2014 ANNUAL MANAGEMENT PLAN

KITOI BAY HATCHERY

Kodiak Regional Aquaculture Association

This plan remains in effect until superseded by a new annual management plan (AMP) in the following year. Kodiak Regional Aquaculture Association (KRAA) will notify the Alaska Department of Fish and Game (ADF&G) private nonprofit (PNP) hatchery program coordinator in a timely manner of any departure from the AMP. That notification will be in the form of a request to amend the AMP. No variation or deviation will be implemented until an AMP amendment has been approved or waived by both the department and KRAA. This policy applies to all hatchery operations covered under the AMP.

INTRODUCTION

The Kitoi Bay Hatchery (KBH) is located on Afognak Island (58°11.04′N lat, 152°21.04′W long) on the west side of Izhut Bay approximately 48 km (30 miles) north of the city of Kodiak (Appendix A1). The hatchery infrastructure was constructed in 1954 by the U. S. Department of the Interior, Fish and Wildlife Service (USFWS), but was destroyed in the 1964 earthquake and rebuilt by the Alaska Department of Fish and Game (ADF&G) in 1965.

Funding for the hatchery was provided exclusively by ADF&G prior to state fiscal year 1987 (FY87) and was provided jointly by ADF&G and Kodiak Regional Aquaculture Association (KRAA) from FY87 to FY91. The hatchery has been fully funded by KRAA since FY92. KBH is owned by the State of Alaska and KRAA operates the facility under an agreement with the State of Alaska. The hatchery is operated in accordance with AS 16.10.400–480, the *KBH Basic Management Plan* (BMP), *KBH Annual Management Plan* (AMP), and private nonprofit (PNP) hatchery permit #29.

The hatchery was initially designed as a sockeye salmon, *Oncorhynchus nerka*, research facility. By 1976, hatchery production priorities switched to pink salmon, *O. gorbuscha,* fisheries enhancement. The present goal of the facility is to provide enhanced common property salmon fishing opportunities for Kodiak Management Area (KMA) fishermen by increasing returns of pink, chum (*O. keta),* coho *(O. kisutch),* and sockeye salmon through broodstock development, egg takes, incubation, hatching, rearing and releasing juvenile salmon (Appendix B), primarily to the Kitoi Bay area. KBH primarily increases salmon harvest of KMA commercial fisheries. Secondary user groups (in terms of the number of salmon harvested) of hatchery production include subsistence and recreational fishermen. KBH has the capacity to produce 231 million juveniles of all life stages (fry, fingerling, presmolt, and smolt).

The purpose of this AMP is to describe the proposed stocking, rearing, and egg-take activities to be undertaken by KBH in 2014, anticipated 2014 salmon runs resulting from KBH projects, and management of KBH salmon in Kodiak waters. Appendix A contains maps showing the KMA and the location of KBH and various projects. Appendix B contains KBH salmon production records.

1.0 OPERATIONAL PLANS FOR 2014

1.1 Egg-take Limits and Broodstock Sources

PNP salmon hatchery permit number 29, approved permit alterations, and the KBH BMP specify the maximum green egg capacity of KBH:

Species	Maximum Green Egg Capacity
chum salmon	28,000,000
sockeye salmon	850,000
pink salmon	215,000,000
coho salmon	2,300,000

Hatchery broodstocks and projects are similarly authorized and are further delimited by fish transport permits (FTP).

1.1.1 Chum Salmon: Big Kitoi Creek

The permitted number for Big Kitoi Creek (BKC) chum salmon eggs at KBH is 28 million, as authorized by the KBH BMP and FTP #06A-0072. In 2014, KRAA intends to submit a permit alteration request (PAR) to increase the KBH permitted capacity of BKC chum salmon eggs to 36 million and collect them from adults returning to the hatchery.

FTP #	Egg take, transport, or release?	Transport From → To	Maximal #, Life Stage	Expires
06A-0072	Egg take & release	KBH	28,000,000 eggs	8/31/21

1.1.2 Pink Salmon: Big Kitoi Creek

The permitted number for BKC pink salmon eggs at KBH is 215 million, as authorized by the KBH BMP and FTP #06A-0073. In 2014, KBH plans to collect approximately 215 million pink salmon eggs from adults returning to the hatchery.

FTP #	Egg take, transport, or release?	Transport From → To	Maximal #, Life Stage	Expires
06A-0073	Egg take & release	KBH	215,000,000 eggs	8/31/21

1.1.3 Coho Salmon: Big Kitoi Creek

The permitted number for BKC coho salmon eggs at KBH is 2.3 million as authorized by the KBH BMP and FTP's #02A-0007, #02A-0008, #02A-0009, #02A-0010 and #02A-0011. In 2014, KBH plans to collect 2.3 million coho salmon eggs from adults returning to the hatchery.

FTP #	Egg take, transport, or release?	Transport From → To	Maximal #, Life Stage	Expires
02A-0007	Egg take, transport & release	KBH to Big Kitoi Lake	1,300,000 eggs	12/31/17
02A-0008	Egg take, transport & release	KBH to Crescent Lake	600,000 eggs	12/31/17
02A-0009	Egg take, transport & release	KBH to Jennifer Lake	300,000 eggs	12/31/17
02A-0010	Egg take, transport & release	KBH to Katmai Lake	40,000 eggs	12/31/17
02A-0011	Egg take, transport & release	KBH to Ruth Lake	60,000 eggs	12/31/17

In the event the number of broodstock available are insufficient to meet the needs of KBH egg-take goals, Pillar Creek (stream #259-10-102) or Monashka Creek (stream #259-10-101) may be used as a backup brood source for Buskin Lake ancestral stock coho salmon. Gametes will be collected at Pillar Creek for transport to KBH. Adult coho salmon from Monashka Creek will be transported to PCH for holding and egg take, and gametes will be transported from PCH to KBH.

FTP #	Egg take, transport, or release?	Transport From → To	Maximal #, Life Stage	Expires
11A-0059	Transport & release	PCH to KBH to Big Kitoi Bay	40,000 juveniles	12/31/16
13A-0081	Transport	Little Kitoi Lake to KBH	4,000 broodstock	10/31/18
13A-0082	Transport	Monashka Creek to KBH	400 broodstock	10/31/18
13A-0083	Egg take & transport	PCH to KBH	2,300,000 eggs	10/31/18

1.1.4 Sockeye Salmon: Little Kitoi Lake and Saltery Lake

The permitted number for sockeye salmon eggs is 850,000 (Saltery Lake ancestral stock) as authorized by the KBH BMP, AMP, and FTPs 10A-1007, 10A-1008, 11A-0031, 13A-0048. In 2014, KBH plans to collect all 850,000 sockeye salmon eggs from adults returning to Little Kitoi Lake (LKL). In the event that sufficient eggs cannot be collected at LKL, Saltery Lake may serve as a backup brood source.

FTP #	Egg take, transport, or release?	Transport From → To	Maximal #, Life Stage	Expires
10A-0007(1)	Egg take, transport & release	Saltery Lake to PCH to KBH to Little Kitoi Lake	850,000 eggs	1/1/19
10A-0008(1)	Egg take, transport & release	Little Kitoi Lake to PCH to KBH to Little Kitoi Lake	850,000 eggs	1/1/19
11A-0031	Egg take, transport & release	Little Kitoi Lake to KBH to Little Kitoi Lake	600,000 eggs	5/25/16
13A-0048	Egg take, transport & release	Little Kitoi Lake to KBH to Little Kitoi Lake	850,000 eggs	12/31/17

Supersedes 11A-0031

1.2 Capture, Egg take, and Transport of Gametes

1.2.1 Chum Salmon: Big Kitoi Creek

Approximately 40,000 returning adult KBH chum salmon will be needed for broodstock in 2014 to achieve the egg-take goal of 36 million eggs, if the proposed PAR is approved. Otherwise, approximately 30,000 returning adults would be required to collect 28 million eggs. Adults are collected and contained behind a barrier seine prior to ascending the fish ladder to the broodstock raceways where the eggs are collected. KBH uses the dry spawning method and eggs are water hardened in an iodophor solution for one hour prior to being loaded into incubators. No BKC chum salmon gametes are transferred to any other location.

1.2.2 Pink Salmon: Big Kitoi Creek

Approximately 425,000 returning adult KBH pink salmon will be needed for broodstock in 2014 to achieve the egg-take goal of 215 million eggs. Adults are collected and contained behind a barrier seine prior to ascending the lower section of the fish ladder where the eggs are collected. KBH uses the dry spawning method before eggs are loaded into incubators. No BKC pink salmon gametes are transferred to any other location.

1.2.3 Coho Salmon: Big Kitoi Creek

Approximately 6,000 returning adult KBH coho salmon will be used for broodstock in 2014 to achieve the egg-take goal of 2.3 million eggs. Coho salmon eggs will be collected in 2014 for future releases into Big Kitoi Bay, Jennifer, Ruth, Crescent and Katmai lakes. Adults are collected and contained behind a barrier seine prior to ascending the fish ladder to the broodstock raceways where the eggs are collected. KBH uses the dry spawning method and eggs are water hardened in an iodophor solution for one hour prior to being loaded into incubators. No BKC coho salmon gametes will be transferred to any other location.

1.2.4 Sockeye Salmon: Little Kitoi Lake

Approximately 1,200 adults returning to LKL will be used for broodstock in 2014 to achieve the egg-take goal of 850,000 eggs. Standard sockeye salmon egg-take procedures will be used during egg-take and eggs will be disinfected prior to transfer to KBH for incubation,

rearing, and release into LKL. Sockeye salmon gametes will be transferred from LKL to KBH for incubation, rearing, and release back into LKL.

1.3 Carcass Disposal

1.3.1 Chum Salmon

Chum salmon carcasses are disposed of in Outer Kitoi Bay and are documented on the ADF&G Salmon Hatchery Carcass Disposal Log.

1.3.2 Pink Salmon

Pink salmon carcasses are disposed of in Outer Kitoi Bay and are documented on the ADF&G Salmon Hatchery Carcass Disposal Log.

1.3.3 Coho Salmon

Coho salmon carcasses are disposed of in Outer Kitoi Bay and are documented on the ADF&G Salmon Hatchery Carcass Disposal Log.

1.3.4 Sockeye Salmon

Carcasses from the sockeye salmon egg takes in LKL are disposed of in the lake. Brood use for these egg takes is documented annually in the ADF&G Salmon Hatchery Carcass Disposal Log.

1.4 Incubation Plans

1.4.1 Chum Salmon

Chum salmon eggs are incubated in the main hatchery building in two types of NOPAD incubators supplied with ultraviolet (UV)-treated water. All chum salmon fry are nonvolitionally ponded from these incubators, through a high-density polyethylene (HDPE) line, directly to saltwater net pens. Kitoi NOPADs are loaded at 420,000 green eggs and 230,000 eyed eggs. Regular NOPAD incubators are loaded at 336,000 green eggs and 200,000 eyed eggs. Approximately 22.5 million brood year 2013 (BY13) chum salmon juveniles are currently incubating at KBH for release in 2014.

1.4.2 Pink Salmon

Pink salmon eggs are incubated in the main hatchery, pink hatchery, and expansion hatchery buildings in Kitoi NOPADs, regular NOPADs and Kitoi box incubators. All fry in Kitoi Box incubators move volitionally to saltwater net pens through polyvinyl chloride (PVC) piping and are enumerated with electronic fry counters. This represents about 40% of the number of juveniles or about 80 million fry. The remaining 60% of pink salmon fry or about 120 million juveniles will move nonvolitionally through a separate outmigration line to saltwater net pens. Kitoi NOPADs are loaded at 550,000 green eggs and 350,000 eyed eggs. Regular NOPADs are not loaded with green eggs, but are loaded with 304,000 eyed eggs. Kitoi box incubators are loaded at 825,000 green eggs at egg take and at 430,000 eggs at eyed egg pick.

Approximately 192 million juveniles are currently incubating at KBH for release in 2014.

1.4.3 Coho Salmon

Coho salmon eggs are incubated in an isolated incubation building in Kitoi box incubators. Coho salmon incubators are loaded at 450,000 eggs at egg take and 325,000 eyed eggs. All fry move volitionally from incubators, through PVC piping, to a collection trough, where they are then enumerated and ponded into raceways. Approximately 1.85 million BY13 coho salmon eggs are currently incubating at KBH for release in 2014 and 2015.

1.4.4 Sockeye Salmon

Sockeye salmon eggs are transported to KBH from the LKL egg-take site and incubated in an isolated room in Kitoi box incubators supplied with UV-treated water. The eggs are disinfected prior to loading into the incubators. Incubators are loaded at approximately 122,000 eggs each. Fry emerge volitionally from incubators into start tanks, and then are transferred to raceways supplied with UV-treated water. Approximately 754,000 BY13 LKL sockeye salmon eggs are currently incubating at KBH for releases in 2014 and 2015.

1.5 Rearing and Release Plans

1.5.1 Chum Salmon

Approximately 22 million BY13 chum salmon fry will be reared in net pens and released between 2.0 and 2.75 grams (g) within the Inner Kitoi Bay Section between May 20 and June 10, 2014 (Appendix B1). Fry will be reared in saltwater net pens for approximately 10 to 14 weeks.

1.5.2 Pink Salmon

Approximately 192 million BY13 pink salmon fry will be reared in net pens and released at 0.7 g within the Inner Kitoi Bay Section between May 20 and May 28, 2014 (Appendix B2). The fry will be reared in saltwater net pens for approximately 3 to 8 weeks.

1.5.3 Coho Salmon

Approximately 1.05 million BY12 coho salmon smolt will be reared in net pens and released at 18.0 g within the Inner Kitoi Bay Section between June 3 and June 17, 2014 (Appendix B3).

Approximately 1.7 million BY13 coho salmon fry will be ponded in June of 2014 and reared at KBH for release to several different locations. Approximately 30,000 coho salmon fry will be released into Ruth Lake, 200,000 fry into Upper and Lower Jennifer lakes, and 165,000 fry into Crescent Lake around the middle of July 2014. An additional 28,000 presmolt will be released into Katmai Lake around the beginning of October. Approximately 1.3 million fry will be retained at KBH for rearing and eventual release within the Inner Kitoi Bay Section as 20.0 g smolt in June of 2015.

1.5.4 Sockeye Salmon

Approximately 650,000 BY12 LKL sockeye salmon presmolt will be reared in net pens in LKL and released at 20.0 g into the Little Kitoi estuary (LKE) about June 2, 2014 (Appendix B4). The fish will be transported to LKL in an oxygenated transfer tank and pumped into net pens in the lake for approximately two to three weeks of rearing and imprinting. Presmolt will then be siphoned from net pens to the estuary at release, which will occur during the peak outmigration of the resident sockeye salmon smolt.

Approximately 754,000 BY13 sockeye salmon eggs (LKL) are currently incubating at KBH and will be reared and released into LKL in 2014 and 2015. Approximately 120,000 BY13 presmolt (LKL) will be released directly into LKL in October 2014 and 650,000 smolt (LKL) will be released into LKE in the spring of 2015.

2.0 WILD DONOR STOCK MANAGEMENT

In 2014 and beyond, there are no plans or expectations to use naturally-spawning salmon stocks as donor stocks for KBH broodstock and egg takes.

Management of KBH salmon stocks is detailed in the *Hatchery Return Management* section below.

2.1 Common Property Fisheries

Not Applicable,

2.2 Escapement Requirements

Not Applicable,

2.3 Donor Stock Collection Procedures

Not Applicable,

3.0 HATCHERY RETURN MANAGEMENT

Management of salmon harvested by subsistence and commercial fishermen is conducted by the ADF&G Division of Commercial Fisheries through permitting, preseason development of regulatory management plans and annual harvest strategies, inseason management actions by emergency order (EO) establishing fishing time and area (within guidelines in management plans) based on harvest strategies and inseason salmon escapements and/or other conservation considerations.

Harvest of salmon by sport anglers and personal use fishermen is managed by the ADF&G Division of Sport Fish through licensing and permitting, preseason establishment of sport fishing bag limits in regulation by species and area, seasonal harvest strategies and inseason management actions by EO (5 AAC 75.003). Harvest limits can be increased or decreased inseason by EO based on escapement and/or other conservation considerations.

KRAA has no authority to manage common property fisheries for natural or hatchery salmon stocks. However, KRAA staff work closely with the Kodiak ADF&G commercial and sport fisheries area management biologists (AMBs) to assure that they have information that KRAA can provide to manage the associated fisheries. KRAA is involved in cooperative projects with ADF&G and assists in the management of natural stocks by providing funding and personnel to gather data necessary for sustainable management of Kodiak salmon populations. Further, KRAA staff share openly with ADF&G salmon management staff any in-season observations on salmon runs or fishery issues.

KBH is a remote facility located on the east side of Afognak Island (Appendix A1). KBH-released salmon return to waters adjacent to the hatchery. The Kitoi Bay commercial fishery harvest strategy is described in the *Eastside Afognak Management Plan* (5 AAC 18.365) and is designed to increase fishing opportunities for the commercial salmon fishery in the Duck, Izhut, and the Inner and Outer Kitoi bays sections (Appendix A2), while providing for adequate returns to KBH.

Inseason management of KBH salmon runs is complex, with overlapping run timing between species and multispecies broodstock priorities. The ADF&G Kodiak Salmon AMB will open and close the Duck, Izhut, and Inner and Kitoi bays sections adjacent to the KBH as needed to harvest hatchery salmon returns in common property or cost-recovery fisheries. During broodstock collection periods, adjustments to fishing periods in KBH management units will be necessary. Communication between the Kodiak salmon fisheries AMB and the Kitoi Bay Hatchery Manager is essential to secure broodstock to achieve egg-take goals while maintaining harvests on high quality hatchery returns.

3.1 Hatchery Return Projections

3.1.1 Chum Salmon

The midpoint estimate for adult chum salmon returning to KBH in 2014 is 166,000 (range 116,000 to 216,000).

3.1.2 Pink Salmon

The midpoint estimate for adult pink salmon returning to KBH in 2014 is 3.0 million (range 2.5 million to 3.8 million).

3.1.3 Coho Salmon

The midpoint estimate for adult coho salmon returning to KBH in 2014 from the Kitoi Bay smolt release is 119,000 (range 95,000 to 158,000).

3.1.4 Sockeye Salmon

The midpoint estimate for adult sockeye salmon returning to LKL in 2014, from KBH releases is 96,000 (range 72,000 to 120,000).

3.2 Returns to Common Property Fisheries

3.2.1 Chum Salmon

Chum salmon are produced for harvest by the common property fishery. About 40,000 adults will be needed for broodstock. Additionally, BKC chum salmon escapement is monitored by KBH staff with an annual escapement objective of 2,000 adults.

Chum salmon produced at KBH are taken in commercial seine fisheries in the Duck, Izhut, and Kitoi Bay sections. The chum salmon run begins in early June, peaks in late June to early July, and ends in late July. The initial KBH chum salmon commercial fishery opening is expected to occur on June 9, 2014. Portions of the Inner and Outer Kitoi, Izhut, and Duck Bay sections are expected to close for broodstock collection around June 30, 2014.

3.2.2 Pink Salmon

Pink salmon are produced for the common property fishery, as well as for cost recovery. Approximately 425,000 pink salmon adults will be needed for broodstock. The 2014 cost-recovery harvest goal has not yet been determined by the KRAA Board of Directors, but it is expected that between 100,000 and 1,000,000 additional adults would be required for cost recovery. Additionally, BKC pink salmon escapement is monitored by KBH staff, with an annual escapement objective of 15,000 adults.

Pink salmon produced at KBH are harvested in commercial seine fisheries in the Duck, Izhut, and Kitoi Bay sections. The pink salmon return begins in mid-July, peaks in early to mid-August, and ends in late August to early September. The initial fishery opening for pink salmon is expected in mid to late July 2014 and is designed to assess run strength and timing and to harvest excess males, which arrive during the early portion of the run. Portions of the Inner and Outer Kitoi, Izhut, and Duck Bay sections are expected to close for cost-recovery operations around the beginning of August, 2014. In addition, portions of these sections are also expected to close for pink salmon broodstock collection around August 13, 2014.

3.2.3 Coho Salmon

Coho salmon are produced primarily for the common property fishery. About 6,000 adults are required for broodstock. Although there is no coho salmon escapement objective for BKC, KBH staff allow approximately 500 adults to enter LKL beginning the first week of September.

Coho salmon produced at KBH are harvested in commercial seine fisheries in the Duck, Izhut, and Kitoi Bay sections. The coho salmon run is expected to start in early August, peak in late August, and continue through September. KBH coho salmon will be harvested incidental to the pink salmon fishery in the Kitoi Bay area as well as in directed coho salmon fisheries in late August and early September. Coho salmon returning to Jennifer and Ruth lakes will also be harvested during commercial fisheries in Duck, Izhut, and Outer Kitoi Bay sections.

3.2.4 Sockeye Salmon

Sockeye salmon are produced primarily for the common property fishery. Sockeye salmon broodstock is collected in LKL following escapement into the system. When maturing adults congregate in the lake, they are captured by beach seine and sorted by sex into floating net pens, where they are held until ready for egg collection. There is no escapement goal for LKL sockeye salmon, and escapement levels have varied over the years, but the objective is approximately 7,000 adults.

Sockeye salmon produced at LKL are harvested in commercial seine fisheries in the Duck, Izhut, and Kitoi Bay sections. The sockeye salmon run should begin in late June and continue through late August with the peak occurring during the last two weeks of July.

3.3 Returns to Remote Release Sites

3.3.1 Coho Salmon

The midpoint estimate for coho salmon adults returning to Crescent Lake from KBH stocking is 3,300 adults (range 2,475 to 4,125).

4.0 EVALUATION/SPECIAL STUDIES

4.1 Marking and Tagging Programs

4.1.1 Chum salmon

While there is no required marking program for chum salmon at KBH, all BY13 juveniles were marked this summer using differential water sources from Big Kitoi Lake (deep and shallow). KBH intends to mark all BY14 juveniles and acknowledges that marking will be contingent upon approval of the proposed PAR to increase permitted egg capacity at KBH to 36 million green eggs.

4.1.2 Pink Salmon

There is no marking requirement for pink salmon releases from KBH.

4.1.3 Coho Salmon

There is no marking requirement for coho salmon releases from KBH.

4.1.4 Sockeye Salmon

A marking requirement was instituted for all KBH sockeye salmon juvenile releases associated with the PAR approval for increasing green egg permitted capacity to the current level of 850,000. All BY13 sockeye salmon eggs were otolith marked (dry marked) and KBH intends to continue otolith marking sockeye salmon eggs for all future production. In addition, 5% of the fall sockeye salmon presmolt released into LKL are differentially finclipped.

4.2 Other Research Programs

4.2.1 Chum Salmon

Chum salmon scales are collected in the common property fishery and from broodstock returning to hatchery raceways during egg take to determine the age composition of the returning adults, which provides valuable forecasting information.

4.2.2 Pink Salmon

Adult pink salmon are sampled throughout cost-recovery operations to gather information on average weight, sex ratio, average quality, and species composition of fish sold.

4.2.3 Coho Salmon

Coho smolt are evaluated for osmoregulation capability each spring prior to the transfer of the entire juvenile population to salt water. Sequential test groups of 100 smolt are held in saltwater test pens for up to one week starting around the middle of April. Once 100% survival is observed, transfer of the remaining smolt to saltwater net pens is initiated.

4.2.4 Sockeye Salmon

An evaluation program at LKL has been ongoing since commencement of the broodstock development program. In 2014, KBH staff will continue to: 1) determine the age structure of sockeye salmon returning to the Inner Kitoi Bay Section; 2) collect baseline age and growth data from juvenile sockeye salmon pen-reared at LKL; 3) estimate the number of sockeye salmon smolt outmigrating from LKL; 4) estimate the survival of the sockeye salmon presmolt stocked into LKL; 5) estimate the average age, weight, and length (AWL) composition of the sockeye salmon smolt outmigrating from LKL; 6) enumerate sockeye salmon adult escapement into LKL; 7) determine zooplankton density and biomass in Little Kitoi, Upper and Lower Jennifer, and Ruth lakes; and 8) complete a report on the LKL broodstock development project.

5.0 APPROVAL

Recommendations for Approval: Kitoi Bay Hatchery Annual Management Plan, 2014

Tina Fairbanks: Executive Director, KRAA — 4/3/2014 Date

Donn Tracy: Area Management Biologist, Division of Sport Fish — 4/2/2014 Date

James Jackson: Area Management Biologist, Division of Commercial Fisheries — 4/2/2014 Date

James Hasbrouck: Regional Supervisor, Division of Sport Fish — 4/7/2014 Date

Steve Honnold: Regional Supervisor, Division of Commercial Fisheries — 4-7-2014 Date

Steve Schrof: Regional Resource Development Biologist, Division of Commercial Fisheries — 4/2/2014 Date

Sam Rabung: PNP Hatchery Program Coordinator, Division of Commercial Fisheries — 4-10-14 Date

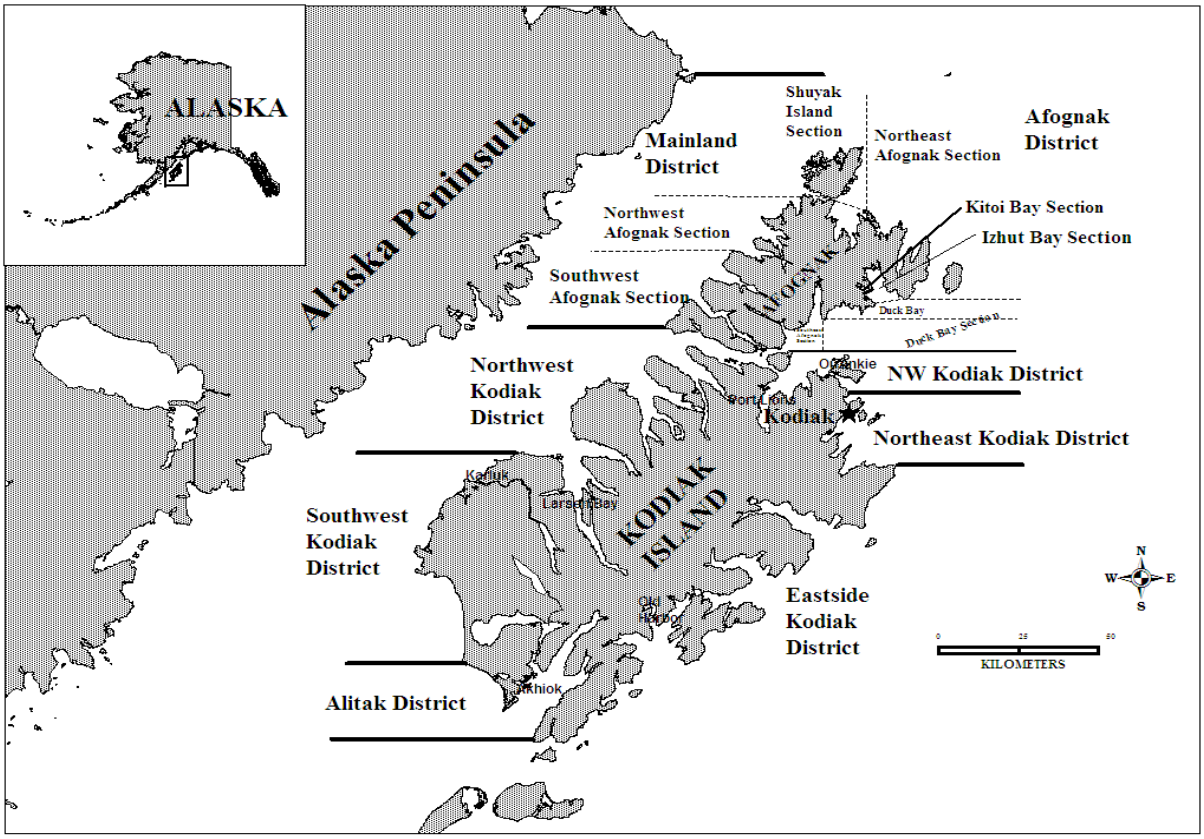
The 2014 Kitoi Bay Hatchery Annual Management Plan is hereby approved:

Tom Brookover: Deputy Director, Division of Sport Fish — Date

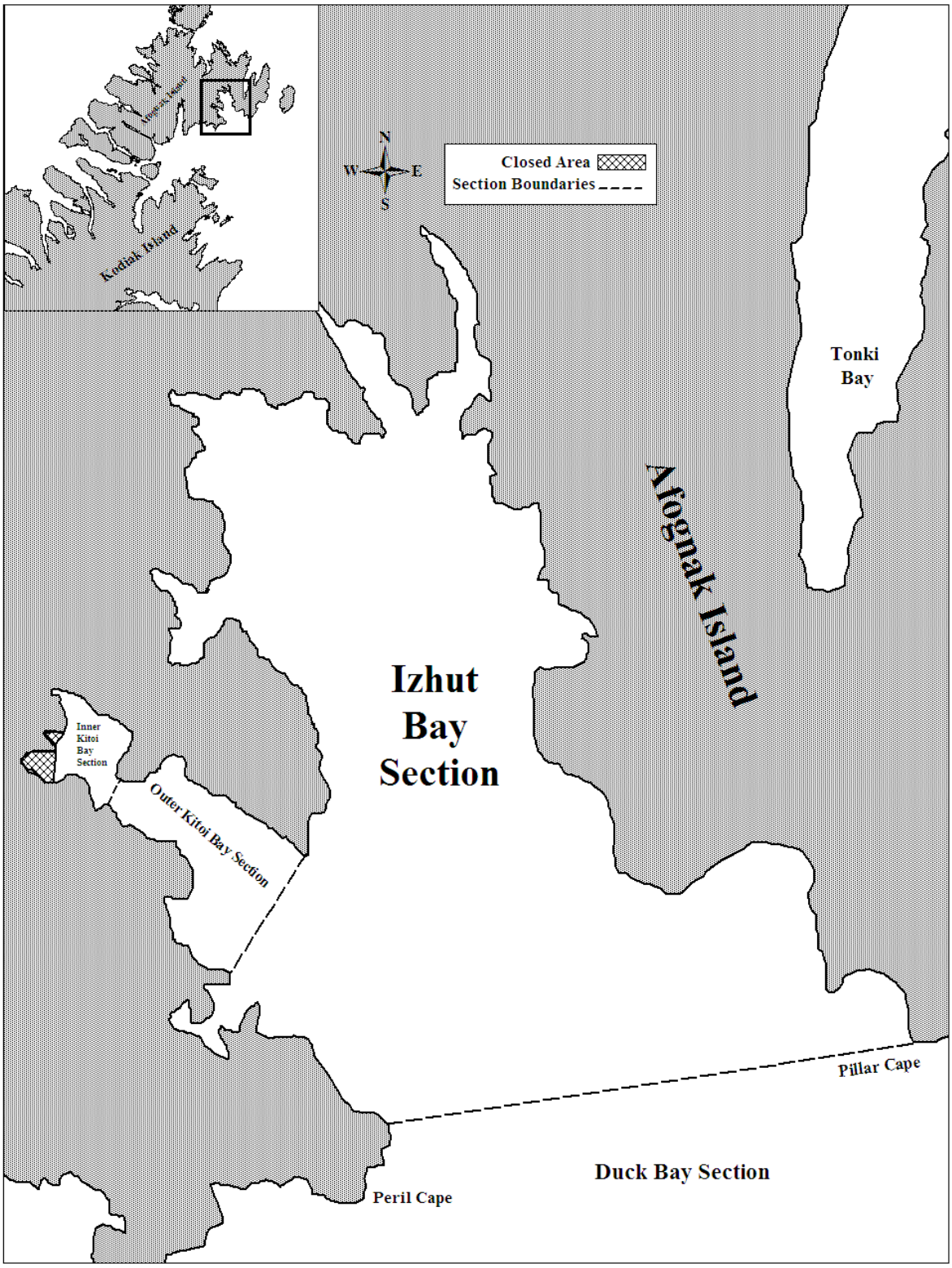
Peter Bangs: Assistant Director, Division of Commercial Fisheries — 4/11/14 Date

APPENDIX A. MAPS

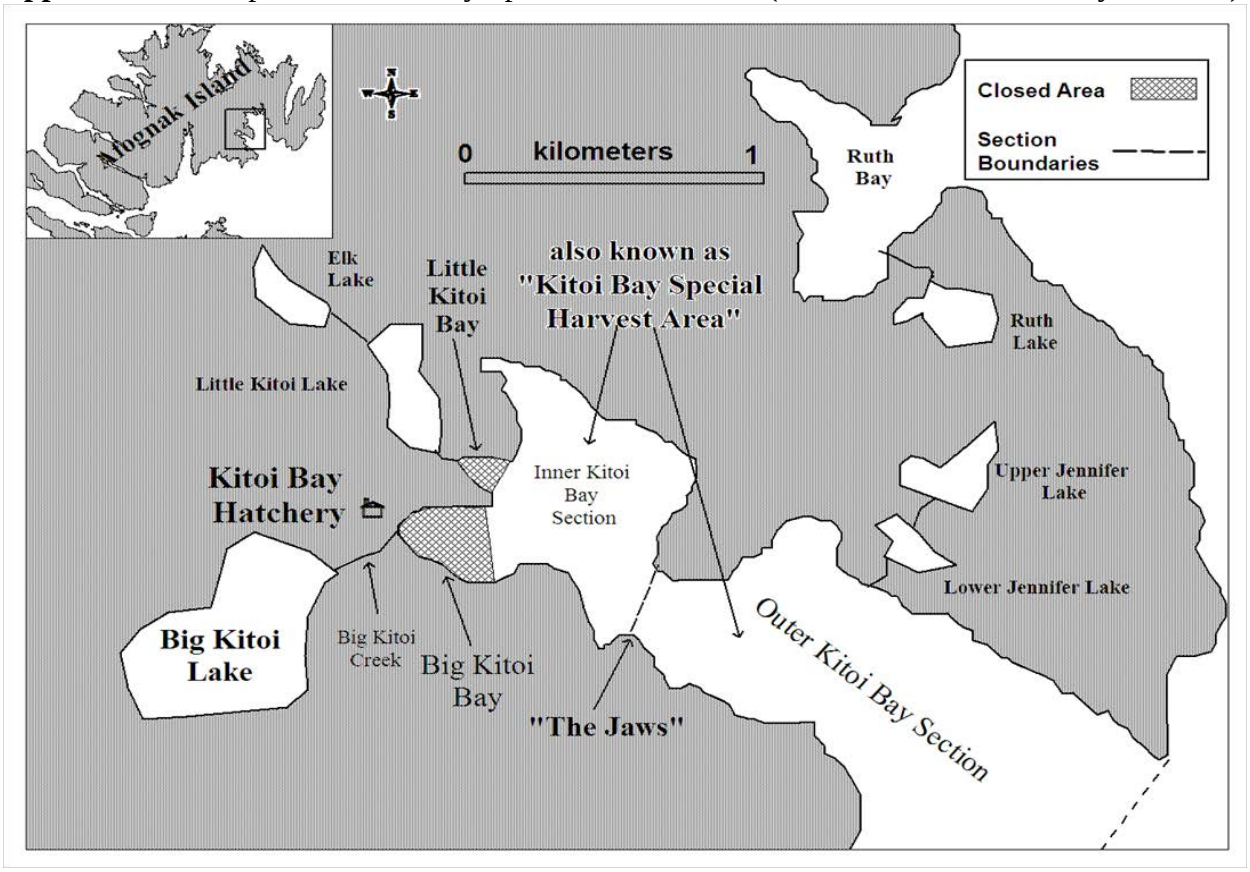
Appendix A1.–Map of the Kodiak Management Area.



Appendix A2.–Map of Izhut (252-30), Duck (252-31), and Inner and Outer Kitoi Bay Sections (252-32).



Appendix A3.–Map of the Kitoi Bay Special Harvest Area (Inner and Outer Kitoi Bay Sections).



APPENDIX B. HISTORIC PRODUCTION TABLES

Appendix B1.–Kitoi Bay Hatchery pink salmon release history, 1973–2011.

Brood Year	Pink Salmon Releases [a]		
	Year	Number	Average Weight (g)
1972	1973	493,130	-
1973	1974	447,642	-
1974	1975	1,226,314	-
1975	1976	2,486,410	-
1976	1977	4,722,152	0.50
1977	1978	17,255,424	0.44
1978	1979	17,319,537	-
1979	1980	22,458,947	0.63
1980	1981	26,351,664	0.93
1981	1982	47,828,701	-
1982	1983	72,054,096	0.79
1983	1984	87,065,569	0.58
1984	1985	75,109,442	0.29
1985	1986	97,773,052	0.78
1986	1987	90,017,823	0.27
1987	1988	94,172,516	0.73
1988	1989	80,502,220	0.62
1989	1990	84,907,550	0.61
1990	1991	124,148,019	0.60
1991	1992	147,145,130	0.79
1992	1993	169,552,112	0.51
1993	1994	163,192,575	0.45
1994	1995	134,104,406	0.53
1995	1996	144,045,245	0.48
1996	1997	102,583,724	0.50
1997	1998	128,101,460	0.50
1998	1999	127,685,500	0.54
1999	2000	137,702,154	0.61
2000	2001	134,823,670	0.72
2001	2002	152,990,900	0.56
2002	2003	144,823,895	0.86
2003	2004	154,073,358	0.76
2004	2005	136,287,250	0.62
2005	2006	115,661,940	0.83
2006	2007	140,898,860	0.60
2007	2008	144,920,820	0.64
2008	2009	153,705,600	0.67
2009	2010	144,431,650	0.70
2010	2011	146,461,254	0.85
2011	2012	156,644,477	0.62

[a] Big Kitoi Creek broodstock. Juveniles (fry life stage) were released into Big Kitoi Bay net pens for rearing then released into Big Kitoi Bay.

Appendix B2.–Kitoi Bay Hatchery chum salmon release history, 1982–2011.

Brood Year	Chum Salmon Releases [a]		
	Year	Number	Average Weight (g)
1981	1982	36,846	0.56
1982	1983	105,058	1.05
1983	1984	630,422	1.16
1984	1985	784,078	0.67
1985	1986	414,233	-
1986	1987	693,166	2.00
1987	1988	4,737,587	2.10
1988	1989	3,289,878	1.85
1989	1990	1,502,501	2.44
1990	1991	0	
1991	1992	22,214,472	1.80
1992	1993	10,101,986	2.02
1993	1994	6,507,497	1.52
1994	1995	9,738,472	1.51
1995	1996	20,139,843	1.27
1996	1997	23,500,000	1.50
1997	1998	12,310,015	1.50
1998	1999	6,859,982	1.02
1999	2000	22,334,640	1.70
2000	2001	20,032,140	1.73
2001	2002	19,593,070	1.55
2002	2003	18,721,700	1.66
2003	2004	21,778,050	2.01
2004	2005	21,578,500	2.02
2005	2006	17,567,016	2.39
2006	2007	21,648,839	1.72
2007	2008	21,690,168	1.94
2008	2009	22,173,160	1.96
2009	2010	20,765,381	2.02
2010	2011	19,412,409	1.98
2011	2012	22,244,780	1.75

[a] Big Kitoi Creek broodstock. Juveniles (fry life stage) were released into Big Kitoi Bay net pens for rearing then released into Big Kitoi Bay.

Appendix B3.–Kitoi Bay Hatchery coho salmon release history by location (active projects), 1986–2011.

	Coho Salmon Releases				
Brood Year	Release Year	Number	Average Weight (g)	Life Stage	Location
1986[a]	1987	9,600	5.00	Presmolt	Big Kitoi Creek
1987	1988	241,373	1.13	Fingerling	Crescent Lake
1988	1989	202,955	0.82	Fingerling	Crescent Lake
1988	1990	137,493	23.30	Smolt	Big Kitoi Bay
1990	1991	191,416	1.10	Fingerling	Crescent Lake
1990	1992	60,755	32.00	Smolt	Big Kitoi Bay
1991	1992	69,100	7.04	Presmolt	Crescent Lake
1991	1992	162,387	4.50	Fingerling	Jennifer Lake
1991	1993	613,681	18.90	Smolt	Big Kitoi Bay
1992	1993	68,420	14.60	Presmolt	Crescent Lake
1992	1993	135,486	1.94	Fingerling	Jennifer Lake
1992	1993	5,163	14.60	Presmolt	Big Kitoi Creek
1992	1994	97,973	28.40	Smolt	Big Kitoi Bay
1993	1994	163,680	0.98	Fingerling	Crescent Lake
1993[b]	1995	258,926	25.90	Smolt	Big Kitoi Bay
1994	1995	167,778	1.16	Fingerling	Crescent Lake
1994	1995	165,000	1.46	Fingerling	Jennifer Lake
1994	1995	59,500	1.74	Fingerling	Ruth Lake
1994	1996	894,486	23.54	Smolt	Big Kitoi Bay
1995	1996	163,200	0.40	Fry	Crescent Lake
1995	1997	819,046	19.57	Smolt	Big Kitoi Bay
1996	1997	165,000	0.35	Fry	Crescent Lake
1996	1997	163,000	0.35	Fry	Jennifer Lake
1996	1997	35,000	0.35	Fry	Ruth Lake
1996	1998	769,000	23.90	Smolt	Big Kitoi Bay
1997	1998	163,000	0.60	Fry	Crescent Lake
1997	1998	165,000	0.50	Fry	Jennifer Lake
1997	1998	35,000	0.50	Fry	Ruth Lake
1997	1999	1,098,338	19.30	Smolt	Big Kitoi Bay
1998	1999	165,000	0.57	Fry	Crescent Lake
1998	1999	136,000	0.55	Fry	Jennifer Lake
1998	1999	35,000	0.57	Fry	Ruth Lake
1998	2000	871,448	16.92	Smolt	Big Kitoi Bay
1999	2000	165,837	0.42	Fry	Crescent Lake
1999	2000	155,688	0.44	Fry	Jennifer Lake
1999	2000	30,695	0.72	Fry	Ruth Lake
1999	2001	936,913	20.76	Smolt	Big Kitoi Bay

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Appendix B3.–Continued.

Coho Salmon Releases					
Brood Year	Release Year	Number	Average Weight (g)	Life Stage	Location
2000	2001	165,000	0.90	Fry	Crescent Lake
2000	2001	120,000	0.86	Fry	Jennifer Lake
2000	2002	1,041,342	16.90	Smolt	Big Kitoi Bay
2001	2002	164,487	0.65	Fry	Crescent Lake
2001	2002	201,320	0.57	Fry	Jennifer Lake
2001	2002	30,000	0.69	Fry	Ruth Lake
2001	2003	1,064,864	16.75	Smolt	Big Kitoi Bay
2002	2003	164,395	0.63	Fry	Crescent Lake
2002	2003	197,590	0.57	Fry	Jennifer Lake
2002	2003	30,000	0.63	Fry	Ruth Lake
2002	2004	969,483	20.08	Smolt	Big Kitoi Bay
2003	2004	165,000	0.76	Fry	Crescent Lake
2003	2004	200,000	0.76	Fry	Jennifer Lake
2003	2004	30,000	0.76	Fry	Ruth Lake
2003	2005	1,009,200	18.54	Smolt	Big Kitoi Bay
2004	2005	140,000	0.75	Fry	Crescent Lake
2004	2005	110,000	0.97	Fry	Jennifer Lake
2004	2005	30,000	0.97	Fry	Ruth Lake
2004	2006	976,059	17.06	Smolt	Big Kitoi Bay
2005	2006	121,410	0.84	Fry	Crescent Lake
2005	2006	199,943	0.78	Fry	Jennifer Lake
2005	2006	30,886	0.78	Fry	Ruth Lake
2005	2007	1,046,365	17.03	Smolt	Big Kitoi Bay
2006	2007	143,008	1.07	Fry	Crescent Lake
2006	2007	209,577	1.23	Fry	Jennifer Lake
2006	2007	30,000	1.23	Fry	Ruth Lake
2006	2008	991,498	16.31	Smolt	Big Kitoi Bay
2007	2008	165,479	0.71	Fry	Crescent Lake
2007	2008	200,655	0.87	Fry	Jennifer Lake
2007	2008	30,000	0.87	Fry	Ruth Lake
2007	2009	1,027,684	18.44	Smolt	Big Kitoi Bay
2008	2009	153,545	0.72	Fry	Crescent Lake
2008	2009	180,480	0.88	Fry	Jennifer Lake
2008	2009	30,295	0.88	Fry	Ruth Lake
2008	2010	1,048,670	19.68	Smolt	Big Kitoi Bay
2009	2010	166,656	0.50	Fry	Crescent Lake
2009	2010	201,533	0.61	Fry	Jennifer Lake
2009	2010	30,179	0.61	Fry	Ruth Lake
2009	2011	1,045,331	17.30	Smolt	Big Kitoi Bay

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Appendix B3.–Continued.

Brood Year	Release Year	Coho Salmon Releases Number	Average Weight (g)	Life Stage	Location
2010	2011	0	0.00		Crescent Lake
2010	2011	0	0.00		Jennifer Lake
2010	2011	0	0.00		Ruth Lake
2010	2012	81,649	19.17	Smolt	Big Kitoi Bay
2011	2012	165,000	0.63	Fry	Crescent Lake
2011	2012	200,000	0.78	Fry	Jennifer Lake
2011	2012	32,709	0.92	Fry	Ruth Lake

[a] Broodstock from Little Kitoi Lake, 1986–1993.
[b] Broodstock from Big Kitoi Creek returns (Little Kitoi Lake ancestral stock), 1993 to present.

Appendix B4.–Kitoi Bay Hatchery sockeye salmon release history, 1988–2011.

		Sockeye Salmon Releases				
Brood Year	Broodstock	Release Year	Number	Average Weight (g)	Life Stage	Location
1988	Upper Station	1989	143,725	2.48	Zero Check Smolt	Little Kitoi Bay
1989	Upper Station	1990	249,346	0.20	Fry	Spiridon Lake
1989	Upper Station	1990	241,000	0.50	Fingerling	Little Kitoi Lake
1989	Upper Station	1990	337,932	0.18	Fry	Little Kitoi Lake
1989	Upper Station	1990	854,610	3.23	Zero Check Smolt	Little Kitoi Bay
1989	Upper Station	1990	458,118	0.48	Zero Check Fingerling	Little Kitoi Bay
1990	Upper Station	1991	1,250,000	2.50	Zero Check Smolt	Little Kitoi Bay
1991	Upper Station	1992	1,463,000	1.60	Zero Check Smolt	Little Kitoi Bay
1992	Upper Station	1993	52,418	3.13	Presmolt	Little Kitoi Lake
1992	Upper Station	1993	180,000	0.50	Fingerling	Jennifer Lakes
1992	Upper Station	1994	326,500	15.00	Smolt	Little Kitoi Bay
1993	Upper Station	1994	1,672,710	1.11	Zero Check Smolt	Little Kitoi Bay
1993	Little Kitoi Lake	1994	10,108	4.60	Presmolt	Little Kitoi Lake
1993	Little Kitoi Lake	1995	916,677	10.08	Smolt	Little Kitoi Bay
1994	Upper Station	1995	266,952	1.83	Zero Check Smolt	Little Kitoi Lake
1994	Little Kitoi Lake	1995	84,861	4.98	Presmolt	Little Kitoi Lake
1994	Little Kitoi Lake	1996	573,242	12.70	Smolt	Little Kitoi Bay
1995	Little Kitoi Lake	1996	155,687	3.16	Presmolt	Little Kitoi Lake
1995	Upper Station	1997	587,435	12.10	Smolt	Little Kitoi Bay
1996	Little Kitoi Lake	1997	77,039	3.31	Presmolt	Little Kitoi Lake
1996	Little Kitoi Lake	1998	99,085	11.70	Presmolt	Little Kitoi Lake
1996	Little Kitoi Lake	1998	397,000	15.10	Smolt	Little Kitoi Bay
1997	Saltery Lake	1999	106,658	17.70	Smolt	Little Kitoi Lake
1998	Saltery Lake	1999	98,737	7.00	Fingerling	Little Kitoi Lake
1998	Saltery Lake	1999	74,463	14.63	Presmolt	Little Kitoi Lake
1998	Saltery Lake	1999	23,756	14.35	Presmolt	Little Kitoi Bay[a]
1999	Saltery Lake	2000	154,039	11.31	Presmolt	Little Kitoi Lake
2000	Saltery Lake	2001	282,089	9.53	Presmolt	Little Kitoi Lake
2001	Saltery Lake	2002	212,418	6.55	Presmolt	Little Kitoi Lake
2002	Saltery Lake	2003	102,822	8.75	Presmolt	Little Kitoi Lake
2002	Saltery Lake	2004	193,646	25.68	Smolt	Little Kitoi Lake[b]
2003	Saltery Lake	2004	20,664	9.40	Presmolt	Little Kitoi Lake
2003	Saltery Lake	2005	279,962	24.15	Smolt	Little Kitoi Lake[b]
2004	Saltery Lake	2005	20,000	7.89	Presmolt	Little Kitoi Lake
2004	Saltery Lake	2006	379,687	22.82	Smolt	Little Kitoi Lake[b]
2005	Saltery Lake	2006	206,884	6.14	Presmolt	Little Kitoi Lake
2005	Saltery Lake	2007	402,911	19.56	Smolt	Little Kitoi Lake[b]

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Appendix B4.–Continued.

		Sockeye Salmon Releases				
Brood Year	Broodstock	Release Year	Number	Average Weight (g)	Life Stage	Location
2006	Saltery Lake	2007	133,533	7.65	Presmolt	Little Kitoi Lake
2006	Saltery Lake	2008	414,376	19.91	Smolt	Little Kitoi Lake[b]
2007	Saltery Lake	2009	417,803	20.01	Smolt	Little Kitoi Lake[b]
2008	Saltery Lake	2009	100,446	8.04	Presmolt	Little Kitoi Lake
2008	Saltery Lake	2010	393,006	20.99	Smolt	Little Kitoi Lake[b]
2009	Saltery Lake	2010	132,786	7.58	Presmolt	Little Kitoi Lake
2009	Saltery Lake	2011	414,333	22.30	Smolt	Little Kitoi Lake[b]
2010	Saltery Lake	2011	113,313	7.80	Presmolt	Little Kitoi Lake
2010	Saltery Lake	2012	413,015	24.40	Smolt	Little Kitoi Lake[b]
2011	Saltery Lake	2012	142,717	6.4	Presmolt	Little Kitoi Lake

[a] This release resulted from a dissolved oxygen crash in the transfer tank.
[b] Little Kitoi Lake net pen releases.

APPENDIX C. FISH TRANSPORT PERMITS

Appendix C1.–Kitoi Bay Hatchery current fish transport permits (FTPs).

FTP #	Species	Ancestral Stock	Description*	Expiration Date
06A-0072	chum	Sturgeon R	28M egg take at KBH, release Big Kitoi Bay	8/31/21
06A-0073	pink	Big Kitoi Cr	215M egg take at KBH, release Big Kitoi Bay	8/31/21
02A-0007	coho	Little Kitoi Lake	1.3M egg take at KBH (Big Kitoi Cr) , release Big Kitoi Bay	12/31/17
02A-0008	coho	Little Kitoi Lake	600k egg take at KBH, release Crescent Lake	12/31/17
02A-0009	coho	Little Kitoi Lake	300k egg take at KBH, release Jennifer Lake	12/31/17
02A-0010	coho	Little Kitoi Lake	40k egg take at KBH, release Katmai Lake	12/31/17
02A-0011	coho	Little Kitoi Lake	60k egg take at KBH, release Ruth Lake	12/31/17
11A-0059	coho	Big Kitoi Creek	40k juveniles from PCH to KBH, release Big Kitoi Bay	12/31/16
13A-0081	coho	Buskin River	4k broodstock from Little Kitoi Lake to KBH for backup	10/31/18
13A-0082	coho	Buskin River	400 broodstock from Monashka Creek to KBH for backup	10/31/18
13A-0083	coho	Buskin River	1M egg take at PCH for KBH as backup	10/31/18
10A-0007	sockeye	Saltery Lake	600k egg take at Saltery Lake, incubate at PCH, incubate at KBH, release Little Kitoi Lake	1/1/14
10A-0008	sockeye	Saltery Lake	600k egg take at Little Kitoi Lake, incubate at PCH, incubate at KBH, release Little Kitoi Lake	1/1/14
11A-0031	sockeye	Saltery Lake	600k egg take at Little Kitoi Lake, incubate at KBH, release Little Kitoi Lake	5/25/16
13A-0048	sockeye	Saltery Lake	850k egg take at Little Kitoi Lake, incubate at KBH, release Little Kitoi Lake	12/31/17

*M denotes million, k denotes thousand