

PILLAR CREEK HATCHERY ANNUAL MANAGEMENT PLAN, 1995

By

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Regional Information Report<sup>1</sup> No. 4K95-27

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Commercial Fisheries Management and Development Division  
211 Mission Road  
Kodiak, AK 99615

May 1995

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## **PROJECT SPONSORSHIP**

Pillar Creek Hatchery operations are funded by Kodiak Region Aquaculture Association (KRAA). In addition, all evaluation of hatchery salmon stocking programs are funded by KRAA.

The Alaska Department of Fish and Game, Sport Fish Division, provides funding for coho salmon stocking on the Kodiak road system.

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## INTRODUCTION

Pillar Creek Hatchery, constructed in the summer of 1990 under a cooperative agreement between the State of Alaska, Department of Fish and Game and Kodiak Regional Aquaculture Association (KRAA), is located on the road system approximately seven miles north of the City of Kodiak. The facility has the capacity to incubate 20 million salmon eggs and was designed to increase salmon production for Kodiak Island seiners and set gill net fishermen by enhancing barren-lake systems with sockeye salmon fry and a to a lesser extent, coho salmon fry, and to also supplement wild stocks to rehabilitate depleted runs. Pillar Creek Hatchery is operated by funds provided by Kodiak Regional Aquaculture Association (KRAA), a non-profit salmon fishers' organization.

The primary project facilitated by Pillar Creek Hatchery is the stocking of late-run sockeye salmon fry into Spiridon Lake. The intent of this project is to create a sockeye salmon fishery by utilization of Spiridon Lake as a fry nursery area. The rearing capacity of the lake has been estimated to be 11 million sockeye salmon fry. In order to minimize the impacts of rearing on the standing crop of macrozooplankton a conservative stocking strategy has been adopted. Thus, stocking 5 million fry for two years, 8 million for the following two years, finally reaching the capacity of 11 million fry after five years is the goal of the project. A brood stock for this project is currently being developed at Little Kitoi Lake near Kitoi Bay Hatchery using Upper Station stock. The 1994 Hatchery Management Plan was amended to change the brood source for Spiridon Lake stocking to Saltery Lake sockeye for an interim period until the brood source goals are attained at Little Kitoi Lake. This brood source change has been approved by the U.S. Fish and Wildlife Service for one year only.

Jennifer Lake will also be stocked with late-run fry (0.2 million) from the Upper Station sockeye salmon brood source.

Early run sockeye salmon from Afognak Lake is the brood source for stocking several additional barren lakes in the Kodiak area. A total of 3.4 million Afognak Lake sockeye salmon eggs were collected in 1994. It is currently projected that the stocking levels of juvenile sockeye salmon in 1995 will be 100,000 for Hidden Lake, 100,000 for L. Waterfall Lake, 100,000 for Crescent Lake, and 100,000 for Little Kitoi Lake.

The reduced stocking levels of Afognak Lake sockeye salmon juveniles is a result of lower than expected egg to fry survival rates and larger release size.

Rehabilitation projects continue at the Malina and Laura Lakes systems with 500 and 60 thousand sockeye salmon eggs collected, respectively. Approximately 100,000 juveniles are expected to be released at Malina Lake and 25,000 at Laura Lake.

A small scale coho salmon science education project resulted in 3,000 eggs collected at Buskin River and will provide eggs for several classroom incubation programs in the Kodiak area schools. Also, 150,000 Buskin River coho salmon eggs were taken to support road system stocking for enhancing sport fishing opportunities.

Since Pillar Creek Hatchery is a relatively new facility, this management plan will continue to evolve in an effort to bring the egg numbers up to the 20 million egg capacity. There are many factors that have, and will continue to, bring changes to this document. In season lake productivity assessment may result in adjustments to stocking densities in order to maintain optimal stocking levels. This management plan also includes proposals which are in the process of review as required by the Fish Transport Permitting or budget allocation processes.

### RELEASE SITES FOR 1995

A. 1995 Spiridon Lake Release from 1994 Saltery Lake egg take:

1. Species: Sockeye Salmon
2. Eggs Taken: 7,500,000 (2,537 females, 1,700 males, 4,237 total adults)
3. Number To Be Released (June): 5,000,000 fry (0.2g)
4. Expected Return: 200,000 (August, 1998 and 1999)
5. FTP # 94A-0106

B. 1995 Jennifer Lake Release from 1994 Upper Station egg take:

1. Species: Sockeye Salmon
2. Eggs Taken: 340,000 (120 females, 80 males, 200 total adults)
3. Number To Be Released (June): 200,000 fry (0.2 g)
4. Expected Return: 8,000 (August, 1998 and 1999)
5. FTP # 91A-0020

C. 1995 Hidden Lake Release from 1994 Afognak Lake egg take:

1. Species: Sockeye Salmon
2. Eggs Taken: 350,000 (160 females, 106 males, 266 total adults)
3. Number To Be Released (October): 100,000 pre-smolt (12.5 g)
4. Expected Return: 12,500 (June, 1998 and 1999)
5. FTP #: 91A-0017

D. 1995 Little Waterfall Bay Lake Release from 1994 Afognak Lake egg take:

1. Species: Sockeye Salmon
2. Eggs Taken: 500,000 (220 females, 147 males, 367 total adults)
3. Number To Be Released (October): 100,000 pre-smolt (12.5 g)
4. Expected Return: 12,500 (June, 1998 and 1999)
5. FTP #: 91A-0021

E. 1995 Little Waterfall Bay Lake Release from 1993 Afognak Lake egg take:

1. Species: Sockeye Salmon
2. Eggs Taken: 150,000 (70 females, 47 males, 117 total adults)

3. Number To Be Released (May): 100,000 smolt (18.0 g) Released in fresh water near lake outlet
  4. Expected Return: 20,000 (June, 1997 and 1998)
  5. FTP #: 91A-0021
- F. 1995 Crescent Lake Release from 1994 Afognak Lake egg take:
1. Species: Sockeye Salmon
  2. Eggs Taken: 400,000 (183 females, 122 males, 244 total adults)
  3. Number To Be Released (October): 100,000 pre-smolt (12.5 g)
  4. Expected Return: 12,500 (June, 1998 and 1999)
  5. FTP #: 91A-0022
- G. 1995 Little Kitoi Lake release from 1994 Afognak Lake egg take:
1. Species: Sockeye Salmon
  2. Eggs Taken: 200,000 (90 females, 60 males, 150 total adults)
  3. Number To Be Released (October): 100,000 pre-smolt (12.5 g)
  4. Expected Return: 10,000 (June, 1998 and 1999)
  5. FTP #: 93A-0140
- H. 1995 Sorg Lake release from 1994 Afognak Lake egg take:
1. Species: Sockeye Salmon
  2. Eggs Taken: 200,000 (90 females, 60 males, 150 total adults)
  3. Number To Be Released (October): 100,000 pre-smolt (12.5 g)
  4. Expected Return: 12,500 (June, 1998 and 1999)
  5. FTP #: 94A-0037
- I. 1995 Ruth Lake release from 1994 Afognak Lake egg take:
1. Species: Sockeye Salmon
  2. Eggs Taken: 80,000 (32 females, 20 males, 52 total adults)
  3. Number To Be Released (October): 50,000 pre-smolt (12.5 g)
  4. Expected Return: 6,250 (June, 1998 and 1999)
  5. FTP #: New
- J. 1995 Alternate contingency Afognak Lake Release from 1994 Afognak Lake egg take:
1. Species: Sockeye Salmon
  2. Eggs Taken: 0
  3. Number To Be Released (July): 500,000 presmolt (<2.0 g)
  4. Expected Return: 15,000 (June, 1998 and 1999)
  5. FTP #: 88A-1021

Fish releases are not projected for Afognak Lake. This will be an alternate release site for Afognak Lake fish (destined for other projects) if an unforeseen emergency exists during rearing of pre-smolt or if stocking densities change due to in season limnology analysis.

K. 1995 Laura Lake Release from 1994 Laura Lake egg take:

1. Species: Sockeye Salmon
2. Eggs Taken: 60,000 (32 females, 12 males, 44 total adults)
3. Number To Be Released (June): 50,000 fry (0.3 g)
4. Expected Return: 500 (June, 1998 and 1999)
5. FTP #: 93A-0113

L. 1995 Malina Lake Release from 1994 Malina Lake egg take:

1. Species: Sockeye Salmon
2. Eggs Taken: 500,000 (209 females, 140 males, 349 total adults)
3. Number To Be Released (October): 100,000 pre-smolt (12.5 g)
4. Expected Return: 10,000 (June, 1998 and 1999)
5. FTP #: 94A-0043

M. 1995 Potato Patch Lake Coho Release from 1994 Buskin River Sci/Ed egg take:

1. Species: Coho Salmon
2. Eggs Taken: 3,000 (1 female, 1 male, 2 total adults)
3. Number To Be Released: 600 fry
4. Expected Return: 9 (September, 1998 and 1999)
5. FTP #: F-92-004, F-92-005, F-92-006, F-91-080, 92A-0162, 92A-0163, 92A-0027

N. 1995 Road System Coho Releases from 1994 Buskin River egg take:

1. Species: Coho Salmon
2. Eggs Taken: 100,000 (28 females, 16 males, 44 total adults)
3. Number To Be Released: 80,000 fry (Mayflower Lake 10,000, Island Lake 25,000, Dark Lake 10,000, Mission Lake 20,000, Potato Patch Lake 15,000,
4. Expected Return: 1,200 (September, 1998 and 1999)
5. FTP #: 93A-0106, 93A-0107, 93A-0108, 93A-0109, 93A-0110

All sockeye will be transported by air as fed fry, fingerling, pre-smolt, or smolt to the remote lakes previously specified. Stocking of fed fry and fingerlings will correspond to the timing of each lake's plankton bloom. Fry will be released at the lake surface. Pre-smolt will be released in late October or early November, just prior to lake freeze up to minimize the likelihood of plankton cropping. Smolt will be salt water challenged at the hatchery and blood samples collected to measure sodium levels. When sodium levels are 170 microequivalents per liter (ueq/l) or greater, smolt will be released. Smolt will be given sufficient time to imprint by releasing into the lake near the outlet.

A small number of Buskin River coho salmon eggs will be used for educational programs in the local schools . There are currently seven schools with Sci-Ed permits that allow use of up to 200 eggs each from this stock. Eggs incubated in classroom incubators will be released into Potato Patch Lake under the supervision of the Pillar Creek Hatchery Manager. The exception to this is the Old Harbor, Ouzinkie, Akhiok, and Port Lions schools in which resultant fry will be destroyed. Coho are also released in several road system lakes for sport fish purposes as previously stated.

### **EGG TAKE GOALS BY SPECIES AND BROOD SOURCE LOCATION FOR 1995**

Egg take goals, and release numbers may be adjusted in season in response to lake studies.

A. 1995 Little Kitoi Lake/Upper Station Lake sockeye salmon egg take:

1. Egg Take Goal: 10,000,000 (L.Kitoi - 5,555 females, 3,700 males, 9,255 total adults; Upper Station - 3,333 females, 2,222 males, 5,555 total adults;)
2. Number To Be Released and Location (June 1996): 8,000,000<sup>1</sup> (0.2 g), Spiridon Lake
3. Expected Return: 320,0000 (August, 1999 and 2000)
4. FTP #: 89A-0001 for U.Station, 92A-0090 for Little Kitoi Bay.

If adult returns at Little Kitoi Bay are not sufficient to supply the needed eggs for Spiridon stocking, the balance will be taken from Upper Station Lake.

B. 1995 Little Kitoi Lake/U.Station Lake sockeye salmon egg take:

1. Egg Take Goal: 350,000 (L.Kitoi - 194 females, 129 males, 323 total adults; Upper Station - 116 females, 80 males, 197 total adults;)
2. Number To Be Released and Location (June 1996): 250,000 (0.2 g), Jennifer Lake
3. Expected Return: 10,000 (August, 1999 and 2000)
4. FTP #: 92A-0088 for Little Kitoi Bay and 91A-0020 for Upper Station

C. 1995 Afognak Lake sockeye salmon egg takes:

1. Egg Take Goal: 1,800,000 (720 females, 480 males, 1,200 total adults)
2. Number To Be Released and Location (June and October 1996): 550,000 (0.3 g), and 550,000 (>5.0 g), for total of 1,100,000, Hidden Lake
3. Expected Return: 90,750 (June, 1999 and 2000)
4. FTP #: 91A-0017

1. Egg Take Goal: 500,000 (280 females, 190 males, 470 total adults)

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<sup>1</sup> Actual egg take to be determined no later than August 15, 1995 pending limnology results.

2. Number To Be Released and Location (May and June 1996): 200,000 (0.3 g), and 100,000 (1.5 g), for total of 300,000, Little Waterfall Lake
3. Expected Return: 13,500 (June, 1999 and 2000)
4. FTP #: 91A-0021

1. Egg Take Goal: 150,000 (70 females, 47 males, 117 total adults)
2. Number To Be Released and Location (May 1997): 100,000 (12.5 g), Little Waterfall Lake or Bay
3. Expected Return: 13,500 (June, 1999 and 2000)
4. FTP #: 91A-0021

1. Egg Take Goal: 500,000 (160 females, 100 males, 260 total adults)
2. Number To Be Released and Location (July 1996): 300,000 (1.5 g), Crescent Lake
3. Expected Return: 16,500 (June, 1999 and 2000)
4. FTP #: 91A-0022

1. Egg Take Goal: 200,000 (80 females, 50 males, 130 total adults)
2. Number To Be Released and Location (October 1996): 150,000 (10.0 g), Sorg Lake
3. Expected Return: 18,750 (June, 1999 and 2000)
4. FTP #: 94A-0037

1. Egg Take Goal: 200,000 (90 females, 60 males, 150 total adults)
2. Number To Be Released and Location (October 1996): 150,000 (12.5 g), L. Kitoi Lake
3. Expected Return: 15,000 (June, 1999 and 2000)
4. FTP #: 93A-0140

1. Egg Take Goal: 0 (0 females, 0 males, 0 total adults)
2. Number To Be Released and Location (July 1996): 500,000 ( g), Afognak Lake (only as a contingency plan)
3. Expected Return: 50,000 (June, 1999 and 2000)
4. FTP #: 88A-1021

D. 1995 Saltery Lake sockeye salmon egg take:

1. Egg Take Goal: 200,000 (32 females, 20 males, 52 total adults)
2. Number To Be Released and Location (June 1996): 125,000 (0.3 g), Ruth Lake
3. Expected Return: 5,000 (July, 1999 and 2000)
4. FTP #: New

E. 1995 Malina Lake sockeye salmon egg take:

1. Egg Take Goal: 1,500,000 (600 females, 400 males, 1,000 total adults)
2. Number To Be Released and Location (June, July, October 1996): 600,000 (0.3 g), 250,000 (1.5 g), 250,000 (12.5 g) Malina Lake
3. Expected Return: 41,500 (June, 1999 and 2000)
4. FTP #: 91A-0114

F. 1995 Laura Lake sockeye salmon egg take:

1. Egg Take Goal: 1,000,000 (360 females, 240 males, 600 total adults)
2. Number To Be Released and Location (June, October 1996): 580,000 (0.3 g), 120,000 (12.5 g), Laura Lake
3. Expected Return: 20,700 (June, 1999 and 2000)
4. FTP #: 93A-0113

G. 1995 Buskin River Sci/Ed coho salmon egg take:

1. Egg Take Goal: 3,000 (1 females, 1 males, 2 total adults)
2. Number To Be Released and Location (June 1996): 600 fry, Potato Patch Lake
3. Expected Return: 9 (September, 1998 and 1999)
4. FTP #: F-92-004, F-92-005, F-92-006,  
F-91-080, 92A-0162, 92A-0163, 92A-0027

H. 1995 Buskin River coho salmon egg take:

1. Egg Take Goal: 150,000 (55 females, 45 males, 100 total adults)
2. Number To Be Released and Location (June 1996): 13,000 fry, Mayflower Lake 45,000, Island Lake 15,000, Dark Lake 25,400, Mission Lake 19,000, Potato Patch Lake 4,200, Pony Lake, 7,000, Southern Lake
3. Expected Return: 1,929 (September, 1999 and 2000)
4. FTP #: 93A-0106, 93A-0107, 93A-0108, 93A-0109, 93A-0110, 93A-0111, 93A-0112

## HARVEST MANAGEMENT

Estimated run, brood, and harvest numbers for 1995: Total runs of 160,000 Spiridon Lake, 21,000 Hidden Lake, 13,000 Crescent Lake, and 20,000 Waterfall Lake sockeye salmon are projected for 1995.

A. Release Site: Spiridon Lake

To avoid harvest of natural stocks and/or target more discretely on Spiridon sockeye salmon, the Department has, for the 1995 fishing season, adjusted the size of the terminal harvest area opened to commercial fishing. As the fishery evolves, additional adjustments may be necessary.

The Spiridon Bay harvest strategy is designed to allow for the harvest of enhanced sockeye salmon returning to Spiridon Lake (Telrod Cove) and to provide adequate protection for escapements of natural salmonid stocks returning to streams in the area. The original intent of this enhancement project was for the harvest of the returning enhanced salmon to occur in traditional commercial fishing areas of the Northwest Kodiak District during openings directed to harvest Karluk sockeye and west-side pink and chum salmon stocks. A terminal harvest area, however, is required to provide for an orderly harvest of enhanced sockeye which have migrated past the traditional commercial fishing areas of the Northwest Kodiak District. The terminal harvest area, addressed in this management plan, will be used if a surplus of sockeye salmon is observed at Telrod Cove.

The Spiridon Bay terminal harvest area (THA) by regulation includes waters west of a line from 153° 37' 21" west longitude, 57° 38' 54" north latitude to the opposite shore at 153° 38' 27" west longitude, 57° 38' north latitude to the west longitude of 153° 42' 24". When a harvestable surplus of enhanced sockeye salmon is documented in the THA, continuous fishing periods will be announced by the Department. The THA will be reduced, at that time, to include only Telrod Cove "proper." A barrier seine will be deployed in 1995 and ensuing years to assure that all Spiridon enhanced sockeye will be harvested. Special harvest openings will be coordinated, if possible, to occur at the beginning of fishing periods scheduled for management sections in the Northwest Kodiak District.

By regulation, the legal gear type for the terminal harvest area is seine gear only.

The Department recognizes that some incidental harvest of natural stocks could occur in this area while the fishery is managed to harvest the enhanced Spiridon Lake sockeye salmon. The Department intends, however, to prevent jeopardizing the escapement of natural salmon stocks.

#### B. Release Site: Hidden Lake

The Foul Bay harvest strategy is designed to allow for the harvest of sockeye salmon returning to Foul Bay produced from the Hidden Lake enhancement project and to provide for the protection of natural salmonid stocks in the area.

Fishing time directed at returning sockeye salmon will be dependent on a minimum escapement of 3,000 pink salmon into Hidden Lake Creek. The majority of fishing time, however, for Hidden Lake sockeye is expected to occur prior to the arrival of pink salmon in late July. Sockeye salmon harvest is primarily expected to occur in the Foul Bay Terminal Harvest Area, however, some sockeye salmon may be harvested in the Northwest Afognak District. Sockeye salmon harvested between July 6th and July 25th will count

towards the 15,000 fish threshold level as indicated in the North Shelikof Strait Sockeye Salmon Management Plan.

At full production (70,000-90,000 run size) approximately 7,000 sockeye salmon will be required for escapement into Hidden Creek as described in the Environmental Assessment (EA) document. There are no brood stock requirements for sockeye salmon returning to Hidden Lake. The THA, addressed in this management plan, will be used if a surplus warrants a commercial fishery.

The Foul Bay THA will address that area of Foul Bay east of 152 47'12" West Longitude. By regulation, the legal gear type for the terminal harvest area is seine gear only.

When a harvestable surplus of enhanced sockeye salmon is documented in the terminal harvest area, continuous fishing periods may be announced by the Department. A barrier seine will be deployed in 1995 to assure that all Hidden Lake sockeye salmon will be harvested.

Hidden Lake sockeye returns will be harvested in special openings in the Foul Bay Terminal Harvest Area. Approximately 8-10% of the sockeye run returning to Hidden Creek (7,000 at full production) will be allowed to escape the fishery as required by the EA. A run of 21,000 sockeye salmon is anticipated for 1995.

The Department recognizes that some incidental harvest of natural stocks could occur in this area while the fishery is managed to harvest the enhanced Hidden Lake sockeye salmon. The Department intends, however, to prevent jeopardizing the escapement of natural salmonid stocks.

To avoid harvest of natural stocks and target Hidden Lake sockeye salmon, the Department may need to adjust the size of the terminal harvest area opened to commercial fishing.

#### C. Release Site: Waterfall Lakes

The Waterfall Bay harvest strategy will allow for the harvest of enhanced sockeye salmon returning to Waterfall Bay and provide safe guards to assure that escapement goals for natural salmon stocks are met.

Sockeye salmon harvest is expected to occur in the Perenosa Bay Section of the Afognak District. A Terminal Harvest Area (THA) is required to provide for an orderly harvest of enhanced sockeye which have migrated past the traditional commercial fishing areas of the Perenosa Bay Section. Since escapement and brood stock are not required, all returning enhanced sockeye salmon will be available for harvest.

The Waterfall Bay THA will address all waters seaward of the stream terminus of stream number 251-822 (58 23'57" N.Latitude, 152 30'12" W.Longitude) that are within a one nautical mile arc.

By regulation, the legal gear type for the terminal harvest area is seine gear only.

When a harvestable surplus of enhanced sockeye salmon is documented in the terminal harvest area, continuous fishing periods may be announced by the Department. A barrier seine or weir will be deployed in 1995 to assure that all Waterfall Lake sockeye salmon will be harvested.

The Department recognizes that some incidental harvest of natural stocks could occur in this area while the fishery is managed to harvest the enhanced Waterfall Lake sockeye salmon. The Department intends, however, to prevent jeopardizing the escapement of natural salmonid stocks. To avoid harvest of natural stocks and target Waterfall Lake sockeye salmon, the Department may need to adjust the size of the terminal area opened to commercial fishing.

D. Release Site: Crescent Lake

The purpose of the project is to allow for the harvest of enhanced sockeye salmon returning to Crescent Lake and to provide adequate protection for escapements of natural salmon stocks.

The harvest of Crescent Lake sockeye salmon is expected to occur during normal fishing periods in the Central Section of the Northwest Kodiak District.

Due to the location of the return site (Settler Cove) special openings are not expected to occur within the Terminal Harvest Area.

E. Release Sites: Jennifer Lake, Malina Lake, Ruth Lake and Sorg (McDonalds Lagoon) Lake.

The 1995 Jennifer Lake return will be harvested incidentally in the Kitoi Bay hatcheries pink and coho common property fisheries.

The 1995 Malina Lake's return should be at escapement level only. If a harvestable surplus does occur and it appears that optimum escapement levels will be exceeded, inseason closed water adjustments for Malina Lake;s systems will occur.

The Ruth Lake and Sorg Lake returns remain in the developmental phase. No returns to these systems will occur in 1995.

F. Harvest Management by Species for 1995:

1. General Conditions:

The primary objective of Pillar Creek Hatchery is to provide fish for the common property fishery. It is recognized that a joint effort among ADF&G and KRAA is necessary to continue the operation of the hatchery at full production levels.

The ADF&G Kodiak Area Management Biologist will manage the fishery based on runs of wild or natural stocks. Enhanced sockeye are expected to be harvested incidental to fisheries targeting other stocks unless otherwise specified.

\$360,000 will be needed to operate the Pillar Creek Hatchery. This budget may be provided by a cooperative agreement between Kodiak Regional Aquaculture Association and CFM&D Division.

When brood stock is taken from spawning systems with established escapement requirements, the number of fish used for brood-stock will not reduce the wild fish spawning population below the minimum escapement goals for that system.

2. Special Harvest Area (SHA) Description and Conditions:

A SHA is not needed for Pillar Creek Hatchery cost recovery. THA's will be used for harvest management of Spiridon Lake, Hidden Lake, and Waterfall Lake sockeye salmon in 1995.

3. Harvest Strategies:

Enhanced sockeye returning to Spiridon will be harvested in the west side pink salmon fishery and in special openings in Telrod Cove. No fish are needed for brood, escapement or cost recovery. A run of 160,000 fish is projected for 1995.

Harvest information will be monitored through the ADF&G fish ticket information collected from each buyer. Scale samples will be taken from 240 adult fish per week (600 total) from the Telrod Cove openings. A total of 600 scale samples will be collected per week either at the Port of Kodiak or from the commercial catch from the westside Kodiak Districts in a coordinated effort between Development and Research sections of ADF&G.

Waterfall Lake sockeye harvest will occur in Perenosa Bay and in the Waterfall Bay Terminal Harvest Area. A run of approximately 20,000 is projected for 1995.

Harvest information from runs at Foul and Waterfall Bays will be monitored through the ADF&G fish harvest ticket information collected from each buyer. Scale samples will be collected by Development section personnel from 240 adult fish per week (600 total) at each location during the fishing period.

Crescent Lake sockeye returns will be harvested in the Central Section of the Northwest Kodiak District. Special openings in the Crescent Lake Terminal Harvest area are not anticipated. A run of 13,000 is projected in 1995.

Harvest information from the sockeye salmon run at Crescent will be monitored through the ADF&G fish harvest ticket information collected from each buyer. Currently, a scale sampling program is not planned.

**1995 ESCAPEMENT GOALS, AND BROOD STOCK REQUIREMENTS  
BY BROOD SOURCE**

<u>Brood Source</u>	<u>Species</u>	<u>Numbers Expected</u>
L. Kitoi Bay	Late Run Sockeye	9,255 Brood stock An escapement of 15,000 would meet the egg take requirements of Kitoi and Pillar, and allow 4,000 natural spawners.
Afognak Lake	Early Run Sockeye	2,000 Brood stock 40,000 Minimum Escapement (50% of escapement over 40,000 is available for egg take).
Malina Lake	Early Run Sockeye	1,000 Brood stock 1,600 minimum escapement (50% of escapement over 1,600 is available for egg take 20,000 Desired Escapement No egg take if escapement exceeds 16,000.
Upper Station	Late Run Sockeye	5,255 Brood stock 150,000 late run Minimum Escapement (50% of escapement over 150,000 is available for egg take). Contingent upon egg take level at Little Kitoi.
Laura Lake	Early Run Sockeye	600 Brood stock 5,000 Minimum Escapement (50% of escapement over 5,000 is available for egg take). No egg take if escapement exceeds 25,000.
Saltery Lake	Late Run Sockeye	55 Brood Stock (5,555 if alternate for L.Kitoi) 40,000 Minimum Sockeye Escapement (50% of escapement over 40,000 is available for egg take).
Buskin Lake	Coho	100 Brood Stock 5,300 Minimum Escapement (50% of escapement over 5,300 is available for egg take).

**SPECIAL STUDIES/RESEARCH**

Stock separation for these projects will be carried out, similar to 1994, with scale pattern analysis. Because multiple stocks migrate along Kodiak's westside, stock identification is required to quantify the Spiridon Lake sockeye component of the catch. The number of Spiridon Lake sockeye salmon commercially harvested in the NW and SW Kodiak Districts during 1994 was estimated using a unique freshwater scale pattern. Approximately 263,750 Spiridon Lake sockeye salmon were harvested, of which 44% (115,609) were harvested in the Spiridon Bay Terminal Harvest Area, followed by 30% (77,744) in Uyak Bay, 26% (68,325) in Uganik Bay, and less than 1% (2,072) in the SW Kodiak District.

The Spiridon Lake sockeye run contribution to the 1995 westside commercial fishery (NW and SW Kodiak Districts) will be estimated using scale pattern identification with a report summarizing results generated by October 31, 1995. Funding for this project will be provided by KRAA at a cost of approximately \$21 thousand.

Smolt abundance will be estimated and samples collected for age and condition during migration out of Spiridon Lake as a check on stocking density. Smolt will also be sampled for condition and age at Hidden, Waterfall and Crescent Lakes. Lake sampling will be conducted to evaluate zooplankton abundance and water quality parameters. All systems will be monitored by tow-netting and hydroacoustics to evaluate population trends.

Table 1. Summary of the 1995 sockeye and coho salmon egg takes, location, adults required, juveniles produced, stocking location and expected return for Pillar Creek Hatchery.

Brood Stock	Adults Required	Eggs (millions)	Juveniles (millions)	Lake Stocked	Expected Return
L.K.;U.S.	6,000	10.4	8.0 <sup>a</sup>	Spiridon	320,000
A.L.	1,200	1.8	1.1 <sup>a</sup>	Hidden	90,750
A.L.	260	0.4	0.3	Crescent	12,000
A.L.	470	0.5	0.3	Waterfall	13,500
A.L.	130	0.2	0.2	Sorg	18,750
S.L.	60	0.2	0.1	Ruth	15,000
M.L.	1,000	1.5	1.1	Malina	41,500
L.K./U.S.	230	0.4	0.3	Jennifer	10,000
L.L.	600	1.0M	0.7	Laura	20,700
A.L.	130	0.2	0.2	L.Kitoi	18,750
B.R. Coho	100	0.2	0.1	Road System	1,929
PCH Totals	10,180	16.7	12.3		562,879

NOTE: A.L. Afognak Lake, U.S. = Upper Station, M.L. = Malina Lake, L.K. = Little Kitoi Lake, L.L. = Laura Lake, P.C.H. = Pillar Creek Hatchery, B.R. = Buskin River, S.L. = Saltery Lake

<sup>a</sup> Actual egg take to be determined no later than August 15, 1995 pending limnology results.

Table 2. Standard sockeye salmon survival assumptions used to estimate returns for Pillar Creek Hatchery.

Life History Stage Size (g)	System		
	Barren	Non-barren	Estuary
Fry 0.3	4.0%	1.5%	
Fingerling 1.5	5.5%	3.0%	
Smolt 8.0	15.0%	15.0%	15.0%
Pre-smolt 5.0	12.5%	10.0%	
Late run zero Check smolt 5.0			5.0%
Early run zero Check smolt 5.0			5.0%

Table 3. Upper Station sockeye salmon egg takes, past, present, and proposed.

Brood Year	Adults	Eggs (millions)	Facility	No. Stocked and Year (millions)	Stocking Location
1988	120	0.2	KBH	0.15 - 1989	Kitoi Bay
1989	3,000	5.0	PCH/KBH	0.26 - 1990 0.8 - 1990 0.3 - 1990	Spiridon Lake L. Kitoi Bay L. Kitoi Lake
1990	3,700	4.5	PCH	3.5 - 1991	Spiridon Lake
		1.5	KBH	1.25 - 1991	L. Kitoi Bay
1991	3,800	4.0	PCH	2.2 - 1992	Spiridon Lake
		2.3	KBH	1.8 - 1992	L. Kitoi Bay
1992	6,816	9.8	PCH	4.2 - 1993	Spiridon Lake
		1.9	KBH	0.05 - 1993 0.3 - 1994	L. Kitoi Lake L. Kitoi Bay
1993	5,551	7.8	PCH	5.0 - 1994 0.3 - 1994	Spiridon Lake Jennifer Lake
		2.0	KBH	1.6 - 1994	L. Kitoi Bay
1994	120	0.3	PCH	0.0 - 1995 0.2 - 1995	Spiridon Lake Jennifer Lake
	120	0.3	KBH	0.0 - 1995 0.2 - 1995 0.0 - 1996	L. Kitoi Bay Jennifer Lake L. Kitoi Bay
1995	5,671	10.3	PCH	8.0 <sup>a</sup> - 1996 0.2 - 1996	Spiridon Lake Jennifer Lake
	120	0.3	KBH	0.0 - 1995 0.2 - 1996 0.0 - 1996	L. Kitoi Bay Jennifer Lake L. Kitoi Bay

<sup>a</sup> Actual egg take to be determined no later than August 15, 1995 pending limnology results.

Table 4. Afognak Lake sockeye salmon egg takes, past, present, and proposed.

Brood Year	Adults	Eggs (millions)	Facility	No. Stocked and Year (millions)	Stocking Location
1991	2,076	2.6	PCH	0.26 - 1992	Hidden Lake
				0.40 - 1992	Crescent Lake
				0.60 - 1992	Waterfall Lakes
				0.46 - 1992	Afognak Lake
				0.18 - 1992	L. Kitoi Bay
1992	1,890	2.7	PCH	1.1 - 1993	Hidden Lake
				0.3 - 1993	Crescent Lake
				0.2 - 1993	Waterfall Lakes
1993	2,169	3.4	PCH	0.25 - 1994	Hidden Lake
				0.3 - 1994	Crescent Lake
				0.15 - 1994	Waterfall Lakes
				0.18 - 1994	L. Kitoi Lake
				0.10 - 1995	L. Waterfall LK
1994	1,190	1.8	PCH	0.10 - 1995	Hidden Lake
				0.10 - 1995	Crescent Lake
				0.10 - 1995	Waterfall Lakes
				0.10 - 1995	Sorg Lake
				0.05 - 1995	Ruth Lake <sup>a</sup>
				0.10 - 1995	L. Kitoi Lake
				0.10 - 1995	L. Kitoi Lake
1995	2,060	2.8	PCH	1.1 <sup>b</sup> - 1996	Hidden Lake
				0.3 - 1996	Crescent Lake
				0.3 - 1996	Waterfall Lakes
				0.15 - 1996	Sorg Lake
				0.13 - 1996	Ruth Lake <sup>a</sup>
				0.15 - 1996	L. Kitoi Lake

FTP's for Afognak Lake egg takes will expire in 1996. A five year extension will be submitted at that time.

<sup>a</sup> Project proposal currently under review.

<sup>b</sup> Actual egg take to be determined no later than August 15, 1995 pending limnology results.

Table 5. Malina Lake sockeye salmon egg takes, past, present, and proposed.

Brood Year	Adults	Eggs (millions)	Facility	No. Stocked and Year (millions)	Stocking Location
1991	120	0.15	PCH	0.09 - 1992	Malina Lake
1992	1,005	1.5	PCH	0.75 - 1993	Malina Lake
1993	644	0.9	PCH	0.5 - 1994	Malina Lake
1994	350	0.5	PCH	0.1 - 1995	Malina Lake
1995	1,000	1.5	PCH	1.1 - 1996	Malina Lake

FTP for the Malina Lake Project will expire in 1996. The goals will remain the same and the project will end at that time pending escapement levels.

Table 6. Laura Lake sockeye salmon egg takes, past, present, and proposed.

Brood Year	Adults	Eggs (millions)	Facility	No. Stocked and Year (millions)	Stocking Location
1993	218	0.3	PCH	0.12 - 1994	Laura Lake
1994	53	0.06	PCH	0.04 - 1995	Laura Lake
1995	600	1.0	PCH	0.7 - 1996	Laura Lake

FTP for the Laura Lake Project will expire in 1997. The 1995 and future egg takes may be suspended if logistics make collecting brood fish too difficult.

Table 7. Little Kitoi Lake sockeye salmon egg takes, past, present, and proposed.

Brood Year	Adults	Eggs (millions)	Facility	No. Stocked and Year (millions)	Stocking Location
1992	1,011	0.59	KBH	0.0 - 1993	L. Kitoi Bay
1993	1,050	1.1	KBH	0.88 - 1995	L. Kitoi Bay
1994	600	1.5	KBH	0.0 - 1995 0.15 - 1995 0.88 - 1996 0.3 - 1995	L. Kitoi Bay L. Kitoi Lake L. Kitoi Bay Jennifer Lake
1995	600	1.5	KBH	0.0 - 1996 0.15 - 1996 0.88 - 1997	L. Kitoi Bay L. Kitoi Lake L. Kitoi Bay
	9,623	10.4	PCH	8.0 - 1996 0.3 - 1996	Spiridon Lake Jennifer Lake

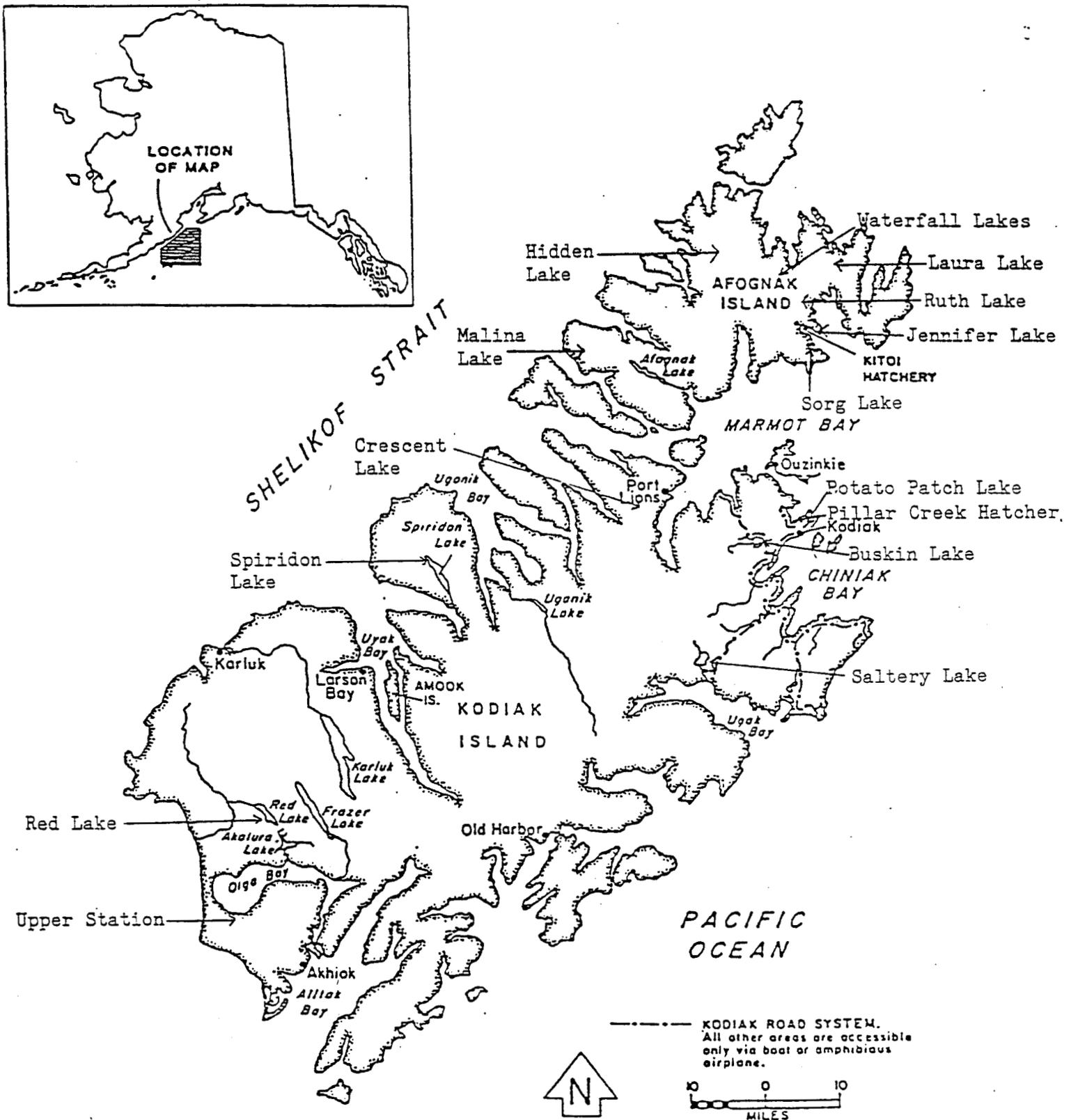


Figure 1. Map of Kodiak and Afognak Islands showing release sites: Hidden, Crescent, Waterfall, Spiridon, Malina, Laura, Jennifer, Sorg, Ruth Lakes; and egg take sites: Upper Station, Afognak, Malina, and Saltery Lakes.

Figure 2. Pillar Creek Hatchery flow chart for 1994 egg takes, brood sources and stocking locations.

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<p><u>Brood Source</u></p> <p>Upper Station/Little Kitoi Bay Sockeye</p> <p>0.35 Million Eggs</p> <p>Spiridon Lake 0.0 Fry FTP # 89A-0001/92A-0090</p> <p>Jennifer Lake 0.2 Million Fry FTP # 91A-0020/92A-0088</p>	<p><u>Brood Source</u></p> <p>Malina Lake Sockeye</p> <p>0.5 Million Eggs</p> <p>Malina Lake 0.1 million PS FTP # 91A-0114</p>
<p><u>Brood Source</u></p> <p>Afognak Lake Sockeye</p> <p>1.8 Million Eggs</p> <p>Hidden Lake 0.10 Million PS FTP # 91A-0017</p> <p>Crescent Lake 0.10 Million PS FTP # 91A-0022</p> <p>Waterfall Lake 0.10 Million PS and 0.10 Million smolt (BY93) FTP # 91A-0021</p> <p>L. Kitoi Bay 0.10 Million PS FTP # 93A-0140</p> <p>Afognak Lake (Contingency) FTP # 88A-1021</p> <p>Sorg Lake 0.1 Million PS FTP # 94A-0037</p> <p>Ruth Lake .05 Million PS FTP # new</p>	<p><u>Brood Source</u></p> <p>Saltery Lake Sockeye</p> <p>7.5 Million Eggs</p> <p>Spiridon Lake 5.0 Million Fry FTP # 94A - 0106</p> <p><u>Brood Source</u></p> <p>Laura Lake</p> <p>0.2 Million Eggs</p> <p>Laura Lake 0.03 Million Fry FTP # 93A-0113</p>

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-Continued-

Figure 2. (page 2 of 2)

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Brood Source

Buskin River Coho 0.1 Million Eggs  
FTP # 93A-0105

	Sci/Ed Program	Kodiak Road System Stocking		
200 Eggs	Chiniak Elementary	Mayflower Lake	10,000 Fry	93A-0106
200 Eggs	Main Elementary	Island Lake	25,000 Fry	93A-0107
200 Eggs	Peterson Elementary	Dark Lake	10,000 Fry	193A-0108
200 Eggs	East Elementary	Mission Lake	20,000 Fry	93A-0109
200 Eggs	Old Harbor School	Potato Patch Lake	15,000 Fry	93A-0110
200 Eggs	Port Lions School	Pony Lake	0 Fry	93A-0110
200 Eggs	Ouzinkie School	Southern Lake	0 Fry	93A-0112
200 Eggs	Akhiok School			
	Sacrificed .001 M			
	Potato Patch .006M			

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Figure 3. Pillar Creek Hatchery flow chart for 1995 egg takes, brood sources and stocking locations.

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<p><u>Brood Source</u></p> <p>Upper Station/Little Kitoi Bay Sockeye</p> <p>10.3 Million Eggs 1.5 Million Eggs</p> <p>Spiridon Lake 8.0 Million Fry FTP # 89A-0001/92A-0090</p> <p>Jennifer Lake 0.2 Million Fry FTP # 91A-0020/92A-0088 FTP # 91A-0114</p> <p><u>Brood Source</u></p> <p>Afognak Lake Sockeye</p> <p>2.8 Million Eggs</p> <p>Hidden Lake 0.55 Million Fry, 0.25 Million PS FTP # 91A-0017</p> <p>Crescent Lake 0.35 Million Fry FTP # 91A-0022</p> <p>Waterfall Lake 0.3 Million Fry FTP # 91A-0021</p> <p>L. Kitoi Lake 0.15 Million PS FTP #93A-0140</p> <p>Sorg Lake 0.15 Million PS FTP # 94A-0037</p> <p>Afognak Lake contingency FTP # 88A-1021</p>	<p><u>Brood Source</u></p> <p>Malina Lake Sockeye</p> <p>0.85 Million eggs</p> <p>Malina Lake 0.25 Million PS FTP # 91A-0114</p> <p><u>Brood Source</u></p> <p>Saltery Lake Sockeye</p> <p>0.3 Million Eggs</p> <p>Ruth Lake 0.13 Million fry FTP # New</p> <p><u>Brood Source</u></p> <p>Laura Lake Sockeye</p> <p>1.0 Million Eggs</p> <p>Laura lake 0.7 Million Fry FTP # 93A-0113</p>
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Figure 3. (page 2 of 2)

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Brood Source

Buskin River Coho 0.15 Million Eggs  
FTP # 93A-0105

	Sci/Ed Program	Kodiak Road System Stocking		
200 Eggs	Chiniak Elementary	Mayflower Lake	13,000 Fry	93A-0106
200 Eggs	Main Elementary	Island Lake	45,000 Fry	93A-0107
200 Eggs	Peterson Elementary	Dark Lake	15,000 Fry	93A-0108
200 Eggs	East Elementary	Mission Lake	25,400 Fry	93A-0109
200 Eggs	Old Harbor School	Potato Patch Lake	19,000 Fry	93A-0110
200 Eggs	Port Lions School	Pony Lake	4,200 Fry	93A-0111
200 Eggs	Ouzinkie School	Southern Lake	7,000 Fry	93A-0112
200 Eggs	Akhiok School			
	Sacrificed .001 M			
	Potato Patch .006M			

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SIGN-OFF

Chris Cleverger 5-12-95  
Chris Cleverger  
Hatchery Manager, Pillar Creek Date

Steve Honnold 5/12/95  
Steve Honnold  
Area Development Biologist, CFM&D Date

Dave Prokopowich 5/12/95  
Dave Prokopowich  
Regional Finfish Biologist, CFM&D Date

Wayne Donaldson 5-12-95  
Wayne Donaldson  
Area Management Coordinator, CFM&D Date

Pete Probasco 5/15/95  
Pete Probasco  
Regional Supervisor, CFM&D Date

Len Schwarz 5/12/95  
Len Schwarz  
Area Biologist, Sport Fish Date

Kevin Delaney  
Kevin Delaney  
Sport Fish Regional Supervisor Date

Larry Malloy 5/15/95  
Larry Malloy  
Executive Director, KRAA Date

The 1995 Hatchery Management Plan for Pillar Creek Hatchery is hereby approved:

\_\_\_\_\_  
Deputy Commissioner Date

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