
Table 12.	Medvejie Central Incubation Facility: coho lake rearing . . . . .	22
Table 13.	Medvejie Central Incubation Facility: Deep Inlet smolt release . . . . .	23
Table 14.	Sheldon Jackson College . . . . .	24
Table 15.	DIPAC/Sheep Creek Hatchery . . . . .	25
Table 16.	Burro Creek Hatchery . . . . .	26
Table 17.	Hidden Falls Hatchery . . . . .	27
Table 18.	Port Armstrong Hatchery . . . . .	28
Table 19.	Gunnuk Creek Hatchery . . . . .	29

### Sockeye Salmon:

Table 20.	1996 Status of northern Southeast enhancement projects-summary . . . . .	33
Table 21.	Snettisham Hatchery . . . . .	34
Table 22.	Haines 17 Mile, 31 Mile, and Chilkat Lake . . . . .	35

### Pink Salmon:

Table 23.	1996 Status of northern Southeast enhancement projects-summary . . . . .	39
Table 24.	Auke Bay Laboratory . . . . .	40
Table 25.	Sheldon Jackson College . . . . .	41
Table 26.	Medvejie Central Incubation Facility . . . . .	42
Table 27.	DIPAC: Sheep Creek, Kowee Creek, Gastineau Hatcheries . . . . .	43
Table 28.	Burro Creek Hatchery . . . . .	44
Table 29.	Gunnuk Creek Hatchery . . . . .	45
Table 30.	Port Armstrong Hatchery . . . . .	46

## LIST OF TABLES (Continued)

	<u>Page</u>
<b>Chum Salmon:</b>	
Table 31. 1996 Status of northern Southeast enhancement projects-summary . . . . .	49
Table 32. Medvejie Central Incubation Facility . . . . .	50
Table 33. Sheldon Jackson College . . . . .	51
Table 34. Gunnuk Creek Hatchery . . . . .	52
Table 35. DIPAC: Sheep Creek, Kowee Creek, Gastineau Hatcheries . . . . .	53
Table 36. Hidden Falls Hatchery . . . . .	54
Table 37. Burro Creek Hatchery . . . . .	55
Table 38. Chilkat Spawning Channel . . . . .	56
Table 39. Port Camden Incubation Boxes . . . . .	57
Table 40. Herman Creek Spawning Channel . . . . .	58
Table 41. Haines 17/30/31 Mile Incubator Boxes . . . . .	59
<b>All Species:</b>	
Table 42. 1996 Status of northern Southeast habitat restoration projects . . . . .	63
Table 43. Gap analysis for Southeast Alaska salmon fisheries, projected harvest potential, 1996 . . . . .	67
Table 44. Gap analysis for Southeast Alaska salmon fisheries, harvest estimates, 1996 . . . . .	68
Table 45. Chinook salmon projects and priorities, 1997-2001 . . . . .	71
Table 46. Coho salmon projects and priorities, 1997-2001 . . . . .	72
Table 47. Sockeye salmon projects and priorities, 1997-2001 . . . . .	73
Table 48. Pink salmon projects and priorities, 1997-2001 . . . . .	73
Table 49. Chum salmon projects and priorities, 1997-2001 . . . . .	74
Table 50. All salmon species projects and priorities, 1997-2001 . . . . .	74
Table 51. 20-year plan projects and target species . . . . .	95
Table 52. Alaska salmon enhancement program status report for chinook salmon, 1996 . . . . .	107
Table 53. Alaska salmon enhancement program status report for chum salmon, 1996 . . . . .	108
Table 54. Alaska salmon enhancement program status report for sockeye salmon, 1996 . . . . .	109
Table 55. Alaska salmon enhancement program status report for coho salmon, 1996 . . . . .	111
Table 56. Distribution of funds by species, potential adult production, and total allocations, 1996 . . . . .	112

**SECTION 1.**

**INTRODUCTION**



## Background

The Commissioner of the Alaska Department of Fish and Game (ADF&G) approved the revised *Comprehensive Salmon Plan, Phase II, Northern Southeast Alaska* in January, 1986. That document (together with the phase-I plan) provides the official blueprint for activities to increase salmon production in the region. Since the beginning, the salmon planning process has been constantly evolving; and changes to the plan have been reflected in annual updates that make it responsive to new knowledge, ideas, and changing conditions. Furthermore, annual updates are designed to measure the progress towards phase-I goals and objectives and to update the 5-Year Action Plan by listing newly recommended projects and revising the status of ongoing projects for the 1996-2000 period.

## Reference Documents

1. Comprehensive Salmon Plan for Southeast Alaska, Phase I; Joint Regional Planning Teams, April 1981.
2. Comprehensive Salmon Plan, Phase II: Northern SE Alaska; Northern Southeast Regional Planning Team, December 1982.
3. Chinook Salmon Plan for Southeast Alaska, 1983. J. Holland (ADF&G), B. Bachen (NSRAA), G. Freitag (SSRAA), P. Kissner (ADF&G), and A. Wertheimer (NMFS).
4. Comprehensive Salmon Plan, Phase II: Northern SE Alaska; Northern Southeast Regional Planning Team, revised Jan. 1986
5. 1986 Update, Comprehensive Salmon Plan, Phase II: Northern SE Alaska; Northern Southeast Regional Planning Team, June 1986.
6. 1987 Update, Comprehensive Salmon Plan, Phase II: Northern SE Alaska; Northern Southeast Regional Planning Team, April 1987.
7. 1988 Update, Comprehensive Salmon Plan, Phase II: Northern SE Alaska; Northern Southeast Regional Planning Team, Kevin C. Duffy, March 1989.
8. 1989 Update, Comprehensive Salmon Plan, Phase II: Northern SE Alaska; Northern Southeast Regional Planning Team, Kevin C. Duffy, March 1990.
9. 1990 Update, Comprehensive Salmon Plan, Phase II: Northern SE Alaska; Northern Southeast Regional Planning Team, Kevin C. Duffy, April, 1991.

10. Northern Southeast Alaska Comprehensive Salmon Plan 1991 Phase II Update and 5-Year Action Plan for Salmon Enhancement and Rehabilitation: prepared by PNP program staff of ADF&G for the Northern Southeast RPT for Carl L. Rosier, Commissioner. December 1992.
11. Northern Southeast Alaska Comprehensive Salmon Plan 1992 Update and 5-Year Action Plan for Salmon Enhancement and Rehabilitation: prepared by PNP program staff of ADF&G for the Northern Southeast RPT for Carl L. Rosier, Commissioner. December 1993.
12. Northern Southeast Alaska Comprehensive Salmon Plan 1993 Update and 5-Year Action Plan for Salmon Enhancement and Rehabilitation: prepared by PNP program staff of ADF&G for the Northern Southeast RPT for Carl L. Rosier, Commissioner. December 1994.
13. Northern Southeast Alaska Comprehensive Salmon Plan 1994 Update and 5-Year Action Plan for Salmon Enhancement and Rehabilitation: prepared by PNP program staff of ADF&G for the Northern Southeast RPT for Frank Rue, Commissioner. December 1995.
14. Northern Southeast Alaska Comprehensive Salmon Plan 1995 Update and 5-Year Action Plan for Salmon Enhancement and Rehabilitation: prepared by PNP program staff of ADF&G for the Northern Southeast RPT for Frank Rue, Commissioner. December 1996.

#### **1996 Progress Report**

This update is a report on hatchery production and new project implementation for salmon enhancement efforts in northern Southeast Alaska in 1996. It is intended to provide current information on hatchery releases, adult returns, hatchery contributions to common property fisheries, and new projects designed to increase the harvest of salmon in Southeast Alaska.

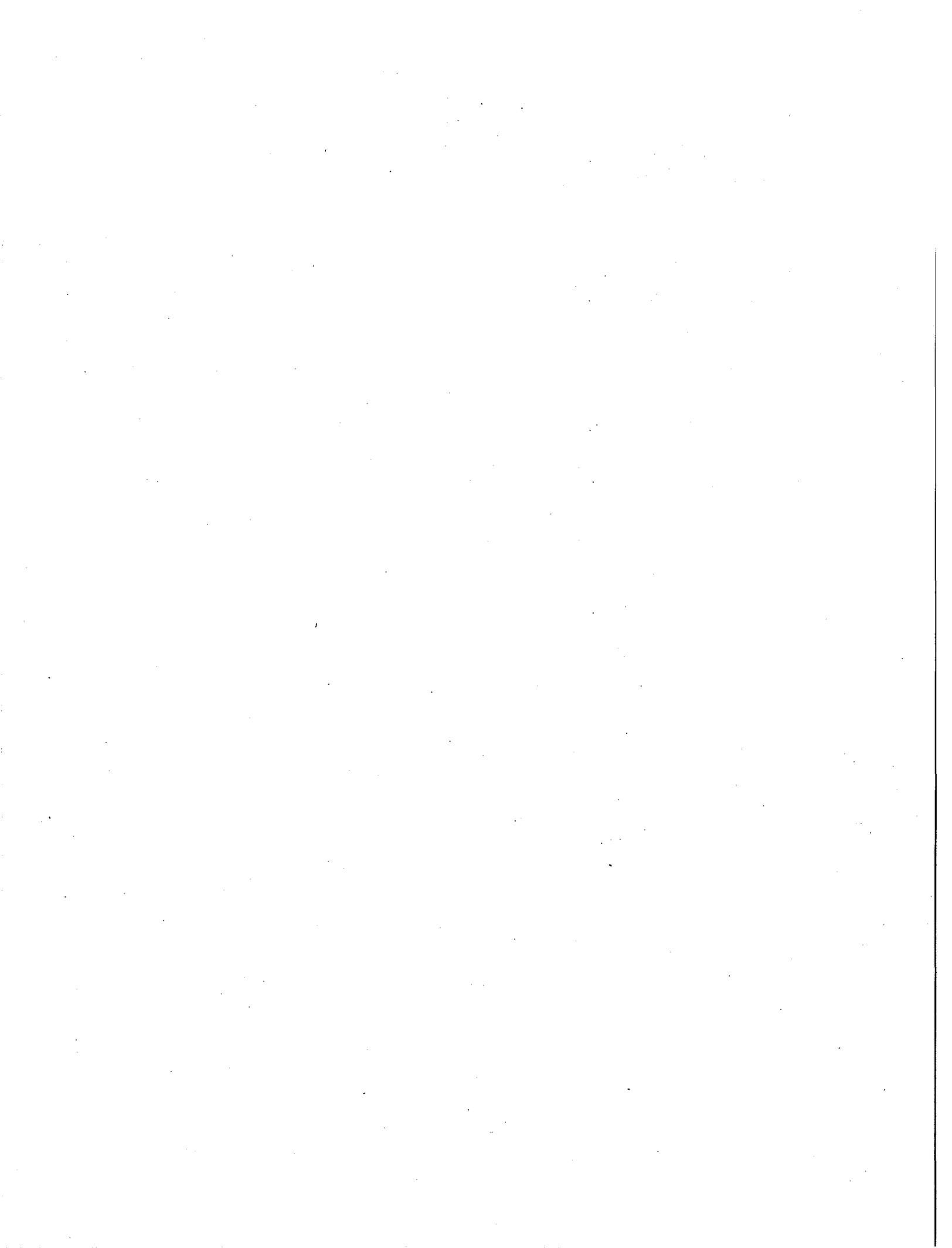
The tables in Section 2 identify the projected and actual enhancement contributions by species to the northern Southeast salmon harvest in 1996. Following each summary table, individual project tables are listed that track and document yearly production from each facility. The definitions/explanations of table categories listed below illustrate how the standard assumptions on salmonid survivals (unmarked fish) and fecundities of ADF&G Commercial Fisheries Management and Development (CFMD) Division will be applied to analyze the production from hatcheries and enhancement projects.

## Definitions/Explanations

1. Projected common property harvest - Assumed harvest rate times total return (chinook "jacks" not included).
2. Projected total return - (a) Assumed survival to adult times number of smolts/fry released or (b) actual survival of smolts times actual/projected past harvest rate times number of smolts.
3. Escapement - Includes brood-stock and cost-recovery fish.
4. Production basis - Number of "green" eggs permitted.
5. Assumed percentage survival to smolts - Standard survival assumption.
6. Number of smolts or fry - Production basis times assumed survival to smolt or fry release.
7. Assumed or actual harvest rate - Average of past harvest rates.
8. Projected number of smolts - Production basis times assumed percentage survival to smolts.
9. Assumed or actual harvest rate - Average of past harvest rates.
10. Common property harvest - Harvest rate times total return.

Production for hatcheries that have not followed a consistent life-stage release pattern cannot be projected in the format presented here. If a facility releases only two life stages (i.e., smolts and fry), production data can be projected through tables on each life stage; however, when a hatchery releases three or more life stages with no consistency in numbers or percentages of releases (i.e., fry, fingerlings, presmolts, smolts), assumptions concerning returns, survivals, and harvest rates cannot be applied. Although some hatcheries may have infrequently deviated from their normal pattern of life-stage releases for experimental purposes, such deviations are relatively minor factors, having little or no effect on survival calculations.

Tables in the 5-year Action Plan have been updated by (1) describing the status of existing projects and (2) adding new projects endorsed by the Northern Southeast Regional Planning Team (NSERPT) for inclusion in the phase-II update. Although chinook salmon production remains a priority for northern Southeast Alaska, mitigation for harvest losses to gear groups in Southeast Alaska directly caused by implementation of the U.S./Canada Pacific Salmon Treaty has been provided through federally funded enhancement projects. Section 7 of this update provides a narrative and associated tables that reflect the current status of these projects, which were designed to produce additional chinook, sockeye, coho, and chum salmon for harvest in Southeast Alaska.



**SECTION 2.**

**NORTHERN SOUTHEAST ALASKA ENHANCEMENT PROJECTS**

**CHINOOK**

**1996**

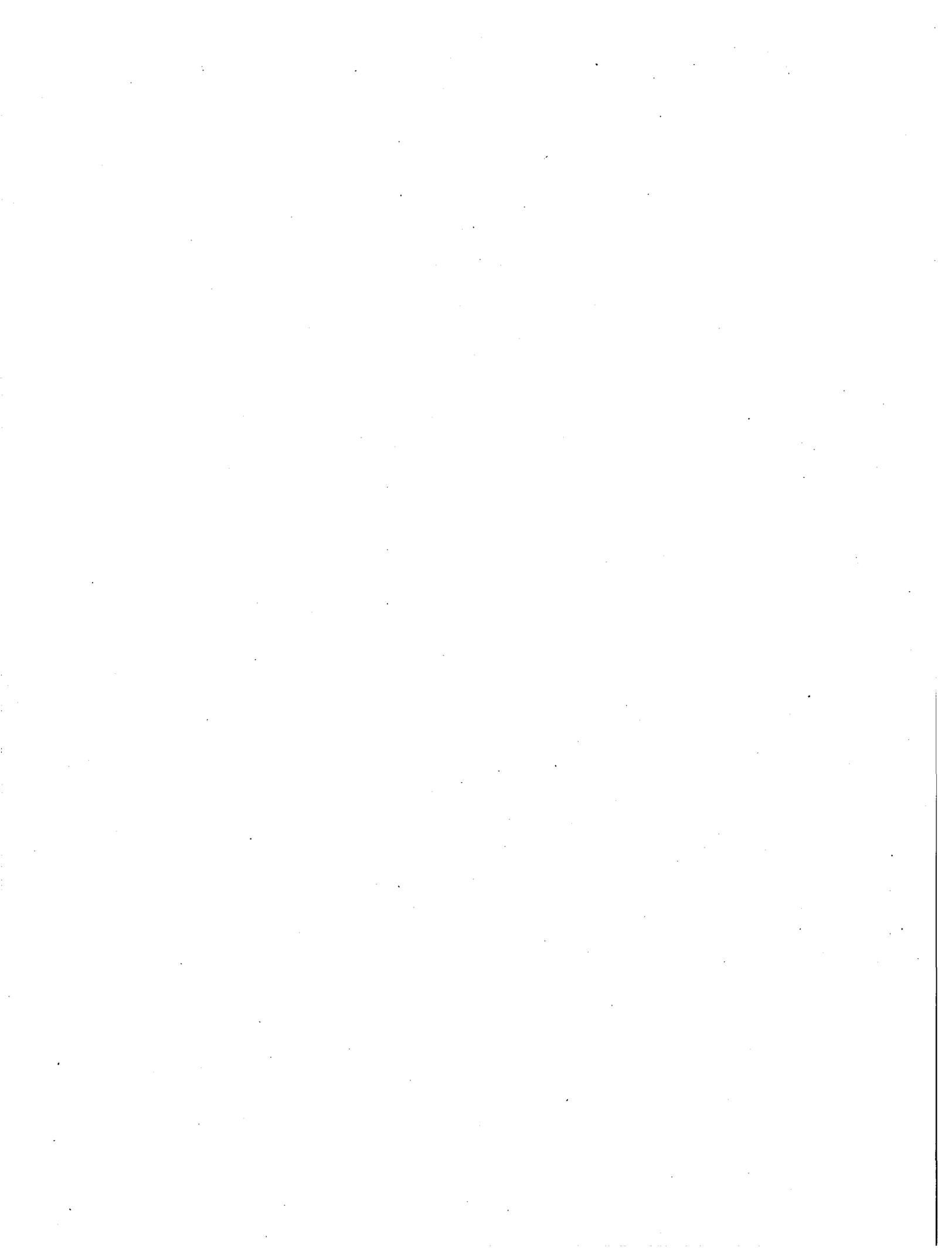


TABLE 1. 1996 STATUS OF NORTHERN SOUTHEAST ENHANCEMENT PROJECTS - SUMMARY

CHINOOK SALMON

PROJECTED FULL PRODUCTION

CURRENT PRODUCTION

OPERATIONAL PROJECTS	UNIT	PRODUCTION BASIS	TOTAL RETURN	COMMON PROPERTY HARVEST	RETURN YEAR	TOTAL RETURN	COMMON PROPERTY HARVEST
SHELDON JACKSON COLLEGE HATCHERY	OUTER COAST	EGGS 100,000	1,860	1,081	1996	1,392	1,233
LITTLE PORT WALTER RESEARCH STATION	OUTER COAST	SMOLT 250,000	7,500	3,540	1996	4,054	2,554
MEDVEJIE CENTRAL INCUBATION FACILITY	OUTER COAST	EGGS 2,000,000	22,000	9,632	1996	38,293	9,748
HIDDEN FALLS HATCHERY	ICY/CHATHAM	EGGS 1,650,000	32,550	7,774	1996	36,071	28,267
SNETTISHAM HATCHERY	STEPHENS PASSAGE	PROGRAM DISCONTINUED IN 1993	N/A	N/A	1996	1,295	NO DATA
GASTINEAU HATCHERY	STEPHENS PASSAGE	EGGS 700,000	13,020	4,661	1996	5,823	2,949
PORT ARMSTRONG HATCHERY	OUTER COAST	EGGS 2,000,000	37,200		1996	N/A	N/A
BURRO CREEK HATCHERY	LYNN CANAL	EGGS 50,000	930	478	1996	55	25
<b>TOTAL OF CURRENT PROJECTS</b>			<b>115,060</b>	<b>27,166</b>	<b>1996</b>	<b>86,983</b>	<b>44,776</b>

TABLE 2. SHELDON JACKSON COLLEGE  
UNIT: OUTER COAST

CHINOOK SALMON

PRODUCTION TO DATE

RELEASE DATA

RETURN DATA

BROOD YEAR	NUMBER EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEARS	ESCAPEMENT	C.P. HARVEST	TOTAL RETURN	HARVEST RATE
1984	61,128	SMOLT	54,164	1988	22	0	22	0
1985	49,603	SMOLT	47,000	1989	163	13	176	7.0
1986	48,753	SMOLT	30,000	1990	260	91	351	25.9%
1987	100,000	SMOLT	96,692	1991	376	129	505	25.5%
1988	130,000	SMOLT	100,482	1992	196	241	437	55.2%
1989	58,173	SMOLT	50,538	1993	504	420	924	45.6%
1990	155,000	SMOLT	94,092	1994	742	538	1,280	42.0%
1991	129,696	SMOLT	89,443	1995	320	706	1,194	59.1%
1992	144,942	SMOLT	103,391	1996	159	1,233	1,392	88.6%
1993	146,681	SMOLT	78,358					
1994	121,044	SMOLT	57,792					
1995	127,659							
1996	150,655							

5-YEAR AVERAGE (1992-1996)

58.1%

PROJECTED PRODUCTION AT FULL CAPACITY

PRODUCTION BASIS	ASSUMED SURVIVAL TO SMOLT	# OF SMOLT	ASSUMED % SURVIVAL TO ADULT	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
EGGS 100,000	62%	62,000	3%	1,860	58.1%	1,081

TABLE 3. LITTLE PORT WALTER RESEARCH STATION  
UNIT: OUTER COAST  
CHINOOK SALMON

PRODUCTION TO DATE

RELEASE DATA

RETURN DATA

BROOD YEAR	NUMBER EGGS <sup>1</sup>	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEARS	ESCAPEMENT <sup>2</sup>	C.P. HARVEST	TOTAL RETURN <sup>1</sup>	HARVEST RATE
1979	33,900	SMOLT	30,600	1982	944	487	1,431	66.0%
1980	24,800	SMOLT	20,300	1983	788	662	1,450	46.5%
1981	355,300 <sup>2</sup>	SMOLT & FRY*	144,000	1984	1,262	713	1,975	39.2%
1982	246,499	SMOLT	175,300	1985	1,328	1,527	2,855	60.1%
1983	413,900	SMOLT & FRY*	334,700	1986	3,756 <sup>3</sup>	2,701	6,457	44.1%
1984	514,700 <sup>2</sup>	SMOLT	175,400	1987	5,349 <sup>3</sup>	4,178	9,527	41.1%
1985	554,000	SMOLT	315,142	1988	4,143 <sup>3</sup>	3,449	7,592	35.0%
1986	600,000 <sup>2</sup>	SMOLT	377,300	1989	3,996 <sup>3</sup>	1,800	5,796	32.0%
1987	500,000 <sup>2</sup>	SMOLT	161,800	1990	2,349	4,148	6,497	63.8%
1988	391,000 <sup>2</sup>	SMOLT	166,000	1991	2,800	4,617	7,417	62.0%
1989	841,500	SMOLT	187,000	1992	1,655	1,371	3,026	45.3%
1990	1,056,000	SMOLT	300,000	1993	1,715	917	2,632	34.8%
1991	938,000	SMOLT	200,969	1994	2,134	1,636	3,770 <sup>3</sup>	43.4%
1992	1,309,000	SMOLT	150,413	1995	2,638	2,562	5,200	49.3%
1993	1,597,000	SMOLT	210,000	1996	1,500	2,554	4,054	63.0%
1994	1,874,500	SMOLT	147,659					
1995	2,161,500							
1996	629,428							

5-YEAR AVERAGE

47.2%

PROJECTED PRODUCTION AT FULL CAPACITY

PRODUCTION BASIS	# OF SMOLT	ASSUMED % SURVIVAL TO ADULT	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
SMOLT	250,000	3%	7,500	47.2%	3,540

<sup>1</sup> Includes 3-year-old males.

<sup>2</sup> Does not include eggs shipped to other facilities.

<sup>3</sup> Includes all jack returns

<sup>4</sup> Includes eggs for experimental purposes.

\*The release of fry is for research purposes and is not considered a significant factor in projected production at full capacity.

TABLE 4. MEDVEJIE CENTRAL INCUBATION FACILITY  
 UNIT: OUTER COAST  
CHINOOK SALMON

PRODUCTION TO DATE

RELEASE DATA				RETURN DATA				
BROOD YEAR	NUMBER EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEARS	ESCAPEMENT	C.P. HARVEST	TOTAL RETURN	HARVEST RATE
1982	46,500	SMOLT	26,600	1986	37	10	47	21.3%
1983	36,509	SMOLT	21,883	1987	179	105	284	37.0%
1984	163,500	SMOLT	108,041	1988	298	121	419	28.9%
1985	291,600	SMOLT	227,500	1989	225	44	269	16.4%
1986	228,059	SMOLT	174,600	1990	1,790	703	2,493	28.2%
1987	1,343,200	SMOLT	743,737	1991	5,230	1,687	6,917	24.4%
1988	1,423,380	SMOLT	920,994	1992	9,275	5,711	14,986	38.1%
1989	1,512,100	SMOLT	866,800	1993	12,630	6,567	19,197	34.2%
1990	1,561,000	SMOLT	1,144,800	1994	11,425	6,532	19,472	33.6%
1991	882,000	SMOLT	762,369	1995	26,575 <sup>1</sup>	20,077	46,652	43.0%
1992	1,599,000	SMOLT	720,681	1996	28,545	9,748	38,293	25.5%
1993	1,583,900	SMOLT	1,129,660					
1994	1,830,790	SMOLT	1,004,878					
1995	1,542,600	SMOLT						
1996	1,445,600							

5-YEAR AVERAGE

34.9%

PROJECTED PRODUCTION AT FULL CAPACITY

PRODUCTION BASIS	ASSUMED SURVIVAL TO SMOLT	# OF SMOLTS	ASSUMED % SURVIVAL TO ADULT	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
EGGS 2,000,000	69%	1,380,000	2%	27,600	34.9%	9,632

<sup>1</sup> includes 6,407 jacks

TABLE 5. HIDDEN FALLS HATCHERY  
UNIT: ICY/CHATHAM STRAIT  
CHINOOK SALMON

PRODUCTION TO DATE

RELEASE DATA

RETURN DATA

BROOD YEAR	NUMBER EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEARS	ESCAPEMENT	C.P. HARVEST	TOTAL RETURN	HARVEST RATE
1981	475,084	SMOLT	80,460	1985	20	76	96	79.2%
1982	78,554	SMOLT	70,000	1986	7	243	250	97.2%
1983	136,000	SMOLT	96,956	1987	115	490	605	81.0%
1984	99,000	SMOLT	92,100	1988	302	190	492	38.6%
1985	339,000	FRY <sup>1</sup> SMOLT	181,000 <sup>1</sup> 97,984	1989	298	154	452	34.4%
1986	273,100	SMOLT	158,957	1990	286	473	759	62.3%
1987	419,000	SMOLT	343,752	1991	1,053	1,071	2,124	50.4%
1988	470,000 <sup>3</sup>	SMOLT FED FRY <sup>4</sup>	310,783 29,402 <sup>2</sup>	1992	1,584	707	2,291	30.9%
1989	448,246	SMOLT	184,468	1993	1,358	409	1,767	23.2%
1990	2,895,570 <sup>5</sup>	SMOLT	1,554,068	1994	3,916	2,603	6,519	40.0%
1991	2,681,789 <sup>6</sup>	SMOLT	1,754,555	1995	11,360	20,503	31,863	64.4%
1992	2,019,282	SMOLT	1,053,038	1996	7,804	28,267	36,071	78.4%
1993	1,858,732	SMOLT	924,022					
1994	1,608,717	SMOLT	888,538					
1995	1,471,330							
1996	1,411,194							

5-YEAR AVERAGE

47.4%

PROJECTED PRODUCTION AT FULL CAPACITY

PRODUCTION BASIS	ASSUMED SURVIVAL TO SMOLT	# OF SMOLT	ASSUMED % SURVIVAL TO ADULT	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
EGGS 1,650,000	62%	1,023,000	1.5%	15,345	47.4%	7,774

<sup>1</sup> Release of fry is for research purposes and is not considered a significant factor in "Projected Production at Full Capacity."

<sup>2</sup> Released into Eliza Lake and Indian River. <sup>3</sup> Includes 40,685 Tahini stock taken at Lutak Inlet for release as smolts at Hidden Falls.

<sup>4</sup> Released into Farragut River. <sup>5</sup> Includes 30,238 Tahini stock taken at Skagway for release as smolts at Hidden Falls.

<sup>6</sup> Includes 56,964 Tahini stock taken at Skagway for release as smolts at Hidden Falls.

TABLE 6. SNETTISHAM HATCHERY  
UNIT: STEPHENS PASSAGE  
CHINOOK SALMON

PRODUCTION TO DATE

RELEASE DATA

RETURN DATA

BROOD YEAR	NUMBER EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEARS	ESCAPEMENT	C.P. HARVEST	TOTAL RETURN	HARVEST RATE
1977	66,315	SMOLT	19,029	1981	2	5	7	71.4%
1978	0		0	1982	0	0	0	N/A
1979	86,300	SMOLT	26,746	1983	21	9	30	30.0%
1980	66,100	SMOLT	39,200	1984	30	290	320	90.6%
1981	500,041	SMOLT	234,000	1985	81	395	476	83.0%
1982	405,144	SMOLT	286,000	1986	180	780	960	81.3%
1983	141,600	SMOLT	108,900	1987	649	2,095	2,744	76.4%
1984	1,191,600	SMOLT AND FRY*	1,305,000 <sup>1</sup>	1988	486	1,614	2,100	76.9%
1985	5,740,000	SMOLT	1,047,000	1989	347	1,579	1,926	82.0%
1986	1,459,000	SMOLT	430,000	1990	1,035	4,527	5,562	81.4%
1987	4,200,000	SMOLT AND FRY*	1,503,941	1991	963	2,987	3,950	75.6%
1988	4,492,000	SMOLT AGE-2 SMOLT	1,603,888 307,000	1992	696	8,291	8,987	92.3%
1989	266,000	SMOLT	91,200	1993	1,504	11,042	12,546	88.0%
1990	2,227,000	SMOLT <sup>3</sup>	286,000	1994	1,498	8,557	10,055	85.1%
1991	3,850,000		1,590,000	1995	NO DATA	NO DATA	NO DATA	
1992	688,000			1996	N/A	1,295	N/A	
1993	PROGRAM	DISCONTINUED						

5-YEAR AVERAGE (1990-1994)

84.5%

PROJECTED PRODUCTION AT FULL CAPACITY

PRODUCTION BASIS	ASSUMED SURVIVAL TO SMOLT	# OF SMOLT	ASSUMED % SURVIVAL TO ADULT	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
EGGS 3,240,000	62%	2,008,800	3%	60,264	84.5%	50,923

<sup>1</sup> Includes 911,000 fed fry released into Redoubt Lake and smolt released at four Juneau locations.

<sup>2</sup> Includes 269,000 fry released into Indian River near Tenakee.

\*Release of fry is for research purposes and is not considered a significant factor in "Projected Production at Full Capacity."

<sup>3</sup> 306,701 smolts released at Port Armstrong in June 1992 (transferred from Snettisham in May 1992 @ 7g).

TABLE 7. GASTINEAU HATCHERY - DIPAC  
 UNIT: STEPHENS PASSAGE  
CHINOOK SALMON

PRODUCTION TO DATE

RELEASE DATA

RETURN DATA

BROOD YEAR	NUMBER EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEARS	ESCAPEMENT	C.P. HARVEST	TOTAL RETURN	HARVEST RATE
1987			11,000 <sup>1</sup>					
1988	200,000 <sup>2</sup>	SMOLT	101,476	1991	95			
1989	50,000	SMOLT	43,596	1992	160	1	161	N/A
1990	213,271	SMOLT	191,765	1993	519	268	785	34.1%
1991	242,104 <sup>3</sup>	FED FRY SMOLT	107,399 210,915	1994	2,266	797	3,063	26.0%
1992	289,494	FED FRY SMOLT	24,057 6,216	1995	2,810	1,354	4,164	32.5%
1993	494,532 <sup>4</sup>	SMOLT	187,210 394,743 <sup>7</sup> 3,983	1996	2,874	2,949	5,823	50.6%
1994	1,504,814 <sup>5</sup>		313,219					
1995	1,525,373 <sup>6</sup>							
1996	764,307 <sup>8</sup>							

AVERAGE

35.8%

PROJECTED PRODUCTION AT FULL CAPACITY

PRODUCTION BASIS	ASSUMED SURVIVAL TO SMOLT	# OF SMOLT	ASSUMED % SURVIVAL TO ADULT	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
EGGS 700,000	62%	434,000	3%	13,020	35.8%	4,661

<sup>1</sup> Smolt transferred from Snettisham Hatchery. <sup>2</sup> Eggs taken at Snettisham for transfer to Gastineau as smolt in 1990. <sup>3</sup> Includes 115,180 eggs for incubation under contract with FRED Division. <sup>4</sup> Includes 208,500 eggs from Little Port Walter and 30,450 eggs from Big Boulder Creek under contract with Sport Fish Division. <sup>5</sup> Includes 464,360 eggs for NSRAA and 429,545 eyed eggs from Little Port Walter. <sup>6</sup> Includes 279,395 eggs from Little Port Walter. <sup>7</sup> Received from Snettisham on 7/7/94 & transferred to Fish Creek and Auke Bay net pen sites. <sup>8</sup> Includes 135,887 eggs from Little Port Walter.

TABLE 8. PORT ARMSTRONG HATCHERY  
UNIT: OUTER COAST  
CHINOOK SALMON

PRODUCTION TO DATE

RELEASE DATA				RETURN DATA				
BROOD YEAR	NUMBER EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEARS	ESCAPEMENT	C.P. HARVEST	TOTAL RETURN	HARVEST RATE
1985	74,444 <sup>1</sup>	SMOLT	70,000	1988	283	3		
1986	80,000	SMOLT	76,000 <sup>2</sup>	1989	213	8	281	24.1%
1987	130,000	SMOLT	89,942	1990	419	477	896	53.2%
1988	166,000	SMOLT	144,323	1991	199	134	333	40.2%
1989	154,588	SMOLT	62,176	1992	734	987	1,721	57.4%
1990	336,316 <sup>3</sup>	SMOLT	395,665 <sup>5</sup>	1993	1,753	679	2,432	27.9%
1991	32,800 <sup>4</sup>	SMOLT	1,275,000 <sup>6</sup>	1994	329	527	925	57.2%
1992	NONE	SMOLT		1995	304	653	957	68.2%
1993	NONE			1996	N/A	N/A	N/A	N/A
1994	NONE							
1995	NONE							
1996	NONE							

5-YEAR AVERAGE

50.2%

PROJECTED PRODUCTION AT FULL CAPACITY

PRODUCTION BASIS	ASSUMED SURVIVAL TO SMOLT	# OF SMOLTS	ASSUMED % SURVIVAL TO ADULT	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
EGGS 2,000,000	62%	1,240,000	3%	37,200	50.2%	18,674

<sup>1</sup> Based on 90% survival to emergent fry. 67,000 fry received at Port Armstrong from Little Port Walter. <sup>2</sup> Released as Age-0 smolts. <sup>3</sup> 176,000 eggs from Little Port Walter destroyed October 8, 1990, because of high rate of bacterial kidney disease (BKD). <sup>4</sup> All fish died because of pipeline failures; 42,111 fry received from Little Port Walter on 3/26/92. <sup>5</sup> BY 1990 Crystal Lake\Unuk River smolts transferred from Snettisham Hatchery from 10 to 15 May, kept in net pens for 1 month, and released at Port Armstrong; also 88,964 BY 1990 Little Port Walter smolts released May 26 at Port Armstrong. <sup>6</sup> These fish were transferred at 5.9 grams from Snettisham in early May 1993, reared in saltwater netpens with freshwater lens for one month, and released.

TABLE 9. BURRO CREEK HATCHERY  
UNIT: LYNN CANAL

CHINOOK SALMON

PRODUCTION TO DATE

RELEASE DATA

RETURN DATA

BROOD YEAR	NUMBER EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEARS	ESCAPEMENT	C.P. HARVEST	TOTAL RETURN	HARVEST RATE
1990	10,000	SMOLT	7,084	1994	32	N/A	N/A	N/A
1991	24,000 <sup>1</sup>	SMOLT	8,500	1995	9	12	21	57.1%
1992	18,000 <sup>1</sup>	SMOLT	8,749	1996	30	25	55	45.6%
1993	5,400 <sup>1</sup>	SMOLT	1,903					
1994	66,369	SMOLT	34,895					
1995	21,677							
1996	50,000							

Average

51.4%

PROJECTED PRODUCTION AT FULL CAPACITY (Based on release of smolt.)

PRODUCTION BASIS	ASSUMED SURVIVAL TO SMOLT	# OF SMOLTS	ASSUMED % SURVIVAL TO ADULT	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
EGGS 50,000	62%	31,000	3%	930	51.4%	478

<sup>1</sup> Eyed eggs (Tahini stock) from Hidden Falls.

TABLE 10. OTHER STOCKING PROJECTS

CHINOOK SALMON

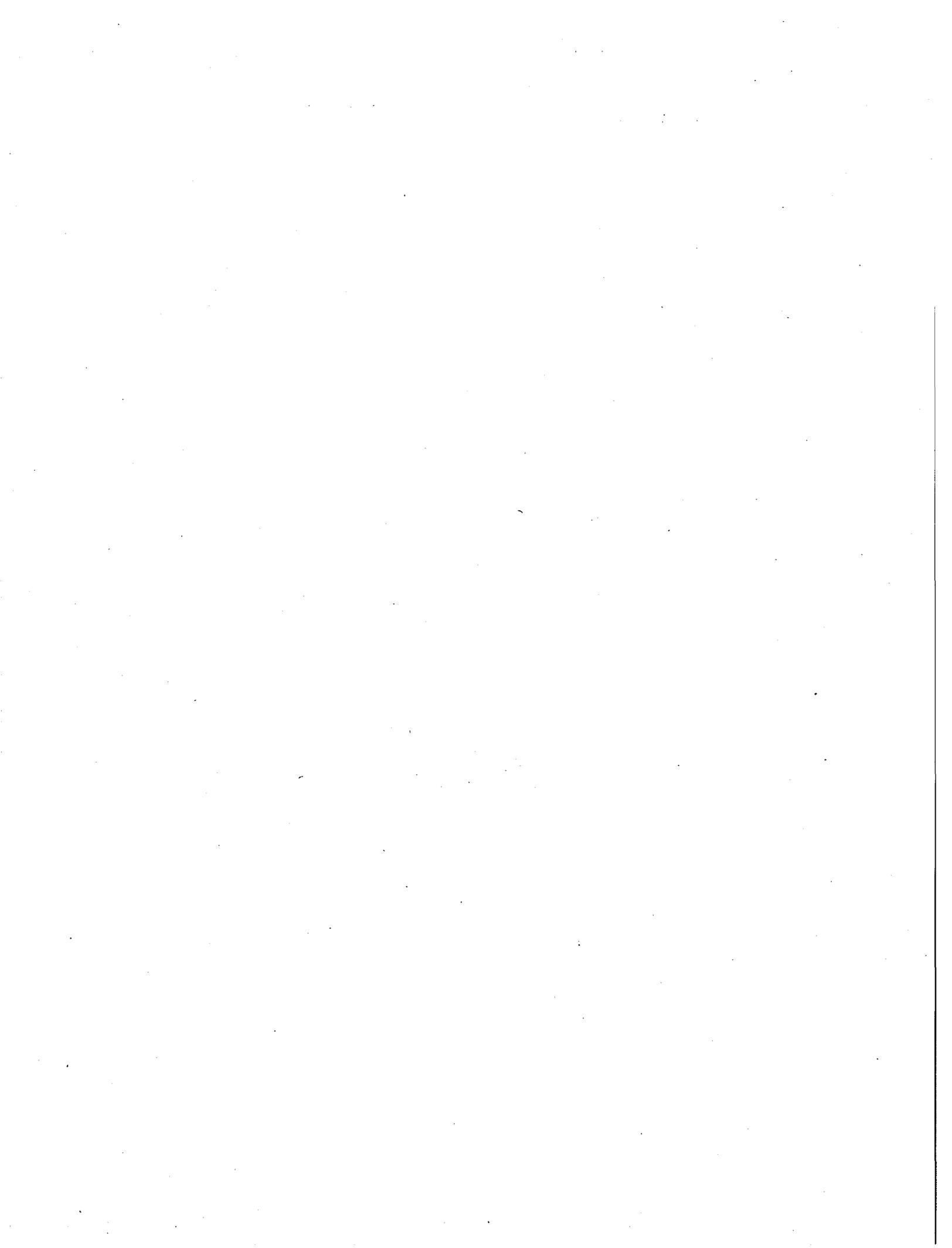
PRODUCTION TO DATE

BROOD YEAR	LIFE STAGE AT RELEASE	NUMBER TAGGED	NUMBER RELEASED	RETURN YEARS	RELEASE SITE	FACILITY	ORIGIN
1991	SMOLT	NONE	10,000	N/A	TWIN LAKES	SNETTISHAM	CRYSTAL CREEK
1991	FED FRY	43,018	44,820	1996-2000	BIG BOULDER	INCUBATION BOX	BIG BOULDER
1992	SMOLT	40,510	141,000	1997-2001	AUKE BAY	SNETTISHAM	CRYSTAL CREEK
1992	SMOLT	40,390	143,000	1997-2001	FISH CREEK	SNETTISHAM	CRYSTAL CREEK
1992	FED FRY	21,775	23,387	1997-2001	BIG BOULDER	GASTINEAU	BIG BOULDER
1992	FRY	NONE	25,500	1997-2001	BIG BOULDER	GASTINEAU	BIG BOULDER
1993	FED FRY	20,841	283,000	1998-2002	INDIAN LAKE	SNETTISHAM	CRYSTAL CREEK
1992	SMOLT	37,779	38,789	1997-2001	TAIYA INLET	JERRY MYERS	HIDDEN FALLS
1992	SMOLT	8,749	8,749	1997-2001	TAIYA INLET	HIDDEN FALLS	HIDDEN FALLS
1993	FRY	26,546	28,062	1998-2002	BIG BOULDER	GASTINEAU	BIG BOULDER
1993	FED FRY	52,589	125,200	1998-2002	FARRAGUT LAKE	CRYSTAL LAKE	FARRAGUT RIVER
1993	FRY	23,939	24,329	1998-2002	BIG BOULDER	INCUBATION BOX	BIG BOULDER
1994	FRY	42,491	44,060	1999-2003	BIG BOULDER	INCUBATION BOX	BIG BOULDER
1995	FRY	58,556	62,015	2000-2004	BIG BOULDER	INCUBATION BOX	BIG BOULDER
1994	SMOLT	1,402	1,507	1999-2003	TAIYA INLET	JERRY MYERS	HIDDEN FALLS

**NORTHERN SOUTHEAST ALASKA ENHANCEMENT PROJECTS**

**COHO**

**1996**



**TABLE 11. 1996 STATUS OF NORTHERN SOUTHEAST ENHANCEMENT PROJECTS - SUMMARY**  
COHO SALMON

PROJECTED FULL PRODUCTION

CURRENT PRODUCTION

OPERATIONAL PROJECTS	UNIT	PRODUCTION BASIS	TOTAL RETURN	COMMON PROPERTY HARVEST	RETURN YEAR	TOTAL RETURN	COMMON PROPERTY HARVEST
MEDVEJIE CIF/LAKE REARING	OUTER COAST	EGGS 2,900,000	113,970	77,044	1996	145,023	99,694
MEDVEJIE CIF/SMOLT PRODUCTION	OUTER COAST	EGGS 400,000	33,600	30,845	1996	12,668	11,973
SHELDON JACKSON COLLEGE HATCHERY	OUTER COAST	EGGS 150,000	4,650	2,641	1996	1,246	914
DIPAC/GASTINEAU HATCHERY	STEPHENS PASSAGE	EGGS 1,500,000	46,500	28,133	1996	69,832	39,666
BURRO CREEK FARMS	LYNN CANAL	EGGS 50,000	1,550	956	1996	NO DATA	NO DATA
HIDDEN FALLS HATCHERY	ICY/CHATHAM	EGGS 1,700,000	495,900	282,663	1996	191,063	115,839
PORT ARMSTRONG HATCHERY	OUTER COAST	EGGS 1,500,000	46,500	28,458	1996	32,443	22,289
<b>TOTAL OF CURRENT PROJECTS</b>			<b>742,670</b>	<b>450,740</b>	<b>1996</b>	<b>452,275</b>	<b>290,375</b>

TABLE 12. MEDVEJE CENTRAL INCUBATION FACILITY  
LAKE REARING  
UNIT: OUTER COAST  
COHO SALMON

PRODUCTION TO DATE

RELEASE DATA				RETURN DATA				
BROOD YEAR	NUMBER GREEN EGGS	NUMBER STOCKED	NUMBER OUTMIGRATED	RETURN YEARS	ESCAPEMENT	C.P. HARVEST	TOTAL RETURN	HARVEST RATE
1981	156,675	112,686	78,379	1984	5,687	6,396	12,083	52.9%
1982	226,000	115,250 <sup>2</sup>	7,750 <sup>1</sup>	1985	185	424	609	69.6%
1983	236,000	188,603	106,864	1986	899	893	1,792	49.8%
1984	1,453,200	1,067,952	340,336	1987	11,238	11,856	23,094	51.4%
1985	75,100	69,974	35,383	1988	1,742	1,350	3,092	43.7%
1986	988,000	842,900	370,485	1989	13,782	12,259	26,041	47.1%
1987	1,026,300	915,269	486,986	1990	26,424	34,525	60,949	56.6%
1988	1,506,000	1,443,500	680,000	1991	70,700	99,600	170,300	59.0%
1989	1,907,900	1,741,500	737,337	1992	44,660	91,100	135,000	67.5%
1990	2,396,000	1,875,000	591,835	1993	20,115	56,350	76,500	73.7%
1991	2,627,855	2,280,000	1,031,536	1994	95,153	168,663	263,816	63.9%
1992	2,741,100	2,330,000	1,131,975	1995	49,384 <sup>3</sup>	89,443	138,827	64.4%
1993	2,359,300	2,076,000	1,490,772	1996	45,329	99,694	145,023	68.7%
1994	2,573,600	2,425,000	1,665,000					
1995	2,700,000	2,392,000						
1996	2,800,000							

5-YEAR AVERAGE

67.6%

PROJECTED PRODUCTION AT FULL CAPACITY

PRODUCTION BASIS	ASSUMED SURVIVAL TO FRY	# OF FRY	ASSUMED % SURVIVAL TO SMOLT	# OF SMOLTS	ASSUMED SURVIVAL TO ADULT	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
EGGS 2,900,000	78.6%	2,279,400	50%	1,139,700	10%	113,970	67.6%	77,044

<sup>1</sup> Losses primarily due to cestode infestation. <sup>2</sup> Losses (primarily eggs) destroyed due to parent with BKD. <sup>3</sup> Does not include jacks.

TABLE 13. MEDVEJIE CENTRAL INCUBATION FACILITY  
SMOLT RELEASES  
UNIT: OUTER COAST

COHO SALMON

PRODUCTION TO DATE

RELEASE DATA

RETURN DATA

BROOD YEAR	NUMBER EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEARS	ESCAPEMENT	C.P. HARVEST	TOTAL RETURN	HARVEST RATE
1988	145,600	SMOLT	119,897	1991	6,082	5,729	11,811	49.0%
1989	115,600	SMOLT	100,992	1992	395	6,529	6,924	94.3%
1990	162,000	SMOLT	138,895	1993	1,017	21,037	22,054	95.4%
1991	504,400	SMOLT	422,000	1994	701	61,410	62,111	98.9%
1992	241,000	SMOLT	209,910 <sup>1</sup>	1995	7,574	23,810	31,384	75.9%
1993	236,700	SMOLT	217,190 <sup>2</sup>	1996	695	11,973	12,668	94.5%
1994	258,000	SMOLT	237,541					
1995	297,000							
1996	257,300							

5-YEAR AVERAGE

91.8%

PROJECTED PRODUCTION AT FULL CAPACITY

PRODUCTION BASIS	ASSUMED SURVIVAL TO SMOLT	# OF SMOLTS	ASSUMED % SURVIVAL TO ADULT	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
EGGS 400,000	84%	336,000	10%	33,600	91.8%	30,845

<sup>1</sup> 4,990 released at Medvejie; 49,890 released at Deep Inlet; and 155,030 released at Shamrock Bay; does not include 1,900 fry released at Wrinklneck Creek  
<sup>2</sup> 41,900 released at Deep Inlet; 170,300 released at Shamrock Bay; and 4,990 released at Medvejie; does not include 2,176 fry released at Wrinklneck Creek

TABLE 14. SHELDON JACKSON COLLEGE  
UNIT: OUTER COAST  
COHO SALMON

PRODUCTION TO DATE

RELEASE DATA				RETURN DATA				
BROOD YEAR	NUMBER EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEARS	ESCAPEMENT	C.P. HARVEST	TOTAL RETURN	HARVEST RATE
1979	3,000	SMOLT	2,523	1982	12	7	19	36.8%
1980	32,983	SMOLT	8,769	1983	16	5	21	23.8%
1981	68,529	SMOLT	2,930	1984	95	58	153	37.9%
1982	72,935	SMOLT	54,695	1985	1,800	1,409	3,209	43.9%
1983	19,338	SMOLT	6,623	1986	161	168	329	51.1%
1984	103,519	SMOLT	86,366	1987	822	336	1,158	29.0%
1985	150,000	SMOLT	110,000	1988	1,286	1,077	2,363	45.6%
1986	168,000	SMOLT	100,000	1989	1,405	1,078	2,483	43.4%
1987	300,000	SMOLT	81,248	1990	520	690	1,210	57.0%
1988	140,000	SMOLT	43,863	1991	728	1,014	1,815	55.8%
1989	115,000	SMOLT	49,781	1992	1,534	1,507	3,041	49.6%
1990	120,400	SMOLT	70,669	1993	782	1,469	2,251	65.3%
1991	127,649	SMOLT	31,071 <sup>1</sup>	1994	334	446	780	57.2%
1992	163,995	SMOLT	96,134	1995	1,905	1,189	3,094	38.4%
1993	150,500	SMOLT	70,398	1996	332	914	1,246	73.4%
1994	157,700 <sup>2</sup>	SMOLT	46,468					
1995	194,318							
1996	117,382							

5-YEAR AVERAGE

56.8%

PROJECTED PRODUCTION AT FULL CAPACITY

PRODUCTION BASIS	ASSUMED SURVIVAL TO SMOLT	# OF SMOLTS	ASSUMED % SURVIVAL TO ADULT	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
EGGS 150,000	62%	93,000	5%	4,650	56.8%	2,641

<sup>1</sup> Severe Trichodina outbreak and inadequate formalin treatment caused 65% plus mortalities after ponding. <sup>2</sup> excessive mortality due to water shutoff 7/12/95 and 7/14/95.

TABLE 15. DIPAC/GASTINEAU HATCHERY  
UNIT: STEPHENS PASSAGE  
COHO SALMON

PRODUCTION TO DATE

RELEASE DATA

RETURN DATA

BROOD YEAR	NUMBER EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEARS	ESCAPEMENT	C.P. HARVEST	TOTAL RETURN	HARVEST RATE
1985	65,761	SMOLT	60,000	1988	678	723	1,401	51.6%
1986	77,000	SMOLT	68,500	1989	3,873	6,210	10,083	61.6%
1987	40,000	SMOLT	36,850	1990	1,132	2,313	3,445	67.1%
1988	1,095,270	FINGERLING SMOLT	100,765 1,079,473	1991	120,043	145,290	269,995	53.8%
1989	1,000,000	SMOLT	1,012,106	1992	72,766	109,415	182,181	60.1%
1990	1,110,348	SMOLT	976,963	1993	45,187	70,221	115,408	60.9%
1991	1,095,276	SMOLT	1,045,938	1994	53,618	124,084	177,702	69.8%
1992	1,126,160	FED FRY <sup>1</sup> SMOLT	2,000 943,853	1995	28,386	34,583	62,969	54.9%
1993	1,122,828	FED FRY SMOLT	126,265 1,038,214	1996	30,166	39,666	69,832	56.8%
1994	965,816	SMOLT	863,474					
1995	1,470,000							
1996	1,022,000							

5-YEAR AVERAGE

60.5%

PROJECTED PRODUCTION AT FULL CAPACITY

PRODUCTION BASIS	ASSUMED SURVIVAL TO SMOLT	# OF SMOLTS	ASSUMED % SURVIVAL TO ADULT	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
EGGS 1,500,000	62%	930,000	5%	46,500	60.5%	28,133

<sup>1</sup> Fed fry released into Picnic Creek, near Lena Cove, on 9/30/93 as part of a cooperative agreement between DIPAC and the U.S. Forest Service for the purpose of stock rebuilding.

TABLE 16. BURRO CREEK HATCHERY  
UNIT: LYNN CANAL  
COHO SALMON

PRODUCTION TO DATE

RELEASE DATA

RETURN DATA

BROOD YEAR	NUMBER EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEARS	ESCAPEMENT	C.P. HARVEST	TOTAL RETURN	HARVEST RATE
1986	5,000	SMOLT	4,516	1989	10	10	20	50.0%
1987	15,000	PRESMOLT	10,000	1990	10	10	20	50.0%
1988	50,000	EYED EGGS <sup>1</sup>	50,000	1991	592	592	1,184	50.0%
	13,000	SMOLT	11,000					
1989	20,000	SMOLT	7,718	1992	12	230	242	95.0%
1990	NONE	N/A	N/A	1993	52	102	154	66.2%
1991	50,000	SMOLT	38,062	1994	62	80	142	56.3%
1992	5,000	SMOLT	1,212	1995	364	254	618	41.1%
1993	15,000	SMOLT	10,000	1996	NO RETURN	NO DATA	N/A	N/A
1994	15,000	SMOLT	12,644					
1995	50,000							
1996	NONE							

5-YEAR AVERAGE

61.7%

PROJECTED PRODUCTION AT FULL CAPACITY

PRODUCTION BASIS	ASSUMED SURVIVAL TO FINGERLING	# OF FINGERLING	ASSUMED % SURVIVAL TO ADULT	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
EGGS 50,000	62%	31,000	5%	1,550	61.7%	956

<sup>1</sup> Eyed eggs released into Burro Creek on January 30, 1989, when hatchery froze.

<sup>2</sup> Fry obtained from DIPAC.

TABLE 17. HIDDEN FALLS HATCHERY  
UNIT: ICY/CHATHAM STRAIT

COHO SALMON

PRODUCTION TO DATE

RELEASE DATA

RETURN DATA

BROOD YEAR	NUMBER EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEARS	ESCAPEMENT	C.P. HARVEST	TOTAL RETURN	HARVEST RATE
1988	68,602	SMOLT	62,595	1991	5,270	4,892	10,162	48.1%
1989	70,076	SMOLT	64,155	1992	9,410	9,262	18,672	49.6%
1990	238,060	SMOLT	168,028	1993	10,658	22,778	33,436	68.1%
1991	475,195	SMOLT	461,169 <sup>1</sup>	1994	28,829	62,497	91,326	68.4%
1992	1,734,605	SMOLT	1,610,520	1995	145,205	90,467	235,672	38.4%
1993	2,718,450	SMOLT	1,458,667	1996	75,224	115,839	191,063	60.6%
1994	5,636,542 <sup>2</sup>	SMOLT	1,554,122					
1995	4,400,000							
1996	5,008,389							

5-YEAR AVERAGE

57.0%

PROJECTED PRODUCTION AT FULL CAPACITY

PRODUCTION BASIS	ASSUMED SURVIVAL TO SMOLT	# OF SMOLTS	ASSUMED % SURVIVAL TO ADULT	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
EGGS 5,700,000	87%	4,959,000	10%	495,900	57.0%	282,663

<sup>1</sup> 56,964 smolts shipped to Skagway for release; remainder released at Kasnyku Bay.

<sup>2</sup> includes 1,500,000 for Port Armstrong.

TABLE 18. PORT ARMSTRONG HATCHERY  
UNIT: OUTER COAST

COHO SALMON

PRODUCTION TO DATE

RELEASE DATA

RETURN DATA

BROOD YEAR	NUMBER EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEARS	ESCAPEMENT	C.P. HARVEST	TOTAL RETURN	HARVEST RATE
1988	140,000	SMOLT	121,730	1991	13,620	13,370	27,090	49.7%
1989	280,000	SMOLT	206,724	1992	13,653	26,487	40,140	66.0%
1990	255,000	SMOLT	164,766	1993	4,108	7,375	11,483	64.2%
1991	613,500	SMOLT	81,673 <sup>1</sup>	1994	1,286	2,519	3,805	66.2%
1992	800,500	SMOLT	828,200	1995	50,834	35,425	86,259	41.1%
1993	880,000	SMOLT	611,763 <sup>2</sup>	1996	10,154	22,289	32,443	68.7%
1994	1,020,000	SMOLT	1,384,037 <sup>3</sup>					
1995	2,014,000							
1996	1,853,000							

5-YEAR AVERAGE

61.2%

PROJECTED PRODUCTION AT FULL CAPACITY

PRODUCTION BASIS	ASSUMED SURVIVAL TO SMOLT	# OF SMOLT	ASSUMED % SURVIVAL TO ADULT	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
EGGS 1,500,000	62%	930,000	5%	46,500	61.2%	28,458

<sup>1</sup> chronic mortalities associated with gas bubble disease; majority of mortalities caused by loss of water in raceways when two pipelines froze up during severe winter weather conditions.

<sup>2</sup> 174, 441 Hidden Falls brood stock; 437,322 Port Armstrong brood stock. <sup>3</sup> 751,566 Port Armstrong, 632,451 Hidden Falls brood stock.

TABLE 19. GUNNUK CREEK HATCHERY  
UNIT: FREDERICK SOUND

COHO SALMON

PRODUCTION TO DATE

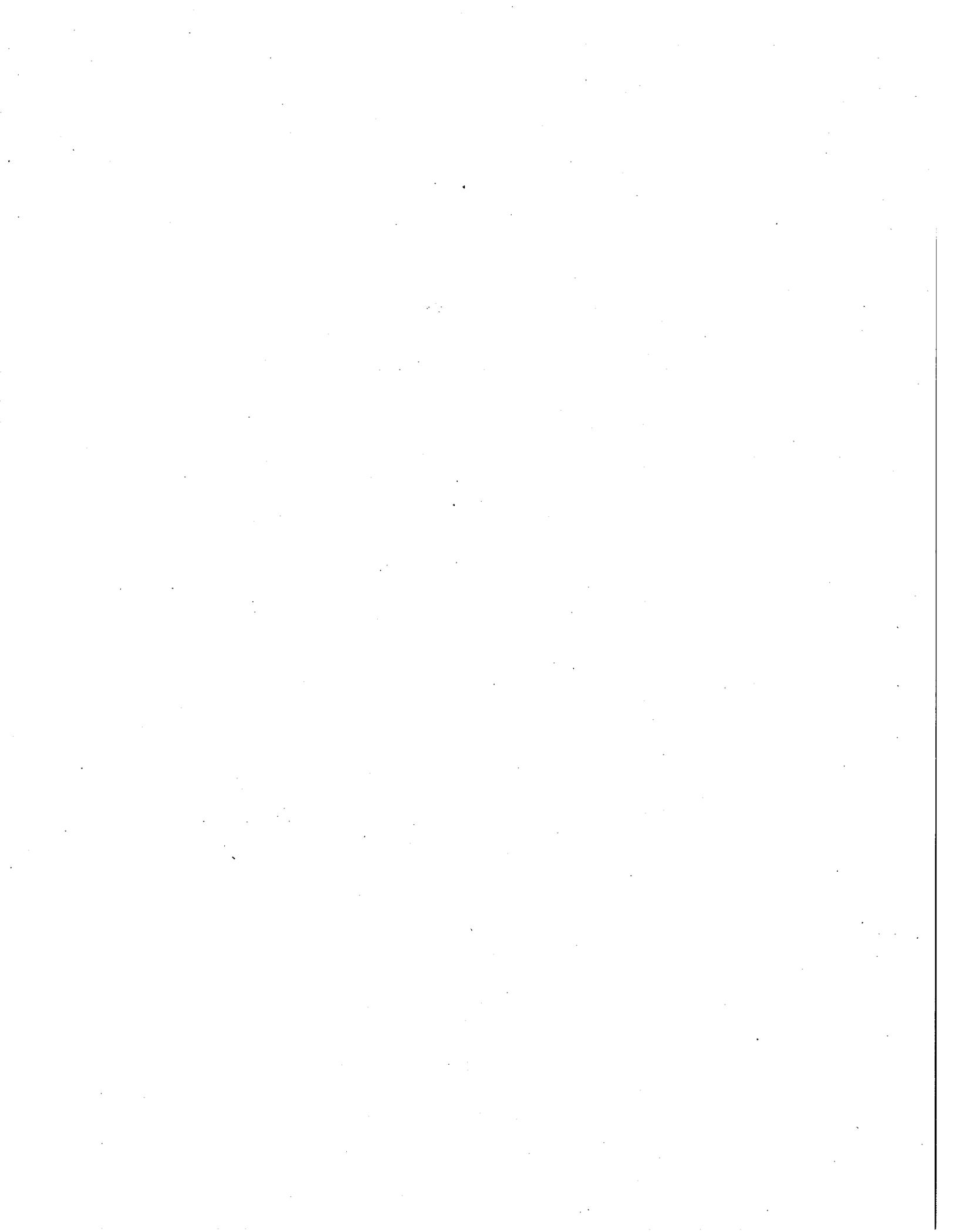
RELEASE DATA

RETURN DATA

BROOD YEAR	NUMBER EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEARS	ESCAPEMENT	C.P. HARVEST	TOTAL RETURN	HARVEST RATE
1994	49,566	FED FRY	39,218	1996				
1995	40,300	FED FRY	36,325					
1996	NO EGG TAKE							

PROJECTED PRODUCTION AT FULL CAPACITY

PRODUCTION BASIS	ASSUMED SURVIVAL TO SMOLT	# OF SMOLT	ASSUMED % SURVIVAL TO ADULT	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
EGGS 250,000	62%	155,000	3%	4,650		



**NORTHERN SOUTHEAST ALASKA ENHANCEMENT PROJECTS**

**SOCKEYE**

**1996**

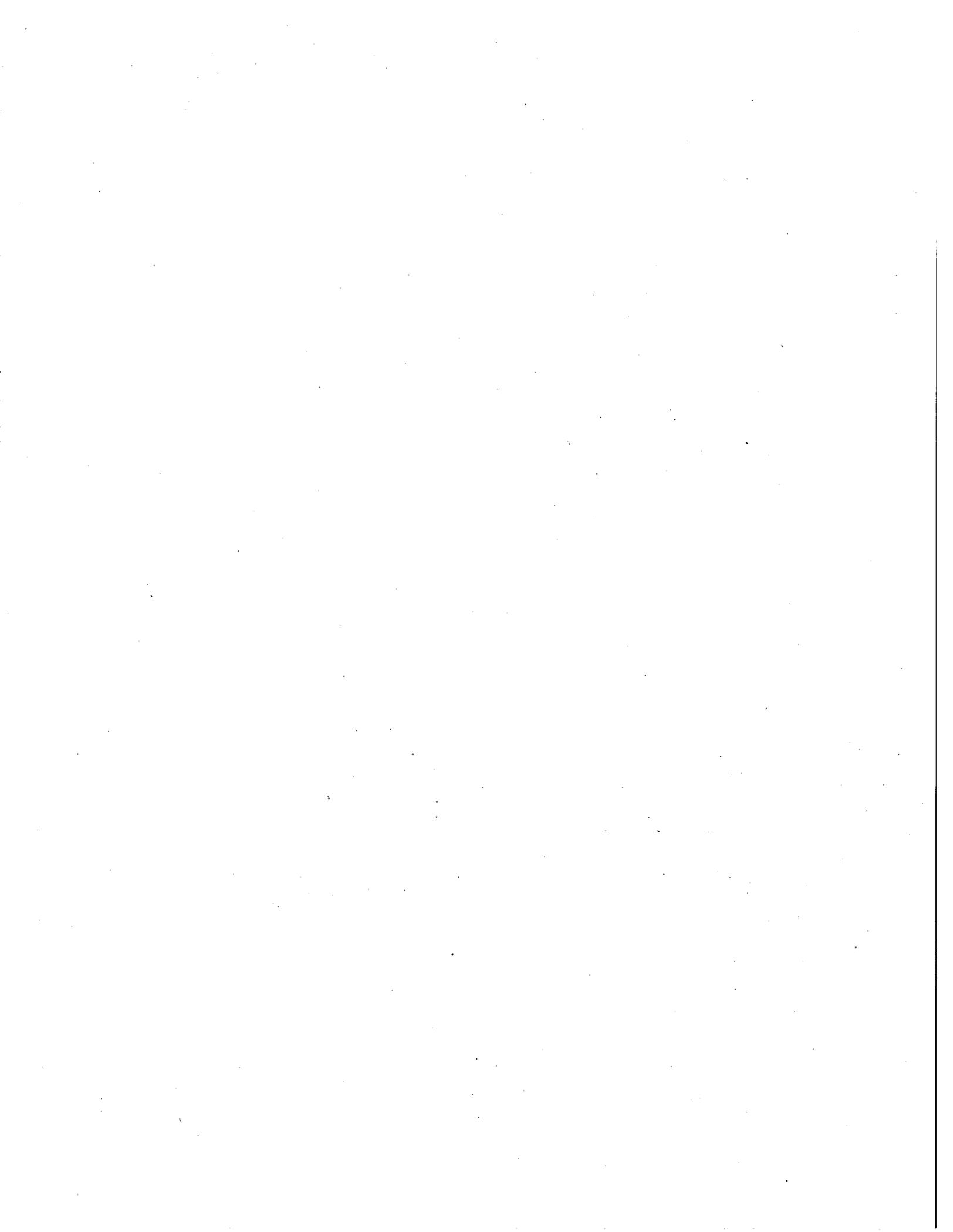


TABLE 20. 1995 STATUS OF NORTHERN SOUTHEAST ENHANCEMENT PROJECTS - SUMMARY

SOCKEYE SALMON

PROJECTED FULL PRODUCTION

CURRENT PRODUCTION

OPERATIONAL PROJECTS	UNIT	PRODUCTION BASIS	TOTAL RETURN	COMMON PROPERTY HARVEST	RETURN YEAR	TOTAL RETURN	COMMON PROPERTY HARVEST
REDOUBT LAKE FERTILIZATION	OUTER COAST	EVM UNITS <sup>1</sup>	325,000	N/A	1996	22,196 <sup>2</sup>	3,265
SNETTISHAM HATCHERY	STEPHENS PASSAGE	27,000,000 EGGS	486,000	308,124	1996	51,417	19,735
HAINES 17 MILE, 31 MILE AND CHILKAT LAKE INCUBATION PROJECT	LYNN CANAL	2,000,000	42,000	18,942	1996	7,515	4,346
<b>TOTAL OF CURRENT PROJECTS</b>			<b>853,000</b>	<b>327,066</b>	<b>1996</b>	<b>81,128</b>	<b>27,346</b>

<sup>1</sup> CFMD Division estimate based on euphotic volume model (EVM).

<sup>2</sup> Based on reported subsistence harvest of 3,265 and an escapement of 18,931.

TABLE 21. SNETTISHAM HATCHERY  
UNIT: STEPHENS PASSAGE  
SOCKEYE SALMON

PRODUCTION TO DATE

RELEASE DATA					RETURN DATA					
BROOD YEAR	BROOD ORIGIN (LAKE)	# OF EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RELEASE SITE (DATE)	RETURN YEAR	ESCAPEMENT	C.P. HARVEST	TOTAL RETURN	HARVEST RATE
1990	SPEEL	2,338,000	FRY	1,310,000	SWEETHEART (91)	1994	10,206	31,016	41,222	75.2%
	CRESCENT	813,000	FRY	388,000	CRESCENT (91)					
			PRESMOLT	69,000	CRESCENT (91)					
	TAHLTAN	4,511,000	FRY	3,585,000	TAHLTAN (91)					
	TRAPPER	2,314,000	FRY	934,000	TRAPPER (91)					
	TATSAMENIE	985,000	FRY	673,000	TATSAMENIE (91)					
1991	CRESCENT	1,114,000	FRY	552,000	CRESCENT (92)	1995	19,073	62,726	81,799	76.7%
			SMOLT	155,000	CRESCENT (93)					
	TAHLTAN	4,246,000	FRY	3,048,000	TAHLTAN (92)					
	TRAPPER	2,953,000	FRY	1,811,000	TRAPPER (92)					
		TATSAMENIE	1,360,000	FRY	1,232,000					
1992	SPEEL	2,851,000	SMOLT	2,006,579	SPEEL (94)	1996	31,682	19,735	51,417	38.4%
	CRESCENT	1,498,000	FRY	766,903	SWEETHEART (93)					
			SMOLT	334,000	GILBERT BAY (94)					
	TAHLTAN	5,384,000	FRY		TAHLTAN (93)					
	TATSAMENIE	1,628,000	FRY	909,000	TATSAMENIE (93)					
	TRAPPER	2,579,000	FRY	1,113,000	TRAPPER (93)					
1993	SPEEL	1,874,000	SMOLT	860,000	SNETTISHAM					
			SMOLT	149,000	SPEEL					
	CRESCENT	2,636,000	FRY	1,740,000	CRESCENT (94)					
			SMOLT	204,000	GILBERT BAY					
	TAHLTAN	6,140,000	FRY	5,595,000	TAHLTAN/TUYA (94)					
	TATSAMENIE	1,144,000	FRY	521,000	TATSAMENIE (94)					
	TRAPPER	1,174,000	FRY	916,000	TRAPPER (94)					
	CHILKAT	5,401,000	FRY	4,818,000	CHILKAT (94)					
1994	SPEEL	1,388,000	SMOLT	631,000	SPEEL/SNETTISHAM					
	CRESCENT	578,000	PRESMOLT	455,000	CRESCENT/GILBERT B					
	TAHLTAN	4,183,000	FRY	3,410,000	TAHLTAN/TUYA					
	TATSAMENIE	1,229,000	FRY	898,000	TATSAMENIE					
	TRAPPER	1,061,955	FRY	773,000	TRAPPER					
		CHILKAT	5,401,000	FRY	2,394,000					
1995	SPEEL	3,065,000	SMOLT		SPEEL/SNETTISHAM					
	CRESCENT	1,059,000	FRY	728,800	SWEETHEART					
	TAHLTAN	6,891,000	FRY	2,296,000	TAHLTAN					
	TATSAMENIE	2,407,000	FRY	2,000,000	TATSAMENIE					
		CHILKAT	6,155,000	FRY	2,691,000					
1996	SPEEL	7,095,790								
	CHILKAT	6,040,800								
	TAHLTAN	6,153,700								
	TATSAMENIE	4,976,000								

34

AVERAGE  
PROJECTED PRODUCTION AT FULL CAPACITY

63.4%

PRODUCTION BASIS	ASSUMED % ADULT SURVIVAL	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
EGGS 27,000,000	1.8% <sup>1</sup>	486,000	63.4%	308,124

<sup>1</sup> assumed survival for lake-stocked fry is 1.8%; survivals (and therefore returns) would be higher for smolt and presmolt programs.

TABLE 22. HAINES 17 MILE, 31 MILE AND CHILKAT LAKE<sup>1</sup>  
UNIT: LYNN CANAL

SOCKEYE SALMON

PRODUCTION TO DATE

BROOD YEAR	# OF EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEAR	ESCAPEMENT	C.P. HARVEST	TOTAL RETURN	HARVEST RATE
1992	408,000	UNFED FRY	201,753 <sup>1</sup>	1993	N/A	N/A	N/A	N/A
1993	602,000	UNFED FRY	588,000	1994	2,434	1,632	4,066	40.1%
1994	598,500	UNFED FRY	550,700	1995	2,507	1,504	4,011	37.5%
1995	612,000	UNFED FRY	295,638 <sup>1</sup>	1996	3,169	4,346	7,515	57.8%
1996	616,000	UNFED FRY						

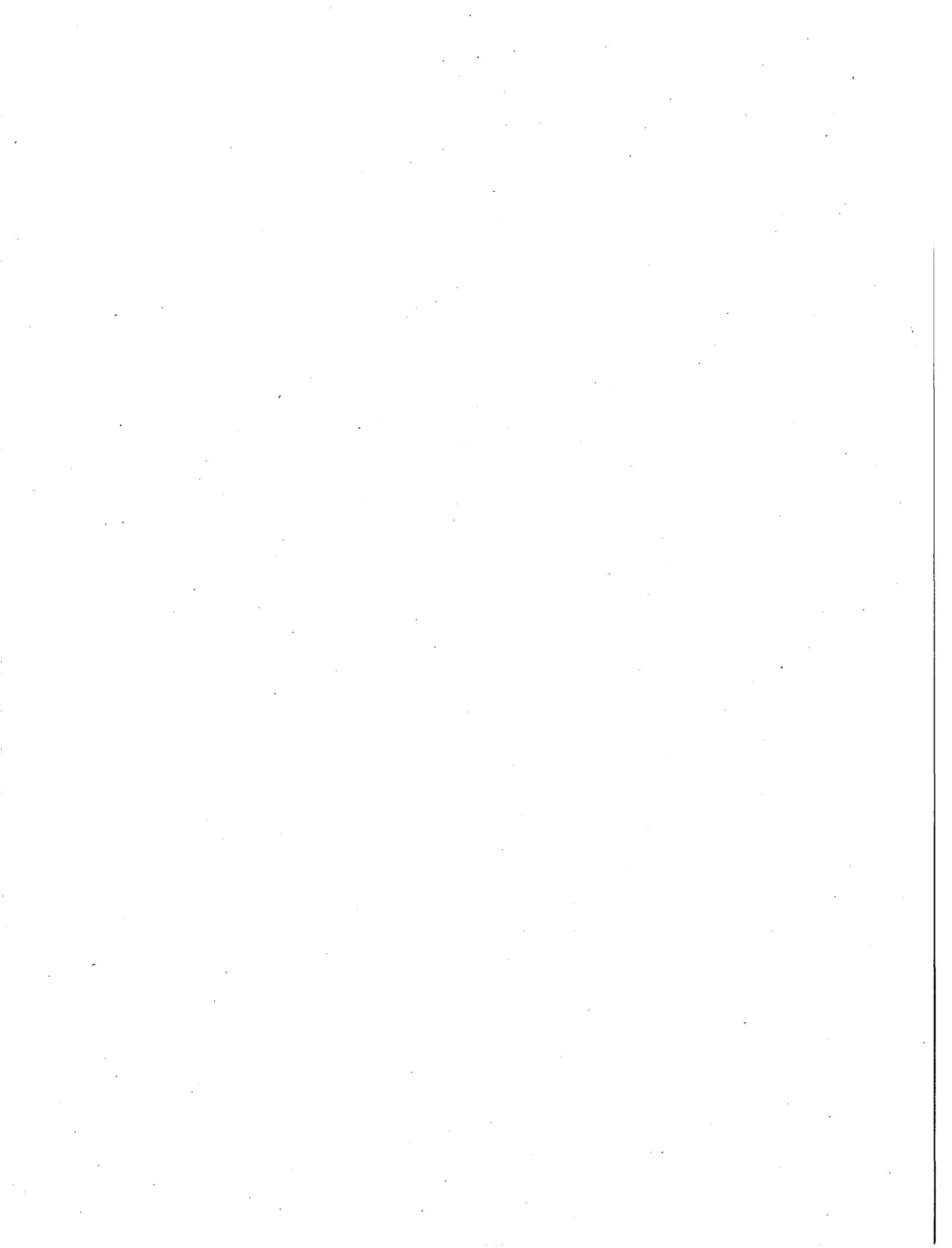
AVERAGE

45.1%

PROJECTED PRODUCTION AT FULL CAPACITY

PRODUCTION BASIS	ASSUMED % ADULT SURVIVAL	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
EGGS 2,000,000	2.1%	42,000	45.1%	18,942

<sup>1</sup>one incubator lost.



**NORTHERN SOUTHEAST ALASKA ENHANCEMENT PROJECTS**

**PINK**

**1996**

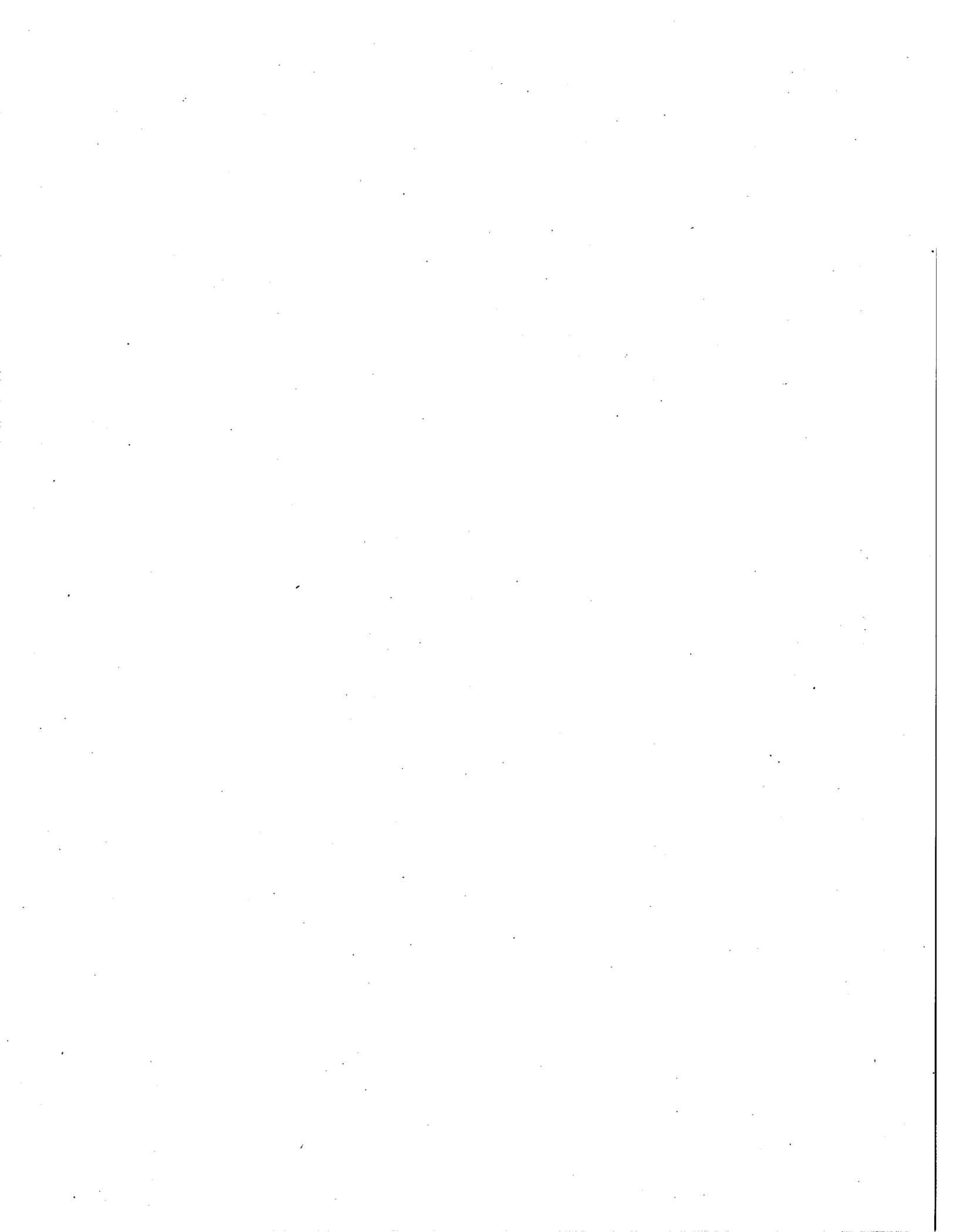


TABLE 23. 1996 STATUS OF NORTHERN SOUTHEAST ENHANCEMENT PROJECTS - SUMMARY

PINK SALMON

PROJECTED FULL PRODUCTION

CURRENT PRODUCTION

OPERATIONAL PROJECTS	UNIT	PRODUCTION BASIS	TOTAL RETURN	COMMON PROPERTY HARVEST	RETURN YEAR	TOTAL RETURN	COMMON PROPERTY HARVEST
AUKE BAY LABORATORY	STEPHENS PASSAGE	N/A	N/A	N/A	1996	3,160	N/A
SHELDON JACKSON COLLEGE HATCHERY	OUTER COAST	EGGS 14,000,000	215,600	78,694	1996	390,384	171,175
DIPAC HATCHERIES (3)	STEPHENS PASSAGE	EGGS 50,000,000 <sup>1</sup>	506,250 <sup>2</sup>	N/A	1996	22,126	N/A
BURRO CREEK FARMS	LYNN CANAL	EGGS 5,000,000	332,500	160,598	1996	1,666	800
GUNNUK CREEK HATCHERY	FREDERICK SOUND	EGGS 5,500,000	84,700	N/A	1996	N/A	N/A
PORT ARMSTRONG HATCHERY	OUTER COAST	EGGS 55,000,000	1,309,000	446,369	1996	1,559,572	533,191
MEDVEJIE CIF	OUTER COAST	EGGS 300,000	4,620	N/A	N/A	N/A	N/A
<b>TOTAL OF CURRENT PROJECTS</b>			<b>2,452,670</b>	<b>685,661</b>	<b>1996</b>	<b>1,976,908</b>	<b>705,166</b>

<sup>1</sup> Combined capacity with Sheep Creek, Kowee Creek, and Gastineau Hatcheries.

<sup>2</sup> Average return for odd- and even-year production.

<sup>3</sup> Common property harvest data is lacking or incomplete.

TABLE 24. AUKE BAY LABORATORY  
 UNIT: STEPHENS PASSAGE

PINK SALMON

PRODUCTION TO DATE

RELEASE DATA

RETURN DATA

BROOD YEAR	NUMBER EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEARS	ESCAPEMENT	C.P. HARVEST	TOTAL RETURN	HARVEST RATE
1995	1,000,000	FRY	776,000	1995	22,167	NO DATA	NO DATA	N/A
1996	NONE	N/A	N/A	1996	3,160	NO DATA	NO DATA	N/A

TABLE 25. SHELDON JACKSON COLLEGE  
UNIT: OUTER COAST  
PINK SALMON

PRODUCTION TO DATE

RELEASE DATA

RETURN DATA

BROOD YEAR	NUMBER EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEARS	ESCAPEMENT	C.P. HARVEST	TOTAL RETURN	HARVEST RATE
1976	1,949,664	UNFED FRY	1,593,184	1978	5,735	N/A	5,735	
1977	10,226,500	UNFED FRY	7,259,016	1979	60,000	N/A	60,000	
1978	2,477,472	UNFED FRY	2,376,944	1980	5,538	N/A	5,538	
1979	9,551,000	UNFED FRY	7,883,250	1981	195,000	N/A	195,000	
1980	2,258,968	UNFED FRY	2,062,139	1982	50,500	1,500 <sup>1</sup>	52,000	
1981	13,697,711	UNFED FRY	10,689,600	1983	160,165	N/A	160,165	
1982	13,774,600	UNFED FRY	9,993,123	1984	166,405	N/A	166,405	
1983	15,637,021	FED/UNFED FRY	14,536,624	1985	237,875	68,897	305,522	22.6%
1984	12,248,695	FED/UNFED FRY	11,070,423	1986	51,973	4,500	56,473	8.0%
1985	11,340,011	UNFED FRY	10,050,822	1987	65,000	1,100	2,100	1.7%
1986	15,015,110	FED/UNFED FRY	14,200,000	1988	8,563	400	8,963	4.5%
1987	14,780,000	FED/UNFED FRY	14,250,000	1989	9,437	563	10,000	5.6%
1988	3,260,000	FED FRY	2,947,500	1990	7,016	234	7,250	3.2%
1989	5,846,122	FED/UNFED FRY <sup>2</sup>	5,400,000	1991	22,587	107	22,744	N/A
1990	3,000,000	FED FRY	2,500,000	1992	18,665	175	18,840	N/A
1991	9,517,109	FED FRY	9,040,000	1993	3,729	28	3,757	N/A
1992	7,236,522	FED FRY	6,790,873	1994	149,482	150,037	297,719	50.4%
1993	916,619	FED FRY	347,000	1995	20,279	3,644	23,923	15.2%
1994	10,800,604	FED FRY	7,130,000	1996	219,209	171,175	390,384	43.9%
1995	8,911,063	FED FRY	7,900,000					
1996	12,518,798							

3-YEAR AVERAGE (1994-1996)

36.5%

PROJECTED PRODUCTION AT FULL CAPACITY

PRODUCTION BASIS	ASSUMED SURVIVAL TO FINGERLING	# OF FINGERLINGS	ASSUMED % SURVIVAL TO ADULT	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
EGGS 14,000,000 <sup>3</sup>	77%	10,780,000	2%	215,600	36.5%	78,694

<sup>1</sup> Sport catch from beach. Commercial catch unknown.

<sup>2</sup> 600,000 unfed fry.

<sup>3</sup> Permitted for 20 million pink/chum, with 6 million chum maximum.

<sup>4</sup> Excludes harvest rates for 1991, 1992, and 1993 that were less than 1%

TABLE 26. MEDVEJIE CENTRAL INCUBATION FACILITY  
UNIT: OUTER COAST

PINK SALMON<sup>1</sup>

PRODUCTION TO DATE

RELEASE DATA

RETURN DATA

BROOD YEAR	NUMBER EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEARS	ESCAPEMENT	C.P. HARVEST	TOTAL RETURN	HARVEST RATE
1991	333,000	UNFED FRY FED FRY	32,000 132,000					
1992	146,000	UNFED FRY	131,600					
1993	48,800	UNFED FRY	31,600					
1994	214,600	UNFED FRY	193,000					
1995	194,700	UNFED FRY	185,900					
1996	338,400	UNFED FRY						

42

PROJECTED PRODUCTION AT FULL CAPACITY

PRODUCTION BASIS	ASSUMED SURVIVAL TO FED FRY	# OF FED FRY	ASSUMED % SURVIVAL TO ADULT	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
EGGS 300,000	77%	231,000	2%	4,620	N/A	N/A

<sup>1</sup> For mitigation of Medvejie Creek.

TABLE 27. SHEEP CREEK, KOWEE CREEK AND GASTINEAU HATCHERIES -- DIPAC<sup>1</sup>

UNIT: STEPHENS PASSAGE

PINK SALMON

PRODUCTION TO DATE

RELEASE DATA

RETURN DATA

BROOD YEAR	NUMBER EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEARS	ESCAPEMENT	C.P. HARVEST <sup>2</sup>	SHA TOTAL RETURN <sup>3</sup>	HARVEST RATE <sup>2</sup>
1979	2,800,500		2,057,152	1981	14,000	N/A	14,000	N/A
1980	3,525,000		3,181,680	1982	16,337	N/A	16,337	N/A
1981	13,180,224		12,020,310	1983	106,000	N/A	106,000	N/A
1982	18,807,420		17,678,975	1984	60,000	N/A	60,000	N/A
1983	40,808,141	FED FRY	38,364,894	1985	442,731	N/A	442,731	N/A
1984	20,152,543	FED FRY	18,931,380	1986	22,577	N/A	22,577	N/A
1985	38,096,796	FED/UNFED FRY	36,895,252	1987	794,750	N/A	794,750	N/A
1986	9,695,196	FED FRY	8,360,000	1988	37,109	N/A	37,109	N/A
1987	42,200,000	FED FRY	41,630,000	1989	77,184	N/A	83,699	N/A
1988	17,111,000	FED FRY	15,032,297	1990	61,203	N/A	65,485	N/A
1989	27,944,844	FED FRY	27,685,924	1991	332,338	N/A	342,338	N/A
1990	32,226,896	FED FRY	31,104,382	1992	972,925	N/A	972,925	N/A
1991	50,858,829	FED FRY	47,282,692	1993	28,075	N/A	28,992	N/A
1992	51,011,430	FED FRY	48,429,147	1994	2,766,100	N/A	2,776,998	N/A
1993	9,946,543	FED FRY	8,923,682	1995	78,780	N/A	78,780	N/A
1994	8,992,749	FED FRY	8,539,515	1996	22,126	N/A	22,126	N/A
1995	9,028,003	FED FRY	8,743,899					
1996	6,022,970							

43

PROJECTED PRODUCTION AT FULL CAPACITY

PRODUCTION BASIS	ASSUMED SURVIVAL TO FINGERLING	# OF FINGERLING	ASSUMED % SURVIVAL TO ADULT	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
EGGS 50,000,000 <sup>4</sup>	90%	45,000,000	0.25% even 2.00% odd	112,500 900,000	N/A	N/A

<sup>1</sup> Since 1990 Kowee Creek Hatchery has been used by the University of Alaska for research; production has been transferred to Gastineau & Sheep Creek hatcheries.

<sup>2</sup> Common property harvest data is lacking or incomplete.

<sup>3</sup> Special Harvest Area (SHA) return includes sport harvest estimates from 1989 on.

<sup>4</sup> Permit for 50,000,000 pink salmon eggs combined for all three facilities.

TABLE 28. BURRO CREEK HATCHERY  
UNIT: LYNN CANAL  
PINK SALMON

PRODUCTION TO DATE

RELEASE DATA

RETURN DATA

BROOD YEAR	NUMBER EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEARS	ESCAPEMENT	C.P. HARVEST	TOTAL RETURN	HARVEST RATE
1980	870,400	ALEVIN <sup>1</sup>	652,800	1982	2,450	N/A	2,450	
1981	1,107,000	ALEVIN <sup>1</sup>	1,009,850 <sup>2</sup>	1983	5,000	N/A	5,000	
1982	841,100	FED FRY	640,000	1984	3,500	N/A	3,500	
1983	1,725,750	FED FRY	1,386,511	1985	33,050	N/A	33,050	
1984	1,521,000	FED FRY	1,445,560	1986	2,288	2,288	4,576	50.0%
1985	2,359,400	FED FRY	2,242,374	1987	4,800	4,700	9,500	49.5%
1986	711,080	FED FRY	670,000	1988	7,300	7,400	14,700	50.3%
1987	2,530,000	FED FRY	2,330,000	1989	2,186	2,186	4,372	50.0%
1988	4,550,000	UNFED FRY <sup>3</sup>	685,284	1990	1,202	1,202	2,404	50.0%
1989	3,189,000	UNFED FRY	2,281,968	1991	506	506	1,012	50.0%
1990	2,106,797	UNFED FRY	1,695,199	1992	4,000	4,000	8,000	50.0%
1991	272,270	UNFED FRY	242,871	1993	3	3	6	50.0%
1992	1,932,000	UNFED FRY	1,582,300	1994	2,442	2,442	4,884	50.0%
1993	1,400	UNFED FRY	251,372 <sup>5</sup>	1995	1,289	1,000	2,289	43.7%
1994	1,044,000	FED FRY	471,105	1996	866	800	1,666	48.0%
1995	506,634	FED FRY	461,442					
1996	456,784							

5-YEAR AVERAGE

48.3%

PROJECTED PRODUCTION AT FULL CAPACITY

PRODUCTION BASIS	ASSUMED SURVIVAL TO EMERGENT FRY	# OF EMERGENT FRY	ASSUMED % SURVIVAL TO ADULT	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
EGGS 5,000,000 <sup>4</sup>	95%	4,750,000	0.7	332,500	48.3%	160,598

<sup>1</sup> Transplanted to Burro and Pullen Creeks when water supply froze.

<sup>2</sup> Number estimated from eyed egg count.

<sup>3</sup> Unfed fry released into Burro Creek on January 30, 1989, when hatchery froze.

<sup>4</sup> Currently permitted for 10,000,000 pink and chum combined, 5,000,000 each.

<sup>5</sup> Includes 250,000 DIPAC fry

TABLE 29. GUNNUK CREEK HATCHERY  
 UNIT: FREDERICK SOUND  
 PINK SALMON

PRODUCTION TO DATE

RELEASE DATA				RETURN DATA				
BROOD YEAR	NUMBER EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEARS	ESCAPEMENT	C.P. HARVEST	TOTAL RETURN	HARVEST RATE
1977	30,000	UNFED FRY	5,000	1979	N/A	N/A	N/A	
1980	16,000		0 <sup>1</sup>	1982	N/A	N/A	N/A	
1981	0 <sup>2</sup>		N/A	N/A	N/A	N/A	N/A	
1982	1,018,000	FED FRY	43,227	1984	1,000	N/A	1,000	
1983	1,044,000	FED FRY	103,322	1985	10,000	N/A	10,000	
1984	0	N/A	N/A	1986	11,222	300	11,522	2.6%
1985	3,300,356	FED FRY	3,066,000	1987	55,000	1,200	56,200	2.1%
1986	3,075,592	FED FRY	2,870,000	1988	39,000	450	40,100	1.1%
1987	4,500,000	FED FRY	4,160,000	1989	58,041	250	58,291	0.4%
1988	4,490,000	FED/UNFED FRY	4,193,240	1990	149,155	45,000	194,655	23.1%
1989	5,991,898	FED/UNFED FRY	3,882,526 <sup>3</sup>	1991	89,689	65,400	155,089	42.1%
1990	7,170,597	FED FRY	6,421,800	1992	69,516	92,340	161,856	57.1%
1991	5,980,478	FED FRY	5,600,720	1993	26,268	14,500	40,768	35.6%
1992	6,209,110	FED FRY	4,299,765	1994	129,410	176,310	305,720	57.7%
1993	2,267,315	UNFED FRY	1,995,945	1995	16,900	16,900	33,800	50.0%
1994-1996	NO EGG TAKES			NO RETURNS				

5-YEAR AVERAGE (1991-1995)

48.5%

PROJECTED PRODUCTION AT FULL CAPACITY

PRODUCTION BASIS	ASSUMED SURVIVAL TO FED FRY	# OF FED FRY	ASSUMED % SURVIVAL TO ADULT	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
EGGS 5,500,000	77%	4,235,000	2%	84,700	48.5%	41,080

<sup>1</sup> All destroyed due to bacterial septicemia.

<sup>2</sup> New hatchery construction in progress.

<sup>3</sup> Only 100,000 unfed fry released.

TABLE 30. PORT ARMSTRONG HATCHERY  
UNIT: OUTER COAST

PINK SALMON

PRODUCTION TO DATE

RELEASE DATA

RETURN DATA

BROOD YEAR	NUMBER EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEARS	ESCAPEMENT	C.P. HARVEST	TOTAL RETURN	HARVEST RATE
1983	9,000,000	UNFED FRY	7,400,000	1985	74,000	74,000	148,000	50.0%
1984	11,160,800	FED FRY	7,312,270	1986	30,098	30,098	60,196	50.0%
1985	13,623,330	FED FRY	9,763,780	1987	276,000	13,800	289,800	4.7%
1986	14,521,980	FED FRY	12,350,000	1988	24,100	4,200	28,300	14.8%
1987	20,960,000	FED FRY	19,370,000	1989	75,066	51,273	126,339	40.6%
1988	17,150,000	FED FRY	16,035,760	1990	903,378	210,035	1,113,413	18.9%
1989	24,004,010	FED FRY	22,420,0560	1991	1,097,622	287,530	1,385,152	20.7%
1990	60,156,640	FED FRY	50,115,670	1992	2,041,595	680,532	2,722,127	25.0%
1991	41,849,490	FED FRY	39,696,810	1993	358,967	119,656	478,623	25.0%
1992	58,322,360	FED FRY	51,188,670	1994	1,260,758	500,000	1,760,758	28.4%
1993	58,667,840	FED FRY	43,000,000	1995	551,354	792,600	1,343,954	59.0%
1994	59,448,000	FED FRY	53,839,000	1996	1,066,381	533,191	1,599,572	33.3%
1995	81,360,000	FED FRY	72,480,000					
1996	91,286,000	FED FRY						

5-YEAR AVERAGE

34.1%

PROJECTED PRODUCTION AT FULL CAPACITY

PRODUCTION BASIS	ASSUMED SURVIVAL TO FED FRY	# OF FED FRY	ASSUMED % SURVIVAL TO ADULT	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
EGGS 85,000,000	77%	65,450,000	2%	1,309,000	34.1%	446,369

**NORTHERN SOUTHEAST ALASKA ENHANCEMENT PROJECTS**

**CHUM**

**1996**

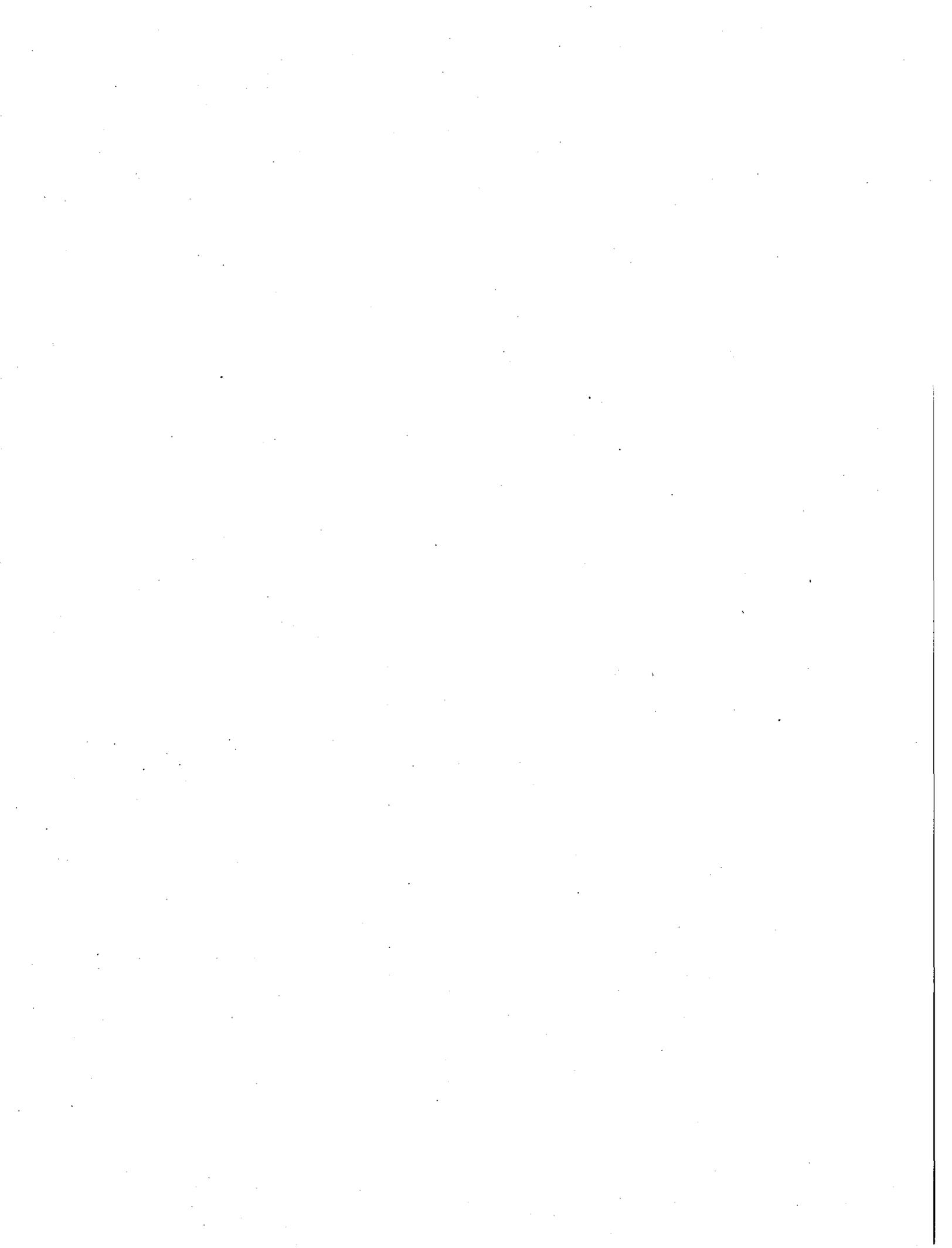


TABLE 31. 1996 STATUS OF NORTHERN SOUTHEAST ENHANCEMENT PROJECTS --SUMMARY

CHUM SALMON

PROJECTED FULL PRODUCTION

CURRENT PRODUCTION

OPERATIONAL PROJECTS	UNIT	PRODUCTION BASIS	TOTAL RETURN	COMMON PROPERTY HARVEST	RETURN YEAR	TOTAL RETURN	COMMON PROPERTY HARVEST
MEDVEJIE HATCHERY	OUTER COAST	EGGS 42,000,000	646,800	477,985	1996	2,819,499	2,350,106
SHELDON JACKSON COLLEGE HATCHERY	OUTER COAST	EGGS 6,000,000	92,400	46,385	1996	73	N/A
GUNNUK CREEK HATCHERY	FREDERICK SOUND	EGGS 59,500,000	916,300	147,524	1996	267,965	16,740
DIPAC HATCHERIES (GASTINEAU AND SHEEP CREEK)	STEPHENS PASSAGE/ LYNN CANAL	EGGS 141,000,000	1,903,500	966,978	1996	3,182,262	1,226,182
HIDDEN FALLS HATCHERY	ICY/CHATHAM	EGGS 141,000,000	2,171,400	1,797,919	1996	4,055,342	3,370,728
BURRO CREEK HATCHERY	LYNN CANAL	EGGS 5,000,000	350,000	157,150	1996	232	80
CHILKAT SPAWNING CHANNEL	LYNN CANAL	EGGS 5,000,000	10,000	N/A	1996	N/A	N/A
PORT CAMDEN INCUBATOR BOXES	FREDERICK SOUND	EGGS 10,000,000	60,200	N/A	1996	N/A	N/A
HERMAN CREEK SPAWNING CHANNEL	LYNN CANAL	EGGS 5,000,000	10,000	N/A	1996	N/A	N/A
HAINES 17/30/31 MILE INCUBATOR BOXES <sup>1</sup>	LYNN CANAL	EGGS 1,300,000	9,750	3,900	1996	N/A	N/A
<b>TOTAL OF CURRENT PROJECTS</b>			<b>6,170,350</b>	<b>3,597,841</b>	<b>1996</b>	<b>10,325,373</b>	<b>6,963,836</b>

<sup>1</sup> numbers listed for TOTAL RETURN and COMMON PROPERTY HARVEST represent all NSRAA chum salmon projects in Haines.

TABLE 32. MEDVEJIE CENTRAL INCUBATION FACILITY  
UNIT: OUTER COAST  
CHUM SALMON

PRODUCTION TO DATE

RELEASE DATA

RETURN DATA

BROOD YEAR	NUMBER EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEARS	ESCAPEMENT	C.P. HARVEST	TOTAL RETURN	HARVEST RATE
1981	255,855	FED FRY	233,697	1984	889	4	893	0.4%
1982	2,963,000	FED FRY	2,460,713	1985	39,300	606	39,906	1.5%
1983	2,643,000	FED FRY	2,558,282	1986	116,743	65,000	181,743	35.8%
1984	6,723,300	FED FRY	6,232,400	1987	126,400	7,300	433,700	1.7%
1985	26,796,800	FED FRY	25,223,405	1988	40,150	5,650	45,800	12.3%
1986	31,013,000	FED FRY	27,516,200	1989	100,833	30,574	131,407	23.3%
1987	28,650,000	FED FRY	28,140,000	1990	93,528	25,422	118,950	21.4%
1988	17,840,000	FED FRY	16,329,300	1991	53,962	0	53,962	0.0%
1989	38,269,000	FED FRY	34,405,100	1992	163,639	144,440	508,079	46.9%
1990	33,794,000	FED FRY	29,648,000 <sup>1</sup>	1993	350,798	1,283,576	1,634,554	78.5%
1991	26,500,000	FED FRY	23,354,400	1994	346,348	959,301	1,306,387	73.4%
1992	32,259,900	FED FRY	29,916,000	1995	164,005	1,122,806	1,286,811	87.3%
1993	31,839,300	FED FRY	29,264,800	1996	469,393	2,350,106	2,819,499	83.4%
1994	33,808,500 <sup>1</sup>	FED FRY	32,043,800					
1995	47,912,400 <sup>3</sup>	FED FRY	39,578,000					
1996	43,005,545 <sup>4</sup>							

5-YEAR AVERAGE (1992-1996)

73.9%

PROJECTED PRODUCTION AT FULL CAPACITY

PRODUCTION BASIS	ASSUMED SURVIVAL TO FINGERLING	# OF FINGERLING	ASSUMED % SURVIVAL TO ADULT	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
EGGS 42,000,000	77%	32,340,000	.02%	646,800	73.9%	477,985

<sup>1</sup> Includes 12,360,000 Hidden Falls chum. <sup>2</sup> 5-year average taken from 1989-1993 returns, excluding 1991 when no common-property harvest was indicated.

<sup>3</sup> Includes 14,000,000 Hidden Falls chum. <sup>4</sup> Includes 14,000,000 Hidden Falls chum and excludes 3,434,455 eggs shipped to SJC hatchery.

Table 33. SHELDON JACKSON COLLEGE HATCHERY  
UNIT: OUTER COAST  
CHUM SALMON

PRODUCTION TO DATE

RELEASE DATA

RETURN DATA

BROOD YEAR	NUMBER EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEARS	ESCAPEMENT	C.P. HARVEST	TOTAL RETURN	HARVEST RATE
1978	691,340	UNFED FRY	646,852	1981	219	N/A	N/A	
1980	118,000	FED FRY	84,072	1983	10	N/A	N/A	
1981	133,868	FED/UNFED FRY	84,970	1984	465	N/A	N/A	
1982	1,178,976	FED FRY	929,993	1985	601	N/A	N/A	
1983	792,556	FED FRY	551,150	1986	2,845	450	2,935	15.3%
1984	2,824,824	FED FRY	2,314,613	1987	4,300	0	4,300	N/A
1985	2,760,394	UNFED FRY	2,244,555	1988	1,823	0	1,823	N/A
1986	1,884,662	FED FRY	1,600,000	1989	444	6	450	1.3%
1987	690,000	FED FRY	450,000	1990	937	63	1,000	6.3%
1988	940,000	FED FRY	827,000	1991	23	0	23	N/A
1989	386,000	FED FRY	270,000	1992	132	0	132	N/A
1990	348,000	FED FRY	280,000	1993	1,459	1,470	2,929	50.2%
1991	4,985	FED FRY	4,000	1994	324	N/A	324	N/A
1992	95,604	FED FRY	88,000	1995	129	N/A	129	N/A
1993	896,400	FED FRY	201,000 <sup>1</sup>	1996	73	N/A	73	N/A
1994	217,672	FED FRY	182,000					
1995	3,583,168 <sup>2</sup>	FED FRY	3,540,000					
1996	3,455,249 <sup>3</sup>							

AVERAGE <sup>4</sup>

50.2%

PROJECTED PRODUCTION AT FULL CAPACITY

PRODUCTION BASIS	ASSUMED SURVIVAL TO FED FRY	# OF FED FRY	ASSUMED % SURVIVAL TO ADULT	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
EGGS 6,000,000	77%	4,620,000	.02%	92,400	50.2%	46,385

<sup>1</sup> poor survival due to very poor fertilization, water shut off, and egg tampering prior to eyed stage. <sup>2</sup> 3,496,900 eggs received from Medvejie. <sup>3</sup> 3,434,455 eggs received from Medvejie. <sup>4</sup> data insufficient for long-term average, so most recent 1993 harvest rate is used.

TABLE 34. GUNNUK CREEK HATCHERY  
 UNIT: FREDERICK SOUND  
 CHUM SALMON

PRODUCTION TO DATE

RELEASE DATA

RETURN DATA

BROOD YEAR	NUMBER EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEARS	ESCAPEMENT	C.P. HARVEST	TOTAL RETURN	HARVEST RATE
1979	16,000		1,000	1982	N/A	N/A	N/A	
1980	129,000		0 <sup>1</sup>	1983	0	N/A	N/A	
1981	0		0	1984	0	N/A	N/A	
1982	662,000	FINGERLING	8,651	1985	0	N/A	N/A	
1983	1,070,000		55,000	1986	292	30	322	9.3%
1984	2,443,107	UNFED FRY	1,982,000	1987	287	130	417	31.2%
1985	8,410,256	FED/UNFED FRY	8,108,715	1988	3,570	340	3,910	8.7%
1986	11,343,710	FED/UNFED FRY	10,810,000	1989	19,317	500	19,817	2.5%
1987	10,860,000	FED/UNFED FRY	10,750,000	1990	46,166	2,000	48,168	4.2%
1988	10,220,000	FED/UNFED FRY	9,879,298	1991	55,357	700	55,957	1.3%
1989	12,008,152 <sup>3</sup>	FED/UNFED FRY	5,643,978	1992	58,700	1,470	60,170	2.4%
1990	14,322,164	FED FRY	6,299,970	1993	54,917	19,169	74,086	25.9%
1991	14,255,795	FED/UNFED FRY	13,119,225	1994	39,512	31,673	71,185	44.5%
1992	16,495,105	UNFED FRY FED FRY	668,860 14,387,650	1995	114,109	1,600	115,709	1.4%
1993	16,291,285	UNFED FRY FED FRY	235,150 13,745,440	1996	251,225	16,740	267,965	6.2%
1994	20,952,435	UNFED FRY FED FRY	1,790,215 14,458,942					
1995	43,932,700	UNFED FRY FED FRY	958,100 35,659,070					
1996	51,741,779							

5-YEAR AVERAGE

16.1%

PROJECTED PRODUCTION AT FULL CAPACITY

PRODUCTION BASIS	ASSUMED SURVIVAL TO FED FRY	# OF FED FRY	ASSUMED % SURVIVAL TO ADULT	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
EGGS 59,500,000 <sup>2</sup>	77%	45,815,000	.02	916,300	16.1%	147,524

<sup>1</sup> All destroyed due to bacterial septicemia. <sup>2</sup> Pink/chum capacity of 65,000,000; up to 5,500,000 can be pinks.

<sup>3</sup> Chlorine contamination by City of Kake water treatment plant resulted in 50% egg mortality.

TABLE 35. DOUGLAS ISLAND PINK AND CHUM<sup>1</sup>  
 UNIT: STEPHENS PASSAGE/LYNN CANAL  
CHUM SALMON  
 (includes Sheep Creek and Gastineau Hatcheries)

PRODUCTION TO DATE

RELEASE DATA

RETURN DATA

BROOD YEAR	NUMBER EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEARS	ESCAPEMENT	C.P. HARVEST <sup>2</sup>	SHA TOTAL RETURN <sup>3</sup>	HARVEST RATE <sup>2</sup>
1979	251,108	UNFED FRY	224,014	1983	500	N/A	500	N/A
1980	965,718	UNFED FRY	954,281	1984	2,000	N/A	2,000	N/A
1981	764,000	UNFED FRY	619,882	1985	1,178	N/A	1,178	N/A
1982	1,106,000	UNFED FRY	1,026,258	1986	2,782	N/A	2,782	N/A
1983	1,307,660	UNFED FRY	1,229,920	1987	4,107	N/A	4,107	N/A
1984	4,582,713	FED FRY	4,291,652	1988	37,791	N/A	37,791	N/A
1985	7,220,550	FED FRY	6,810,463	1989	32,488	2,084	34,572	N/A
1986	19,910,000	FED FRY	18,900,000	1990	184,710	3,329	188,039	N/A
1987	19,750,000	FED FRY	18,350,000	1991	171,269	5,100	176,369	N/A
1988	48,738,140	FED FRY	43,924,642	1992	171,909	151,870	323,779	46.9%
1989	19,201,203	FED FRY	22,961,248 <sup>4</sup>	1993	78,796	177,628	256,474	69.3%
1990	99,861,851	FED FRY	102,230,000 <sup>5</sup>	1994	396,896	371,319	768,215	48.3%
1991	89,713,992	FED FRY	90,098,374 <sup>6</sup>	1995	347,844	N/A	347,844	N/A
1992	98,889,002	FED FRY	94,603,010 <sup>7</sup>	1996	1,956,080	1,226,182	3,182,262	38.5%
1993	74,177,586 <sup>8</sup>	FED FRY	67,620,503					
1994	117,749,973	FED FRY	82,343,380					
1995	98,898,678	FED FRY	114,587,018					
1996	125,475,155	FED FRY						

4-YEAR AVERAGE<sup>9</sup>

50.8%

PRODUCTION BASIS	ASSUMED SURVIVAL TO FED FRY	# OF FED FRY	ASSUMED % SURVIVAL TO ADULT	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
EGGS 141,000,000	90%	126,900,000	1.5%	1,903,500	50.8%	966,978

<sup>1</sup> Since 1990 Kowee Creek Hatchery has been a University of Alaska research facility and production has been transferred to Sheep and Gastineau Hatcheries.

<sup>2</sup> Common property harvest data is lacking or incomplete. <sup>3</sup> Special harvest area returns include sport fish harvest from 1984 onward.

<sup>4</sup> 9,021,460 fry were transferred from Snettisham Hatchery and not reflected in egg take. <sup>5</sup> 8,934,300 fry were transferred from Snettisham for Boat Harbor and Limestone releases and not reflected in egg take.

<sup>6</sup> 6,720,000 fry were transferred from Hidden Falls and not reflected in egg take. <sup>7</sup> Hidden Falls stock released at Boat Harbor (i.e., 9,545,112) are not included.

<sup>8</sup> Includes 10,253,292 eggs from Hidden Falls for release at Boat and Amalga Harbors. <sup>9</sup> Excludes 1995 return data.

TABLE 36. HIDDEN FALLS HATCHERY  
UNIT: ICY/CHATHAM STRAITS  
CHUM SALMON

PRODUCTION TO DATE

RELEASE DATA

RETURN DATA

BROOD YEAR	NUMBER EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEARS	ESCAPEMENT	C.P. HARVEST	TOTAL RETURN	HARVEST RATE
1978	2,524,577	FED/UNFED FRY	1,889,184	1981	3,436		3,431	
1979	4,255,954	FED/UNFED FRY	3,577,700	1982	40,056	17,974	58,030	30.9%
1980	9,929,196	FED/UNFED FRY	9,013,938	1983	43,000	72,334	118,587	70.0%
1981	11,921,742	FED/UNFED FRY	10,291,351	1984	60,000	561,793	616,193	91.2%
1982	23,224,924	FED/UNFED FRY	18,909,761	1985	70,000	380,567	450,587	84.5%
1983	31,800,000	FED/UNFED FRY	28,500,000	1986	70,500	594,819	664,813	89.5%
1984	35,900,000	FED/UNFED FRY	30,050,000	1987	87,000	434,453	543,639	79.9%
1985	58,000,000	FED/UNFED FRY	45,300,000	1988	216,377	205,594	421,971	49.0%
1986	65,600,000	FED FRY	40,330,000	1989	104,779	50,184	154,963	32.4%
1987	73,500,000	FED FRY	52,755,717	1990	222,131	257,600	479,731	53.7%
1988	67,800,000	FED FRY	60,737,000	1991	290,574	579,329	869,903	66.0%
1989	84,392,787	FED FRY	62,500,000	1992	288,890	724,849	1,013,739	71.5%
1990	92,147,569	FED FRY	64,275,400	1993	353,923	1,437,282	1,791,205	80.2%
1991	82,099,645 <sup>1</sup>	FED FRY	56,129,200	1994	352,597	2,855,275	3,207,872	89.0%
1992	91,190,098 <sup>2</sup>	FED FRY	62,442,800	1995	340,898	3,216,855	3,557,753	90.4%
1993	102,119,530	FED FRY	60,222,973	1996	684,614	3,370,728	4,055,342	83.1%
1994	93,370,000	FED FRY	70,989,750					
1995	94,812,522	FED FRY	76,671,678					
1996	83,793,600							

5-YEAR AVERAGE

82.8%

PROJECTED PRODUCTION AT FULL CAPACITY

PRODUCTION BASIS	ASSUMED SURVIVAL TO FED FRY	# OF FED FRY	ASSUMED % SURVIVAL TO ADULT	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
EGGS 141,000,000	77%	108,570,000	.02	2,171,400	82.8%	1,797,919

<sup>1</sup> 14,000,000 eggs transferred to Medveje Central Incubation Facility (MCIF).

<sup>2</sup> Includes 14,082,500 for MCIF and 10,060,300 for Boat Harbor.

TABLE 37. BURRO CREEK HATCHERY  
 UNIT: LYNN CANAL  
CHUM SALMON

PRODUCTION TO DATE

RELEASE DATA

RETURN DATA

BROOD YEAR	NUMBER EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEARS	ESCAPEMENT	C.P. HARVEST <sup>1</sup>	TOTAL RETURN	HARVEST RATE <sup>1</sup>
1980	250,00	ALEVIN <sup>2</sup>	140,000	1983	0	N/A	N/A	
1981	410,00	ALEVIN <sup>2</sup>	315,400	1984	9	N/A	N/A	
1982	0		0	1985	102	N/A	N/A	
1983	134,724	FRY	89,075	1986	181	181	362	50.0%
1984	567,716	FRY	461,060	1987	220	242	462	52.4%
1985	304,200	FED FRY	286,102	1988	328	328	656	50.0%
1986	592,955	FED FRY	560,000	1989	8	N/A	N/A	N/A
1987	560,000	FED FRY	500,000	1990	41	41	82	50.0%
1988	599,000	FED FRY	501,414	1991	556	556	1,112	50.0%
1989	118,800	UNFED FRY	43,605	1992	90	90	180	50.0%
1990	27,000	UNFED FRY	6,286	1993	86	86	172	50.0%
1991	423,000	UNFED FRY	374,524	1994	19	19	38	50.0%
1992	73,800	FED FRY	71,600	1995	30	20	50	40.0%
1993	61,200	UNFED FRY	54,070	1996	152	80	232	34.5%
1994	10,800	FED FRY	6,297					
1995	16,750	FED FRY	13,580					
1996	137,006							

5-YEAR AVERAGE

44.9%

PROJECTED PRODUCTION AT FULL CAPACITY

PRODUCTION BASIS	ASSUMED % SURVIVAL FROM EMERGENT FRY TO ADULT	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
EGGS 5,000,000 <sup>3</sup>	0.7%	350,000	44.9%	157,150

<sup>1</sup>Common Property Harvest" and "Harvest Rate" based on operators estimates in Annual Reports.

<sup>2</sup> Transplanted to Burro and Pullen Creeks when water supply froze.

<sup>3</sup> Permit is for 10,000,000 pink and chum combined, or 5,000,000 each.

TABLE 38. 24-MILE CHILKAT SPAWNING CHANNEL  
UNIT: LYNN CANAL

CHUM SALMON

PRODUCTION TO DATE

BROOD YEAR	ESCAPEMENT	NUMBER OF FEMALES	EGGS DEPOSITED	SPRING FRY PRODUCED	POSSIBLE ADULT CONTRIBUTION 1% RETURN
1983	463	185	463,000	92,600	926
1984	1,505	602	1,505,000	301,000	3,010
1985	1,735	694	1,735,000	347,000	3,470
1986	1,283	513	1,283,000	256,600	2,566
1987	5,000	2,000	5,000,000	1,000,000	10,000
1988	2,500	1,000	2,500,000	500,000	5,000
1989	1,300	520	1,300,000	260,000	2,600
1990	1,836	734	1,836,000	367,000	3,670
1991	1,230	492	1,230,000	246,000	2,460
1992	100	45	112,500	22,500	225
1993	85	38	95,625	19,125	191
1994	730	315	787,500	157,500	1,575
1995	1,000	400	1,000,000	200,000	2,000
1996	187	88	220,000	44,000	440

PROJECTED PRODUCTION AT FULL CAPACITY

PRODUCTION BASIS	ASSUMED SURVIVAL TO EMERGENT FRY	# OF EMERGENT FRY	ASSUMED % SURVIVAL TO ADULT	TOTAL RETURN	ASSUMED HARVEST RATE	C.P. HARVEST
EGGS 5,000,000	20%	1,000,000	1%	10,000	N/A	N/A

56

TABLE 39. PORT CAMDEN INCUBATION BOXES  
UNIT: FREDERICK SOUND

CHUM SALMON

PRODUCTION TO DATE

RELEASE DATA

RETURN DATA

BROOD YEAR	NUMBER EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEARS	ESCAPEMENT	C.P. HARVEST	TOTAL RETURN	HARVEST RATE
1985	136,400	UNFED FRY	33,962	1988	N/A	N/A	N/A	N/A
1986	200,000	UNFED FRY	198,000	1989	N/A	N/A	N/A	N/A
1987	605,000	UNFED FRY	599,000	1990	N/A	N/A	N/A	N/A
1988	1,350,000	UNFED FRY	1,309,390	1991	N/A	N/A	N/A	N/A
1989	1,350,000 <sup>1</sup>	UNFED FRY	729,800	1992	N/A	N/A	N/A	N/A
1990	2,675,000	UNFED FRY	2,399,000	1993	N/A	N/A	N/A	N/A
1991	4,607,000	UNFED FRY	4,212,000	1994	N/A	N/A	N/A	N/A
1992	6,000,000	UNFED FRY	4,440,000	1995	N/A	N/A	N/A	N/A
1993	5,262,500	UNFED FRY	4,979,350	1996	N/A	N/A	N/A	N/A
1994	6,015,000	UNFED FRY	5,149,000					
1995	5,197,000	UNFED FRY	4,827,000					
1996	4,710,000	UNFED FRY						

PROJECTED PRODUCTION AT FULL CAPACITY

PRODUCTION BASIS	ASSUMED SURVIVAL TO EMERGENT FRY	# OF FRY	ASSUMED % SURVIVAL TO ADULT	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
EGGS 10,000,000	86%	8,600,000	0.007%	60,200	N/A	N/A

<sup>1</sup> 600,000 eggs died from clogged water intake.

TABLE 40. HERMAN CREEK SPAWNING CHANNEL  
 UNIT: LYNN CANAL  
CHUM SALMON<sup>1</sup>

PRODUCTION TO DATE

BROOD YEAR	ESCAPEMENT	NUMBER OF FEMALES	EGGS DEPOSITED	SPRING FRY PRODUCED	ADULT CONTRIBUTION 1% RETURN
1989	1,050	515	1,131,900	622,337	6,223
1990	2,991	1,496	3,290,100	700,345	7,003
1991	4,600	2,254	4,958,800	1,139,002	11,390
1992	5,500	2,695	5,929,000	1,185,000	11,850
1993	4,500	2,205	4,851,000	1,067,220	10,672
1994	8,070	3,600	9,000,000	1,980,000	19,800
1995	8,204	4,099	10,247,500	2,254,450	22,545
1996	7,720	3,712	9,280,000	2,041,600	20,416

PROJECTED PRODUCTION AT FULL CAPACITY

PRODUCTION BASIS	ASSUMED SURVIVAL TO EMERGENT FRY	# OF EMERGENT FRY	ASSUMED % SURVIVAL TO ADULT	TOTAL RETURN
EGGS 5,000,000	20%	1,000,000	1%	10,000

<sup>1</sup> Number estimated using 22% survival egg to fry, 2,500 egg fecundity, and 50% male/female ratio.

TABLE 41. HAINES 17/30/31 MILE INCUBATOR BOXES  
UNIT: LYNN CANAL

CHUM SALMON

PRODUCTION TO DATE

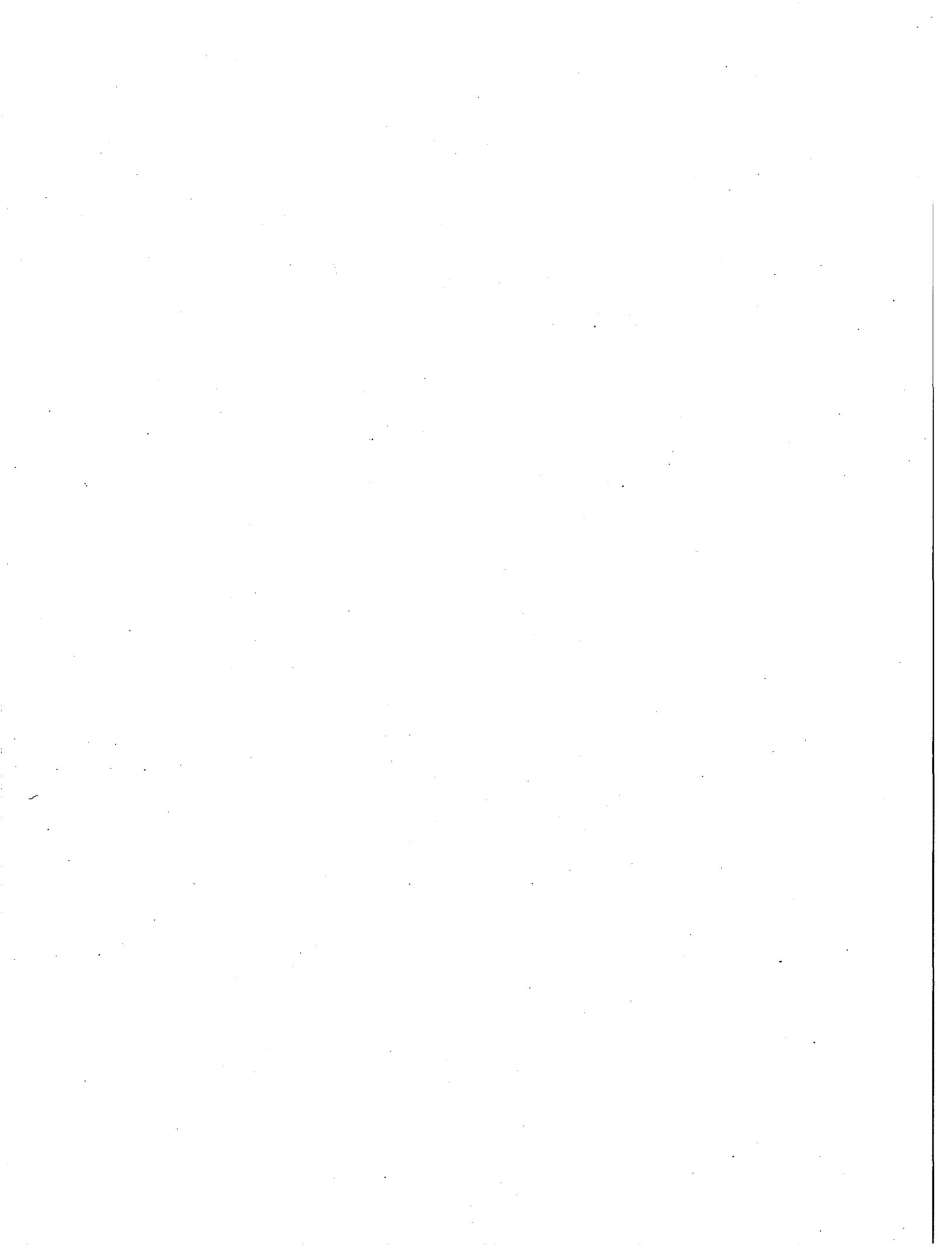
BROOD YEAR	# OF EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEARS	EXPECTED # RETURN	C.P. HARVEST	TOTAL RETURN
1991	817,300	UNFED FRY	582,925 <sup>1</sup>	1995-1997	1,937 to 3,874	N/A	N/A
1992	668,800 <sup>2</sup>	UNFED FRY	691,208	1996-1998	3,177 to 6,345	N/A	N/A
1993	1,007,500	UNFED FRY	985,625	1997-1999	4,037 to 8,075	N/A	N/A
1994	900,000	UNFED FRY	855,000	1998-2000	4,275 to 8,550	N/A	N/A
1995	515,000	UNFED FRY	484,250	1999-2001	2,421 to 4,842	N/A	N/A
1996	210,000	UNFED FRY	198,200	2000-2002	991 to 1,982	N/A	N/A

PROJECTED PRODUCTION AT FULL CAPACITY

PRODUCTION BASIS	ASSUMED % ADULT SURVIVAL	TOTAL RETURN	ASSUMED HARVEST RATE	C.P. HARVEST
EGGS 1,300,000	0.75%	9,750	40.0%	3,900

<sup>1</sup> boxes froze

<sup>2</sup> 1992 egg take for 17-mile incubation boxes is unavailable



**SECTION 3.**

**NORTHERN SOUTHEAST ALASKA  
HABITAT PROTECTION AND IMPROVEMENT PROJECTS**

**ALL SPECIES**

**1996**

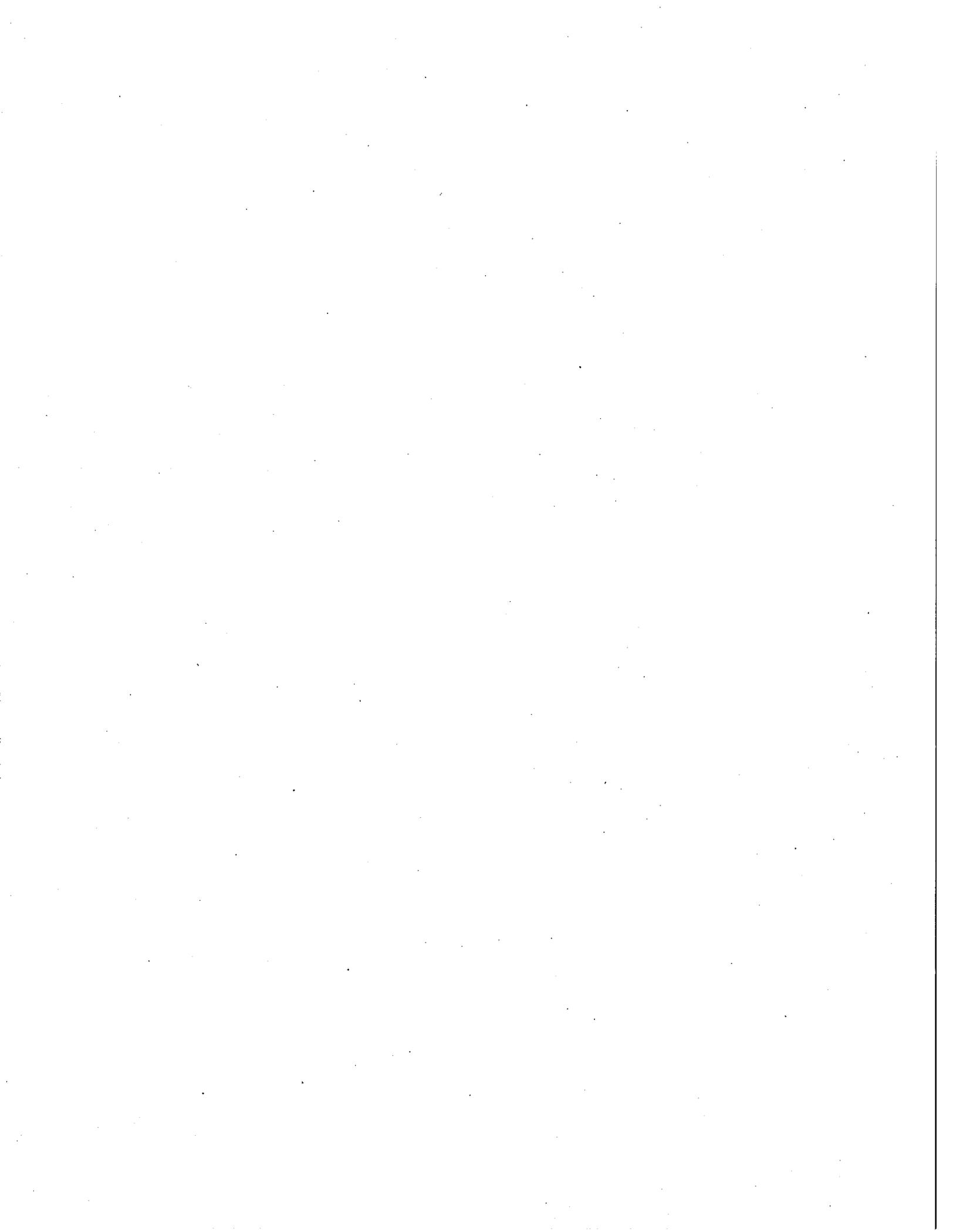


TABLE 42. 1996 STATUS OF NORTHERN SOUTHEAST HABITAT RESTORATION PROJECTS

SPECIES	TITLE	STATUS	NARRATIVE
Chinook	Big Boulder Creek rehabilitation plan	Ongoing	Continue to monitor and execute planned activities
Coho	Ophir Creek flow improvement project	Ongoing	Continue to improve flow characteristics
All	Alaska Water Watch	Ongoing	Water quality sampling at Duck & Pullen Creeks
All	Inventory/catalogue all streams in SE Alaska	Ongoing	Continue to update anadromous streams



**SECTION 4.**

**GAP ANALYSIS**

**1996**

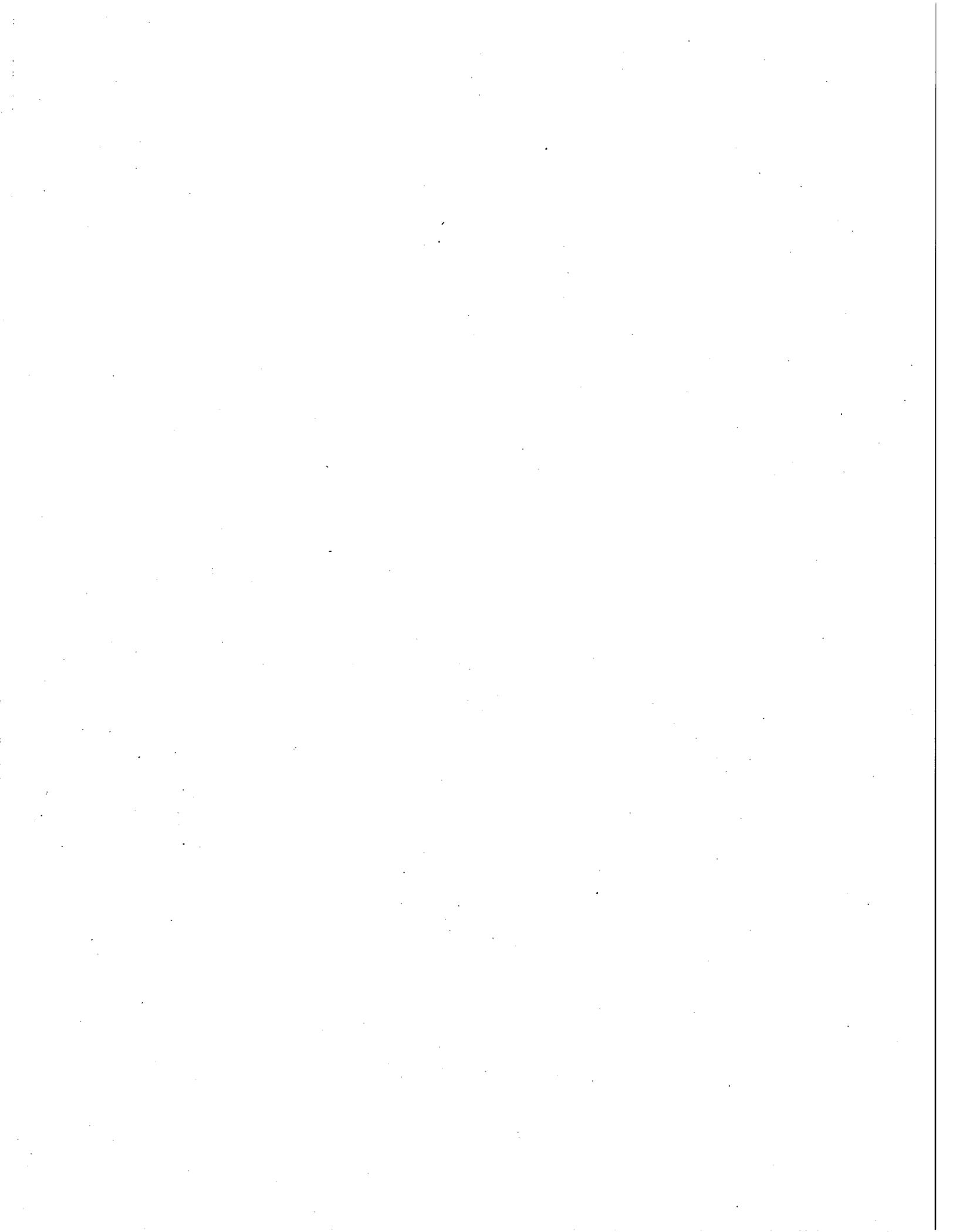


TABLE 43. GAP ANALYSIS FOR SOUTHEAST ALASKA SALMON FISHERIES, 1996

5-Year Average Harvest, Projected Harvest Potentials  
and Harvest Objectives Compared

Projected Average Harvest Potential With Current Projects								
Species	5-Year Average Harvest <sup>1</sup>	Wild <sup>2</sup>	Enhanced Potential <sup>3</sup>		Total Enhanced Potential	Projected Potential Harvest	Harvest Objective <sup>4</sup>	1996 Gap
			<u>Northern SE</u>	<u>Southern SE</u>				
Chinook	234,600	263,000	27,166	103,932	131,098	394,098	537,000	142,902
Coho	3,915,700	1,200,000	450,740	634,514	1,085,254	2,285,254	2,650,000	364,746
Sockeye	2,568,300	800,000	327,066	99,426	426,492	1,226,492	2,100,000	873,508
Pink	52,500,500	16,500,000	685,661	471,548	1,157,209	17,657,209	30,000,000	12,342,791
Chum	10,087,500	1,700,000	3,597,841	1,672,720	5,270,561	6,970,561	9,700,000	2,729,439

67

<sup>1</sup> 1992-1996 (rounded to nearest hundred)

<sup>2</sup> Best estimate of ADF&G, Commercial Fisheries Division for long-term average wild harvest.

<sup>3</sup> From 1996 enhancement project summary tables for northern and southern Southeast Alaska.

<sup>4</sup> From Comprehensive Salmon Plan, Phase II. NSE. December 1982.

TABLE 44 GAP ANALYSIS FOR SOUTHEAST ALASKA SALMON FISHERIES, 1996

5-Year Average Harvest, 1996 Harvest Estimates by Operators  
and Harvest Objectives Compared

Projected Average Harvest Potential With Current Projects								
Species	5-Year Average Harvest <sup>1</sup>	Wild <sup>2</sup>	1996 Enhanced Fish Contributions <sup>3</sup>		Total Enhanced Potential	Projected Potential Harvest	Harvest Objective <sup>4</sup>	1996 Gap
			<u>Northern SE</u>	<u>Southern SE</u>				
Chinook	234,600	263,000	44,776	15,668	60,444	323,444	537,000	213,556
Coho	3,915,700	1,200,000	290,375	327,067	617,442	1,817,442	2,650,000	832,558
Sockeye	2,568,300	800,000	27,346	412,743	440,089	1,240,089	2,100,000	859,911
Pink	52,500,500	16,500,000	705,166	572,500	1,277,666	17,777,666	30,000,000	12,222,334
Chum	10,087,500	1,700,000	6,963,836	2,067,326	9,031,162	10,731,162	9,700,000	NONE

68

<sup>1</sup> 1992-1996

<sup>2</sup> Best estimate of ADF&G, Commercial Fisheries Division for long-term average wild harvest.

<sup>3</sup> Hatchery operator estimates from 1996 enhancement project summary tables for northern and southern Southeast Alaska.

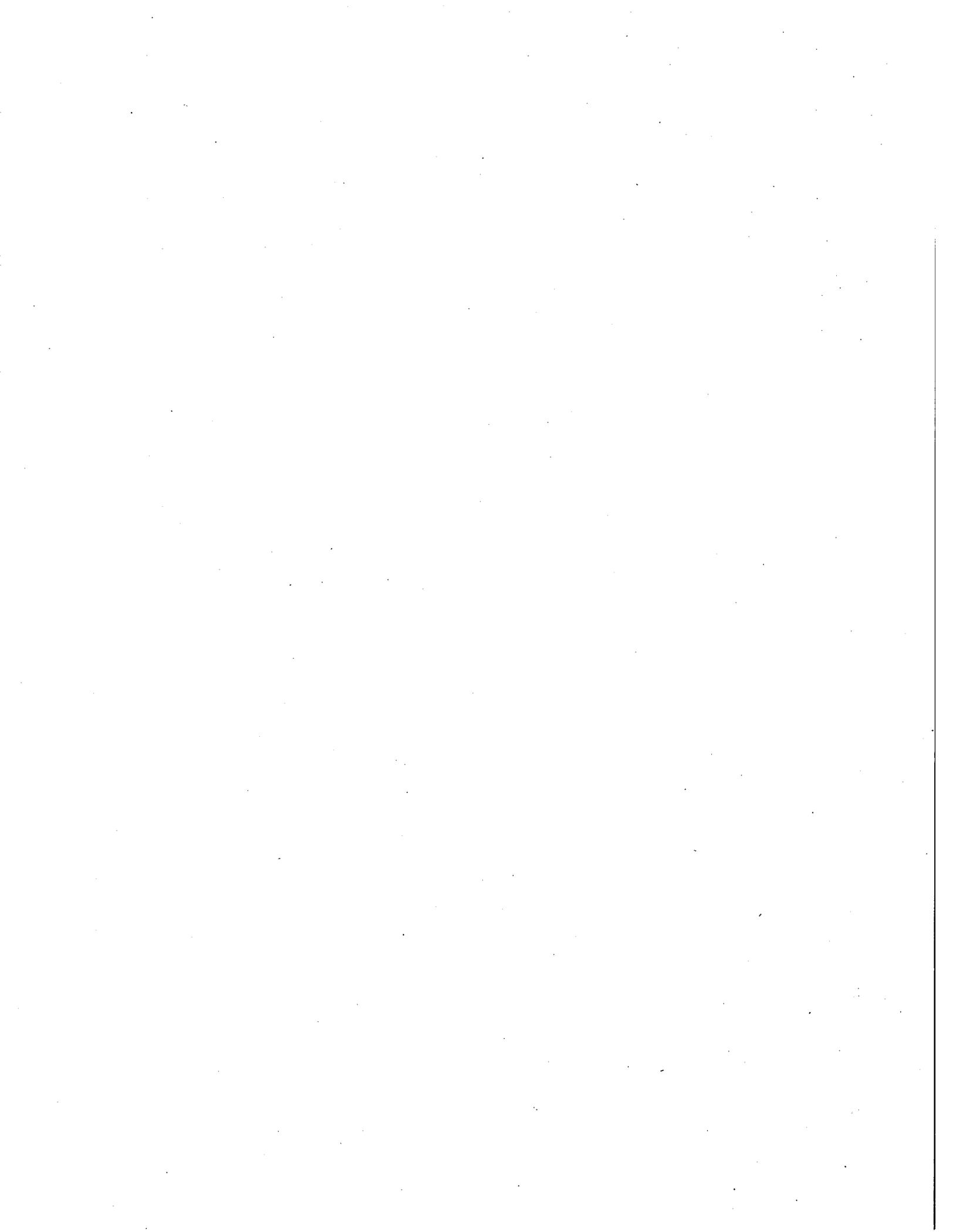
<sup>4</sup> From Comprehensive Salmon Plan, Phase II. NSE. December 1982.

**SECTION 5.**

**5-YEAR ACTION PLAN**

**ALL SPECIES**

**1996-2000**



## Introduction

The 5-year action plan consists of those salmon enhancement projects that have passed preliminary screening and have been recommended for action (i.e., implementation or feasibility study) by the Northern Southeast Regional Planning Team during the next five years (1997-2001). Some of the projects listed are already funded or are included in budget proposals of the various agencies, while others are not.

The 5-year action plan also provides the updated status of ongoing projects, its intent is to guide budget development toward priority projects, and it will be updated periodically to reflect current directions recommended by the NSERPT.

Tables 47 through 52 present an updated account of current projects by species, providing the name as well as the type of project. These tables also prioritize projects over the next 5-year period as follows:

A = high priority; B = low priority; C = ongoing project or evaluation/completion phase; and D = project dropped.

Table 45. Chinook salmon projects and priorities, 1997-2001.

Chinook Salmon	<u>Project Type</u>		
	Enhancement	Habitat Protection	Mngt.
Habitat restoration-Boulder Creek		C	
Fishery Creek fish pass/stocking	A		
Ward Creek fish pass/stocking	B		
Wheeler Creek (Game Cove) fish pass/stocking	D		
Port Armstrong Hatchery expansion	C		
Indian River fish pass/stocking	A		
Farragut Lake stocking	C		
Crystal Lake Hatchery ozonation	C		

Table 46. Coho salmon projects and priorities, 1997-2001.

Coho Salmon	Project Type		
	Enhancement	Habitat Protection	Mngt.
Taku River rearing habitat	D		
Slippery Creek fish pass	C		
Portage Creek fish pass	C		
Dean Creek fish pass	C		
Hasselborg/Salt Lake smolt evaluation	D		
Greens Creek fishway evaluation	C		
Fishery Creek fishway	A		
Herbert/Eagle River rearing habitat	C		
Deer Lake bioenhancement enhancement	C		
Baranof Lake stocking	A		
Deep Inlet coho smolt release	C		
Shamrock Bay coho smolt release	C		
Medvejie coho smolt release	C		
Port Armstrong Hatchery coho smolt releases	C		
Suntaheen Creek fish pass	A		
Brown's Creek fish pass	B		
Large woody debris replacement in Kadake and Saginaw Watersheds		A	
Lava Falls Creek	C		
Whiterock Creek fish pass/habitat monitoring	C		
Game Creek habitat improvement		D	
Kennel Creek habitat improvement		D	
Neka River habitat improvement and enhancement	B	B	
Davidson Creek fish pass/bioenhancement	C		
Bayhead Creek barrier modification	C		
Pavlof River fish pass	C		

Table 47. Sockeye salmon projects and priorities, 1997-2001.

Sockeye Salmon	<u>Project Type</u>		
	Enhancement	Habitat Protection	Mngt.
Snettisham CIF	C		
Surveillance of unmonitored or small sockeye systems			B
Redoubt Lake enrichment/stocking	C		
Chilkat Lake sockeye salmon instream incubation boxes	C		
Chilkat River escapement enumeration			C
Goulding Lake stocking	A		
Tahltan Lake	C		
Tuya Lake	C		
Little Tatsamenie Lake	C		
Trapper Lake	D		

Table 48. Pink salmon projects and priorities, 1997-2001.

Pink Salmon	<u>Project Type</u>		
	Enhancement	Habitat Protection	Mngt.
Suntaheen Creek barrier modification	A		
Cat Creek Fish Passage	B		
Kwatahein Creek fish pass	C		
Fishery Creek fish pass	A		
Whiterock Creek fish pass	C		

Table 49. Chum salmon projects and priorities, 1997-2001.

Chum Salmon	<u>Project Type</u>		
	Enhancement	Habitat Protection	Mngt.
Creation/improvement spawning habitat, Chilkat River	A		
Boat Harbor chum salmon releases	C		
Limestone Inlet releases	C		

Table 50. All salmon species projects and priorities, 1997-2001.

All Species	<u>Project Type</u>		
	Enhancement	Habitat Protection	Mngt.
Reestablish Title 16 authority on federal lands/provide funding			A
Nearshore marine conditions optimal release timing studies	A		
Watershed Restoration	A		

## Project Narratives

### **Chinook Salmon:**

**Habitat restoration of Boulder Creek** - Boulder Creek, which has been impacted by highway construction, has been studied by ADF&G to determine chinook salmon habitat and needed restoration activities. A project was designed, and a new bridge has been constructed. The escapements have been substantially below desired levels for a number of years. An incubation box has been placed alongside the creek and seeded with eggs from 10 to 16 females. Several methods have been used to enhance spawning habitat, including placing boulder clusters, cabling large woody debris to stream bed, and creating a boulder step-dam to hold spawning gravel in place. Continued monitoring and executing of additional habitat activities are planned. Source: ADF&G.

**Fishery Creek fish pass/stocking** - Fishery Creek (112-17-30) is a major stream system on the west side of Admiralty Island that flows directly into Chatham Strait. A large vertical waterfall barrier occurs on this system about 1.5 miles above salt water. The barrier prevents access by all anadromous fish to an additional 17 miles of spawning and rearing habitat. This stream has been analyzed for biological feasibility and the barrier surveyed for engineering feasibility; however, because this project falls within designated monument/wilderness jurisdiction, no further action can occur until a thorough analysis of its effects on wilderness have been determined through the NEPA process. The Forest Service has requested that this barrier be analyzed as a potential chinook salmon stocking opportunity to create a self-perpetuating run. This would require further analysis to determine the impacts of chinook introduction on wilderness values. Project scoping and a feasibility study was initiated in 1994. The fish pass will be installed, if feasible, by 1998. Source: USFS.

**Ward Creek fish pass/stocking** - Ward Creek (112-17-16) is another large west Admiralty Island stream system with a partial barrier about one mile above salt water. Although coho salmon have been documented above the barrier, passage is impeded during low- or high-flow periods. This project also falls within the jurisdiction of designated monument/wilderness; therefore a thorough analysis through the NEPA process will be necessary. This system has also been suggested as a potential chinook salmon stocking opportunity to begin a self-perpetuating population. The upper watershed of this system is within lands selected by the Shee Atika Corporation. Source: USFS.

**Wheeler Creek fish pass/stocking** - Wheeler Creek (112-16-30) is another west Admiralty Island system. Unlike Fishery and Ward Creeks the barrier on this system is about five miles from salt water. The 15-meter vertical falls blocks all anadromous fish access to the systems upper reaches. As with the other west

Admiralty Island opportunities, this stream may be analyzed for reintroduction of chinook salmon. A habitat and juvenile population inventory of the watershed was completed in 1992 to determine the number of chinook salmon in the system. Because of the height of the barrier falls (i.e., 15 m) and its distance from salt water as well as the limited spawning and rearing habitat available above it, the probability of success in passing fish over the falls is low. The project has therefore been dropped from consideration. Source: USFS.

**Port Armstrong Hatchery Expansion** - In 1992 ADF&G selected Armstrong-Keta's Port Armstrong Hatchery as the facility to conduct the Southeast Baranof Chinook Project. Using a U.S./Canada funding grant, an expansion project to rear chinook was initiated at the Port Armstrong site. Construction began in the fall of 1992 and included installation of new water pipelines, new raceways and raceway support structures, and expansion of the hydroelectric facilities. The project was completed in 1995. Pending availability of chinook brood stock, coho are being reared at the hatchery. Source: Armstrong-Keta, Inc.

**Indian River (Tenakee) cooperative fish pass/stocking** - This barriered system has been stocked three times with chinook salmon fry. The first two stockings occurred in 1986 and 1988; the estimated smolt to adult survival was about 0.5%. In 1993 it was stocked with 120,000 fry (40,000 with coded wire tags); half of the fry with identifiable tags were planted into beaver ponds and channels. The purpose of that bioenhancement effort was to develop a chinook brood stock that would utilize proposed fish passes at the barrier falls about 1.5 miles from tidewater. Findings from a watershed analysis completed in 1995 indicate these falls preclude access to 34 miles of rearing and spawning upstream of the falls.

USFS staff plans to construct the fish pass over the barrier falls in 1998. Over time, USFS biologists expect rearing coho to outcompete rearing chinook salmon in this system; however, it will take many years for the planted chinook and the native coho stocks to fully utilize the upstream habitat. Staff propose shifting enhancement emphasis to coho salmon and additionally taking 100,000 coho salmon eggs for instream incubation in 1997, 1998, and 1999. The resulting fry will move into the upstream habitat the following springs. Based on a smolt-to-adult survival of 10%, up to 3,000 adult cohos could be produced in that system annually. The proposed coho salmon enhancement project would allow USFS to fully stock the upstream habitat and provide substantially more adult coho returns to the Tenakee Inlet area many years earlier than the number that would be naturally provided if cohos were left alone to rebuild their population in the habitat upstream of the falls. Source: USFS

**Farragut Lake Stocking** - ADF&G has been conducting chinook salmon egg takes on the Farragut River to enhance the native runs by

stocking fry in Farragut Lake, which is located at the headwaters of the Farragut River about three miles above a barrier. The goal is to collect up to 250,000 eggs from 40 females, incubate and short-term rear fry at Crystal Lake Hatchery, and release them into the lake. Based on preliminary studies conducted from 1983 to 1985, 2,000 to 4,000 adults could be generated. ADF&G personnel collected eggs in 1991-1993, and released the fry in Farragut Lake from 1992-1994. Funding for this project was dropped after the 1994 releases, so the project has essentially been completed; however, CWT recoveries are expected to occur through the year 2000. Source: ADF&G

**Crystal Lake Hatchery Ozonation** - To control the incidence of bacterial kidney disease (BKD) at the Crystal Lake Hatchery, \$200,000 of federal monies was appropriated to installing water depuration equipment at this facility, which has had a long history of fish health problems attributable to BKD. The source was traced to the resident fish in the lake that supplies water to the hatchery. In 1993 a contractor completed the installation of an ozone contact system capable of treating 500 gallons per minute of water. This system was used to treat the water used for egg incubation in 1994. A malfunction of the ozone monitoring system and the ozone destruct system may have caused some mortality in the BY 94 chinook eggs. The problems have been identified and corrected. The operation of the depuration system will help to maintain the production potential of adult salmon at the facility.

#### **Coho Salmon:**

**Creation of rearing habitat - Taku River** - Creation of access to slough and pond areas on the lower Taku River could expand natural coho production. The Forest Service and ADF&G have identified several sites in recent years. This project has been dropped. Source: USFS & ADF&G.

**Slippery Creek fish pass** - Slippery Creek (109-43-03) is located on northeast Kuiu Island; it drains into Port Camden. Built in 1988 the fish pass was originally designed for coho, and the upper watershed was stocked with coho fry from Crystal Lake Hatchery. In 1992, tagged coho salmon caught in the commercial fishery demonstrated that the Slippery Creek watershed had contributed about 3,300 coho salmon to the common property fisheries. In addition to coho, pink, chum salmon, steelhead have been observed above the fish pass. Source: USFS

**Portage Creek fish passes** - Portage Creek (110-16-02) is located on north Kupreanof Island. Two fish passes, located 1.5 and 2.0 miles above tidewater, have been constructed over barriers to provide access to approximately 40 acres of spawning and rearing habitat. Coho salmon bioenhancement activities began in 1992; the eggs are incubated at Gunnuk Creek Hatchery. The final egg take from lower Portage Creek stock will be conducted in 1995, and the project will

end with fry plants into the system in 1996. The project has the potential of producing from 1,200 to 6,850 adult coho annually; the first marked fish to enter the fishery will be in 1995. Steelhead and chum salmon are expected to utilize these fish passes. Pink salmon are also expected to use them, and if all spawning habitat is accessed by them, up to 95,000 pink salmon could be available to the fishery. Two Forest Service cabins in Portage Bay may serve as a base for sport anglers to target mainly coho and steelhead. Source: USFS

**Dean Creek fish pass** - In 1983, a fish pass installed in Dean Creek (109-50-07) one-quarter of a mile upstream from salt water. Approximately three miles of good coho habitat was made accessible; however, because of a deficiency in a downstream coho population and limited fry transplants from adjacent system, colonization by coho salmon has been slow. A modification in the fish pass in 1994 has allowed pink salmon to access the available spawning and rearing habitat as well. Some coho salmon spawning is occurring; and juvenile coho salmon have been observed above the fish pass. Source: USFS

**Hasselborg/Salt Lake smolt evaluation** - These Admiralty Island systems have the potential to produce significant numbers of coho salmon; however, this potential has not been quantified. ADF&G Sport Fish Division has proposed a project to capture, enumerate and tag out-migrant coho smolts from this system to learn more about their distribution and contributions to the fisheries and possible reasons for low run strength. In 1994 Sport Fish Division determined it could not initiate this project because of lack of funding. Source: ADF&G.

**Greens Creek fish pass evaluation** - The environmental impact statement (EIS) for the Greens Creek Mine specified that fish passage would be provided past a barrier in the system to mitigate impacts to fish habitat. That barrier was modified in 1989 through blasting to provide steps for fish passage. Use of the fish pass by pink, chum, and coho salmon has been documented in significant numbers of cohos and chums. There are still questions about the actual rearing potential and net production of coho salmon, and the Forest Service is continuing to evaluate this aspect. Source: ADF&G.

**Fishery Creek fish pass** - This project outlined under the chinook salmon section has the potential for native coho and pink salmon enhancement as well. Source: USFS.

**Herbert/Eagle River rearing habitat** - The Eagle and Herbert Rivers are glacially turbid systems sharing a common drainage and are located about 35 kilometers north of the city of Juneau. The USFS has determined that these systems are limited in their potential to produce coho salmon. The river valley has an abundance of suitable spawning habitat but limited rearing habitat along downstream

reaches necessary for support of juvenile fish. The USFS constructed rearing ponds (i.e., interconnected access channels and ponds) in 1988 and 1989, and since that time USFS staff have been monitoring the site annually. The project, which was completed in 1991, is intended to provide rearing habitat for juvenile fish, particularly coho salmon during the summer and refuge habitat during the winter. Source: USFS.

**Deer Lake bioenhancement** - Deer Lake is a 977-acre lake located on southeast Baranof Island, at the entrance to Patterson Bay. Deer Lake was stocked with approximately 850,000 coho salmon in 1985 and 1987 as part of NSRAA's barren lakes stocking program. In 1988, NSRAA had 700,000 coho salmon in excess of lake rearing capacity. Rather than destroy the fish or stock the lakes too densely, Deer Lake was stocked with the 470,000 coho; a fertilization program was started to increase primary and secondary productivity. In addition, fertilization allowed annual stockings due to the elevated zooplankton biomass. Commercial fertilizers have been applied annually from July through mid-September to (1) sustain zooplankton levels adequate for fish to grow to smolt stage in one year and (2) maintain nutrient levels to ensure good recruitment for next summers zooplankton crop. From 1989 to 1996, 1,440,000; 1,740,000; 1,875,000; 2,056,000; 2,330,000; 2,076,000; 2,425,000; and 2,392,000 fry were planted into Deer Lake, respectively. Adult coho returns and percent marine survival were as follows: 1990, 53,600 (17%); 1991, 166,100 (24%); 1992, 123,000 (18%); 1993, 76,000 (13%); 1994, 238,000 (24%); 1995, 140,887 (12%); and 1996, 168,762 (11.6%). Source: NSRAA/USFS.

**Baranof Lake stocking, Cliff and Lord's Pocket Lakes** - An environmental assessment for the south Baranof lake stocking program was completed in the spring of 1988, and NSRAA (with ADF&G approval) has included these lakes as stocking candidates. NSRAA staff would incubate coho eggs at Medvejie Hatchery and plant the resulting coho fry into lakes that have impassable waterfalls to upstream migrants. During odd and even years, respectively, 1.1 and 1.9 million coho fry would be stocked into approximately 2,400 acres of barren lakes. Smolt migrations and adult contributions would thereafter be monitored. As of 1995 these lakes are not being actively pursued for stocking, although detailed lake survey work has been conducted on Cliff and Lord's Pocket Lakes. Source: NSRAA.

**Deep Inlet coho smolt release** - Coho smolts were released in Deep Inlet from 1990 to 1995; the number released has ranged from 49,970 (16.7 g) in 1994 to 136,000 (20.5 g) in 1993. This project has expanded commercial and sport fishing opportunities for cohos in the Sitka area, and the total harvest rates have been high (91.7% of the 8,003 cohos returning in 1995). The original donor stock of coho eggs came from Sheldon Jackson Hatchery (Indian River stock); however, the later brood source was from the return to the Medvejie Hatchery in Silver Bay. Releases of coho ceased at Deep Inlet in

1996, because of conflicts with wildstock coho exploitation.  
Source: NSRAA.

**Shamrock Bay coho smolt release** - Shamrock Bay was added as a release site in 1993 to provide trollers further opportunities to fish on hatchery returns in the Sitka area. Smolts are transported from Medvejie Hatchery to Shamrock Bay by boat, held in net pens for three weeks, and released. Some 279,900 (24.3 g), 156,442 (21.6 g), 170,300 (40.3 g), and 231,000 (24.6 g) smolts were released at the site in 1993, 1994, 1995, and 1996, respectively. Total adult returns and marine survivals for 1994, 1995, and 1996 were 41,145 (14.7%), 21,246 (13.6%), and 9,048 (5.3%), respectively. Source: NSRAA.

**Medvejie coho smolt releases** - Coho releases from Medvejie Central Incubation Facility (MCIF) are minimized to avoid wild stock interactions. Ideally, just enough fish are released to provide adequate adult returns to meet egg take goals. In 1992 and 1993, just under 3,000 smolts were released each year from the hatchery; however, in 1994, 1995, and 1996, 5,000 smolts (18.2 g, 31.0 g, and 24.2 g, respectively) were released each year to better insure adequate brood stock. In 1993, inadequate hatchery returns forced utilization of fish returning to Deep Inlet and Sheldon Jackson to meet the egg take goals. Adult returns and marine survivals to MCIF were 427 (14.4%), 578 (11.5%), and 450 (9.2%) in 1994, 1995, and 1996, respectively. Source: NSRAA.

**Port Armstrong Hatchery coho smolt releases** - The Port Armstrong Hatchery is rearing coho in the facilities built with a U.S./Canada funding grant from the Southeast Baranof Chinook Project, pending availability of chinook brood stock. In June 1996, 1.4 million coho smolts were released in Port Armstrong. The total adult coho return to Port Armstrong in 1996 was 10,150; the contribution to commercial fisheries in 1996 was 22,300 coho salmon. Source: Armstrong-Keta, Inc.

**Suntaheen Creek fish pass** - The Forest Service has modified a rock barrier, installed two fish passes at a waterfall, coded-wire-tagged native coho salmon stock, and released them upstream of the barriers where good spawning and rearing habitat exists. From 1990 to 1993 coho salmon eggs were also collected at Game Creek and incubated at Medvejie Hatchery; the resulting fry were coded-wire-tagged and planted above the barriers. Between 1992 and 1996, this project contributed an annual average of 680 coho to the troll fishery. Smolt trapping below the falls indicated increased survivals through 1994, followed by a steady decline. The lack of coho spawners ascending the fish passes in 1996 was probably the result of the generally poor return of coho to the system, which was typical for coho returns to Chichagof systems in 1996. Continued evaluation of the fish passes and their possible modification is being pursued by the U.S. Forest Service. Source: ADF&G and USFS.

**Brown's Creek fish pass** - Brown's Creek (109-52-08) is located at the head of Rowan Bay on Kuiu Island. Located 2.6 miles from salt water, a 28-foot falls blocks access to approximately 17 acres of spawning/rearing habitat. A conceptual design has been developed for a fish pass. Substantial populations of pink and coho salmon and steelhead are present in the lower creek. Coho from the lower portion of the creek could be used to stock the upper watershed. Average peak escapement of pink salmon is 6,500. Some pink salmon may use the ladder, although there is little pink salmon spawning habitat above the falls. A preliminary estimate of construction cost is \$200,000. Logging road access is available within 1 mile. Emphasis on this project has been reduced because of a low benefit:cost ratio; NEPA documentation and a final design would have to be developed prior to implementation. Source: USFS.

**Large woody debris replacement in Kadake and Saginaw watersheds**

The watersheds of Kadake and Saginaw Creeks on Kuiu Island (ADF&G 109-42-30 and 109-44-39, respectively) provide approximately two acres of stream habitat in need of rehabilitation. Logging has impacted both banks along sections of some small- to medium-sized coho rearing streams. The amount of pool-forming, large, woody debris (logs) has been reduced, compared with unlogged streams. Emphasis on placement of large woody debris in clear-cut streams has been replaced with a broader watershed restoration strategy. The Petersburg Ranger District is proposing to rehabilitate timber harvested riparian zones by accelerating the return of riparian vegetation to preharvest conditions. Silvicultural treatments will be used to promote establishment and growth of conifers for the benefit of fish and wildlife. The treatments will include releasing and thinning conifers; releasing involves girdling (killing) red alders that are in direct competition with conifers. Where conifer densities are great, thinning will be conducted to expedite growth of the remaining trees. The goal of the project is to promote uneven-aged stands of conifers that will provide for future recruitment of large woody debris and optimize riparian habitat for fish and wildlife use. A harvested riparian zone within Rowan Creek (109-44-39) will be treated in 1995. This pilot project will guide additional riparian rehabilitation efforts, and sections of Saginaw and Brown Creeks have been proposed for treatment in 1996. Source: USFS

**Lava Falls Creek** - Lava Falls Creek flows into the southwest corner of Port Krestof. A waterfall at tidewater blocked passage of all anadromous fish. About 5 miles (12 acres) of spawning and rearing habitat were made available to coho salmon by constructing two fish passes. During each of the three years before construction of the fish passes, coho salmon fry from nearby Eagle River (Kruzof Island) were planted above the barrier; i.e., 6,700 in 1993, 6,800 in 1994, and 25,000 in 1995. Between 5,000 and 7,500 juvenile cohos were coded wire tagged each year. Additional coho plants may be made in 1997 and 1998, provided adult returns indicate that would be necessary to fully seed the system.

In 1996 returns from the 1993 and 1994 stockings provided an estimated contribution (based on tag recovery data) of 141 adult coho salmon to the commercial and sport fisheries of Sitka, Hoonah, Pelican, Juneau, and Craig. Assuming a 60% catch rate and 10% survival of smolts to adult, the coho fry stocked in 1993 had a 35% survival rate to smolt. Adult coho and pink salmon were observed in the fish pass as well as upstream of it in the fall of 1996. Monitoring will continue with stream counts of adult and juvenile coho salmon. Source: USFS.

**Whiterock Creek fish pass** - Cascading waterfalls form a partial barrier to coho salmon and a complete barrier to pink and chum salmon. Step pools were blasted into a rock plateau adjacent to the barrier falls, and large woody debris structures were placed in the main channel in 1992. Annual monitoring indicates upstream habitat has been fully utilized by juvenile coho since completion of the project. All large wood debris structures are still in place, providing additional instream rearing habitat. Between 1993 and 1994, the sill walls on two blasted pools of the fish pass failed because of poor rock quality. In 1995 two concrete walls were constructed to replace the failed sills and improve passage particularly for pink and chum salmon. Monitoring and evaluation of this fish pass continued in 1996. Source: USFS.

**Game Creek** - Game Creek (ADF&G 113-31-13) is a major watershed on Chichagof Island that drains into Port Frederick near the City of Hoonah. A cascade falls occurs on one of its main tributaries, blocking access to about two miles of excellent rearing habitat. A baseline buffer monitoring program that began on the watershed in 1992 to determine the effectiveness of jump pools and large woody debris installation has been completed. It was determined that completion of barrier modification would not be cost effective, and no further work is planned. No analysis of the effect upon the resident fish population has been conducted. Source: USFS.

**Kennel Creek** - Large woody debris was installed in Kennel Creek (ADF&G 112-50-20) in 1992 to create spawning and rearing habitat for anadromous and resident fish. An evaluation by the Forestry Sciences Lab was conducted to determine the effectiveness of the habitat restoration work. The resulting compiled data was analyzed by Hoonah Ranger District staff, and the project was determined to be unfeasible; therefore, the project has been dropped from consideration. Source: USFS.

**Neka River** - The following projects are proposed for the Neka River (ADF&G 114-33-23): (1) The proposed installation of two incubation boxes will increase anadromous fish production from underutilized habitat and (2) development of a rock pit/rearing pond will create additional habitat for anadromous and resident fish. Necessary monitoring and feasibility investigations will be initiated following the NEPA process implementation. Preliminary analysis of ADF&G escapement data indicated declining chum stocks there, and an

analysis of the limiting factors involved is currently underway; however, due to funding constraints these project proposals will not likely be implemented in the near future. Source: USFS.

**Davidson Creek fish passage** - Davidson Creek (ADF&G 111-32-10780) drains into the east side of the Taku Inlet just north of Turner Lake. A reconnaissance survey was conducted in 1963 to assess the suitability for modifying a bedrock falls and planting salmon. Coho were planted in the stream in 1964 and 1965. The stream was again surveyed in 1988, and a detailed fish passage feasibility assessment was recommended. The extent and quality of upstream habitat makes Davidson Creek an excellent enhancement opportunity. Project scoping/feasibility studies and an environmental analysis were conducted in 1990. The fish pass was completed in 1991, and bioenhancement has continued there. Source: USFS.

**Bayhead Creek barrier modification** - Walk-through surveys for coho escapement in 1992 failed to detect any coho upstream of the barrier modification. Three barriers in the system were modified by blasting in 1992. Blasting occurred again in 1993 and 1995, creating larger step pools at the lower end of the middle barrier cascade, but it has also contributed more waste depositing in the middle cascade. Also the middle cascade developed into a 2.9-m falls lacking adequate jump pools; any future work ought to be concentrated there first to reduce any impacts on the lower cascade. Monitoring of the depositions of debris should be done annually.

**Pavlof River fish pass** - Two fish passes have been installed in the Pavlof River system: (1) in 1935, a concrete stair was constructed by the Works Progress Administration (WPA) at the partial falls located at salt water and (2) in 1987, the state installed an aluminum fish pass at the upper cascade to provide pink and chum salmon with access to high-quality spawning habitat upstream. Previous to modification, the barriers were passable to coho and sockeye salmon. Since construction, maintenance has included cleaning rock and organic debris from the fish outlet as well as the use of explosives to create and deepen an exit channel immediately upstream of the fish exit. In 1995 a relatively large coho escapement (i.e., 1,840) counted upstream of the upper fish pass occurred when the fish outlet of the fish pass had been partially blocked by organic debris from a washed-out beaver dam, attesting to the capability of coho to pass this blockage. Further studies (e.g., stock assessment, habitat, value of fish passes, etc.) of this system should be conducted.

#### **Sockeye Salmon:**

**Sockeye Central Incubation Facility (Snettisham)** - In 1996 the operation of Snettisham Hatchery was transferred by ADF&G to Douglas Island Pink and Chum, Inc. (DIPAC). Snettisham Hatchery had been retrofitted in 1993 to function as a central incubation

facility for sockeye salmon. The new facility has ten separate incubation modules designed to service a diverse program of sockeye lake enhancement in northern Southeast Alaska. The new program also expanded the sockeye smolt project, which is intended to provide for cost recovery potential.

The new facility incorporates new systems that provide better water quality and more efficient operation. ADF&G staff believe that Snettisham has the best potential of any Southeast Alaska hatchery to produce sockeye salmon and further advance this technology. The Snettisham program melds several important projects at one facility:

**(1) U.S./Canada Transboundary River (TBR) Enhancement**- When the United States and Canada entered into a treaty governing harvest of salmon stocks of joint concern, they also committed to jointly undertake enhancement efforts designed to benefit both countries. In Alaska the major joint enhancement projects are for sockeye salmon lake stocking on the transboundary rivers (i.e., Taku and Stikine). Snettisham has dedicated four modules for this program.

**(2) Chilkat Lake Sockeye Enhancement** - In its fourth year, this is a cooperative project with NSRAA. Eggs are collected from adult sockeyes in Chilkat Lake and transported to Snettisham, where they are incubated; as the fry emerge in June of the following year, they are transported back to Chilkat Lake and released. The project was initiated in 1993 with an egg take of 5.7 million, resulting in a fry plant of 4.4 million into Chilkat Lake in June 1994. In 1994, 6.1 million eggs were taken, and 3.0 million fry were planted into the lake in the spring of 1995. In 1995, 6.0 million eggs were taken, and the subsequent fry plant in the spring of 1996 was 2.7 million. In 1996, 6.0 million eggs were again taken; 2.8 million were planted the following spring. This program is expected to produce about 130,000 adult sockeyes annually to the common-property fisheries of Lynn Canal. There is no cost recovery associated with this project. Source: NSRAA

**(3) Port Snettisham Sockeye Enhancement** - This program includes both lake stocking and smolt production. Two natural sockeye systems and two barriered lakes exist in Port Snettisham. Speel and Crescent Lakes are an integral part of Snettisham Hatchery's operations, providing the brood source for this portion of the program. These lakes are stocked in some years to maintain and enhance production. Snettisham produces smolts for release at two saltwater sites: (1) the hatchery itself and (2) Gilbert Bay (i.e., in June 1994, 334,000 smolts were released there). This program will generate between 300,000 and 450,000 adult sockeyes per year, beginning in 1997; at that time cost recovery potential should be adequate to cover project costs.

Sockeye fry will also be stocked in Sweetheart Lake, which is a barriered system in Port Snettisham. The outlet creek cascades

down a 500-foot fall before entering salt water. Investigations completed in 1993 indicated that 60% of sockeye smolts leaving the lake survived this drop, which is an acceptable mortality in terms of the applicable enhancement technique (i.e., fry planting). The first adults returned in 1993: 12,600 fish. In 1994 the estimated return was 21,800 fish. Further sockeye fry plants are scheduled to continue at Sweetheart lake. This project could produce an additional return to Gilbert Bay of between 20,000 and 60,000 adult sockeyes per year. As the 5,000,000 smolt level is reached, adult production should double; however, additional evaluation is needed to meet full production, and it is likely that lake fertilization would be needed. Source: ADF&G

**Surveillance of unmonitored and small sockeye systems** - Very little information exists on small-scale, naturally producing sockeye systems in northern Southeast Alaska. Monitoring surveys need to be introduced to identify enhancement potentials and optimal harvest strategies at Crab Bay Lake, Neka Lake, Pavlof Lake, Lisianski Lake, Game Creek Estuary, Hoktaheen Lake, Surge Lake, and Takanis Lake. Although the Forest Service would like to implement the entire project, funding is not probable for the near future. Pavlof Lake has been identified as the system with the highest priority; in 1997 ADF&G, through a "Bring Back the Natives" grant secured by the Hoonah Ranger District, completed an inventory of this system. Source: USFS.

**Redoubt Lake Enrichment and sockeye salmon stocking** - Redoubt Lake encompasses 3,200 acres and is located about 12 air miles south of Sitka. The lake and inlet stream have spawning runs of sockeye, pink, chum, and coho salmon. The lake supports an important local subsistence and sport fishery; it also once sustained commercial harvests of 50,000 to 60,000 sockeye salmon per year and escapements of over 100,000. Escapements are currently at relatively low levels, recently averaging less than 5% of historical levels; in 1994 the escapement at Redoubt Lake was 39,449 fish.

Redoubt Lake was fertilized from 1984 through 1987 by ADF&G and the Forest Service, resulting in significant increases in both age-1 and age-2 smolt production over that of pre-enrichment years. In addition, the results of subsequent water-quality testing confirmed that both phytoplankton and zooplankton had been boosted by fertilization; however, the sockeye fry population was too low to take full advantage of the available forage and return of the sockeye population to former historical levels of abundance would require several life cycles if solely dependent on natural spawners. Thus, in 1988 the fertilization was terminated until a sockeye fry delivery system could be developed; however, although experimental work was conducted, no fry delivery program was developed, nor is one likely to be developed in the near future. Fertilization resumed in 1989 and continued through 1995.

The first group of sockeye salmon to benefit from enrichment returned to spawn in 1989. Escapement totalled approximately 30,000 in 1989, 72,000 in 1990, and 45,000 in 1991 : a 3-year average of 49,000 sockeye. The 2-year period between 1992 and 1993 produced a lower average escapement of 17,450--a result of the two nonfertilization years (i.e., 1988 & 1989); however the escapement was indeed higher than the pre-enrichment 1980-1987 average escapement of 8,000.

Sockeye salmon escapement totalled approximately 39,200 in 1994 and 34,200 in 1995. Fertilization will be discontinued in 1996. A smolt weir that has operated in its current form since 1991 accounted for 600,000 sockeye salmon smolts in 1996--the largest total ever recorded. To determine the effectiveness of the 1990-1995 fertilization and the long-term multigenerational effects of the 1984-1987 fertilization, limnological sampling and monitoring of the adult escapement will continue through 2001. Source: USFS, ADF&G, and NSRAA.

**Chilkat Lake sockeye salmon instream incubation boxes** - Streamside incubation boxes have been operational on a tributary (spring pond) of Chilkat Lake since 1989. Sockeye salmon indigenous to the stream are gathered for brood each fall to seed the incubators with a total of 600,000 eggs. Fry volitionally emigrate the following spring. Fry releases and survivals for brood years 1992 through 1996 were as follows: 396,800 (99%); 588,000 (98%); 550,700 (91%); 589,960 (98%); and 570,000 (95%), respectively. Source: ADF&G and NSRAA.

**Chilkat River escapement enumeration** - This system is glacial, making escapement enumeration difficult. Sonar counters, fish wheels, and carcass tagging enumeration studies on the spawning grounds lead to more accurate counts and thus better management of the fishery. Two fish wheels were operated on the lower Chilkat River in 1994, 1995, and 1996; sockeye were tagged and released at both fish wheels. Marked fish were recovered on the Chilkat River and Chilkat Lake spawning grounds to assess escapement. Source: ADF&G and NSRAA

**Goulding Lakes sockeye fry stocking** - Goulding Lakes have been identified as having exceptional potential as a nursery lake for sockeye fry stocking. The scope of the project would be to establish a baseline of information for lake limnology and cutthroat populations during the first two years. Stocking of fry would begin in year three; limnology and fisheries investigations would continue through one sockeye life cycle (6 years). Potential adult production would be 200,000 to 300,000 adult sockeyes, based on the ADF&G euphotic volume model. Preliminary limnology and fishery work was conducted in 1994. The status of this project is in the initial stages of planning. ADF&G Sport Fish Division has intimated that the planting of sockeyes into the system may be in conflict with department disease policy, because resident cutthroat

trout could be at risk due to possible introduction of IHN.  
Source: NSRAA and ADF&G

**Tahltan Lake (TBR project)** - Tahltan Lake, which has an indigenous run of sockeye salmon, drains into the Stikine River. Limnological studies indicate greater sockeye production is possible. As part of a joint agreement between Canada and the U.S., eggs are collected at the lake and transported to isolation modules that had been constructed at Snettisham. In the summer of 1996, 2.3 million fry were planted into the lake; in the fall of 1996, 6.0 million eggs were taken there. This enhancement effort is aimed at increasing the catch of the gillnet fleets of both countries. The project is also identified in the Pacific Salmon Treaty. Source: ADF&G

**Tuya Lake (TBR project)** - Tuya Lake is a barriered lake that also drains into the Stikine River. There are no anadromous species inhabiting the lake. In 1996, 3.6 million sockeye fry (i.e., from eggs taken at Tahltan Lake in 1995 and incubated at Snettisham) were planted in the lake. Limnological studies indicate the lake is capable of supporting more than 10 million juvenile sockeye salmon. This enhancement project is identified in the Pacific Salmon Treaty. Source: ADF&G

**Little Tatsamenie Lake (TBR project)** - The lake drains into the Taku River system just south of Juneau. Limnological studies indicate that greater sockeye salmon production is possible for this system. In 1996, 2 million fry (i.e., from eggs taken in 1995 and incubated at the Snettisham CIF) were planted back into the lake. In the fall of 1996, 4.9 million eggs were taken from this stock. This enhancement project is identified in the Pacific Salmon Treaty. Source: ADF&G

**Trapper Lake** - This partially barriered lake drains into Little Trapper Lake, which supports a sockeye salmon population. The rearing potential for this system is underutilized, and in 1990 the department began planting sockeye salmon into the system; however, this strategy was suspended in 1995 because of unsatisfactory results following 6 years of stocking. This enhancement project is identified in the Pacific Salmon Treaty. Source: ADF&G.

#### **Pink Salmon:**

**Suntaheen Creek barrier modification** - The Forest Service modified a rock barrier and installed two fish passes in Suntaheen Creek in 1991. Monitoring activities conducted during 1995 indicated the these barrier modifications to be successful for passing pinks (i.e., up to 4,000 pinks of 16,000 total salmon) into the system above the barrier, but only marginally successful for chums, the majority of which spawn downstream of the barrier. In 1992, a respective 2,145 and 65 pinks and chums were counted below the barrier, while 885 pinks and no chums were counted above it. In

1993, 7,087 and 1,177 pinks (total 8,264) were counted below and above the barrier, respectively, compared with 10 chums below and 44 above (total 54). In 1994, 3,459 and 481 pinks (total 3,940) were counted below and above the barrier, respectively, compared with 227 chums below and 45 above (total 272). In 1995, 6,628 and 4,876 pinks (total 11,504) were counted below and above the barrier, respectively, while only 81 chums were counted below it. No foot surveys were conducted in 1996. Source: USFS

**Cat Creek fish pass** - Cat Creek (ADF&G 110-15-03) in the Frederick Sound unit has been identified as an opportunity to benefit pink salmon by modification of three small bedrock falls. Explosives could be used to shape the barriers. Coho are presently passing the obstructions. The USFS conducted a feasibility analysis in 1991 for this project and determined pink salmon could benefit from the project. The USFS conducted a feasibility analysis in 1991 and determined pink salmon could benefit. The project is not being emphasized because of the present abundance and low value of pink salmon. NEPA documentation, engineering analysis, and a final design will need to be completed before this project could move forward. Source: USFS.

**Kwatahein Creek fish pass** - Kwatahein Creek (109-52-55) is in the Bay of Pillars on west Kuiu Island; the fish pass there was built in 1989. The 60-foot fish pass allows pink and chum salmon to negotiate a 13-foot partial barrier to access 5.2 acres of prime spawning habitat. Kwatahein Creek is the main pink salmon producer in the Bay of Pillars.

**Fishery Creek fish pass** - This enhancement opportunity was discussed under the chinook salmon section of this plan. The habitat above the barrier has been identified as suitable for several species of salmon, including pinks. Source: USFS.

**Whiterock Creek fish pass** - Whiterock Creek (ADF&G 112-12-50) is a small system on southeastern Chichagof Island just north of Sitkoh Bay. A waterfall barrier is located in this system about 1.5 miles above salt water. A pool and weir fish pass was constructed in 1992 to allow access to about five acres of new habitat. Evaluation of the project is continuing. Between 1993 and 1994, the sill walls on two blasted pools of the fish pass failed because of poor rock quality. In 1995 two concrete walls were constructed to replace the failed sills and improve passage particularly for pink and chum salmon. Source: USFS.

#### **Chum Salmon:**

**Creation/improvement of spawning habitat, Chilkat River** - Several sites on the Chilkat River show potential for creating additional spawning habitat for chum salmon. Rehabilitation needs along the Haines Highway should be evaluated where road construction may have impacted chum habitat. In some areas, debris may be simply removed

with heavy equipment to uncover upwelling water for chum salmon spawning. Possible spawning channel locations have been identified and are being studied for their construction potential. Source: NSRAA.

**Boat Harbor chum salmon releases** - In 1988, a cooperative project (DIPAC, NSRAA, and ADF&G) for the rearing and release of chum salmon at Boat Harbor was initiated using Kadashan stock. Approximately 6 million chum salmon fry were released. DIPAC and NSRAA have conducted this program since 1989: 7.5, 8.3, 9.3, 6.7, 9.6, 6.5, 8.9, and 8.7 million fry were released in 1989, 1990, 1991, 1992, 1993, 1994, 1995, and 1996, respectively. Adult returns have ranged from 80,000 to 263,525 since 1992. Source: NSRAA.

**Limestone Inlet** - The Snettisham Hatchery has been releasing chum salmon fry at Limestone Inlet since 1988; however, chum salmon production at that facility has been discontinued. To enable continuation of the program, beginning in 1992 operation of the site was turned over to DIPAC and NSRAA. In 1991 fry from both Gastineau (9 million) and Snettisham (2.5 million) facilities were released at Limestone. Program releases include the following: 1992, 8.5 million 1.2-g fry; 1993, 10.0 million 1.0-g fry; 1994, 5.8 million 0.95-g fry; 1995, 11.3 1.1-g fry; and 1996, 15.4 million 1.1-g fry. Chum salmon returns from 1992 through 1996 were 10,880, 56,706, 74,900, 153,813, and 375,967, respectively. Source: NSRAA.

#### **All Species:**

**Reestablish Title 16 permitting authority on federal lands and provide enforcement funding** - Current legal interpretations suggest that ADF&G permitting authority may not extend to uncatalogued tributaries of anadromous streams, although many are important to coho production. Title 16 permitting authority must be reestablished for all portions of anadromous fish streams. Legislation and operational plans for habitat protection are pointless, if they are not enforced and proven effective. The effectiveness of current habitat protection standards should be monitored and evaluated.

The crucial need is for funding to allow expansion of surveillance during land-use activities (e.g., timber harvest) and subsequent evaluations. Surveillance is presently inadequate to oversee expansion in private timber harvests. Additional seasonal field support is needed within the Habitat Division of ADF&G. A 6-month position for each area office would allow field participation in timber-sale layouts and increase enforcement during the months when harvests occur. Further increases in the activities of the habitat Division will no doubt be needed over the long term to keep pace with logging, mineral, and municipal development. Regulations should be stringently enforced, and parties responsible for habitat

loss should be required to pay for mitigative projects. Source: Phase II Plan.

**Study of nearshore marine conditions and optimal release timing** - Study of nearshore marine conditions should become a part of the feasibility study of all enhancement projects releasing juvenile salmonids to an "ocean ranching" situation. Timing of release can be crucial to the success of hatchery projects, and water temperature and zooplankton studies should involve all facilities releasing salmonids in Southeast Alaska. Source: Phase II Plan.

**Watershed restoration, Sitka Ranger District** - This effort encompasses a variety of rehabilitation and enhancement strategies for the following watersheds: Shelikof Creek, St. John the Baptist Creek, Iris Creek, Nakwasina River, Appleton Creek, Noxon Creek, Kizuchia Creek, Rodman River, Katlian Creek, Range Creek, Starrigavan Creek, Duffield Creek, Corner Creek, Adams Creek, Sitkoh Creek, Sitkoh River, Fish Bay Creek, and Whiterock Creek. Interdisciplinary skills are used to complete watershed inventories and to develop rehabilitation plans for soils, watershed, silvacultural, and fisheries resources. Treatments include (1) connecting isolated gravel borrow pits to main channels to create new rearing area; (2) inserting large woody debris into streams; (3) removing and/or replacing culverts and/or bridges that impede fish passage or are erosion/sediment sources to streams; (4) stabilizing slopes or channels; (5) stabilizing stream banks; and (6) thinning riparian areas to promote faster growth of trees.

The Sitka District (USFS) has completed watershed rehabilitation work at Shelikof and Iris Creeks on Kruzof Island, Starrigavan Creek on Baranof Island, and False Island Creek and Sitkoh Creek on Chichagof Island. Work completed at Shelikof Creek in 1994 included placing 30 instream large woody debris (LWD) structures, thinning 30 acres of riparian second-growth, revegetating 40 acres of landslides and road cut banks, and placing road cross drainage structures. The work completed at Starrigavan Creek in 1995 included placing 35 instream LWD structures (i.e., a total of 59 since 1986); thinning 20 acres of riparian second-growth; repairing or replacing road drainage structures to eliminate sediment sources to streams; blocking ATV access points to streams; and enlarging/connecting four old gravel borrow ponds to Starrigavan Creek to provide additional rearing habitat.

Work completed at False Island included 20 acres of riparian thinning in 1996. LWD structures will be placed in the stream in 1997. At Sitkoh Creek, five acres of riparian thinning were completed in 1995. An inventory of Nakwasina River began in 1996; the inventory and a rehabilitation plan will be completed in 1997, along with some initial riparian thinning and LWD instream structures.

Project work is being monitored by site visits on a rotating annual schedule. Monitoring includes (1) surveying stream habitat and LWD structures, (2) sampling fish populations at several index streams, (3) measuring response of remaining trees and vegetation to riparian thinning, and (4) evaluating erosion control efforts. Over time, this effectiveness monitoring will determine whether habitat objectives were realized. Source: USFS.

**Watershed restoration, Hoonah Ranger District** - This district will be initiating a variety of rehabilitation and enhancement strategies aimed at watersheds receiving lower impacts from more recent timber activities. In 1995, some rehabilitation work was performed upon stream crossings on alluvial fans; however, the results were inconclusive, because a high-magnitude storm event necessitated a reassessment of test designs for hardened fords. Approximately four acres of landslides and numerous cut slopes were also revegetated. In 1996-1997, 10 acres were seeded; however, road maintenance, specifically the restoration of fish passage at blocked stream crossings, progressed slowly. More monitoring information was collected, describing extent of habitat blocked upstream of culverts in Pavlof, Freshwater, Game, Suntaheen, and Iyouktug watersheds. There is a significant need to continue these inventory and monitoring activities. Source: USFS



**SECTION 6.**

**20-YEAR ACTION PLAN PROJECTS**

**ALL SPECIES**

**1996**

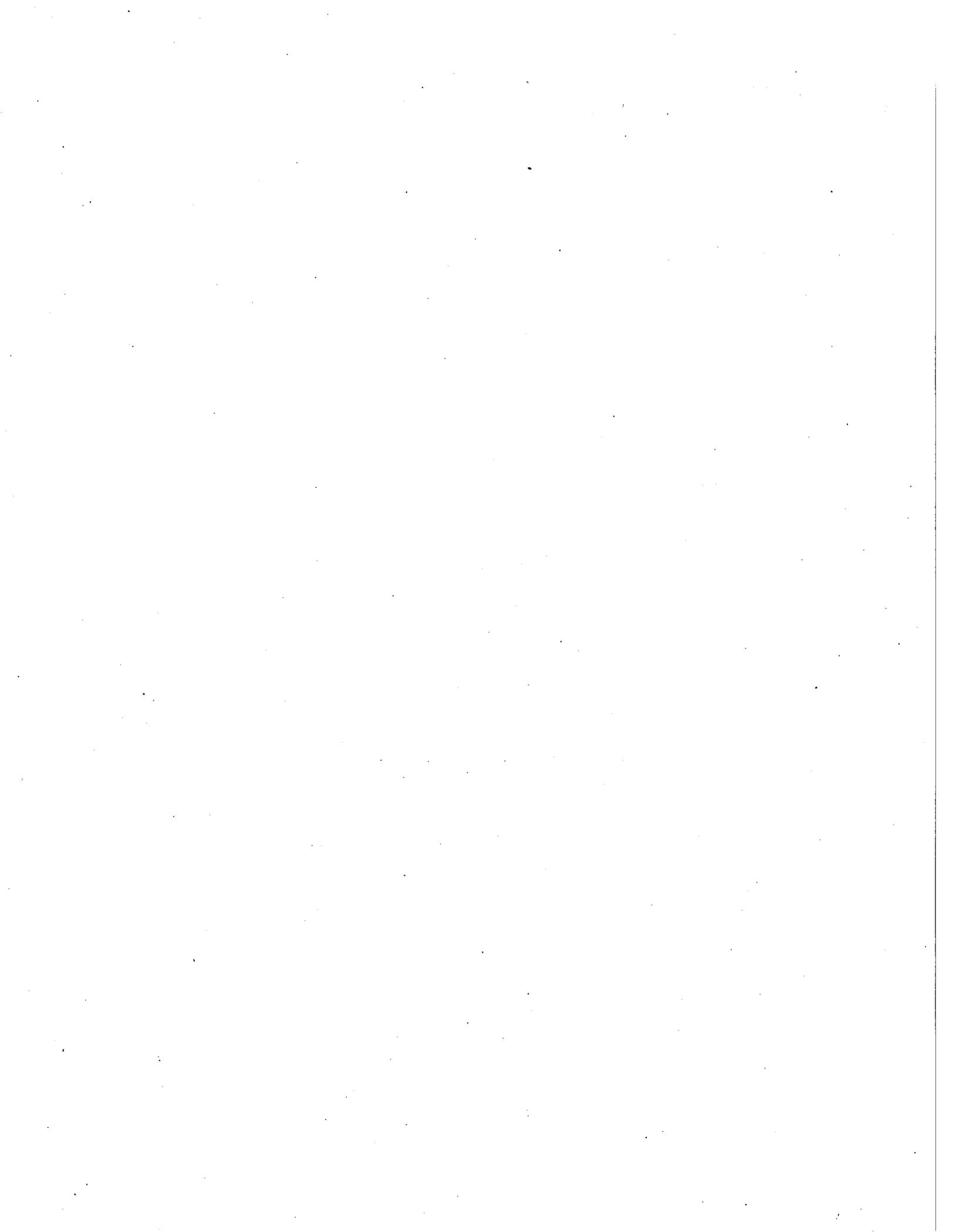


TABLE 51. 20-year action plan projects and target species.

Project	Project Type and Target Species		Habitat Protection
	Enhancement	Management	
Documentation feeding/nursery areas		Chinook	
Thomas Bay hatchery feasibility study	Chinook		
Increased enumeration Chilkat River stocks		Chinook	
Investigate other rehabilitation strategies			Chinook
Thomas Bay Hatchery feasibility coho lake rearing, Thomas Bay	Coho		
Improved escapement enumeration/goals	Coho	Coho	
Run timing and magnitude indexing		Sockeye	
Benzeman Lake investigations	Sockeye		
Admiralty Island barriered lakes	Sockeye		
Lake Florence	Sockeye		
Hasselborg and Thayer Lakes	Sockeye/Coho		
North Arm Port Houghton Lake	Sockeye		
Smolt index/forecasting, Chilkat River	Sockeye		
Reevaluation of escapement goals		Pink	
Stock separation		Chum	
Lake Ekaterina/West Crawfish	Chum		
Thomas Bay area hatchery investigations	Chum		
Haines area logging guidelines	Chum		
Fall chum salmon forecasting		Chum	
Summer chum release site investigations	Chum		
Fish pass study	All species		
Water flow control structures	All species		
Swan Lake cooperative fish stocking	Species undetermined		
Goon Dip River fish pass/stocking	Chinook		
Appleton Creek cooperative fish stocking	Chinook		
Flat Cove cooperative fish stocking	Chinook		
Walter Island Creek habitat improvement	Coho		
Roberts Island Creek fish pass	Species undetermined		
114-80-40 fish barrier removal	Species undetermined		
Port Howard fish pass	Species undetermined		

## Project Narratives for the 1996 20-year Action Plan

Documentation feeding/nursery areas - Information on feeding and nursery areas for immature chinook salmon could be gathered by means of an in-season high seas tag and recovery program. Limited troll observer programs and analyses of fish tickets and logbooks could be used to document times and areas with a high incidence of undersized chinook. Legalized retention of sublegal tagged fish could also aid this effort. The National Marine Fisheries Service (NMFS) Auke Bay Lab has conducted studies targeting on immature chinook and coho salmon. Source: Phase II Plan.

Thomas Bay hatchery feasibility study - There are two possible water sources for a hatchery in Thomas Bay: Scenery or Swan Lakes. Both lakes have large drainages; however, they are too distant for cost-effective pipeline installations that would directly tap the lake. This project would depend on feasibility of obtaining reliable water closer to the hatchery site. Swan Lake's outlet stream has a falls near salt water; gravity-flow water would therefore be available. It also has a long-range potential for hydroelectric development that would also favor hatchery development. Thomas Bay is an excellent terminal harvest area for any species; however, if a major hatchery is determined to be technically feasible, chinook/ coho salmon production to benefit trollers would be preferable. Source: Phase II Plan.

Increased enumeration Chilkat River stocks - There are no directed fisheries on chinook salmon in Lynn Canal during the spring spawning run, except for the sport fishery. Better means of assessing run strength is needed before commercial effort is again allowed to target on the spawning run. Source: Phase II Plan.

Investigate other rehabilitation strategies - Improved harvest management and habitat restoration are the preferred methods for rehabilitation of wild chinook salmon stocks. The success of these strategies should be evaluated and the potential for fry stocking and/or on-site incubation of the Chilkat and Taku Rivers chinook stocks investigated. Source: Phase II Plan.

Coho lake rearing, Thomas Bay - In conjunction with a hatchery development in Thomas Bay, lakes in the area may offer opportunities for coho lake rearing. Source: Phase II Plan.

Improved escapement enumeration/goals - Better enumeration of Chilkat and Chilkoot stocks can be achieved by continuation of weir operations through the coho season. For other Lynn Canal stocks, an escapement index system employing helicopter surveys, possibly coordinated with weir counts for up to one cycle, would greatly benefit management potentials. By improving escapement information, harvest data could be correlated to escapements and eventually used more effectively to achieve desired escapements. Improved escapement data will also allow the relationship between

escapements and subsequent returns to be determined so that escapement goals can be set. Source: Phase II Plan.

**Run timing and magnitude indexing** - The relative abundance of sockeye salmon stocks from the Chilkat and Taku Rivers could be determined by test fishing. Separate stocks could also be identified by scale pattern analysis to determine contribution to the fisheries by time and area. This information would greatly aid in efficient management of these stocks. Source: Phase II Plan.

**Benzeman Lake investigations** - Benzeman Lake has a unique run of small fish (2.5-3.5 lbs), which is probably the result of a natural selection process to allow adult passage through the lake's underground outflow and across the top of the barrier during overflows. No studies are planned at this time because of logistical problems with enumerating fish entering and exiting the lake through this outflow. Furthermore, the desirability of enhancing a run of such small fish is questionable, because fertilization is expected to increase the numbers of fish, not their size. However, the lake's large size (1,600 acres) and the scarcity of opportunities for significant increases in sockeye salmon production make its potentials well worth investigating. Source: Phase II Plan.

**Admiralty Island barriered lakes** - Major opportunities may exist in three barriered lake system on Admiralty Island where potentials are unknown. Because of high wilderness and recreational values, decisions on whether enhancement activities will be allowed in Admiralty Island National Monument Wilderness awaits the completion of a wilderness-aquaculture environmental impact study as set out in ANILCA Section 1315(b).

**Lake Florence** - This lake has 840 surface acres, is located outside of the wilderness, and could make a contribution to the area sockeye salmon fisheries. The lake's moderate size makes it a good potential study site to determine the effects of sockeye introductions on resident cutthroat trout. Shee Atika Incorporated owns the land and has expressed an interest in participating in an enhancement project. Source: Phase II Plan.

**Hasselborg and Thayer Lakes** - These lakes encompass approximately 3,500 and 3,000 surface acres, respectively. These lakes may have the potential to produce significant numbers of sockeye (or coho) salmon; however, their potential productivity level has not been quantified. Hasselborg Lake is highly productive for sport fishing opportunities, and effects of sockeye enhancement activities upon the lake's sport fisheries is not known at this time. Source: Phase II Plan.

**North Arm, Port Houghton** - Little is known about this lake. While it is documented that coho and steelhead enter the lake, reports of a run of anadromous sockeye salmon have not been confirmed. This

1,200-acre lake system should be investigated for opportunities to increase sockeye production. Fish pass improvement, fertilization, fry stocking, or streamside incubation projects may be appropriate. Source: Phase II Plan.

**Smolt index/forecasting - Chilkat and Chilkoot Rivers** - During early stages of the sockeye salmon gillnet fishery these systems support and prior to escapement monitoring, management decisions have been based on harvest data. A reliable, preseason forecast of these sockeye salmon stocks would allow more effective management of early portions of this Lynn Canal fishery. Source: Phase II Plan.

**Reevaluation of escapement goals** -ADF&G biologists consider current index escapement goals too low for some districts. Studies of natural production capacity are needed to determine whether optimum escapements are actually being sought. Such a project would be a major undertaking. In the meantime, where there is evidence to show that specific goals are too low, an increase in those goals might yield greater production and result in increased future harvests. Source: Phase II Plan.

**Stock separation** - Chum salmon are often harvested when they are intermingled with sockeye or pink salmon. Research should be initiated for regulating chum salmon harvests on the basis of spatial or temporal separation. Tagging experiments, test fishing, and/or biometric support to analyze current catch records are needed to detect any differences in migration routes, milling areas, and variations in timing. Source: Phase II Plan.

**Lake Ekaterina/ West Crawfish** - Shamrock Bay in West Crawfish Inlet is one of the more outstanding hatchery and/or release sites. A nearby stream (ADF&G 113-032-05) offers native brood stocks, but because it is a significant stock, enhancement strategies would have to be designed to allow management for adequate escapement to the stream. There is a hatchery water supply at Lake Ekaterina; however, the greatest drawback there appears to be the lack of flat ground for construction. There has been considerable talk of floating hatcheries, and this site may be the place to try it. The NSRAA is evaluating Shamrock Bay as a release site for coho salmon incubated at the Medvejie Central Incubation Facility. Smolts would be reared for 30 days in saltwater netpens prior to release for imprinting. In addition, NSRAA has proposed studying Lake Ekaterina for stocking coho fry. US/Canada funding is pending. Source: Phase II Plan.

**Thomas Bay area hatchery investigations** - Investigation of hatchery opportunities in the Thomas Bay area is recommended. Besides the Thomas Bay site, several opportunities for small PNP pink and chum facilities may exist. The following sites offer good terminal harvest areas and may have small to moderate incubation capacity:

(1) Port Malmesbury (ADF&G 109-63-17) and (2) North Arm, Farragut Bay (ADF&G 110-14-15) Source: Phase II Plan.

**Haines area logging guidelines** - The effects of logging on Klehini chum and chinook salmon should be studied in order to minimize impacts to spawning and rearing habitat and to develop guidelines to reduce impacts on other drainages scheduled for logging. Source: Phase II Plan.

**Fall chum salmon forecasting** - The development of a fall chum salmon forecast that is based on overwinter survivals is needed. Selected side sloughs would be monitored as an index of overall survival. The forecast would aid management during early portions of the chum run. The data could also be used to better define escapement goals. Source: Phase II Plan.

**Summer chum release site investigations** - Summer chum salmon are desirable species for enhancement. The sites below have favorable harvest areas for remote release of hatchery-raised fry, but their development may be limited by technical and/or economic feasibility: (1) Taiya Inlet, (2) Sawmill Creek/Echo Cove, (3) Sullivan Island, (4) William Henry Bay, and (5) St James Bay. Source: Phase II Plan and DIPAC staff.

**Fish pass study** - Evaluations of all fish passes are badly needed. Past fish pass construction has occurred without an adequate understanding of biological and physical limitations of salmon passage as well as adequate evaluations afterwards. In particular, biological aspects, such as the effects of improving access versus creating new access, new species interactions, and the rate of colonization of newly accessible areas, need to be studied if a fish pass program is to be a success. Experimentation on concepts such as methods for increasing the rate of colonization is needed. Source: Phase II Plan.

**Water flow control structures** - Stream flow control is a technique that has not been utilized in Southeast Alaska but offers potential for improving egg-to-fry survivals for all species as well as juvenile survivals for freshwater rearing species. It can also aid adult spawning success. The Canadians have successfully utilized a number of simple control structures. Although it is usually not economically attractive to develop reservoir capacities adequate for flood protection, a relatively small amount of storage capacity could augment extreme low flows. A habitat survey program will no doubt show many systems in northern Southeast Alaska where low flows are a limiting factor. Flow control for appropriate systems should be explored. Source: Phase II Plan.

**Swan Lake cooperative fish stocking** - This project would be an extension of the Sulloia Lake project to include some fish for Swan Lake in Sitka so that it could be restocked for the annual children's fishing derby. Although Swan Lake is not on National

National Forest land, and Swan Lake could be stocked when aircraft and personnel return from Sitka for almost no extra cost. This project would serve the public interest well. Source: USFS.

**Goon Dip River fish pass/stocking (W. Chichagof Wilderness Area)**

Goon Dip River has a 25-foot waterfall near tidewater that blocks migration of all anadromous fish species. Lakes of 35 and 160 acres as well as six miles of inlet stream are populated only by sculpin. A vertical-slot fish pass constructed in a tunnel could provide access for introduced chinook or coho salmon. Assuming stocking costs of \$20,000 for three years, and construction costs of \$750,000, the project could have a benefit/cost ratio of 13.5:1, based on habitat potential for chinook salmon. Stream and lake surveys have been completed for this system. NEPA analysis, engineering surveys and design, and a fish stocking program remain to be completed. Source: USFS.

**Appleton Creek cooperative fish stocking** - Appleton Creek has a barrier falls near salt water that blocks anadromous fish access to several miles of stream and pond habitat totalling approximately 15 acres. Correction of the barrier by installation of fish pass may not be cost effective. However, upstream habitat could be utilized for rearing hatchery-incubated chinook salmon. Cooperative fish stocking would be patterned after Indian River, but without the detailed analysis. Following completion of the Indian River study, coded wire tagged chinook salmon would be dispersed throughout Appleton Creek above the barrier falls. The benefit/cost ratio has been calculated at 3.5:1. This project needs further discussion prior to complete endorsement by the NSERPT and prior to project implementation. Source: USFS.

**Flat Cove Creek cooperative fish stocking (W. Chichagof Wilderness Area)** - Flat Cove would be stocked in a manner similar to Indian River. NEPA analysis must be completed to clear this project in a wilderness area. The benefit/cost ratio has been calculated at 3.0:1. This project needs further discussion prior to complete endorsement by the NSERPT and prior to project implementation. Source: USFS.

**Juneau Ranger District**

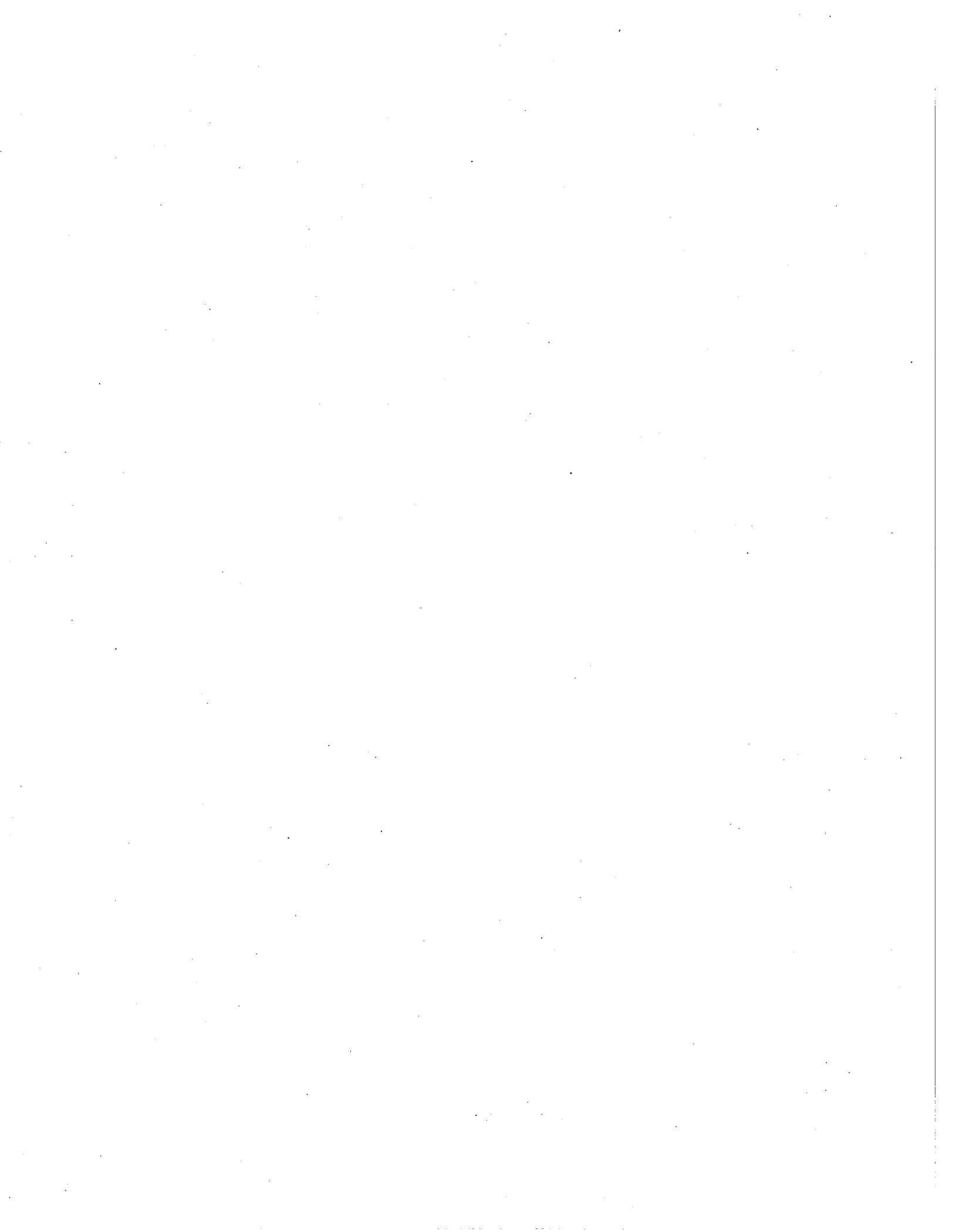
**Walter Island Creek habitat improvement** - Walter Island Creek (ADF&G 110-34-010) is located on the south side of Port Houghton, 80 air miles southeast of Juneau. It has 3,640 acres of drainage, 3.25 miles of mainstream, and 1.2 miles of tributaries. Average pink salmon escapement is 300 fish, but the data is poor. Spawning habitat is poor in the first 1.25 miles and moderate for the next mile. Stream gradient of 3% contributes to poor gravel supplies. Rearing habitat is moderate in the lower section and better upstream. Coho salmon appear to favor this stream. Wire gabions have been recommended to improve enhancement opportunities. A determination of the type of substrate in the pink salmon spawning

grounds is required before the most effective gravel trapping structure can be designed. Project identification, scoping, and feasibility is scheduled for 1993 at a cost of \$4,000. Source: USFS.

**Roberts Island Creek fish pass** - Roberts Island Creek (ADF&G 110-31-004) is located on the south shore of Port Houghton about 80 air miles southeast of Juneau. This creek system drains 7,460 acres and has 5.8 miles of mainstream and 7.5 miles of tributaries. Escapement data is poor, but pinks and chums are the most common resident species. Spawning and rearing habitats are good in the first mile; however, a large log barrier diminishes further spawning and rearing habitat. There is some disagreement as to the enhancement opportunities at this location.

**114-80-40 fish barrier removal** - This nameless anadromous stream (ADF&G 114-80-40) is located in the vicinity of Excursion Inlet at the southeast end of Glacier Bay. There is a fish barrier in the stream. Identification, project scoping, and feasibility studies have not yet been conducted. Source: USFS.

**Port Howard fish pass** - This system (ADF&G 1112-61-12) is located 2 miles northwest of Point Howard, which is located 5 miles due west of Juneau. There is a fish barrier near tidewater. Resident fish species include pink and chum salmon. Project scoping and feasibility studies were conducted in 1992, and the project was determined to be nonfeasible. Source: USFS.



**SECTION 7.**

**U.S./CANADA PACIFIC SALMON TREATY ENHANCEMENT PROGRAM  
FOR SOUTHEAST ALASKA**

1996



## Background

In 1985 several substantive changes to the course of the fisheries development in southeast Alaska were made necessary by the implementation of the U.S./Canada Pacific Salmon Treaty (PST). To mitigate for the harvest restrictions imposed on all gear groups a new enhancement program was developed. Initial goals included the production of 100,000 chinook salmon, 1,000,000 chum salmon, and 20,000-40,000 sockeye salmon. The federal government appropriated \$20.0 million for this enhancement program, defining the grant funding structure so as to provide for annual payments over a five-year period, beginning in 1986.

In the late spring of 1985, the State of Alaska began to explore various options for chinook salmon mitigation through investment in new hatchery production. A multi-disciplinary mitigation team composed of representatives of the Alaska Department of Fish and Game, National Marine Fisheries Service, commercial fishing organizations, and private sector aquaculture associations, was formed to deliberate on all aspects of chinook salmon production including various enhancement technologies, fisheries management issues, and harvest opportunities.

Although primary emphasis had been placed on implementing projects to produce chinook salmon for common property harvests by the troll fleet, other projects designed to produce chum, coho, and sockeye salmon have also been proposed and endorsed. All of these projects will provide additional benefits for each of the targeted gear groups. Every year, beginning in 1985 and ending in 1991, ADF&G has hosted mitigation group meetings to discuss the status and future direction of the U.S./Canada enhancement program. The final group meeting was held in February of 1992. At that time the mitigation team members made project recommendations for consideration by the Commissioner. The Commissioner acted upon these recommendations and made the final project determinations in April of 1992. These project choices were consolidated into a grant proposal and forwarded to NOAA for review and approval.

On September 30, 1992, ADF&G received permission from NOAA to expend the FFY91 appropriation. The final allocation of \$2.2 million fulfilled the \$20 million dollar commitment by the federal government to the State of Alaska for the Alaska Salmon Enhancement Program.

## Current Status

Effective November 1996, all enhancement projects were completed, all funds were exhausted, and the Alaska Salmon Enhancement Program was deactivated. Tables 52-56 identify each of the enhancement projects funded through the U.S./Canada process. The first four tables are presented by species and include information by agency, project, adult production goal, status, and cost by federal fiscal

year. The total allocation for the enhancement program was \$19,865,280, which included federal fiscal years 1986 through 1996. Of this total \$11,160,349 was dedicated for chinook salmon production, \$6,201,193 for sockeye production, \$1,613,468 for chum production, and \$314,000 for coho production. Table 56 summarizes this distribution and includes contract administration and technical support expenditures. Completion of these projects, which were federally funded under the Alaska Salmon Enhancement Program, has directly assisted the northern and southern southeast regional planning teams in achieving the goals established in the phase-I regional comprehensive salmon plans.

Table 52. ALASKA SALMON ENHANCEMENT PROGRAM STATUS REPORT FOR CHINOOK SALMON, 1996.

FACILITY OR PROJECT	ADULT PRODUCTION GOAL	STATUS	COST (In Thousands)
1. SSRAA - WHITMAN LAKE HATCHERY EXPANSION	33,000	FFY 86 - COMPLETED	1,291.7
2. NSRAA - MEDVEJIE HATCHERY EXPANSION	17,300	FFY 86/87 - COMPLETED	2,095.1
3. ADF&G- HIDDEN FALLS HATCHERY EXPANSION	52,000	FFY 87 - ENGINEERING/ DESIGN SITE PREPARATION/CONSTRUCTION FFY 88 - CONSTRUCTION (558.8) PLUS ALLOCATION FROM BARANOF WARM SPRINGS (891.2) COMPLETED	250.0 1,799.0 <u>1,250.0</u> TOTAL 3,299.0
4. FRED - CRYSTAL LAKE HATCHERY RENOVATION	10,000	FFY 88- COMPLETED FFY 91	420.0
5. FRED/COMM. FISH - CARROL INLET PREDATION STUDY	N/A	FFY 86 - COMPLETED	30.2
6. FRED - BARANOF HATCHERY	N/A	FFY 88 - DISCONTINUED	51.6
7. FRED - FARRAGUT RIVER FRY PLANTS, 5 YEARS	4,000	FFY 89/90 - PROJECT INITIATED IN 1991-COMPLETED	77.0
8. FRED - HARDING RIVER FRY PLANTS, 5 YEARS	800	FFY 89/90 - PROJECT DISCONTINUED 9/30/95-BALANCE OF FUNDS TRANSFERRED TO SNETTISHAM AND INDIRECT	113.96
9. FRED - CRYSTAL LAKE HATCHERY WATER MAIN REPLACEMENT	N/A	FFY 89/90 - WATERLINE WORK COMPLETED RACEWAY WORK COMPLETED	725.0
10. NSRAA - MEDVEJIE HATCHERY REARING SPACE	N/A	FFY 89/90- COMPLETED 1991	60.0
11. SSRAA - WHITMAN LAKE HATCHERY MODIFICATIONS	17,500	FFY 89/90 -PROJECT COMPLETED 11/30/94	359.63
12. FRED - DEEP COVE CHINOOK REMOTE RELEASE. CAPITAL AND OPERATIONAL COSTS, 5 YEARS.	N/A	FFY 89/90 -INITIATED IN 1991 - DISCONTINUED 1993. BALANCE OF FUNDS TRANSFERRED TO S.E. BARANOF PROJECT (1,177.8)	137.13
13. NSRAA - HIDDEN FALLS NET PENS	(Included in #3 above)	FFY 89/90 -COMPLETED IN 1993	70.0
14. AKI - S.E. BARANOF CHINOOK CAPITAL COSTS	60,000	FFY 89/90 -TRANSITION FROM DEEP COVE PROJECT COMPLETED	1,177.87
15. AKI - S.E. BARANOF CHINOOK OPERATIONAL COSTS, 3 YEARS	(Included in # 14 above)	FFY 1991 - PROJECT COMPLETED	453.15
16. FRED - CRYSTAL LAKE HATCHERY OZONATION	N/A	FFY 1991 - PROJECT COMPLETED IN 1993 - BALANCE TO SNETT.	175.2
17. NSRAA - MEDVEJIE RACEWAY COVERS	N/A	FFY 1991 - PROJECT COMPLETED 6/30/95	70.0
18. SSRAA - NEETS BAY HATCHERY UPGRADE	N/A	FFY 1991 - PROJECT COMPLETED 9/30/95	450.0
19. FRED - UPPER LYNN CANAL CHINOOK ENHANCEMENT	3,000	FFY 1991 - PROJECT COMPLETED	103.8
<b>ADULT PRODUCTION POTENTIAL</b>	<b>197,600</b>	<b>TOTAL EXPENDITURES ALL PROJECTS</b>	<b>\$11,180.35</b>

TABLE 53. ALASKA SALMON ENHANCEMENT PROGRAM STATUS REPORT FOR CHUM SALMON, 1996.

FACILITY OR PROJECT	ADULT PRODUCTION GOAL	STATUS	COST (In Thousands)
1. FRED - MARX CREEK SPAWNING CHANNEL	50,000	FFY 87/88 - BROOD TRANSPORT, FRY SURVIVAL, CODED WIRE TAGGING - COMPLETED	18.1 <u>18.1</u>
			TOTAL 36.2
2. NSRAA - TAKATZ BAY PROJECT REMOTE CHUM REARING	600,000	FFY 86 - FRY TRANSPORT, REARING AND RELEASE - COMPLETED	95.0
3. FRED - TAKATZ PROJECT  FRED - HIDDEN FALLS BARRIER NET	N/A	FFY 86 - CHUM EGG TAKE, INCUBATION AT HIDDEN FALLS - COMPLETED FFY 86 - NET PURCHASE AND INSTALLATION COMPLETED	23.0  <u>95.0</u>
			TOTAL 213.0
4. SSRAA - WHITMAN LAKE HATCHERY CHUM INCUBATION	250,000	FFY 86 - CHUM INCUBATORS FOR EXPANDED CAPACITY - COMPLETED	36.9
5. NSRAA - HIDDEN FALLS INCUBATION AND REARING	540,000	FFY 88/89 - INITIATED IN 1990, 35 MILLION ADDED EGG CAPACITY - COMPLETED	385.0
6. SSRAA - KENDRICK BAY FLOAT CAMP	200,000	FFY 88/89 - INITIATED 1990, CAMP AND OPERATIONAL EQUIPMENT - COMPLETED	149.39
7. SSRAA - EARL WEST FLOAT CAMP	N/A	FFY 89/90 - INITIATED 1990, CAMP AND OPERATIONAL EQUIPMENT - COMPLETED	125.0
8. SSRAA - NEETS BAY HATCHERY INCUBATION AND WATER SAVINGS	400,000	FFY 89/90 - PROJECT COMPLETED 1993	667.97
9. MARX CREEK FRY EVALUATION	N/A	FFY87-PROJECT COMPLETED 1996	
ADULT PRODUCTION POTENTIAL	2,040,000	TOTAL EXPENDITURES ALL PROJECTS	\$ 1,613.46

TABLE 54. ALASKA SALMON ENHANCEMENT PROGRAM STATUS REPORT FOR SOCKEYE SALMON, 1996.

FACILITY OR PROJECT	ADULT PRODUCTION GOAL	STATUS	COST (In Thousands)
1. FRED - SNETTISHAM CIF	316,800	FFY 86 - TURNER LAKE PATHOLOGY AND LIMNOLOGY INVESTIGATIONS - COMPLETED	63.2
		SPEEL LAKE INCUBATION PROJECT - COMPLETED	48.0
		FFY 87 - ENGINEERING /DESIGN - COMPLETED	155.0
		LIMNO/LAKE OUTLET INVESTIGATIONS - COMPLETED	100.0
		FFY 88 - CRESCENT LAKE LIMNO./EVALUATIONS	20.0
		18 MILLION EGG FACILITY, CONSTRUCTION - COMPLETED	<u>1,100.0</u>
		TOTAL	1,481.2
2. SSRAA - BEAVER FALLS HEAT EXCHANGER ADULT HOLDING, BROODSTOCK RIPENING	88,000	FFY 87- COMPLETED	175.4
		FFY 88 - COMPLETED	170.0
3. FRED - BEAVER FALLS	145,200	FFY 86 - STATE FY87 OPERATIONS	185.0
		FFY 87 - STATE FY88 OPERATIONS	168.6
		NAHA/PATCHING/KARTA EGG TAKE, TRANSPORT EVALUATION	153.6
		FFY 88 - STATE FY89 OPERATIONS	151.5
		MCDONALD/HUGH-SMITH EGG TAKE	
		MCDONALD/HUGH SMITH/VIRGINIA LAKE	
		TRANSPORT, EVALUATION	134.2
		PATCHING /HECKMAN LIMNOLOGY	<u>68.2</u>
		TOTAL	1,206.5
4. FRED - KLAWOCK HATCHERY	29,000	FFY 87 - CONVERSION COMPLETED	110.0
		KLAWOCK/NECK LAKES LIMNOLOGY	<u>50.0</u>
		TOTAL	160.0
5. FRED - SITUK/MOUNTAIN LAKES	40,000	FFY 87 - LIMNOLOGY COMPLETED	18.3
6. FRED - SNETTISHAM, PHASE II	N/A	FFY 88 - INTERIM FACILITY FOR 1990 TRANSBOUNDARY RIVER COMMITMENTS - COMPLETED 1993	90.0
		SWEET HEART /SPEEL LIMNOLOGY STUDIES	27.8
		TBR OPERATIONAL COSTS	70.0
		LONG LAKE /CRATER LAKES FISH SAMPLING	4.0
7. FRED- SNETTISHAM CIF		FFY 89/90 - 18 MILLION EGG CAPACITY - COMPLETED 1993	1,350.0
8. FRED - SWEETHEART/SPEEL		FFY 89/90 - 3 YEARS EVALUATION. - COMPLETED 6/30/94	<u>113.4</u>
		TOTAL	1,673.5
9. FRED - HUGH- SMITH, BAKEWELL BADGER LAKES REHABILITATION	UNDETERMINED	FFY 89/90 - STATE FY 91 REHABILITATION - COMPLETED	131.6
10. FRED - MCDONALD LAKE	112,000	FFY 89/90 - TWO YEARS OF REHABILITATION, COMPLETED	78.2
11. FRED - REDOUBT LAKE	60,000	FFY 89/90 - FIVE YEARS OF REHABILITATION , COMPLETED	455.0
12. NSRAA - REDOUBT LAKE CIF	CANCELLED	FFY 89/90- PROJECT MONIES REPROGRAMMED INTO THREE NEW SOCKEYE SALMON PROJECTS (\$495,000 TOTAL)	-0-

--continued--

601

TABLE 54. (CONTINUED)

FACILITY OR PROJECT	ADULT PRODUCTION GOAL	STATUS	COST (In Thousands)
13. FRED/SSRAA BEAVER FALLS OPERATIONS	N/A	FFY 89/90 - SSRAA OPERATES UNDER CONTRACT WITH ADF&G	110.0
14. FRED - SNETTISHAM CIF	(INCLUDED IN #15 BELOW)	FFY 89/90 - CHILKAT SOCKEYE MODULES 9 MILLION EGG CAPACITY - COMPLETED 1993	300.0
15. NSRAA-CHILKAT LAKE SOCKEYE ENHANCEMENT	249,943	FFY 89/90 - CHILKAT SOCKEYE ENHANCEMENT 5 MILLION EGGS , COULD INCREASE TO 10 MILLION COMPLETED	178.0
16. NSRAA - LAKE EKATERINA INVESTIGATIONS	N/A	FFY 89/90 - LAKE INVESTIGATIONS - COMPLETED	17.0
17. FRED - SALMON LAKE SOCKEYE REHABILITATION	40,000	FFY 91 - PROJECT COMPLETED	122.0
18. FRED - SNETTISHAM OFF-HATCHERY REARING	300,000	FFY 91 - PROJECT COMPLETED- BALANCE TO SNETT. FRY/SMOLT	51.9
19. FRED - SNETTISHAM CIF	(INCLUDED IN # 1&7 ABOVE)	FFY 1991 - PROJECT REIMBURSES FOR TBR OPERATIONAL COSTS FY 91 - COMPLETED 1993	108.8
20. CFMD - SNETT. FRY/SMOLT	N/A	COMPLETED	17.6
21. CFMD - SNETT. FRY/SMOLT II	N/A	COMPLETED	104.9
ADULT PRODUCTION POTENTIAL	1,380,943	TOTAL EXPENDITURES ALL PROJECTS	\$ 6,201.2

TABLE 55. ALASKA SALMON ENHANCEMENT PROGRAM STATUS REPORT FOR COHO SALMON, 1996.

FACILITY OR PROJECT	ADULT PRODUCTION GOAL	STATUS	COST (In Thousands)
1. NSRAA - DEER LAKE COHO BY-PASS	UNDETERMINED	FFY 91 - PROJECT STARTED 1992 - COMPLETED IN 1993	50.0
2. FRED - KETCHIKAN AREA LAKE STOCKING	25,000	FFY 91 - FRY TRANSPORT AND RELEASE. SOME FUNDS TO SNETT. FRY/SMOLT II COMPLETED	114.0
3. FRED - OLD FRANKS BIOENHANCEMENT	25,000	FFY 91 - FRY TRAPPING AND TRANSPORT- COMPLETED	150.0
ADULT PRODUCTION POTENTIAL	50,000	TOTAL EXPENDITURES ALL PROJECTS	\$ 314.0

**TABLE 56. DISTRIBUTION OF FUNDS BY SPECIES, POTENTIAL ADULT PRODUCTION, AND TOTAL ALLOCATIONS, 1996.**

<b>SPECIES</b>	<b>POTENTIAL ADULT PRODUCTION</b>	<b>ALLOCATIONS</b>
CHINOOK SALMON	197,600	\$ 11,160,349
SOCKEYE SALMON	1,380,943	\$ 6,201,193
CHUM SALMON	2,040,000	\$ 1,613,468
COHO SALMON	50,000	\$ 314,000
CONTRACT ADMINISTRATION		\$ 412,100
ADMINISTRATIVE OVERHEAD		\$ 54,170
ADF&G TAG LAB COMPUTER HARDWARE AND SOFTWARE		\$ 110,000
TOTAL FUNDING RECEIVED		\$ 19,865,280*
TOTAL U.S./CANADA FUNDING		\$ 20,000,000

\* DIFFERENCE DUE TO ADMINISTRATIVE COSTS ASSESSED BY NOAA

**DISTRIBUTION OF FUNDS BY AGENCY**

NORTHERN SOUTHEAST REGIONAL AQUACULTURE ASSOCIATION	\$ 3,020,100
SOUTHERN SOUTHEAST REGIONAL AQUACULTURE ASSOCIATION	\$ 3,536,000
ARMSTRONG-KETA INC.	\$ 1,631,020
ALASKA DEPARTMENT OF FISH AND GAME	\$ 11,678,160
TOTAL ALLOCATIONS	\$ 19,865,280

## ACKNOWLEDGEMENTS

The 1996 update of the phase-two comprehensive salmon plan for northern Southeast Alaska was prepared by Carol E. Denton, Kevin C. Duffy, Steven G. McGee, and Sid O. Morgan (ADF&G, CFMD Division, Planning, Permitting, and Development Program). Additional assistance by U.S. Forest Service, NSRAA, and CFMD Division regional staffs is gratefully acknowledged. The cover was designed by Katherine Aschaffenburg. This update was reviewed and approved by the Northern Southeast Regional Planning Team.



The Alaska Department of Fish and Game administers all programs and activities free from discrimination based on race, color, national origin, age, sex, religion, marital status, pregnancy, parenthood, or disability. The department administers all programs and activities in compliance with Title VI of the Civil Rights Act of 1964, Section 504 of the Rehabilitation Act of 1973, Title II of the Americans with Disabilities Act of 1990, the Age Discrimination Act of 1975, and Title IX of the Education Amendments of 1972.

If you believe you have been discriminated against in any program, activity, or facility, or if you desire further information please write to ADF&G, P.O. Box 25526, Juneau, AK 99802-5526; U.S. Fish and Wildlife Service, 4040 N. Fairfax Drive, Suite 300 Webb, Arlington, VA 22203 or O.E.O., U.S. Department of the Interior, Washington DC 20240.

For information on alternative formats for this and other department publications, please contact the department ADA Coordinator at (voice) 907-465-6077, (TDD) 907-465-3646, or (FAX) 907-465-6078.

The Alaska Department of Fish and Game administers all programs and activities free from discrimination based on race, color, national origin, age, sex, religion, marital status, pregnancy, parenthood, or disability. The department administers all programs and activities in compliance with Title VI of the Civil Rights Act of 1964, Section 504 of the Rehabilitation Act of 1973, Title II of the Americans with Disabilities Act of 1990, the Age Discrimination Act of 1975, and Title IX of the Education Amendments of 1972.

If you believe you have been discriminated against in any program, activity, or facility, or if you desire further information please write to ADF&G, P.O. Box 25526, Juneau, AK 99802-5526; U.S. Fish and Wildlife Service, 4040 N. Fairfax Drive, Suite 300 Webb, Arlington, VA 22203 or O.E.O., U.S. Department of the Interior, Washington DC 20240.

For information on alternative formats for this and other department publications, please contact the department ADA Coordinator at (voice) 907-465-6077, (TDD) 907-465-3646, or (FAX) 907-465-6078.