Fishery Management Report No. 17-26

2016 Lower Cook Inlet Area Finfish Management Report

by

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and

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Alaska Department of Fish and Game **Divisions of Sport Fish and Commercial Fisheries**

Symbols and Abbreviations

The following symbols and abbreviations, and others approved for the Système International d'Unités (SI), are used without definition in the following reports by the Divisions of Sport Fish and of Commercial Fisheries: Fishery Manuscripts, Fishery Data Series Reports, Fishery Management Reports, and Special Publications. All others, including deviations from definitions listed below, are noted in the text at first mention, as well as in the titles or footnotes of tables, and in figure or figure captions.

Weights and measures (metric)

centimeter	cm
deciliter	dL
gram	g
hectare	ha
kilogram	kg
kilometer	km
liter	L
meter	m
milliliter	mL
millimeter	mm

Weights and measures (English)

cubic feet per second	ft^3/s
foot	ft
gallon	gal
inch	in
mile	mi
nautical mile	nmi
ounce	oz
pound	lb
quart	qt
yard	yd

Time and temperature

day	d
degrees Celsius	°C
degrees Fahrenheit	°F
degrees kelvin	K
hour	h
minute	min
second	s

Physics and chemistry

all atomic symbols	
alternating current	AC
ampere	A
calorie	cal
direct current	DC
hertz	Hz
horsepower	hp
hydrogen ion activity (negative log of)	pH
parts per million	ppm
parts per thousand	ppt, ‰
volts	V
watts	W

General

Alaska Administrative Code	AAC
all commonly accepted abbreviations	e.g., Mr., Mrs., AM, PM, etc.
all commonly accepted professional titles	e.g., Dr., Ph.D., R.N., etc.
at	@
compass directions:	
east	E
north	N
south	S
west	W
copyright	©
corporate suffixes:	
Company	Co.
Corporation	Corp.
Incorporated	Inc.
Limited	Ltd.
District of Columbia	D.C.
et alii (and others)	et al.
et cetera (and so forth)	etc.
exempli gratia (for example)	e.g.
Federal Information Code	FIC
id est (that is)	i.e.
latitude or longitude	lat or long
monetary symbols (U.S.)	$, ¢
months (tables and figures): first three letters	Jan,...,Dec
registered trademark	®
trademark	™
United States (adjective)	U.S.
United States of America (noun)	USA
U.S.C.	United States Code
U.S. state	use two-letter abbreviations (e.g., AK, WA)

Mathematics, statistics

all standard mathematical signs, symbols and abbreviations	
alternate hypothesis	H_A
base of natural logarithm	*e*
catch per unit effort	CPUE
coefficient of variation	CV
common test statistics	(F, t, χ^2, etc.)
confidence interval	CI
correlation coefficient (multiple)	R
correlation coefficient (simple)	r
covariance	cov
degree (angular)	°
degrees of freedom	df
expected value	*E*
greater than	>
greater than or equal to	≥
harvest per unit effort	HPUE
less than	<
less than or equal to	≤
logarithm (natural)	ln
logarithm (base 10)	log
logarithm (specify base)	$\log_2$, etc.
minute (angular)	'
not significant	NS
null hypothesis	H_O
percent	%
probability	P
probability of a type I error (rejection of the null hypothesis when true)	α
probability of a type II error (acceptance of the null hypothesis when false)	β
second (angular)	"
standard deviation	SD
standard error	SE
variance	
population	Var
sample	var

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by
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ABSTRACT

The Lower Cook Inlet (LCI) management area consists of all coastal waters and inland drainages entering waters north of Cape Douglas, west of Cape Fairfield, and south of Anchor Point. In 2016, commercial harvest was 434,070 salmon and composed of 98,952 pink *Oncorhynchus gorbuscha*, 258,641 sockeye *O. nerka*, 74,197 chum *O. keta*, 1,436 coho *O. kisutch*, and 844 Chinook salmon *O. tshawytscha*. Approximately 54% of the harvest (236,010) salmon were sold as common property harvest, and 198,060 salmon were sold for hatchery cost recovery including carcass sales. Homepack and donated fish (2,873 salmon) accounted for less than 1% of the harvest. Based on fish ticket reporting of prices, the preliminary value of the commercial salmon harvest was $2.7 million, including hatchery sales. This amount does not include postseason adjustments, bonuses, etc. During the 2016 season, 21 set gillnet and 19 purse seine permit holders reported deliveries. Set gillnet harvest value was an estimated $238,000, with average permit earnings of $11,347. Purse seine fishery exvessel harvest value was an estimated $774,780, with average permit earnings of $40,778. Revenue generated by cost recovery for hatchery operations was approximately $1.7 million. An additional $467,911was disbursed to Cook Inlet Aquaculture Association from a 2% salmon enhancement tax in Area H. A total of 4,223 salmon were harvested in personal use and subsistence fisheries. For these fisheries, approximately 208 subsistence and personal use permits were issued to Alaska residents. In addition, 200 coho salmon were landed by sport fish permit holders in a derby in Seward. Although these fish were subsequently sold commercially, they were not included in the total commercial harvest. The commercial Pacific herring *Clupea pallasii* fishery in the Kamishak Bay District remained closed in 2016 for the 15th consecutive year to allow the spawning population to continue rebuilding.

Key words Pacific salmon *Oncorhynchus* spp., sockeye salmon *O. nerka*, pink salmon *O. gorbuscha*, chum salmon *O. keta*, Chinook salmon *O. tshawytscha*, coho salmon *O. kisutch*, Pacific herring *Clupea pallasii*, harvest, set gillnet, purse seine, commercial salmon harvest, salmon enhancement, hatchery, cost recovery, sport fishery, subsistence fishery, personal use fishery, escapement, Cook Inlet Aquaculture Association CIAA, Lower Cook Inlet, Kamishak Bay, Kachemak Bay, Resurrection Bay, Annual Management Report AMR

INTRODUCTION

LOWER COOK INLET MANAGEMENT AREA COMMERCIAL SALMON AND HERRING FISHERIES

The Lower Cook Inlet (LCI) management area comprises waters of the Cook Inlet Area, south of the latitude of Anchor Point including the western shore of Cook Inlet south to Cape Douglas, and the eastern shore of Cook Inlet along the Kenai Peninsula to Cape Fairfield. This area is included in Area H and encompasses all coastal waters and inland drainages entering this area (Figure 1).

This salmon management area is divided into 5 districts that correspond to local geography and distribution of the 5 species of Pacific salmon (*Oncorhynchus* spp.) harvested by commercial fisheries (Figures 1–18). The primary management objective for all districts is the achievement of spawning escapement goals for major salmon stocks, while allowing for orderly fisheries to harvest fish surplus to spawning requirements. In addition, Alaska Department of Fish and Game (ADF&G) follows regulatory guidelines to manage fisheries and allow private nonprofit hatcheries to achieve cost recovery and broodstock objectives.

Three hatcheries currently contribute to the area's salmon fisheries. The Trail Lakes Hatchery (TLH) at Mile 29 of the Seward Highway produces sockeye *O. nerka* and coho salmon *O. kisutch* and is operated by the Cook Inlet Aquaculture Association (CIAA)[1]. ADF&G

[1] Cook Inlet Aquaculture Association (CIAA) project and hatchery reports provide preliminary data used throughout this report. For more information please contact CIAA or visit the website at: http://www.ciaanet.org/data/project-reports.html. Hereafter referred to as CIAA.

operates the Ship Creek Hatchery Complex near Anchorage that produces Chinook *O. tshawytscha* and coho salmon, which are released in the LCI area. In addition, the Tutka Bay Lagoon Hatchery once again began incubating pink salmon *O. gorbuscha* eggs in 2011 for release into Kachemak Bay.

Gear utilized in commercial salmon fisheries includes purse seine and set gillnet. Purse seine gear is permitted to fish in the Southern, Outer, Eastern, and Kamishak Bay districts. Set gillnet gear is permitted to fish in the Southern District. The Barren Islands District is closed by regulation to salmon harvest.

When Pacific herring *Clupea pallasii* spawning biomass allows for a commercial fishery in the Kamishak District, annual harvest level ranges are established in regulation (5 AAC 27.465) and divided between the commercial purse seine sac roe fishery in that district (90%) and the Shelikof Strait food and bait fishery (10%) in the Kodiak management area. Other districts in LCI were closed to commercial herring harvest by the Alaska Board of Fisheries (BOF) in 2002 pending an increase in stock levels sufficient to ensure that a commercial herring fishery can be conducted in a sustainable manner.

OVERVIEW OF AREAWIDE SALMON AND HERRING FISHERIES

In 2016, commercial harvest was 434,070 salmon in the LCI management area. The harvest was composed of 98,952 pink, 258,641 sockeye, 74,197 chum *O. keta*, 1,436 coho, and 844 Chinook salmon (Table 1; Figure 19). Hatchery runs of sockeye salmon in general were below forecast in Resurrection Bay and at other hatchery release sites. Commercial harvest of coho and sockeye salmon were below previous 10-year (2006–2015) averages (Table 2). Approximately 54% of the harvest, 236,010 fish, was attributed to the common property fishery, and 198,060 fish to hatchery cost recovery. An additional 8,283 sockeye and 173,778 pink salmon were harvested by hatcheries for broodstock (Appendices F2 and F3). Homepack harvest (985 salmon) accounted for less than 1% of the commercial harvest from LCI districts (Table 1). The 2016 preliminary exvessel value estimates by gear group from the common property fishery, both wild and enhanced salmon, were $774,780 (76.5%) for purse seine and $238,277 (23.5%) for set gillnet (Table 3; Figure 20). The average price per pound paid to fishermen was generally below the previous 10-year average for all salmon species except sockeye and coho salmon (Table 4). The overall harvest value for purse seine in 2016 was approximately 45% of the previous 10-year harvest average, whereas set gillnet harvest value was only 18% below the previous 10-year average value (Table 5).

No commercial fisheries for herring occurred in 2016 in order to allow the population further opportunity to rebuild from historically low abundance (Figure 21).

SALMON SEASON SUMMARY BY DISTRICT

SOUTHERN DISTRICT

The Southern District includes the waters of eastern Cook Inlet south of Anchor Point and north of a line from Cape Elizabeth to Cape Douglas excluding waters east of a line from Point Adam to the tip of Cape Elizabeth (Figures 1–5). Commercial fishing in this district is restricted by regulation to waters along the south shore of Kachemak Bay from Chugachik Island near the terminus of Kachemak Bay to Point Bede approximately 4 miles south of the village of Nanwalek (English Bay). Purse seine gear is permitted in all open waters of this district during periods established by emergency order (EO). Commercial set gillnet harvest is restricted to

approximately 15 miles of shoreline in 5 subdistricts in this district: east shore of Ismailof Island near Halibut Cove; waters surrounding McDonald Spit extending to Jakolof Bay; waters east of Barabara Point extending approximately 1.4 miles; waters along the west shore of outer Seldovia Bay; and waters of a portion of the south shore of Port Graham and English Bay. Any Cook Inlet Area (Area H) commercial set gillnet permit holder may register to fish in these areas. This registration, however, would preclude that permit holder from fishing in the Northern and Central districts in Cook Inlet for the remainder of that calendar year. Other areas in the "Greater Cook Inlet Area," as defined in 5 AAC 21.345, may be fished in a given year by set gillnet permit holders fishing in the Southern District. The primary target species in this district for both purse seine and set gillnet permit holders are sockeye and pink salmon, although modest numbers of chum and coho salmon are also harvested. The major natural producer of sockeye salmon in this district is the English Bay River. Pink salmon historically have returned in large numbers to Humpy Creek, as well as numerous smaller streams in the Southern District. Hatchery releases began in 1972, when 241,000 coho and 34,000 Chinook salmon were released into Kasitsna Creek. This was followed by releases of chum and pink salmon into Halibut Cove Lagoon in 1974 and 1975. Sockeye salmon were released into Leisure Lake and Halibut Cove Lagoon in 1976. Since that time, hatchery releases have continued to provide added salmon production to sites within this district (Appendices F12, F13, and F14).

Preseason Outlook and Harvest Strategy

The 2016 commercial wild stock harvest forecast for the Southern District was 47,000 pink and 52,600 sockeye salmon (Table 6; Appendix H1). The enhanced sockeye salmon run to CIAA release sites was forecast to be 111,476 fish. A total of 414,470 hatchery-produced pink salmon were anticipated to return to the LCI Area in 2016 from the 2015 release of 11.2 million fry from Tutka Bay Lagoon and 2.2 million from Port Graham Bay (Appendices F7, F9, and F14).

As specified in regulation, the set gillnet fishing season in the Southern District opens on or after June 1 with two 48-hour periods per week specified unless modified by EO. The seine fishing season and fishing periods are opened and closed by EO depending on the available harvestable surplus of both wild and hatchery stock salmon. Given that cost recovery objectives were not anticipated to be met by sockeye salmon returns to Resurrection Bay, all returning hatchery sockeye and pink salmon in excess of broodstock requirements in other areas were anticipated to be required for cost recovery harvest. Considering recent irregular runs of sockeye salmon to the Port Graham Subdistrict, the commercial set gillnet fishery would remain closed in this area until observations at the English Bay River indicated sufficient escapement to achieve both the sustainable escapement goal (SEG) and hatchery broodstock requirements. Hatchery harvest for this and previous seasons is discussed fully in the *Cook Inlet Salmon Enhancement* section.

Early season management of the Southern District (excluding the Port Graham Subdistrict), is based on actual harvest versus anticipated harvest. Port Graham Subdistrict management is based on anticipated versus actual run strength to the English Bay Lakes as measured by the English Bay River weir. Environmental conditions, fishing effort, and harvest consistency throughout the period are also taken into account. By early July, ground survey estimates of chum and early pink salmon escapement begin to weigh more heavily when scheduling commercial fishing periods. These surveys become primary tools in late July and August when management focus shifts to pink salmon in this district.

Season Summary

The total 2016 Southern District sockeye salmon commercial common property harvest excluding homepack was 66,662, with 19,427 (29.2%) harvested by the set gillnet fleet and 47,235 harvested by seine permit holders (Appendices A1–A3). In addition 23,708 sockeye salmon were reported harvested from the Tutka Bay Lagoon Hatchery Special Harvest Area (SHA) by CIAA for cost recovery, and 2,961 fish were harvested for broodstock purposes (Appendix F2). Total common property pink salmon harvest was 66,509 fish with 44,637 (67.1%) harvested by the seine fleet and 21,872 harvested by set gillnet permit holders. In addition, CIAA harvested 23,783 pink salmon from the Tutka Bay Lagoon Hatchery SHA, as well as 2,647 from the Port Graham Hatchery SHA (Appendix F3). A total of 843 Chinook salmon were harvested in the Southern District with 731 Chinook salmon harvested by set gillnet permit holders and the remaining by seine permit holders. Also, a total of 2,289 chum salmon were harvested, with 2,124 by set gillnet and 165 by seine permit holders. In addition, 856 coho salmon were landed, with 687 by set gillnet and 169 by seine permit holders (Appendices A1 and A2; Table 1). A total of 384 sockeye, 75 Chinook, 193 coho, 46 chum and 284 pink salmon were retained by 23 commercial permit holders (11 seine, 12 set gillnet) for personal homepack use and not sold (Appendix E7; Table 1).

Prior to the first commercial set gillnet fishing period on Thursday, June 2, ADF&G released an EO that defined the seaward boundary of the 5 areas in the Southern District where commercial set gillnets are legal using GPS coordinates located 1,000 feet seaward of the Mean Lower Low Water (MLLW) isobar established on NOAA nautical charts. Prior to this EO, the legal boundary was implied by 5 AAC 21.330(b)(1), which states that,

> "Set gillnets may be used…within 1,000 feet of beach areas that at mean low water are connected by exposed land to the shore…"

The only exception to this was in the Port Graham Subdistrict where this distance is defined as 2,500 feet.

This regulation was identified by Alaska State Troopers as problematic for their field staff because mean low water (MLW) is a nonstandard reference that would be highly difficult to establish in the field without additional technical staff and equipment. The standard reference used in all other shore fisheries in Cook Inlet, as well as on NOAA navigational charts is MLLW, which is defined as the average of the lower low water height of each tidal day observed over the 17 year National Tidal Datum Epoch. In December 2016, the BOF passed regulations assigning GPS coordinates to points along a line 1,000 feet seaward of MLLW. This will simplify identification of this line for users and enforcement staff.

The Southern District set gillnet commercial fishing season was opened by EO on June 2 (Table 7). The first 48 hour commercial fishing period was also announced in this EO to begin at 6:00 AM on Thursday, June 2. The harvest from this period was 367 sockeye, 118 Chinook, and 6 chum salmon with 10 permit holders reporting deliveries (Appendix A1). During this period, waters of the Port Graham Subdistrict remained closed to commercial set gillnet harvest as a precautionary measure due to irregular sockeye salmon runs in recent years. The English Bay weir began operation on May 24 and through June 4 had passed 259 sockeye salmon. Passage increased the following week with a cumulative total of 919 sockeye salmon counted through the weir on June 11. This compares to an anticipated escapement of 409–921 sockeye salmon required to meet the SEG by July 31, when the weir is traditionally removed. The anticipated

escapement is the previous 10-year average percent of final escapement for that date multiplied by the SEG to get the minimum and maximum anticipated escapement for that date (Appendices A4–A6; Table 8).

The second 48 hour period began the following Monday on June 6 at 6:00 AM and 9 permit holders reported 297 sockeye, 60 Chinook, and 14 chum salmon harvested (Appendix A1). During the following period on Thursday, June 9, harvest increased with a total of 410 sockeye, 37 Chinook, and 64 chum salmon harvested by 7 permit holders (Appendix A1).

A commercial fishing period began on Monday, June 13, in the Southern District excluding the Port Graham Subdistrict with 11 permit holders reporting a harvest of 91 Chinook, 598 sockeye, and 95 chum salmon. Harvest from the following period beginning on Thursday, June 16, decreased with 10 permit holders delivering 68 Chinook, 553 sockeye, and 57 chum salmon (Appendix A1). Passage at the English Bay weir was steady with 1,697 sockeye salmon counted through June 18. This compared with an anticipated escapement of 864–1,944 sockeye salmon by this date. Although cumulative sockeye salmon passage at the English Bay weir remained within the escapement targets for those dates, ADF&G staff were concerned that inconsistent daily passage could result in an early and low run. Consequently, the commercial fishery in the Port Graham Subdistrict remained closed. During the week of June 19–25, passage was only 851 sockeye salmon, versus an anticipated passage of 1,242–2,794 sockeye salmon for this 7 day period. Cumulative passage on June 25 was 2,548 sockeye salmon versus an anticipated cumulative count of 2,105–4,737 sockeye salmon (Appendix A4). Historically, passage at the weir has been extremely sporadic with fish numbers influenced by rainfall and tides, as well as subsistence harvests by residents of Nanwalek and Port Graham. Consequently, ADF&G elected to keep the common property commercial fishery in the Port Graham Subdistrict closed until there were enough sockeye salmon to support additional harvest; as well as subsistence harvest and escapement needs. Elsewhere in the Southern District, harvest from the Monday and Thursday fishing periods on June 20 and June 23, improved with a total of 97 Chinook, 2,051 sockeye, and 187 chum salmon harvested by 11 permit holders (Appendix A1).

Weir passage over the next week (June 26–July 2) decreased markedly with only 608 sockeye salmon counted, which was below the anticipated passage for that week of 1,729–3,890 sockeye salmon. Total passage through July 2 was 3,156 sockeye salmon versus an anticipated total cumulative passage of 3,835–8,628 sockeye salmon. Historically, approximately 64% of the English Bay weir escapement has been counted as of July 2 (Appendix A4). Commercial set gillnet harvest in other portions of the Southern District increased during the week of June 26–July 2 with 13 permit holders reporting 58 Chinook, 2,090 sockeye, and 238 chum salmon landed from the Monday and Thursday periods combined (Appendix A1). Salmon passage at the English Bay weir from July 3 to 9 declined considerably in spite of significant rainfall and a large tide cycle. A total of 878 sockeye salmon were counted during this 1 week period versus an anticipated passage of 1,103–2,481 sockeye salmon. Total cumulative escapement on July 9 was 4,095 sockeye salmon versus an anticipated escapement of 4,937–11,109 sockeye salmon. Typically, 82% of the run is in the river by this date. In light of this, the 5.5 day regulatory subsistence fishing period in the Port Graham Subdistrict was reduced to 48-hours with the 5.5 day fishing period ending on July 6 and the 48-hour period beginning on Monday, July 11. However, beginning on July 11, weir passage increased dramatically with close to 3,000 sockeye salmon passed in the weir during next 6 days and the minimum SEG range of 6,000 sockeye salmon was exceeded on July 15. Consequently, regulatory subsistence fishing periods resumed

on July 14. Commercial set gillnet harvests remained moderately strong during the July 4 and July 7 fishing periods with a total of 92 Chinook, 3,503 sockeye, 341 chum and 2,849 pink salmon. Set gillnet harvests the following week, July 10–16 reached their peak for the season with 83 Chinook, 5,852 sockeye, 492 chum, and 6,013 pink salmon harvested by 14 permit holders (Appendices A1 and A4).

The Southern District commercial purse seine season was opened by EO on Monday, June 20 with a fishing schedule of 3 weekly 16 hour periods (6:00 AM to 10:00 PM) on Mondays, Wednesdays, and Fridays in portions of the district east of McDonald Spit. Harvest from the first weeks 3 fishing periods combined was 2,840 sockeye salmon with 5 permit holders reporting deliveries. Harvest increased dramatically during the second week (June 26–July 2), with 11 permit holders reporting a combined total of 7,191 sockeye as well as 76 Chinook, 176 pink and 22 chum salmon. Sockeye harvests during the first week of July remained robust with 10,800 sockeye salmon harvested, as well as 1,792 pink salmon by 11 permit holders. SHAs remained closed during these periods with most fishing activity occurring in the Tutka Subdistrict outside of the SHA. There were no schedule or area changes in the Southern District for the second (July 10–16), or third (July 17–23) week of July. Harvest and effort remained generally consistent and strong during these 2 weeks with sockeye salmon harvests remaining steady, and pink salmon harvests increasing. However, harvest and participation decreased markedly during the last week of July (July 24–30) with decreasing numbers of pink and sockeye salmon harvested in the Monday fishing period, and confidential numbers in the Wednesday and Friday periods due to fewer than 3 permits reporting deliveries. ADF&G announced on Wednesday, July 27 that beginning on Friday, June 28 waters in the vicinity of Humpy Creek would be opened up to the fresh water of Humpy Creek using the definition of "fresh water" in 5 AAC 39.975(26). On July 29, ADF&G announced that waters of the Tutka Bay SHA north of the powerlines would open on Monday, August 1 to commercial common property harvest on a Monday, Wednesday, and Friday schedule concurrent with other areas in the Southern District. In spite of this, there were no common property seine deliveries reported for Monday, August 1. On the following Wednesday and Friday, 7 deliveries were reported by 3 permit holders with 420 sockeye, and 11,177 pink salmon delivered. During the week of August 7–13 there were 391 sockeye and 7,730 pink salmon reported delivered during the Monday and Wednesday fishing periods. No further common property purse seine deliveries were reported from this district in 2016 (Appendix A2 and Table 7).

Although set gillnet harvests of sockeye salmon declined in the second half of July, pink salmon harvests increased with 6,797 fish harvested by 13 permit holders during the week of July 17–23 as well as 2,369 sockeye salmon. The following week (July 24–30), 9 permit holders harvested 894 sockeye and 2,984 pink salmon. Set gillnet participation declined sharply during the first week of August with only 7 permit holders harvesting 319 sockeye and 1,842 pink salmon total during the 2 fishing periods that occurred this week. Harvest the following week was minimal as well with 3 permit holders reporting 56 sockeye and 902 pink salmon during the 40-hour fishing period that began on Monday, August 8. There were no reported harvests from the Thursday fishing period. The following week, (August 14–21) saw the last set gillnet deliveries of the season with fewer than 3 permit holders reporting deliveries. Harvest numbers from this week are therefore confidential. The 2016 salmon season was closed to purse seine fishing on September 18 and to set gillnet fishing by regulation on October 1 (Appendix A1).

Of the 6 pink salmon index streams in the Southern District, 2 had final escapement estimates that were above the SEG ranges (Humpy Creek, Tutka Lagoon Creek), 2 were within the SEG ranges (Barabara Creek, Port Graham River), and 2 were below SEG ranges (China Poot, Seldovia River). The only chum salmon SEG in the Southern District is for the Port Graham River. Final escapement in this system for this species was within the SEG range (Appendices A7 and A8). Final spawning escapement for English Bay River was 7,673 sockeye salmon. This was within the SEG range of 6,000–13,500 sockeye salmon. The previous 10-year average spawning escapement was 11,296 sockeye salmon for this system (Appendix A6). Although the Port Graham Section of the Port Graham Subdistrict, as well as the English Bay Section did open to commercial set gillnet harvest beginning on July 21, no commercial set gillnet harvests were reported this season for that area.

The total 2016 Southern District common property commercial harvest of 66,662 sockeye salmon was above the previous 10-year average harvest of 56,138 fish and above the anticipated harvest of 54,600 fish (Table 6; Appendices A3 and H1). The pink salmon commercial common property harvest (66,509) was above the anticipated harvest of 47,000 fish, and above the previous 10-year average harvest of 49,397 fish (Appendix A3). ADF&G staff sampled otoliths from sockeye and pink salmon that were harvested in the commercial common property fisheries in this district. Of those examined, 41.2% of the sockeye and 91.7% of the pink salmon had thermally marked otoliths with 11.9% of the marked sockeye being of PWS hatchery origin (Appendices F22–F26). Further information regarding thermal marks may be found in the hatchery section of this report.

OUTER DISTRICT

The Outer District includes the waters of LCI along the Kenai Peninsula south and east of a line from Point Adam to Cape Elizabeth, and east of the longitude of Cape Elizabeth to the longitude of Aligo Point, which is 35 miles southwest of Seward (Figures 1, 2, and 6–9). Purse seine gear is permitted in all open waters of this district during periods established by EO. Historically, the primary target species have been sockeye and pink salmon. The major natural producers of sockeye salmon in this district are Delight, Desire, and Delusion lakes. All 3 of these lakes were reported to have been glaciated in the early part of the 20th century with the McCarty Glacier terminus stretching from James Lagoon on the west to McCarty Lagoon on the east (Cook and Norris 1998, page 251). Pink salmon return in large numbers to Rocky Bay, Port Dick, and Windy Bay, as well as several smaller systems. In addition, chum salmon are regularly harvested from Dogfish Lagoon and Port Dick. There have been no regular releases of hatchery salmon into this district (Appendix F12).

At the December 2013 BOF meeting, Dogfish Lagoon Creeks was added to the 8 pre-existing pink salmon index streams in the Outer District and an SEG of 1,200–8,400 pink salmon was created. This stream complex has been regularly surveyed for more than 40 years.

Preseason Outlook and Harvest Strategy

The 2016 commercial wild stock harvest forecast for the Outer District was 14,300 sockeye and 194,000 pink salmon (Table 6; Appendix H1). As specified in regulation, the seine fishing season and periods are opened and closed by EO depending on the available harvestable surplus of wild stock salmon returning to spawning systems in the Outer District.

Historically, management of commercial sockeye, pink, and chum salmon fisheries in this district have relied heavily on aerial and ground surveys of major spawning systems for those species. Beginning in 1997 until 2014, daily monitoring of sockeye salmon returning to Delight Lake was conducted using a picket weir staffed by ADF&G field personnel. Funding for the weir was cut in 2015 and escapement monitoring is now conducted using aerial surveys. Typically, sockeye salmon runs to this lake, as well as Desire and Delusion lakes, peak in late July. Escapement into these lakes is frequently driven by rain events with weeks of limited passage followed by a significant spike in escapement as the result of increased water volume in the lake outflow. By early August, chum and pink salmon runs to this district may increase to harvestable levels.

Season Summary

On July 8, portions of the Outer District were opened beginning on Monday, July 11, to commercial common property salmon harvest on a schedule of Monday, Wednesday, and Friday 6:00 AM to 10:00 PM fishing periods. This was based on an aerial survey flown on July 7 of the Outer District that identified chum salmon in several bays that were above anticipated levels for that date (Appendix B3). A ground survey conducted on July 11 counted 5,663 chum salmon in Port Dick Creek (Appendix B4). This was above the SEG range for this system of 1,900–4,450 chum salmon. Combined harvest during fishing periods from July 11 to 15 was 140 pink and 4,886 chum salmon with 4 permit holders delivering. Harvest the following week (July 17–23) was confidential because fewer than 3 permit holders reported deliveries. Harvest (and participation) increased the following week (July 24–30) with 12 permit holders delivering 29,246 chum and 2,219 pink salmon with much of this harvest occurring in the Dogfish Bay area where anadromous stream closures had been relaxed. The following week (July 31–August 6) had 8 permit holders delivering 8,169 chum and 2,314 pink salmon. As a result of commercial pink salmon harvest falling below the anticipated harvest in many Outer District spawning systems, commercial fishing was closed in the Port Dick area beginning on Monday, August 8. Harvest during the week of August 7–13 was confidential because fewer than 3 deliveries occurred. A ground survey of Port Dick Creek on August 9 documented only 1,837 pink salmon. This compares to a SEG range of 18,550 pink salmon with a mid-point run-timing of August 7, (Yuen and Bucher 1993). There were no harvests reported during the week of August 14–20. Harvests during the week of August 21–27) were confidential due to fewer than 3 permit holders reporting deliveries. There were no further deliveries reported from this district in 2016 (Appendices B1–B6).

Of the 9 pink salmon index streams in the Outer District, all but 1 had final escapement estimates that were below the SEG ranges (Dogfish Lagoon Creek). There are 4 chum salmon index streams with SEGs in the Outer District. Of these, 2 were above the SEG ranges (Port Dick and Dogfish Lagoon creeks), and 2 were within their SEG ranges. There are 4 sockeye salmon index systems in the Outer District. Three of these systems were below their SEG ranges (Delight, Desire, and Aialik lakes) with Bear Lake exceeding its SEG range (Table 8; Appendices B3–B6).

The Outer District closed for the 2016 season on September 18. A total of 13 permits reported deliveries from the Outer District in 2016, which was also equal to the previous 10-year annual average of 13 permits. Total harvest from this district was fewer than a dozen Chinook, sockeye and coho salmon combined, as well as 5,369 pink and 60,800 chum salmon. With the exception of chum salmon, which had an anticipated harvest of 56,800 fish, the actual harvest of the other 4 species of Pacific salmon were below anticipated levels in this district (Appendices B1 and B2).

EASTERN DISTRICT

The Eastern District includes all state waters of the Gulf of Alaska between the longitudes of Aligo Point and Cape Fairfield (Figures 1, 2, and 10). Purse seine gear is permitted in all open waters of this district during periods established by EO. Historically, the primary target species have been sockeye and pink salmon with commercial harvests occurring irregularly (Appendix C2). Harvests of chum salmon were larger in this district during the 1980s. The natural producers of sockeye salmon in this district have historically been Bear and Aialik lakes. Sockeye salmon production in Aialik Lake is a relatively recent event, with this lake having been covered by the Pedersen Glacier as late as 1909 (Cook and Norris 1998). Beginning in 1990, CIAA began supplementing natural production in Resurrection Bay by releasing up to 3.4 million sockeye salmon juveniles into Bear Lake, in addition to 1.3 million to 1.7 million sockeye salmon into Resurrection Bay in some years since 2008 (Appendix F12).

Pink salmon production in the Eastern District has been the result of natural spawning, excluding 1999 and 2000, when 24,000 and 48,000 pink salmon were released by the Alaska Sea Life Center into Resurrection Bay (Appendix F14). The largest pink salmon producers in this district are Salmon Creek with a 10-year (1980–1989) average escapement of 4,500 pink salmon and Bear Creek with a 10-year (1997–2006) average escapement of 11,800 fish. In addition, Thumb and Humpy coves collectively produced an average of 10,500 pink salmon per year from 1997 to 2006 (Appendix C9). Ground surveys of this area in recent years have been curtailed due to budgetary constraints combined with historically low runs to this area (Appendix C9).

Since the early 1960s, coho salmon production in Resurrection Bay has been supplemented by enhancement efforts. Historically, commercial harvests of this species in the Eastern District were minimal (Appendix C2). In 1966, commercial harvest of coho salmon north of a line from Cape Resurrection to Callisto Head was prohibited, and in 1968 this regulatory line was moved south to its current position at Aialik Cape. Beginning in 1985 with the start of hatchery releases of Chinook salmon in the Seward area (Appendix F11), commercial harvest of this species north of a line from Cape Resurrection to Aialik Cape was prohibited. In addition, since 1989 the *Resurrection Bay Salmon Management Plan* (5 AAC 21.376) directed commercial fishery managers to conduct those fisheries in a manner that does not interfere with recreational fisheries for enhanced Chinook and coho salmon in Resurrection Bay. Consequently, the majority of coho salmon in this area have been harvested by sport users, and runs of pink and chum salmon have generally been insufficient to target for commercial harvest. Since 1956, the Seward Chamber of Commerce has conducted a fishing derby that focuses on enhanced and wild coho salmon returning to local spawning systems at the head of Resurrection Bay. Beginning in 1990, coho salmon harvested by participants in the derby have been sold commercially by the Chamber of Commerce to a local processor as a fund raiser for that organization. These sales are listed separately from commercial common property harvests in Appendix C2.

Preseason Outlook and Harvest Strategy

The enhanced sockeye salmon run to CIAA release sites in Resurrection Bay was forecast to be 171,000 fish (Table 6; Appendix H1). As specified in regulation, the seine fishing season and fishing periods are opened and closed by EO depending on the available harvestable surplus of both wild stock and enhanced salmon returning to the Eastern District. CIAA announced preseason that all of the sockeye salmon anticipated to return to Resurrection Bay release sites would be required to meet corporate cost recovery, as well as broodstock needs. Early season

management of the Eastern District is based on actual harvest versus anticipated harvest, as well as passage at the Bear Creek weir, which is located 8 km (5 miles) from saltwater. Beginning in July, management is based on aerial surveys of sockeye salmon runs to Aialik Lake. Historically, runs of pink and chum salmon to this district have been below the level required to support consistent and sustainable commercial harvests.

Season Summary

The total 2016 Eastern District sockeye salmon commercial common property harvest was confidential due to fewer than 3 seine permit holders participating. CIAA harvested 102,776 sockeye salmon for cost recovery from Resurrection Bay and at the Bear Lake weir. An additional 1,484 excess sockeye salmon were donated to members of the public at the Bear Creek weir (Appendices C1–C3).

The Bear Lake SHA opened by regulation to corporate cost recovery harvest and brood stock collection at 6:00 AM on May 15. Although the first delivery did not occur until May 23, sockeye salmon began arriving at the Bear Creek weir on May 13 with 2,666 fish counted through May 31 versus an anticipated minimum of 28 fish past the weir by this date. Cost recovery harvest began on May 23 with 4,158 sockeye salmon harvested through June 4. Harvest from June 5 to 11 was 14,954 sockeye salmon with a similar amount (15,096 sockeye salmon) harvested the following week. Passage at the weir remained steady with 4,156 sockeye salmon passed during the first week (May 29–June 4) and an additional 5,973 sockeye salmon passed from June 5 to 11. An additional 1,286 sockeye salmon were allowed to pass through the weir from June 12 to 14 for a cumulative total of 12,775 fish. Cost recovery harvest of returning fish at the weir began on June 8 and continued daily through the end of June with 47,375 sockeye salmon sold by July 1. Cost recovery in Resurrection Bay ended on July 1 with a total of 41,350 sockeye salmon harvested by purse seine. On July 5, waters of Resurrection Bay north of Caines Head opened to commercial common property purse seine harvest on a Monday through Friday schedule of 6:00 AM to 10:00 PM fishing periods. This fishery concluded on Friday, July 15. Harvest from this fishery is confidential because fewer than 3 permit holders reported deliveries. Cost recovery at the Bear Creek weir continued into early August with an additional 14,051 sockeye salmon sold for a cumulative total of 61,426 sockeye salmon taken at the weir. In addition, 1,484 sockeye salmon that arrived at the weir in an unmarketable condition, or were few in number, were donated to members of the public (Table 7; Appendices F2, C1, and C3).

Final passage into Bear Lake was 12,775 sockeye salmon with 3,764 fish harvested for broodstock. The remaining 9,011 sockeye salmon were allowed to spawn naturally in the lake. This escapement was above the SEG range of 700–8,300 fish, and below the previous 10-year spawning escapement average of 9,086 sockeye salmon (Appendices C3, C4, C7, and F2).

A total of 150 coho salmon were passed through the weir. An additional 259 coho salmon were harvested at the weir for CIAA broodstock (Appendices C5–C7, and F4).

In 2016, poor weather conditions combined with pilot unavailability resulted in 5 aerial surveys of Aialik Lake. In addition, turbidity in the lake remained extremely high with visibility only of a few inches in the water. Surveys were conducted on July 1, July13, August 9, August 28, and September 30; with a peak count of 400 sockeye salmon occurring on the second survey. As has been the case in the past 4 years, high levels of suspended silt and algae in the lake made aerial surveying of this system problematic. This is the sixth consecutive year when the SEG range of 3,700–8,000 sockeye salmon was not met. As a result, no commercial fishing periods were

announced targeting sockeye salmon runs to Aialik Lake in 2016 (Appendices C8 and C9). A total of 200 coho salmon were harvested by sport users and sold to local processors by the Seward Chamber of Commerce during the annual silver salmon derby (Appendix C2).

KAMISHAK BAY DISTRICT

The Kamishak Bay District includes all state waters on the west side of Cook Inlet south of the latitude of Anchor Point and north of a line from Cape Douglas to Elizabeth Island (Figures 1, 2, and 11–13). Purse seine gear is permitted in all open waters of this district during periods established by EO. Historically, the primary naturally occurring target species have been chum and pink salmon. From 1959 through 1980, the average harvest was 31,000 pink, 34,000 chum, and 2,000 sockeye salmon. From 1981 to 2010, the average harvest was 67,000 pink, 52,000 chum, and 55,000 sockeye salmon. In addition to sockeye releases, pink salmon were also released into Paint River from 1980 to 1983, and 1.0 million fry were released in 2015 (Appendices F12 and F14). The major natural producers of pink salmon in this district have been the Bruin Bay River, Sunday Creek, and Brown's Peak Creek. Major chum salmon producers have been the Big Kamishak and Little Kamishak rivers as well as Cottonwood Creek and the McNeil River. In addition, numerous other rivers and streams have periodically produced respectable pink and chum salmon runs.

Prior to 1981, Mikfik Lake was the largest single producer of sockeye salmon in this district with an average run of 6,600 from 1970 to 1980. The second largest producer, Chenik Lake had an average run of 3,800 sockeye salmon during this period with Amakdedori Creek and Kamishak rivers having average runs of 1,200 and 1,300 sockeye salmon, respectively. Generally, runs to Chenik Lake increased after enhancement (1978–1996) with average harvests of 55,900 sockeye salmon per year during this period (Appendix F16). However, there were years when escapement dropped below 1,000 fish, possibly stemming from over-aggressive stocking resulting in an infectious hematopoietic necrosis (IHN) outbreak. Stocking of Chenik Lake was curtailed in 1996 and the population recovered quickly without further enhancement. The large runs experienced since 2002 have derived entirely from natural production. Average annual escapement to Mikfik Lake from 1981 to 2010 was 11,100 sockeye salmon, with escapement to Chenik Lake at 8,700 fish and escapement to nearby Amekdedori Creek and Kamishak rivers increasing slightly to 2,700 and 1,800 respectively. Kirschner Lake has been stocked regularly with sockeye salmon since 1987 resulting in annual commercial harvests consistently exceeding 20,000 fish. In addition, hatchery sockeye salmon were also released from 1986 to 1996 at several other smaller systems in this district, albeit with poor success (Appendix F12).

Preseason Outlook and Harvest Strategy

The 2016 commercial wild stock harvest forecast for the Kamishak Bay District was 36,800 sockeye salmon. A commercial pink salmon harvest of 83,000 fish was anticipated (Table 6; Appendix H1). The enhanced CIAA sockeye salmon run to Kirschner Lake was forecast to be 18,000 fish (Appendix F1; Table 6). As specified in regulation, the fishing season in the Kamishak Bay District opens from June 1 until closed by EO. Historically, the Kamishak District has been opened for extended 7 day periods, with specific areas closed as needed by EO to address anticipated escapement shortfalls (e.g., McNeil River chum salmon) or to allow for hatchery cost recovery harvest. CIAA announced preseason that all of the 18,158 sockeye salmon anticipated to return to the Kirschner Lake release site would probably be required to meet cost recovery goals. Early season management of the Kamishak Bay District is based on

actual harvest versus anticipated harvest as well as passage at the Mikfik and Chenik Lake video monitoring sites. In addition, aerial surveys are flown; weather permitting, to monitor sockeye and chum salmon escapement to index streams, as well as to recover recording media from video monitoring sites for inseason review in the Homer office. Beginning in July, management is also based on aerial surveys of pink and chum salmon runs to spawning systems in this district. Surveys are also flown in late August and September to monitor progress of coho salmon runs to select streams in this district.

Season Summary

The total 2016 Kamishak Bay District commercial common property harvest was 18,218 sockeye, 10,984 chum, 578 coho, and 350 pink salmon harvested by 5 seine permit holders (Appendices D1 and D2).

Waters of the Kamishak Bay District opened to commercial common property harvest on Wednesday, June 1 on a schedule of Monday through Sunday fishing periods, 24 hours per day. Although there were harvests reported from this district by 5 permit holders, these deliveries were spread out over a 7 week period from June 26 to August 13. In all but 1 of those weeks, there were fewer than 3 permits reporting deliveries. Consequently, harvests from those individual weeks were confidential. Of the sockeye salmon harvested, 8,779 were harvested from the Chenik Subdistrict and 5,893 from the Kirschner Subdistrict, with the remaining 3,548 harvested from the Kamishak and Douglas subdistricts. Video monitoring of sockeye salmon runs to Mikfik and Chenik lakes occurred with minimal technical difficulty. An early breakup of ice allowed early floatplane access for installation of the Mikfik Lake video system on May 25. This system recorded salmon passage through August 19. The camera at Chenik Lake was started on June 16 and operated until August 23. There was a gap of approximately 3.5 days during this period when the hard drive reached its maximum capacity and was not changed out as a result of inclement weather. Video at Chenik Lake documented 5 sockeye salmon on the day that it was installed and passage continued until August 12. During this time there were only 5 days when passage was not observed (excluding the 3.5 days when the camera was not operating). Final escapement for this system was 19,510 sockeye salmon. This is the third year in a row when escapement to this system exceeded the SEG range of 3,500–14,000 sockeye salmon. This occurred in spite of removing regulatory closed waters restrictions on July 4 and allowing fishing up to the mouth of the Chenik River. Escapement into the lake on that date was 10,604 sockeye salmon with the run estimated to be ~42% complete on that date. Management strategy for this system has been based on the assumption that escapement into the lake was zero to negligible except during large tide cycles. During such tides, the upper intertidal (which is exposed bedrock) would be inundated and allow salmon passage into the more protected river channel and thereby minimizing exposure of the migrating salmon to the various predators in the area. Related to this, permit holders that fished in Chenik Lagoon between large tide cycles reported not observing the expected buildups of fish (Appendices D3–D7).

A total of 10,180 sockeye salmon were counted from video at Mikfik Lake through August 19. The count was within the SEG range of 3,400–13,000 and above the previous 10-year average of 9,007 fish (Appendix D7).

CIAA harvested 44,765 sockeye salmon for cost recovery from the Kirschner Lake SHA (Appendix F2). An additional 287 pink and 41 chum salmon that were probably of wild stock origin were harvested in the SHA and also sold for cost recovery.

The peak aerial survey count for Amakdedori Creek was 2,240 sockeye salmon. This was within the SEG range of 1,250–2,600 fish and below the 10-year average of 2,364 fish (Appendix D9).

In 2016, pink salmon SEGs were not met for Sunday or Brown's Peak creeks. Although poor observational conditions may have reduced observer efficiency with regards to pink salmon counts, as well as only having flown 2 surveys in August due to poor weather, it is also possible that these systems were exhibiting depressed runs similar to other even-year pink salmon systems in other districts. However, the Bruin River had a pink salmon escapement that was only slightly below the midpoint of 87,200 fish. Escapements for all pink salmon index streams in the Kamishak District were below the most recent 10-year average escapements. Similarly, chum salmon escapements were below recent 10-year averages as well with the exception of Bruin and McNeil river stocks which were above average (Appendices D8 and D10).

There were 18,218 sockeye salmon harvested by the commercial common property fleet from the Kamishak District in 2016. The anticipated preseason harvest was 36,800 wild sockeye and the previous 10-year average harvest was 65,091 sockeye salmon (Appendix D2). The total coho salmon harvest of 578 fish was below the previous 10-year average harvest of 2,487 and above the anticipated harvest of no fish (note that there have been no coho harvested from this district in the last 5 years). Total pink salmon harvest from this district was 350 fish versus an anticipated harvest of 83,000 fish. The previous 10-year average harvest was 32,342 pink salmon. Total chum salmon harvest was 10,984 down from the previous 10-year average of 25,080 fish (Appendix D2). In addition, 44,765 sockeye salmon were harvested by CIAA for cost recovery purposes from the Kirschner Lake SHA. This is more than double the anticipated harvest of 18,158 fish (Appendix F2).

LOWER COOK INLET SUBSISTENCE, PERSONAL USE AND HOMEPACK COMMERCIAL FISHERIES

The Cook Inlet subsistence management area (5 AAC 01.550) includes all state waters between Cape Douglas and Cape Fairfield, excluding waters of the upper Susitna River (5 AAC 01.550). Superimposed on this area is the Anchorage-Matsu-Kenai Nonsubsistence Area described in 5 AAC 99.015(a)(3). This area makes up more than 90% of the area described in 5 AAC 01.550. Under Alaska Statute 16.05.258 (c), the BOF may not permit subsistence fishing in nonsubsistence areas. A portion of the LCI management area is outside the nonsubsistence areas, including the southwest tip of the Kenai Peninsula with the communities of Seldovia, Port Graham, and Nanwalek, as well as portions of the western shore of Upper Cook Inlet near Tyonek in the Northern Cook Inlet management area. However, in order to provide harvest opportunity in addition to sport fishing to Alaska residents within these nonsubsistence areas, the BOF has provided 2 personal use salmon fisheries in LCI, and defined seasons and gear types for personal use herring and smelt fisheries. In addition, both resident and nonresident commercial permit holders have been allowed to retain legally harvested fish from their commercial catch for their own use as homepack.

NANWALEK/PORT GRAHAM SUBSISTENCE FISHERY

Subsistence fishing is allowed in the Port Graham and Koyuktolik (Dogfish Bay) subdistricts from April 1 through September 30, and in the Port Chatham and Windy Bay subdistricts from April 1 through August 1. Extended fishing periods in these areas are defined in regulation as from 10:00 PM Thursday to 10:00 AM Wednesday (132 hours) each week. Set gillnets up to 35

fathoms in length, 6 inches in mesh size, and 45 meshes in depth may be used. This fishery has been specifically administered by ADF&G staff since the late 1970s. However, local dependence by residents on returning salmon to meet basic nutritional needs has been identified since pre-statehood (Stanek 1985). Fishing in these areas has tended to focus primarily on salmon returning to English Bay Lakes as well as to the Port Graham River. Over the last 20 years, sockeye salmon runs to English Bay Lakes have been depressed. This has reduced both local commercial and subsistence salmon harvests. Partially in response to this at the November 2001 BOF meeting, waters of the Port Chatham and Windy Bay subdistricts were added to regulation as areas available for salmon harvest to subsistence permit holders. Historically, separate permits have been issued to residents of Port Graham (population 168) and Nanwalek (population 287). Permission to fish in Koyuktolik, Port Chatham, Port Graham, and Windy Bay is specified on both of these permits. Historically, there has been no requirement on these permits for the subsistence user to report from which harvest areas some or all of the harvest was caught. There is no bag or annual possession limit for subsistence salmon in the Port Graham, Port Chatham, Windy Bay, or Koyuktolik (Dogfish Bay) subdistricts.

In 2016, 50 permits were sent to the Nanwalek Traditional Council and 40 permits to the Port Graham Village Council. In addition, 10 permits were sent to the Anchorage ADF&G office, and 10 permits were kept at the Homer ADF&G office for distribution. All permits were serially numbered and printed on Rite-in-the-Rain paper[2]. Representatives from the village councils were asked to disperse these permits to residents of these villages who intended to harvest salmon for subsistence use so that those households would be in compliance with 5 AAC 01.580. Prior to 2012, a village resident was paid to disperse and collect permits from both of these communities and provide ADF&G with a final harvest estimate. Permits were not actively distributed from ADF&G offices prior to 2012.

In 2016, the English Bay River weir was operated for the first time since 2011 by residents of Nanwalek. From 2012 to 2015, operation of the weir was supervised by CIAA staff. Sockeye salmon escapement past the English Bay River weir in early July was significantly below historical levels with only 3,217 passed prior to July 1 versus an anticipated 3,625 fish required by this date to achieve the lower end of the SEG range of 6,000 sockeye salmon on July 31 (Appendices A4 and A5).

Consequently, on July 3, ADF&G announced that subsistence fishing opportunity in the English Bay section of the Port Graham Subdistrict would be reduced from 132 hours per week to a 48-hour period from 6:00 AM Monday through 6:00 AM Wednesday. This reduction took effect following the conclusion of the ongoing fishing period at 10:00 AM on Wednesday, July 6. On Friday, July 15 sockeye salmon escapement achieved the minimum escapement level for that date. The following day ADF&G announced that the 6:00 AM Monday–6:00 AM Wednesday subsistence fishing period scheduled for Monday, July 18, would be extended to 10:00 AM Thursday, with the fishery reopening at 10:00 PM that evening for 6.5-day fishing periods.

In 2016, ADF&G received subsistence reporting from 20 households in Nanwalek (Appendix E2). Of those, 12 permits were photocopies of a single blank permit with names and harvest information for those 12 households. Prior to this, representatives of Nanwalek had indicated that they were planning to keep the subsistence permits in the office and fill them in at the end of the season. At that time, ADF&G staff indicated that this was contrary to regulations

[2] Product names used in this report are included for scientific completeness but do not constitute a product endorsement.

that require subsistence fishermen have their permits in their possession while fishing and record harvest daily on those permits. This is clearly outlined in general subsistence fishing regulation 5 AAC 01.015(b)(3) specifying that permits must be in the possession of the person taking fish at the gear site and that accurate daily catch reporting occur. Unlike all other set gillnet fisheries in Cook Inlet and most other subsistence fisheries in Alaska, subsistence fishing gear in the Port Graham Subdistrict may be fished unattended. This has resulted in what are de facto community nets with reporting occurring irregularly. A total of 15 Chinook, 620 sockeye, 677 coho, 12 pink and 199 chum salmon were reported harvested in 2016. This compares to a reported harvest of 35 sockeye by 1 resident in 2015 (Appendix E2).

A total of 12 permits were returned by Port Graham residents. The total reported harvest of 72 salmon was significantly less than the 2015 harvest of 2,336 salmon (Appendices E1 and E8). In addition, 1 Valdez resident reported harvesting 5 salmon from subsistence fisheries in the Port Graham area (Appendix E8).

In the fall of 2015, Subsistence Division staff conducted household surveys in Nanwalek and Port Graham. Residents of these villages reported a combined harvest of 13,700 salmon in 2014. During that year a total of 3,133 salmon were reported on subsistence permits submitted to the Homer office. Division of Subsistence staff indicated that these numbers were not intended to be a precise estimate of the actual number of salmon harvested however, they do share the concern that there may be significant under reporting in this fishery (B. L. Davis, Fisheries Biologist, ADF&G, Anchorage; personal communication).

SELDOVIA SUBSISTENCE FISHERY

There are 2 subsistence fishing seasons specified in regulation that take place each year in the waters of the Seldovia Bay Subdistrict. The first season consists of two 48-hour periods each week beginning at 6:00 AM on Monday and Thursday from April 1 through May 30. The second season consists of two 36-hour periods on the first 2 weekends in August. Legal gear is set gillnets up to 35 fathoms in length, 6 inches in mesh size, and 45 meshes in depth.

A subsistence set gillnet fishery for salmon was created in Seldovia Bay by the BOF during its 1995 meeting. The harvest of Chinook salmon was limited to 200 fish to avoid impacting the stocked Chinook fishery in Seldovia Bay. The annual possession limit is 20 Chinook per household. The fishery is opened for two 48-hour periods per week from April 1 to May 30 and one 36-hour period each of the first 2 weekends in August. The BOF adopted a proposal extending the April/May period by 10 days to May 30 at their February 1998 meeting. The highest reported subsistence harvest was 189 Chinook salmon in 2000 and the lowest was 12 reported in 2006 (Hammarstrom and Dickson 2007).

Chinook salmon that have been released annually into the Seldovia Harbor since 1987 are funded under the federal Dingell–Johnson Sport Fish Restoration Fund (Appendix F15). Allowing a subsistence harvest on these Chinook salmon would violate the intent of this federal program. Furthermore, there have been no significant historical runs of Chinook salmon to the Seldovia area (or other locations in LCI south of the Anchor River). The customary and traditional use worksheet submitted to the BOF in 2005 identified Chinook salmon as the least important of the 5 species to residents of Seldovia as far as traditional subsistence use was concerned. In addition to structuring the timing of the fishery to avoid this hatchery run, the BOF also imposed an annual possession limit of 20 Chinook salmon per household for this species and an overall guideline harvest level of 200 Chinook salmon per year. There is no bag or annual possession

limit for other salmon species in the Seldovia subsistence fishery. A permit issued by ADF&G is required prior to setting gear, and catches are recorded on the permit. Catches are also reported to the Homer area office inseason so that cumulative harvest totals can be monitored and coho salmon deducted from the fall personal use coho salmon fishery guideline harvest level specified in 5 AAC 77.549(a).

In 2016, 40 permits for the spring fishery were sent to the Seldovia harbormaster's office, 10 permits were retained at the Homer ADF&G office and 10 were sent to the Anchorage ADF&G office. An additional 20 permits for the fall fishery were sent to the harbormaster's office, and a total of 15 permits were kept at both the Anchorage and Homer ADF&G offices. All permits were serially numbered and printed on Rite-in-the-Rain paper. The Seldovia harbormaster was instructed to have Alaska residents complete the name and address portion of the permits while under witness of a harbormaster employee and then have that employee fax a copy of the completed permit back to the Homer ADF&G office.

In 2016, three permits were dispersed to Alaska residents for the early season and 3 permits were returned. All reported having fished and reported harvesting 7 Chinook, 53 sockeye, 2 pink, and 1 chum salmon. This compared to a previous 10-year average of 10 permits issued, 7 permits returned, and 4 reporting not fishing with an average harvest of 7 Chinook and 41 sockeye salmon. One permit was issued for the August weekend and it was returned but the permit holder reported having not fished. The previous 10-year average for the August weekend fishery was 5 permits issued, and 4 permits returned with a harvest of 23 sockeye, 9 coho, 36 pink, and 15 chum salmon (Appendix E3). Total harvest for both the early and late season was 63 salmon versus a previous 10-year harvest average of 132 salmon. Currently, there is no specific customary and traditional allocation for this subsistence fishery as there are for other LCI subsistence fisheries (5 AAC 01.566(d)).

CHINA POOT PERSONAL USE DIP NET AND PERSONAL USE COHO SALMON FISHERIES

There are 2 personal use salmon fisheries currently specified in regulation in LCI. These are the China Poot personal use dip net fishery and the Southern District personal use coho salmon fishery.

The China Poot dip net fishery dates back to 1980 when returns from the 1976 hatchery release of sockeye salmon began (Appendices F12 and F15). This fishery is managed by ADF&G, Division of Sport Fish. Prior to 1996, harvest from this fishery was documented as part of the *Statewide Harvest Survey*[3]. Currently, there are no reporting requirements to monitor overall harvest from this fishery. The daily bag and possession limit for this fishery is 6 sockeye salmon.

The personal use coho fishery in the Southern District dates back prior to statehood, when it was considered a subsistence fishery. From 1986 through 1995, various court rulings converted it to a personal use fishery and then back to a subsistence fishery. A court action in late 1994 reestablished the boundaries of the Anchorage Nonsubsistence Area (5 AAC 99.015(a)(3)) that put the location of this fishery within the nonsubsistence area, thereby invalidating the subsistence regulations that governed this fishery at that time (Figure 14). As a result, early in 1995 the BOF readopted personal use regulations governing this fishery into permanent regulation and rescinded subsistence regulatory language pertaining to this fishery. Regulations

[3] Alaska Sport Fishing Survey database [Internet]. 1996– . Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish Available from: http://www.adfg.alaska.gov/sf/sportfishingsurvey/

pertaining to this fishery are found in 5 AAC 77.549 *Personal Use Coho Salmon Fishery Management Plan*. These currently specify a guideline harvest range of 1,000–2,000 coho salmon. Additionally, coho salmon caught in the Seldovia subsistence fishery described in 5 AAC 01.560(b)(8)(B) are deducted from this annual harvest goal. Coho salmon targeted in this fishery have shifted from exclusively wild stock fish to include hatchery coho salmon, which have periodically been stocked in several locations in Kachemak Bay since the mid-1970s (Appendix F19). Since the late 1980s, annual releases of 100,000–325,000 coho salmon smolt into the Nick Dudiak Fishing Lagoon, located on the Homer Spit, have periodically contributed significantly to the personal use harvest (Figure 15). Samples taken in 1999 and 2000 of coho salmon caught in this fishery from sites on the Homer Spit adjacent to the Nick Dudiak Fishing Lagoon documented a hatchery component of 81% and 90%, respectively during these 2 years (Szarzi et al. 2010). However, as a result of decreased releases and poor runs of late-season coho salmon in the Nick Dudiak Fishing Lagoon, effort has shifted away from the Homer Spit to waters between Fritz Creek and Swift Creek (Appendix E6; Figure 14). The wild stock components of this fishery are primarily bound for the Fox River drainage at the head of Kachemak Bay. However, there are numerous smaller runs of coho salmon scattered throughout Kachemak Bay.

In addition to holding a valid sport fishing license and being an Alaska resident, participants in the personal use coho salmon fishery must obtain a fishery-specific permit from the Homer ADF&G office. Beginning in 1999, ADF&G has requested that permit holders voluntarily report their harvest daily in order to facilitate inseason management and assure that the 1,000–2,000 guideline harvest range specified in 5 AAC 77.549 is observed, while providing opportunity for harvest to reach at least the lower end of the range. Harvest during the 2016 season was 2,033 coho, 166 sockeye, 18 Chinook, 8 pink and 335 chum salmon, with 170 permits issued, 169 permits returned and 118 reported as actively fished (Appendix E4). Similar to the 2 previous years, coho salmon in 2016 were abundant with only 4 fishing days required to meet the guideline harvest range. The first 48 hour fishing period occurred on Thursday, August 18 beginning at 6:00 AM, and the second fishing period began at 6:00 AM on Monday, August 22. The fishery was closed by EO at the conclusion of the second period at 6:00 AM, August 24. The previous 10-year average was 129 permits issued with 1,375 coho salmon harvested. Unlike recent years but similar to 2014, this season started with a significant number of coho salmon available for harvest along the Homer Spit and in the Mud Bay area. Leading up to the season, sport fishermen and observers on the Homer Spit could see large concentrations of coho salmon transiting the area. This resulted in increased interest and effort early in the season targeting coho salmon in this easily observable and accessible area. As might be expected, harvest by section shifted significantly from recent years, which had been dominated by catches from the Fritz Creek to Swift Creek section. This section still easily reported the highest number of coho harvested (780), with the adjacent area to the west, (Mud Bay to Fritz Creek) reporting a harvest of 550. Continuing this westward trend, the harvest from the east side of the Homer Spit was 382 coho salmon. Coho harvest from Bear Cove to Neptune Bay was 124 coho salmon followed by the Neptune Bay to Little Tutka section with 82 coho salmon. The Troublesome Creek to Coal Point section had 4 coho salmon reported (Appendix E6).

Without a harvest sampling program in place it is difficult to tell what portion of the harvest could be attributed to hatchery fish returning to the Nick Dudiak Fishing Lagoon on the Homer Spit. Though harvest rates were considered good in the 2016 Coho Personal Use Fishery, the Nick Dudiak Fishing Lagoon run was considered below average, as was anecdotal sport angler

success around Cook Inlet waters. However, it is likely that enhanced runs contributed to this year's personal use harvest. A single aerial survey of an index system within the Fox River drainage indicated an observed escapement toward the lower end of historical peak counts for the system. Of the 170 permits issued, 82% were held by Homer area residents, 7% by Anchorage area residents, and the remaining 11% by residents of Anchor Point and other locations in Alaska (Appendices E5 and E8).

COMMERCIAL HOMEPACK

Historically, both resident and nonresident commercial permit holders have been allowed to retain legally taken fish from their commercial catch for their own use. In 2007, the BOF amended 5 AAC 39.130(c)(10) requiring that the number of fish of any species retained by commercial fishermen for their own use be documented on a fish ticket[4]. Previously these fish had been voluntarily noted on fish tickets by some permit holders.

In 2016, 14 set gillnet and 11 purse seine permit holders reported retaining 75 Chinook, 384 sockeye, 196 coho, 284 pink, and 46 chum salmon for their own personal use (Appendix E7). Of those, 10 were residents of Homer, 8 permit holders were Seldovia residents, and the remaining 6 Alaskan permit holders were Halibut Cove, Seward, Port Graham and Anchor Point residents. (Appendix E8).

COOK INLET SALMON ENHANCEMENT

Fisheries enhancement and rehabilitation in Alaska began in earnest in 1971 when the Alaska State Legislature created the Fisheries Rehabilitation, Enhancement and Development Division (FRED) to help build and stabilize fisheries production. Prior to this time and before statehood, there was only 1 hatchery in the Cook Inlet area. It was built by the Territorial Fish Commission in 1923 and located on Grouse Lake near Seward. This hatchery released Chinook and sockeye salmon in 1925 and 1926. Broodstock for released Chinook salmon came from Washington State, and brood for sockeye releases from Grouse and Bear lakes (Appendices F11 and F12). The Seward Hatchery was destroyed by fire in March of 1927 (Roppel 1982). Since the mid-1960s, there have been sporadic releases of coho and Chinook salmon to systems in Resurrection Bay and at Kasitsna Bay near Homer. These fish were produced at ADF&G hatcheries in Anchorage on Ship Creek as well as at the Big Lake and Fire Lake hatcheries.

In 1974, the Alaska legislature passed the Private Non-Profit Hatchery Act, which stated,

> "It is the intent of this act to authorize the private ownership of salmon hatcheries by qualified non-profit corporations for the purpose of contributing by artificial means to the rehabilitation of the state's depleted and depressed salmon fishery. The program shall be operated without adversely affecting natural stocks of fish in the state and under a policy of management which allows reasonable segregation of returning hatchery reared salmon from naturally occurring stocks."

Shortly thereafter, CIAA was created in 1976. Tutka Bay Lagoon Hatchery (TBLH) was built by the state of Alaska in 1976 and began rearing sockeye and pink salmon that year (Appendices F7 and F8). Also in 1983, the Eklutna Hatchery began producing chum and coho salmon. The Crooked Creek Hatchery (CCH) was built in 1975 and began producing sockeye and Chinook

[4] Statewide electronic fish ticket database [Internet]. 1985– . Juneau, AK: Alaska Department of Fish and Game, Division of Commercial Fisheries. (Cited: January 2017). [URL not available as some information is confidential]. Hereafter referred to as fish tickets.

salmon 2 years later, with coho salmon production starting in 1979. In 1991, residents of Port Graham formed the Port Graham Hatchery Corporation (PGHC) and began producing sockeye and pink salmon at a converted cannery in the village of Port Graham (Appendix F9). Early in 2014 CIAA acquired the assets of the PGHC, including permitted egg capacity, and is currently restoring the hatchery to working condition after a protracted period of inactivity.

CIAA is among 12 nonprofit corporations in the State of Alaska that maintain private hatcheries with the capacity to produce salmon for harvest in common property fisheries. After merging with PGHC in early 2015, CIAA is now the second largest hatchery nonprofit in Alaska in terms of overall egg capacity.

Historically, hatchery contribution to the common property fishery has been estimated based entirely on the number of salmon harvested in the SHA versus the number harvested outside of the SHA. Using this methodology in 2016, CIAA contributed 67.0% (174,443) of the total LCI sockeye salmon harvest of 260,509 fish, and less than half (41,467) of the total LCI harvest of 99,640 pink salmon (Table 1; Appendices F1 and F6). However, examinations in 2016 of 348 readable otoliths collected from pink salmon harvested in the commercial common property seine fishery from 2 days in July in the Tutka Subdistrict outside of the SHA showed a combined 319 (91.7%) with hatchery marks (Appendix F22). Otoliths sampled from pink salmon harvested for cost recovery caught within the SHA were 94.1% hatchery marked, (Appendix F23). Otoliths collected in 2016 from the set gillnet fishery showed a preliminary 24.9% level of sockeye salmon with LCI hatchery thermal marks as well as a 9.1% level of fish with Main Bay Hatchery thermal marks (Appendix F24). Sockeye salmon otoliths collected from the commercial common property purse seine fishery in 2016 showed a preliminary 49.6% level of hatchery marked fish (Appendix F25). Examinations of sockeye salmon otoliths from fish harvested for cost recovery showed that 94.4% had marked otoliths (Appendix F26). None of the seine caught sockeye salmon had thermal marks associated with PWS or Kodiak hatchery facilities. Otoliths that were damaged or malformed were excluded.

Kitoi and Pillar Creek hatcheries began thermally marking sockeye salmon in 2013 (brood year 2012) with only 607,000 fish (14.9%) receiving marks of the 4.1 million sockeye salmon released. The percentage of marked sockeye salmon increased the following year at KRAA facilities to 92.8% of 4.3 million released. Sockeye salmon produced at the Main Bay facility in PWS have been thermally marked since 1999 and sockeye salmon released at the Gulkana Hatchery have been otolith marked using strontium chloride since 2000[5]). Strontium marks cannot be identified using an optical microscope, but must instead be identified using electron microscopy. Gulkana produced sockeye salmon make up the bulk of PWS releases with a recent 10-year average annual release of 20.6 million fry versus 9.7 million smolt and fry released from the Main Bay Hatchery. BY2011 and BY2012 sockeye salmon from the Gulkana and Kitoi Bay release sites may be present in Lower Cook Inlet commercial harvests, but they were not identified either as a result of their being strontium marked, or unmarked (Botz et al. 2013).

In addition to sockeye and pink salmon releases, CIAA also released an average of 583,000 coho salmon over the last 10 years (Appendix F8). Ship Creek Hatchery Complex (operated by ADF&G) has released an average of 748,000 Chinook salmon into LCI; where both of these species are primarily harvested by sport users (Appendices F10 and F11).

[5] Mark, tag and age lab database. [Internet] 1974– . Juneau, AK. Alaska Department of Fish and Game, Division of Commercial Fisheries. (Cited: March 2017). Available from: https://mtalab.adfg.alaska.gov/OTO/reports/MarkSummary.aspx

A total of 1,187 pink salmon otoliths were collected in 2016 from selected index streams in the Southern and Outer District, as well as the English Bay River. Otoliths were examined for thermal marks that would indicate hatchery origin. Of the 1,116 readable otoliths, 281 (25.2%) had hatchery marks with the majority of the marked otoliths (178) collected from Tutka Lagoon Creek, adjacent to TBLH. Overall, 66.9% of the hatchery-marked fish had marks indicating a Tutka Bay Lagoon Hatchery release, 14.2% had marks indicating they were released from the Port Graham SHA, and 18.9% had thermal marks from hatcheries in PWS (Appendix F27). This was similar to findings in 2014 and 2015 when otoliths were collected from 7 index streams in the Southern District as well as the English Bay River (Appendices F28 and F29). Hatchery marked salmon are anticipated to be found at high levels in streams located in SHAs or adjacent to hatcheries and streams that are outside of SHAs should have reduced levels of marked fish. Excluding the Tutka Lagoon Creek and Port Graham River samples reduces the level of strayed LCI fish to 3.6% and the level of PWS strays to 5.9% (Appendix F30). These results may not represent the full extent of stray hatchery pink salmon in LCI streams because the Kitoi Hatchery located on Afognak Island does not currently mark pink salmon releases.

TUTKA BAY LAGOON HATCHERY

TBLH is located in Tutka Bay, approximately 23 kilometers (14 miles) south of Homer (Figure 17). TBLH, constructed in 1976, is owned by ADF&G and has been operated by CIAA under contract since 1992. Prior to the start of hatchery production of pink salmon, ADF&G staff in 1975 conducted a study examining the diet of pink salmon fry in Tutka Bay. This study found that harpacticoid copepods were the preferred diet of pink salmon fry with decapod zoea, (which include crab and shrimp) comprising less than 10% by organism number (Kron and Yuen 1978). The facility was originally constructed as a pink and sockeye salmon hatchery. However, it also produced chum salmon from 1979 to 1990. Water for hatchery operations is supplied by Tutka Lagoon Creek. Permitted water capacity is 76 L/s, with a current usage of 68 L/s. The TBLH had an initial capacity of 10 million pink salmon eggs, but major renovation work in 1993–1994 increased the physical capacity to 150 million eggs. In addition, TBLH has a sockeye salmon egg physical capacity of 1.8 million, as well as raceways to accommodate the resulting fry. However, problems with infectious hematopoietic necrosis virus outbreaks have plagued this facility and made for erratic sockeye salmon releases from 1977 to 1999 when this species was incubated (Appendix F7). Sockeye salmon produced at TBLH were released into Leisure Lake (1977), Tustumena Lake (1978), English Bay (1990), and Tutka Bay (1996, 1997, and 1999). Fish released into Tutka Bay in 1996, 1997, and 1999 were of Packers Lake stock. Beginning in 2005, sockeye salmon were incubated and reared at the Trail Lakes Hatchery using Hidden Lake broodstock and were transferred to Tutka Bay Lagoon for imprinting and release, which resulted in better survival rates. Discussion regarding sockeye salmon releases from this site is located in the *Remote Releases* portion of this section. Pink salmon were raised consistently at the TBLH from 1977 to 2004 with releases ranging in number from 318,000 (1977) to 105 million (1996) and an average release of 42.4 million fry. All pink salmon broodstock was derived locally from the adjacent Tutka Lagoon Creek. Pink salmon were not only released from the hatchery site directly but also remote released from Halibut Cove Lagoon (1975, 1977, 1986–1992), Paint River (1980–1983), Homer Spit (1987–1992), and Ingram Creek (1987–1990) in Turnagain Arm (Appendices F6, F7, and F14). Pink salmon production was halted in 2004 because of low market value for this species, which resulted in an inability to generate adequate cost recovery revenue to fund the pink salmon program. Chum salmon were reared and released on site from

1979 to 1990 in numbers ranging from 7,992 in 1981, to 3.2 million in 1988. Broodstock for the chum salmon return was initially taken from Port Dick Creek in 1978 with 732,000 released in Tutka Lagoon. The last 4 years of chum salmon releases into Tutka Lagoon (1987–1990) used broodstock collected from Cottonwood Creek on the west side of Cook Inlet (Appendix F7).

In 2012 CIAA resumed production of pink salmon with the release of brood year 2011 fry. TBLH has a permitted capacity of 125 million pink and 660,000 sockeye salmon eggs. Prior to brood year 2012, thermal marks were not applied to any fish cultured at this location. However, following facility upgrades in 2012, thermal marks were applied to the 4.4 million pink salmon that were released from Tutka Bay Lagoon in 2013 as well as releases since (Appendix F7).

The 2016 pink salmon run to the TBLH was only the fourth year of returns since resuming production of this species after a 7 year hiatus. Of the 11.2 million BY2014 fry released in 2015, an estimated 348,470 (3%) were anticipated to return (Appendices F14 and H1). The actual run was estimated at 215,737 fish (Appendix F1). Of these fish, CIAA reported that 108,484 were harvested for broodstock with 71,963 (66.3%) being viable (Appendix F3). This compares to a viable-nonviable broodstock percentage from last year of 23.2% and is below the minimum survival standard for hatcheries of 70% specified in 5 AAC40.860.

Total pink salmon cost recovery harvest from this facility was 23,776 fish. ADF&G staff collected pink salmon otoliths from commercially harvested fish in the Tutka Subdistrict. Of the 160 readable otoliths collected from commercial common property vessels, 319 (91.7%) had hatchery thermal marks. Of those, all but 2 were Tutka hatchery thermal marks with the other fish examined having a Port Graham thermal mark (Appendix F22). A total of 96 readable otoliths were examined from pink salmon harvested in cost recovery fisheries in the Tutka SHA. All of those otoliths had a thermal mark that was associated with that hatchery. Although unmarked fish could be of wild origin, they may also be hatchery fish from the Kitoi hatchery on Afognak Island which does not mark the pink salmon that they release.

The final escapement index for Tutka Lagoon Creek pink salmon in 2016 was 33,242 pink salmon. This was above the SEG range of 6,500–17,000 pink salmon and above the previous 10-year average escapement for this system of 18,500 fish (Table 8; Appendix A8).

PORT GRAHAM HATCHERY

The Port Graham Hatchery (PGH) is in the village of Port Graham (Figures 1 and 18) and originally was located in a converted Whitney-Fidalgo salmon cannery. The hatchery was permitted in September 1992 and actively operated by the Port Graham Hatchery Corporation until 2007. Ownership of this facility was transferred to CIAA in 2014. Water for operations in the main hatchery building was supplied by the untreated Port Graham municipal water supply at a rate of 13–28 L/s. Freshwater for the adult holding and egg-take complex comes from nearby Cannery Creek via an 8 in pipeline at a rate of 50–107 L/s. Prior to permitting, the hatchery had been conducting experimental pink and sockeye salmon egg takes and fry releases via a scientific/educational permit since 1990. Sockeye salmon were raised at this facility during many years from 1991 to 2006 with releases ranging from 85,000 (1991) to 918,000 (1999) with an average release of 316,000 fish between 1991 and 2006 (Appendices F9 and F19). This facility provided sockeye salmon fry and smolt for the Nanwalek Salmon Enhancement Project (NSEP) from 1992 to 2008. See the NSEP section under *LCI Remote Releases* for further details on this project.

Pink salmon were released during most years from 1991 to 2007 with releases ranging from 255,000 (1991) up to 57.2 million (2003) and an average release of 11.6 million fry. In addition, coho salmon eggs were collected from the Port Graham River in 1996, and in October 1997 a total of 29,963 coho salmon smolt were released from this facility. The coho salmon project was discontinued after this release. In January 1998 a fire completely destroyed the original Port Graham Hatchery building, including incubation modules containing pink and sockeye salmon eggs collected during the previous year. A separate building that housed the empty coho salmon module was undamaged by the fire. This building was converted to pink and sockeye salmon incubation to allow for incubation of eggs collected during the upcoming summer. Rearing infrastructure in this newer building allowed the hatchery manager to thermally mark all pink salmon fry beginning in 1998. Sockeye salmon thermal marking began in 2003. In 2006, the loss of a hatchery manager, combined with financial troubles, resulted in sockeye and pink salmon releases ending in 2006 and 2007, respectively. Consequently, the PGHC contracted with the CIAA in 2007 to harvest 510,000 sockeye salmon eggs from returning PGH fish, incubate them at the TLH, and then release them as fry in the English Bay Lakes (246,000; October 30, 2008) and as smolt in Port Graham (112,000; June 15, 2009) (Appendix F21).

In 2016, total of 11,783 pink salmon were harvested for broodstock from the Port Graham SHA. An additional 1,000 pink salmon were harvested from the general subdistrict in the common property fishery and sold to CIAA for use as broodstock. Of these 12,783 pink salmon, a total of 8,126 (63.6%) were viable. For the first time since 2006, the 9.1 million green eggs that were collected were incubated at the Port Graham Hatchery. In recent years releases at this facility were of fry that had been incubated at the Tutka Bay Lagoon Hatchery. This was the case with the 1.3 million fed fry that were released into the Port Graham SHA on May 27, 2016. ADF&G staff collected 96 otoliths from the 2,647 fish that were sold for cost recovery in Port Graham. Of the 73 otoliths that were readable, 63 (86.3%) were found to have hatchery thermal marks. Of those, 60 otoliths (95.2%) had Port Graham marks, 2 had a Tutka hatchery mark and 1 fish had a Solomon Gulch hatchery associated thermal mark (Appendices F19, F22, and F23).

Total pink salmon cost recovery harvest from this facility was 2,647 fish that were excess males that were not included in broodstock tallies. Overall returns to this facility and the Port Graham River were modest in 2016 with pink salmon escapement (14,629) above the midpoint of the SEG, and chum salmon escapement (2,391) below the midpoint. Total pink salmon return to the Port Graham Hatchery estimated at only 16,430 fish (Table 8; Appendices F1, F3, and A8).

TRAIL LAKES HATCHERY

The TLH is located on the Seward Highway, approximately 47 kilometers (29 miles) north of Seward (Figure 10). ADF&G built this hatchery in 1982, and CIAA has operated it under contract since 1989. Initially, this facility produced sockeye, coho, and Chinook salmon. Water for hatchery operations is supplied by ground wells that are capable of producing approximately 139–186 L/s, of which 132 L/s are required for hatchery operations. All releases from this hatchery are remote releases. Sockeye salmon have been consistently produced at the TLH since 1983 with releases ranging from 516,000 (1986) to 18.9 million (2002), with an average of 9.2 million fish per year from 2005 to 2014. In addition to release sites in Upper Cook Inlet, TLH-produced hatchery sockeye salmon have been released into LCI systems such as Bear Lake and Grouse Lake, as well as lakes (Leisure, Hazel, and Kirschner) that were stocked by the Tutka, Crooked Creek, and Eklutna hatcheries prior to 1998. See the section *LCI Remote Releases* under

Cook Inlet Salmon Enhancement for further information regarding specific remote release sites. Coho salmon have also been produced at TLH in consistent numbers since 1983 with releases ranging in size from 75,000 (1996) up to 1.7 million (1987), with a previous 10-year average release of 627,200 fish from 2005 to 2014 (Appendix F8). The majority of the coho salmon reared in recent years have been released into Bear Lake. Chinook salmon were produced from 1984 to 1988, and chum salmon were raised for 1 year with a release of 455,809 in 1985 into Resurrection Bay systems. This hatchery has been consistently applying thermal marks to releases since 1991.

In 2016, the total run of adult sockeye salmon to remote release sites from this hatchery in Cook Inlet was 258,963 fish (Appendix F1). The overall documented run was less than the CIAA forecast run of 326,862 sockeye salmon (Appendix F1). A total of 172,733 sockeye salmon were sold for hatchery cost recovery worth $1.6 million dollars (Table 3). A total of 8,283 sockeye salmon were collected for broodstock, and of those, only 6,472 (78.1%) were viable broodstock with the remainder being holding mortalities or otherwise unsuitable for egg harvest and donated to members of the public (Appendix F2). The common property fishery harvested approximately 65,476 of the total TLH sockeye salmon run (Appendix F1). This includes remote releases at Hidden Lake, Kirschner Lake, Resurrection Bay, and sites in Kachemak Bay. Currently, TLH has a permitted capacity of 6 million coho, 4 million Chinook, and 30 million sockeye salmon eggs.

In 2016, a total of 9.3 million sockeye salmon eggs composed of 3 stocks were collected from 4 sites in Cook Inlet.

Sockeye salmon were released at 7 locations in LCI as well as into Hidden Lake in 2016. Bear Lake stock was released into Resurrection Bay and stocked back into Bear Lake. Tutka Bay Lagoon sockeye salmon releases (531,625 smolt) were all from 2014 returns to Tutka Lagoon of English Bay lineage fish. No broodstock were taken from English Bay Lakes in 2016. Although no releases occurred in either Hazel, or Leisure lakes, Kirschner Lake was stocked with 185,000 English Bay stock fry (Appendix F12).

In 2016, a total of 409 adult coho salmon returned to the Bear Creek weir. CIAA collected 259 fish for broodstock, 133 of which were viable and 126 were nonviable. A total of 150 adult coho were allowed to migrate into Bear Lake where they spawned naturally. From the 133 fish used for broodstock, a total of 288,711 green eggs were harvested, which is fewer than the 4.0 million eggs that CIAA is permitted for this species (Appendices F1, F4, and F5). The majority of the coho salmon run originated from the BY13 fry release (566,000) (Appendix F1). No coho salmon were commercially harvested in the common property fishery from the Eastern District, and only 2 were harvested from the Outer District in 2016. In the Southern District 1,049 coho salmon were harvested in the commercial common property fishery with 193 of those fish retained as homepack by the permit holder (Appendices A1, A2, B1, and C1). Given that 123,000 BY13 smolt from the Ship Creek Hatchery Complex in Anchorage were stocked into the Nick Dudiak Fishing Lagoon on the Homer Spit, an unknown percentage of the Southern District commercial coho salmon harvest may have originated from that facility.

LCI REMOTE RELEASES

Nanwalek Salmon Enhancement Project (NSEP)

The English Bay Lakes (EBL) system is located approximately 1.6 kilometers (1 mile) southeast of the village of Nanwalek (formerly English Bay; Figures 1, 2, 5, and 18). The EBL system is a chain of 5 small lakes with a total surface area of approximately 200 hectares (0.77 square miles). These lakes have the only commercially significant wild stock of sockeye salmon native to the Southern District of LCI. Production in this system declined in the early 1980s, resulting in commercial fishery closures beginning in 1985 and later subsistence harvest restrictions in order to increase escapement. ADF&G's Fishery Research, Enhancement, and Development (FRED) Division conducted limnology studies and reported in 1992 that these lakes were nutrient poor, and given that recent escapements (1985–1990) were only 60% of the historical average, "the amount of nutrients from carcasses has been reduced from what it once was, and has further decreased fertility of the lakes in the English Bay watershed" (Edmundson et al. 1992). Stocking at English Bay Lakes began in 1990 with a release of 855,000 fry that were grown from eggs collected the previous year in EBL and reared at the Big Lake Hatchery facility near Wasilla. With the closure of Big Lake Hatchery in 1992, incubation and early rearing of sockeye salmon from EBL occurred at the nearby PGH. The EBL system has received sockeye salmon releases in all but 7 years since 1990. These releases have varied significantly in number from 50,096 to 906,057 during that time, with an average of 207,300 fry per release during the last 5 years of releases from 2011 to 2015 (Appendices F12, F20, and F21). There were no fry released into EBL in the fall of 2016 because broodstock were not collected the previous year as a result of a disagreement between CIAA and members of the Nanwalek local government.

A total of 123 sockeye salmon were sampled for otoliths throughout the summer at the English Bay weir. Of the 119 that could be read, 17.6% were found to have hatchery thermal marks. Age groups of the adult fish sampled at the weir were 51.3% age 1.2, 25.2% age 1.3, 14.3% age 2.2, and 8.4% age 2.3. In addition, a smolt weir was installed and maintained earlier in the season with 46,490 sockeye salmon smolt counted and otoliths collected from 151 individuals. Of those, only 54 were readable with the rest either missing from their vials (43) or unreadable (54) due to inadequate cleaning of blood off of the otolith when collected. Of the 54 that were readable, 20 smolt (37.0%) had a hatchery mark with the remaining unmarked. An additional 12 pairs of EBL thermally marked sockeye salmon otoliths were recovered from the commercial set gillnet fishery in the Southern District (Appendices A6 and F24).

Overall, 88.9% of the outmigrating smolt that had readable otoliths were age 1, with the remaining being age 2. In addition, CIAA did not document any coho or pink salmon fry that emigrated from English Bay Lakes in 2016.

Leisure and Hazel Lakes

Leisure (also known as China Poot) Lake is located approximately 18 kilometers (11 miles) southeast of Homer (Figures 1, 2, and 16). Leisure Lake has a surface area of approximately 100 hectares (0.4 square miles). The lake outlet has a set of impassable falls that prevents the return of anadromous adult sockeye salmon. This lake has been stocked regularly with an average of 1.6 million sockeye salmon fry per year since 1976 (Appendix F12). Until the early 1990s, Leisure Lake was used experimentally to determine fry stocking densities that would produce optimum adult returns. Lake fertilization was initiated in 1984 to increase salmon production.

The brood source for stocking from 1976 until 2004 was Tustumena Lake. A lawsuit by the Wilderness Society and the Alaska Center for the Environment challenging the permit to collect these eggs in a designated wilderness area within the Kenai National Wildlife Refuge resulted in the loss of Tustumena Lake as a collection site. The broodstock source was changed to Hidden Lake in Upper Cook Inlet. Hidden Lake is 680 hectares (2.6 square miles) in size and is 68 kilometers (42 miles) east of Soldotna. Hidden Lake has an indigenous population of sockeye salmon with similar run-timing to the Tustumena Lake stock. This stock was first enhanced by ADF&G in 1976 and later by CIAA. From 2004 through 2011, Hidden Lake was the source of broodstock for both Leisure and Hazel Lake stocking. In 2012, fry from English Bay Lakes were planted into Hazel Lake, with Hidden Lake stock sockeye salmon planted into Leisure Lake. Hazel Lake is located approximately 4 kilometers (2.5 miles) southwest of Leisure Lake (Figure 1). Hazel Lake has a surface area of approximately 90 hectares (0.35 square miles) and drains into the Wosnesenski River, which is approximately 14 kilometers (9 miles) long. Hazel Lake has been stocked for 25 of the last 29 years with an average of 1.1 million sockeye salmon juveniles but 2016 was the first year since 1994 when neither lake was stocked with hatchery sockeye salmon (Appendix F12). This is due to the loss of a significant number of sockeye salmon broodstock in 2015 as the result of a lensing bag malfunction.

Hatchery salmon returning to both Hazel and Leisure lakes have been thermally marked since brood year 1990. However, without funding to support a sampling program, ADF&G has been unable to take full advantage of these identifying features. Since 2013, ADF&G has collected sockeye salmon heads from the Southern District set gillnet harvest and CIAA has examined their otoliths for thermal marks. In 2016 the proportion of marked fish from the commercial set gillnet fishery was just over one-third overall (34.3%) with nearly one-quarter (24.8%) of those probably originating from Tutka Lagoon releases. Hazel and Leisure Lake releases probably made up 20.2% of the hatchery fish, with English Bay Lake releases comprising 3.3% of the marked fish. The remaining sockeye salmon were from the Main Bay Hatchery in PWS (24.8%), Bear Lake releases (24.0%), and unidentified hatchery releases (1.4%). Of the 1,637 otoliths collected in 2016, 1,086 have been analyzed to date, with the remaining 548 yet to be analyzed (Appendix F24).

Estimated commercial harvest contributions by returning Leisure and Hazel lake sockeye salmon are shown in Appendix F15. These values are the total seine harvest of all sockeye salmon from the China Poot and Neptune Bay subdistricts. Prior to returns of significant numbers of enhanced salmon to the Southern District in 1980, the seine harvest of sockeye salmon was minimal with a range of 5 to 5,232 fish and an average of 1,749 fish since 1959, excluding 1978, when 54,000 were harvested (Appendix A3). Prior to enhancement, the set gillnet harvest from 1959 to 1980 ranged from 6,148 to 54,404 fish with an average of 19,538 fish. After enhancement, the set gillnet harvest increased by half to 30,015 fish per year on average. However, the average seine harvest since 1980 has increased more than 50 times over the previous amount to more than 96,000 fish per year (Hollowell and Ford 2013).

Overall returns to this site from 2012 (BY11) and 2013 (BY12) sockeye salmon releases (3.3 and 2.6 million respectively) was estimated at 51,730 fish. The 2012 releases of BY11 fish were split with English Bay lineage fish released at Hazel Lake, and Hidden Lake stock fish released at Leisure Lake. Releases to both lakes in 2013 were of Hidden Lake stock (Appendices F1, F12, and F15; Figures 19 and 20).

Kirschner Lake

Kirschner Lake is the third lake in LCI that has historically been used for remote sockeye salmon releases. Kirschner Lake is located on the west side of Cook Inlet and is 24 kilometers (15 miles) due west of Burr Point, which is the northernmost point of Augustine Island (Figure 12). Kirschner Lake is approximately 140 hectares (0.54 square miles) in size and has a barrier falls at the outlet that prevents freshwater migration of returning anadromous salmon. Kirschner Lake has been stocked for 26 of the last 30 years with an average of 286,000 fry. In 2016 CIAA released 185,000 sockeye salmon fed fry of English Bay stock into Kirschner Lake. Harvest in 2016 was above anticipated (18,158 fish) with 44,765 sockeye salmon harvested for cost recovery, and 5,893 harvested in the commercial common property fishery. This year's run is the result of only the 2012 (BY11 English Bay) fry release because there was no release in 2013 due to a lensing bag malfunction in 2012 (Appendices F1, F12, and F17).

Tutka Bay Lagoon

In addition to pink salmon releases from the TBLH, the lagoon has also been a remote release site since 2005 for sockeye salmon hatched at TLH. This was due to pathogen-related issues at the TBLH facility that are specific to sockeye salmon, which has hampered production of this species at this hatchery. Releases at this site historically have been of Hidden Lake stock since 2005 (with Packers Lake stock released during years of local TBLH production). However, beginning in 2011, all releases have been of English Bay Lake stock. The intent of this is to develop an independent EBL stock brood source and not rely on annual runs to English Bay Lakes for brood. However staging these fish in a freshwater environment between the time when they are captured and later in the fall when the eggs have ripened has been problematic. In many years interruption of the freshwater flow into the lensing bag, or a breach in the lensing bag has resulted in levels of mortality exceeding the 30% minimum survival specified in 5 AAC 40.860. Sockeye salmon releases from this location are documented in Appendix F12.

The overall sockeye salmon adult run to this release site in 2016 was estimated at 34,485 fish (Appendices F1 and F18). Of these, 13,133 were reported on fish tickets as being harvested for cost recovery from the Tutka SHA, and 2,965 for broodstock and hatchery excess with an additional 14,360 harvested in the Tutka hatchery subdistrict outside of the SHA (Appendices F1 and F2).

In 2016, CIAA remote released 531,625 sockeye salmon smolt (BY 2014) into Tutka Lagoon. These fish were hatched and reared to smolt at the TLH before being transferred to net pens at TBLH for imprinting. Of those released, all were of English Bay Lake stock. The sockeye salmon run to this facility in 2016 were English Bay Lakes stock (Appendix F12).

Port Graham

Similar to the Tutka Bay Lagoon Hatchery SHA, in recent years the Port Graham Hatchery SHA has served as a remote release site for smolt and fry incubated at other locations. This occurred in 2009 with the release of 112,000 English Bay stock sockeye salmon, and again in 2013 with 102,000 BY11 English Bay stock sockeye salmon. Pink salmon releases resumed in 2013 with 14.3 million unfed fry released that were incubated at the TBLH. Releases of pink salmon cultured at the TBLH continued through this year. However, eggs taken from broodstock this year were retained at the Port Graham Hatchery where they will be incubated through the winter and released in 2017 (Appendices F12 and F14).

Paint River Fish Ladder

The Paint River drainage in the Kamishak Bay District contains at least 40 kilometers (25 miles) of potential salmon spawning and rearing habitat. Currently the Paint River system is barren of salmon due to a 12 m waterfall at tide line that was impassable prior to 1993. The former FRED Division and CIAA initiated feasibility studies for a fishway in 1979. CIAA received state and federal grant funds to build the fishway, completing construction in the fall of 1991. Commissioner Carl Rosier declared the fish pass officially operational in January 1993.

The Paint River Lakes were stocked via air drop with sockeye salmon fry in 9 of the 11 years from 1986 to 1996 and again in 2002 to test the feasibility of developing a sockeye salmon return to the fish pass project site. Releases ranged in size from 500,000 fry in 1996 to 2.2 million in 1988. In addition, the Paint River was stocked with approximately 0.5 million pink salmon fry from 1980 to 1983. Returns from the pink salmon releases were documented by aerial survey with a few dozen to 5,000 fish observed in saltwater below the fish ladder during 3 of the 4 return years. Although there were several sightings of sockeye salmon in the area of the fish ladder during return years of the sockeye releases, the only harvest that occurred was in 1991 where 400 sockeye salmon were harvested in the Paint River Subdistrict. The stated policy during these years was that the fish pass remained closed unless significant numbers of returning sockeye salmon were observed. From 1991 to 2003, there were 500–1,000 sockeye salmon typically observed in the Paint River Subdistrict and the peak observation occurred in 1998 when 1,900 fish were observed near the fish ladder. During these years the Paint River fish ladder remained closed to passage for the returning salmon (Hammarstrom 2003).

Modifications were made to the ladder in 2010, 2011, and 2012 to address concerns made by ADF&G Division of Wildlife Conservation that brown bears could fall into open cells of the fish ladder and drown. The fish ladder was opened for the first time to migrating salmon from early June through September in 2011. Following this, an aerial survey was made of the Paint River drainage with no salmon observed. The ladder has been reopened seasonally since 2011. No salmon were observed on aerial surveys in 2012 or 2013. On September 7, 2014, visiting CIAA staff found 1 live coho salmon and 3 unidentified salmon carcasses above the ladder. In addition, later that day when flying a survey upstream of the ladder, ADF&G and CIAA staff observed what appeared to be 6–10 coho (or possibly Chinook) salmon in Dunuletak Creek 5 miles above the ladder. Aerial surveys in 2015 did identify what appeared to be 50–100 chum salmon over the summer in the Paint River drainage. Aerial surveys were not flown in 2016 due to time constraints and the installation of a video monitoring system.

In 2014, CIAA purchased 3,028 pink salmon that were commercially harvested in Bruin. From these fish, 1.4 million green eggs were harvested, and 1.0 million fry produced. These were released on April 8 in Upper Paint River Lake, approximately 21 km above the Paint River fish ladder. Although 15,000 adult pink salmon were anticipated to return in 2016, CIAA's newly installed video monitoring system at the ladder malfunctioned and only recorded for a portion of the time deployed. Hence, it is not known how many pink salmon returned in 2016.

Bear Lake and Resurrection Bay

Bear Lake is located approximately 10 kilometers (6 miles) northeast of Seward. Bear Lake has a surface area of approximately 180 hectares (0.69 square miles) and has been monitored since 1960, when a picket weir was established where Bear Creek intersects the Salmon River. Initial enhancement activities in the early 1960s focused on coho salmon and the control of predators

such as threespine stickleback (*Gasterosteus aculeatus*) and Dolly Varden char, as well as alleged competing species such as sockeye salmon. To accomplish this, the piscicide Rotenone was methodically applied to the lake on August 26, 1963, by ADF&G biologists. In addition, "a barrier 5 feet high was then constructed to hold the treated water until detoxification, and to prevent the ingress of nonsalmonid species" (Bandirola 1965, page 148).

Coho salmon hatched from eggs collected in Bear Creek in the previous fall were reintroduced in November and December of 1963.

> "The barrier at the outlet of rehabilitated Bear Lake was destroyed as a result of the Good Friday earthquake and reinfestation of the lake by Dolly Varden and threespine sticklebacks occurred. A concrete weir to assess upstream and downstream salmon migrations and to serve as a permanent barrier was completed in Bear Creek on August 25, 1964." (Bandirola 1966, page 129)

This barrier is a low concrete dam with spaced pickets along the upper surface. Water spilling over the top of the dam prevents smaller fish from travelling upstream, and larger fish are stopped by the pickets. A submerged wire cage is set in the main water outflow. This is closed and mechanically hoisted into a building above the dam and opened onto a sorting table. Smaller fish such as Dolly Varden char, sculpin (Family *Cottidae*), Pacific lamprey (*Entosphenus tridentatus*), and threespine stickleback drop through the sides and bottom of the basket back to the downstream area. Once on the sorting table, salmon can be passed to the upstream side of the dam or harvested for broodstock and hatchery cost recovery purposes. Trout, char, and species of salmon other than coho and sockeye are passed back to the downstream side of the weir. In addition to Dolly Varden char, weir operators have anecdotally reported returning steelhead trout (*Onchorhynchus mykiss*), Chinook salmon, and pink and chum salmon to the downstream side of the weir. Members of the public have also reported observing hundreds to thousands of coho salmon milling downstream of the weir in late fall after the weir has closed for the season. CIAA has been responsible for operation of this weir since 1990.

Bear Lake was again treated with Rotenone by ADF&G biologists in 1971 on July 21 and 22. The stated goal of this treatment was the eradication of threespine stickleback from Bear Lake with no mention of removing other species such as sockeye salmon, Dolly Varden char, Pacific lamprey, freshwater sculpin, etc. According to McHenry (1972), "the lake could no longer rear substantial numbers of juvenile coho salmon due to extreme competition for survival from threespine sticklebacks." In 1988, the BOF revised the *Bear Lake Management Plan* (5 AAC 21.375) to allow for the enhancement of sockeye salmon in this lake. Bear Lake has been stocked since 1963 with coho salmon. From 2005 through 2014, an average of 516,800 coho salmon smolt have been released annually (Appendix F13). Broodstock for many of the coho salmon releases in the early 1960s came from the Swanson River (Kenai Peninsula), Pasagshak River (Kodiak Island), Ketchikan Creek (Southeast Alaska), and Dairy Creek (Seward Lagoon), as well as Big Creek in Oregon. Sockeye salmon have been stocked into this lake annually since 1990 with a recent 10-year (2005–2014) average of 2.6 million released. Sockeye salmon released into this lake from the Trail Lakes Hatchery from 1990 to 1992 came from the Upper Russian River and Big River, both of which drain into Upper Cook Inlet. In addition, in 1998, 507,000 Tustumena Lake sockeye salmon smolt that had also been reared at the Trail Lakes Hatchery were released. Since that time, all other releases have been derived from broodstock harvested at Bear Lake (McHenry 1972).

In addition to Bear Lake, coho and other species of Pacific salmon have been released into several locations in Resurrection Bay since the late 1970s. Returns for these species typically are targeted by noncommercial users as specified in the *Resurrection Bay Salmon Management Plan* (5 AAC 21.376). Both pink and chum salmon have been released irregularly into a variety of locations in Resurrection Bay (Appendix F14). In 2008, CIAA began releasing an average of 1.6 million sockeye salmon smolt annually from net pens anchored in Resurrection Bay.

The sockeye salmon runs to Resurrection Bay in 2016 primarily came from 2.5 million BY11 Bear Lake fry released in 2012. The following year an additional 2.1 million BY11 smolt were released from net pens into Resurrection Bay as well as 2.5 million BY12 fry into Bear Lake. In 2014, 1.7 million BY12 smolt were released from net pens into Resurrection Bay in addition to 2.4 million BY13 fry into Bear Lake. Finally in 2015, 2.4 million fry were released into Bear Lake (Appendix F1).

In 2016, 400 adult coho salmon returned to the Bear Creek weir during its period of operation through October 11. CIAA collected 259 coho salmon for broodstock for a total of 288,711 green eggs, which is fewer than the 4.0 million eggs that CIAA is permitted for this species. No fish were donated to members of the public due to this run coming in below the forecasted 18,780 fish (Appendix C5 and F4).

Sampling of the sport fishery from 2003 to 2005 determined that 29.8% of the fish harvested were thermally marked hatchery coho salmon (Bosch 2011). Additional information regarding 2016 runs to Bear Lake may be found in the Eastern District section of this report.

LOWER COOK INLET COMMERCIAL HERRING FISHERY

LCI herring fishing first began in the Southern District in 1914 with the development of a gillnet fishery within Kachemak Bay. During the peak of the fishery, 8 salteries, including 6 near Halibut Cove, were in operation. A purse seine fishery in Kachemak Bay began in 1923. But after 3 successive years of average annual harvests approaching 8,000 short tons (1 short ton = 2,000 pounds), herring populations, and hence the fishery, collapsed (Rounsefell 1930).

The next LCI herring fishery began in 1939 and was centered in the Resurrection Bay and Day Harbor areas of the Eastern District (Figure 10). Product from this purse seine fishery was used exclusively for oil and meal reduction. Although the fishery continued through 1959, peak harvests occurred from 1944 to 1946, averaging 16,000 short tons each of those years (Reid 1971). After this time period, stocks sharply declined, apparently due to overexploitation.

HARVEST STRATEGY AND STOCK ASSESSMENT

The LCI herring management area includes waters of Cook Inlet, south of the latitude of Anchor Point including the western shore of Cook Inlet south to Cape Douglas, and the eastern shore of Cook Inlet along the Kenai Peninsula to Cape Fairfield (Figure 1). This management area is divided into 5 districts that match those for LCI salmon.

Commercial fishing for Pacific herring in LCI historically occurred in 4 of the 5 management districts, with Barren Islands District the sole area where commercial herring fishing has not occurred (Figure 2). Historic fisheries have included food/bait, meal/oil reduction, and sac roe harvest with legal gear at times including both gillnet and seine. All of these fisheries have suffered periods of stock depletion and extended closures (Appendix G2).

Currently, 2 herring management plans regulate fisheries in LCI, both adopted in 2001 by the BOF. The first management plan (5 AAC 27.463) renders waters of the Southern, Outer and Eastern Districts closed to commercial herring harvest, citing concerns for stock abundance and sustainability of commercial harvest in these areas. The *Kamishak Bay District Herring Management Plan* (5 AAC 27.465) describes the management strategies used to set and implement the guideline harvest levels for the Kamishak Bay sac roe fishery and is the only plan currently in place that could allow a commercial herring fishery in LCI. This plan was most recently adjusted in 2001 to include a reduction in the maximum exploitation rate allowed in the fishery, from a former level of 20% of the forecasted herring biomass, to a new level of 15%, and a reduction in the biomass threshold (the minimum necessary to allow a fishery) from 8,000 short tons to 6,000 short tons. Highlights of the original plan that were retained include a management strategy intended to limit the harvest of herring age 5 and younger, and an allocation of 10% of the allowable harvest of Kamishak Bay herring to the Shelikof food/bait fishery in the Kodiak management area. Lawful gear in the Kamishak Bay sac roe fishery is restricted to purse seine. The limited entry permit system for sac roe herring seining in Cook Inlet was implemented in 1977, and 75 permanent permits are currently issued for the management area. Historical harvest and management information for the Kamishak Bay sac roe fishery can be found in Appendices G3 and G4.

The Kamishak Bay sac roe fishery began in 1973 when 8 permit holders harvested 243 short tons (Schroeder and Kyle 1986). Participation in the fishery and harvest increased rapidly, peaking at 4,824 short tons harvested in 1976 before a stock decline prompted closure of the fishery after only 415 short tons were harvested in 1979 (Schroeder and Kyle 1986). The stock recovered quickly, and the fishery reopened in 1985 with a harvest of 1,132 short tons(Schroeder and Kyle 1986). The fishery remained open seasonally from 1985 to 1998 with an average annual harvest of 2,878 short tons before being closed again beginning with the 1999 season due to low abundance levels (Hammarstrom 2000). Management since that time concentrated on assessment of the Kamishak Bay herring biomass to determine when commercial harvest could be sustainably resumed. However, all funding for herring stock assessment in LCI was cut in FY 2016, and the last aerial and vessel surveys of Kamishak Bay were conducted in the spring of 2015.

The primary method of herring biomass assessment in LCI was aerial survey. When adequate funding was available, aerial surveys were conducted annually throughout the herring spawning season in the Kamishak Bay and Southern districts, from mid-April through early June, to determine the relative abundance and distribution of herring. Because a commercial herring fishery had not occurred in the Outer and Eastern districts for many years, aerial surveys of these areas tapered off soon after the BOF closed these districts to commercial herring fishing by regulation at their 2001 meeting. Because fishermen do annually participate in a personal use herring fishery in Kachemak Bay, limited aerial surveys of the Southern District continued until just before all herring stock assessment funding was cut. Aerial surveys of Kamishak Bay were moderately consistent across seasons, with numbers and distribution of herring schools, location and extent of spawning events, and visibility factors affecting survey results recorded on index maps for each survey. Beginning in 2012 and continuing until the final survey in 2015, hard copy index maps were replaced by tablet computers running a customized version of ArcPad that allowed surveyors to enter their observations directly onto digital charts. Three standard conversion factors are used to estimate herring biomass based on each 538 ft^2 (50 m^2) of school surface area sighted and the following water depth parameters: 1) 1.52 short tons for water

depths of 16 ft or less; 2) 2.56 short tons for water depths between 16 and 26 ft; and 3) 2.83 short tons for water depths greater than 26 ft (Lebida and Whitmore 1985; Otis and Bechtol 1999).

Due to invariably poor weather and water clarity, aerial surveys rarely provided reliable estimates of total herring biomass returning to Kamishak District Bay waters (Otis et al. 1998). As a result, an age-structured-assessment (ASA) model was used from 1994 through 2015 to forecast herring abundance for Kamishak Bay, as well as to hindcast previous years' total abundance (Appendix G5). This dynamic model incorporated a variety of heterogeneous data sources, including a time series of commercial catch age composition, total run age composition, and aerial survey biomass estimates from years with adequate survey conditions and coverage. The model simultaneously minimized the differences between expected and observed values for each of its components, updated hindcasts of previous years' abundance, and produced a forecasted estimate of the following year's run. This tool was important for management to help determine appropriate harvest levels and also for research to revise previous biomass estimates with updated return data to gain a more accurate assessment of trends over time (Appendix G5).

When funding was available, ADF&G utilized a chartered commercial seine vessel to aid in herring assessment in Kamishak Bay District and opportunistically in the Southern District. In years when no commercial fishery occurred, ADF&G was unable to utilize the fleet to collect samples for age, sex, and size composition analysis. By chartering a commercial purse seine vessel, age, sex, and size and disease samples together with additional related information were collected and used to further aid in understanding the dynamics of the Kamishak Bay herring stock. These surveys also facilitated the collection of samples for other cooperative research projects that contributed to our overall understanding of herring disease (Hershberger et al. 2016) and stock structure (Otis et al. 2010; Libungan et al. 2016). When sufficient funding was available, separate vessel charters were conducted to sample different portions of the spawning migration (early and late). In years when a fishery occurred (traditionally in the early part of the migration), a single late season sampling charter was employed to obtain a more complete picture of the overall run. Hydroacoustic observations of herring schools and water temperature/depth parameters were concurrently documented during the charters. The information gathered during those sampling efforts provided age class data that 1) allowed ADF&G to generate an age composition estimate of the overall biomass observed by aerial surveyors throughout the entire duration of the spawning migration; and 2) facilitated the evaluation of the relative strength of recruiting year classes. This was critical in generating the annual herring forecast. The charters further served to corroborate the relative magnitude of herring biomass observed by aerial surveyors.

Funding for vessel charters was eliminated in 2011, resulting in a lack of age, sex, and size data for use in the ASA model during 2011 or 2012. Temporary funding was identified in 2013, 2014 and 2015, enabling ADF&G to resume use of this important stock assessment tool during those years, however, all funding for herring stock assessment was cut prior to the 2016 season.

SEASON SUMMARY

Due to the loss of funding, ADF&G did not conduct aerial or vessel surveys to assess the Kamishak Bay herring stock in 2016. Historical biomass trends for Kamishak Bay herring are provided in Figure 21.

2017 HERRING SEASON OUTLOOK

Due to the loss of funding for aerial and vessel surveys, there was insufficient data to run the ASA model to generate a forecast of the 2017 Kamishak Bay District herring spawning biomass. Given the lack of current survey information, coupled with the recent trend of low biomass and poor recruitment events, ADF&G will not prosecute a commercial fishery in 2017.

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REFERENCES CITED

Bandirola, L. S. 1965. Silver salmon studies in the Resurrection Bay area. Annual report of progress, 1963–1964 Federal Aid In Fish Restoration Project F-5-R-6 Sport Fish Investigations of Alaska. Vol. 5, Juneau.

Bandirola, L. S. 1966. Silver salmon studies in the Resurrection Bay Area. Annual report of progress, 1964–1965 Federal Aid in Fish Restoration Project F-5-R-6 Sport Fish Investigations of Alaska. Vol. 6, Juneau.

Bosch, D. 2011. Coho salmon thermal-marked otolith recovery, Resurrection Bay, Alaska, 2003–2005. Alaska Department of Fish and Game, Fishery Data Series No. 11-06, Anchorage.

Botz, J., T. Sheridan, A. Wiese, H. Scannell, R. Brenner, and S. Moffitt. 2013. 2011 Prince William Sound area finfish management report. Alaska Department of Fish and Game, Fishery Management Report No. 13-11, Anchorage.

Bue, B. G., S. M. Fried, S. Sharr, D. G. Sharp, J. A. Wilcock, and H. J. Geiger. 1998. Estimating salmon escapement using area-under-the-curve, aerial observer efficiency, and stream-life estimates: The Prince William Sound pink salmon example. North Pacific Anadromous Fish Commission Bulletin No. 1:240-250.

Cook, L., and F. Norris. 1998. A stern and rock-bound coast: Kenai Fjords National Park historic resource study. National Park Service, Alaska Support Office, Anchorage, Alaska.

Edmundson, J. A., G. B. Kyle, and T. Balland. 1992. Rearing capacity, escapement level, and potential for sockeye salmon (*Oncorhynchus nerka*) enhancement in English Bay Lakes. Alaska Department of Fish and Game, Fisheries Research, Enhancement and Development Division Report No. 120, Anchorage.

Hammarstrom, L. F. 2003. 2002 Lower Cook Inlet annual finfish management report. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 2A03-04, Anchorage.

Hammarstrom, L. F., and M. S. Dickson. 2007. 2006 Lower Cook Inlet annual finfish management report. Alaska Department of Fish and Game, Fishery Management Report No. 07-42, Anchorage.

Hershberger, P. K., K. Stick, B. Bui, C. Carroll, B. Fall, C. Mork, J. A. Perry, E. Sweeney, J. Wittouck, J. Winton, and R. Kocan. 2002. Incidence of *Ichthyophonus hoferi* in Puget Sound fishes and its increase with age in Pacific herring. Journal of Aquatic Animal Health 14:50-56.

Hershberger, P. K., J. L. Gregg, L. M. Hart, S. Moffitt, R. Brenner, K. Stick, E. Coonradt, E. O. Otis, J. J. Vollenweider, K. A. Garver, J. Lovy, T. R. Meyers. 2016. The parasite *Ichthyophonus sp*. in Pacific herring from the coastal NE Pacific. Journal of Fish Diseases 39:395-410.

Hollowell, G., E. O. Otis, and E. Ford. 2013. 2012 Lower Cook Inlet annual finfish management report. Alaska Department of Fish and Game, Fishery Management Report No. 13-36, Anchorage.

Kron, T. M., and H. J. Yuen. 1978. Emigration and feeding of juvenile pink salmon, *Oncorhynchus gorbuscha*, in relation to zooplankton abundance in Tutka Bay, Alaska, 1975. Division of Fisheries Rehabilitation, Enhancement and Development, Alaska Department of Fish and Game, Anchorage.

Lebida, R. C., and D. C. Whitmore. 1985. Bering Sea aerial survey manual. Alaska Department of Fish and Game, Division of Commercial Fisheries, Bristol Bay Data Report No. 85-2, Dillingham, Alaska.

Libungan, L. A., A. Slotte, E. O. Otis, and S. Palsson. 2016. Otolith variation in Pacific herring (*Clupea pallasii*) reflects mitogenomic variation rather than the subspecies classification. Published online in Polar Biology on 4 January 2016. DOI 10.1007/s00300-015-1882-x. http://link.springer.com/article/10.1007/s00300-015-1882-x

McHenry, E. T. 1972. Annual progress report for silver salmon studies in the Resurrection Bay Area. Alaska Department of Fish and Game, Division of Sport Fish, Anchorage.

Mills, M. J. 1984. Alaska statewide sport fish harvest studies. Alaska Department of Fish and Game, Federal Aid in Fish Restoration, Annual Performance Report 1983-1984, Project F-9-16(25)SW-I-A, Juneau.

Otis, E. O. 2004. Abundance, age, sex, and size statistics for Pacific herring in Lower Cook Inlet, 1995–1999. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 2A04-14, Anchorage.

REFERENCES CITED (Continued)

Otis, E. O., and W. R. Bechtol. 1999. Lower Cook Inlet herring stock structure and aerial survey assessment project operational plan. Alaska Department of Fish and Game, Division of Commercial Fisheries, Homer.

Otis, E. O., W. R. Bechtol, and W. A. Bucher. 1998. Coping with a challenging stock assessment situation: the Kamishak Bay sac-roe herring fishery. Pages 557-573 [*In*] Funk, F., T. J. Quinn, J. Heifetz, J. N. Ianelli, J. E. Powers, J. F. Schweigert, P. J. Sullivan, and C. I. Zhang, editors. Fishery stock assessment models: Proceedings of the International Symposium on Fishery Stock Assessment Models for the 21st Century, October 8-11, 1997, Anchorage, Alaska. University of Alaska Sea Grant College Program AK-SG-98-01.

Otis, E. O., and J. L. Cope. 2004. Abundance, age, sex, and size statistics for Pacific herring in Lower Cook Inlet, 2000-2003. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 2A04-04, Anchorage.

Otis, E. O., R. Heintz, and J. Maselko. 2010. Investigation of Pacific herring (*Clupea pallasii*) stock structure in Alaska using otolith microchemistry and heart tissue fatty acid composition. Exxon Valdez Oil Spill Restoration Project Final Report (Restoration Project 070769), Alaska Department of Fish and Game, Division of Commercial Fisheries, Homer, Alaska.

Roppel, P. 1982. Alaska salmon hatcheries 1891-1959. Alaska Historical Commission Studies in History, No. 20. National Marine Fisheries Service, Portland, Oregon.

Reid, G. M. 1971. Age composition, weight, length, and sex of herring, *Clupea pallasii*, used for reduction in Alaska, 1929-1966. NOAA Technical Report, NMFS SSRF 634.

Rounsefell, G. A. 1930. Contribution to the biology of the Pacific herring, *Clupea pallasii*, and the condition of the fishery in Alaska. Document No. 1080, Issued July 23, 1930, Bulletin of the United States Bureau of Fisheries, Volume XLV.

Schroeder, T. R., and S. C. Kyle. 1986. Annual finfish management report, 1985, Lower Cook Inlet. Alaska Department of Fish and Game, Division of Commercial Fisheries, Homer.

Stanek, R. T. 1985. Patterns of wild resource use in English Bay and Port Graham, Alaska. Alaska Department of Fish and Game, Division of Subsistence. Technical Paper No. 104, Anchorage.

Szarzi, N. J., C. M. Kerkvliet, B. J. Failor, and M. D. Booz. 2010. Recreational fisheries in the Lower Cook Inlet Management Area, 2008–2010, with updates for 2007. Alaska Department of Fish and Game, Fishery Management Report No. 10-38, Anchorage.

Yuen, H. J. 1994. A model to predict Pacific herring age composition in early and late spawning migrations in Kamishak Bay, Alaska. Alaska Fishery Research Bulletin 1:35-54.

Yuen, H. J., and W. A. Bucher. 1993. Lower Cook Inlet salmon run timing curves. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 2A93-34, Anchorage.

FIGURES AND TABLES

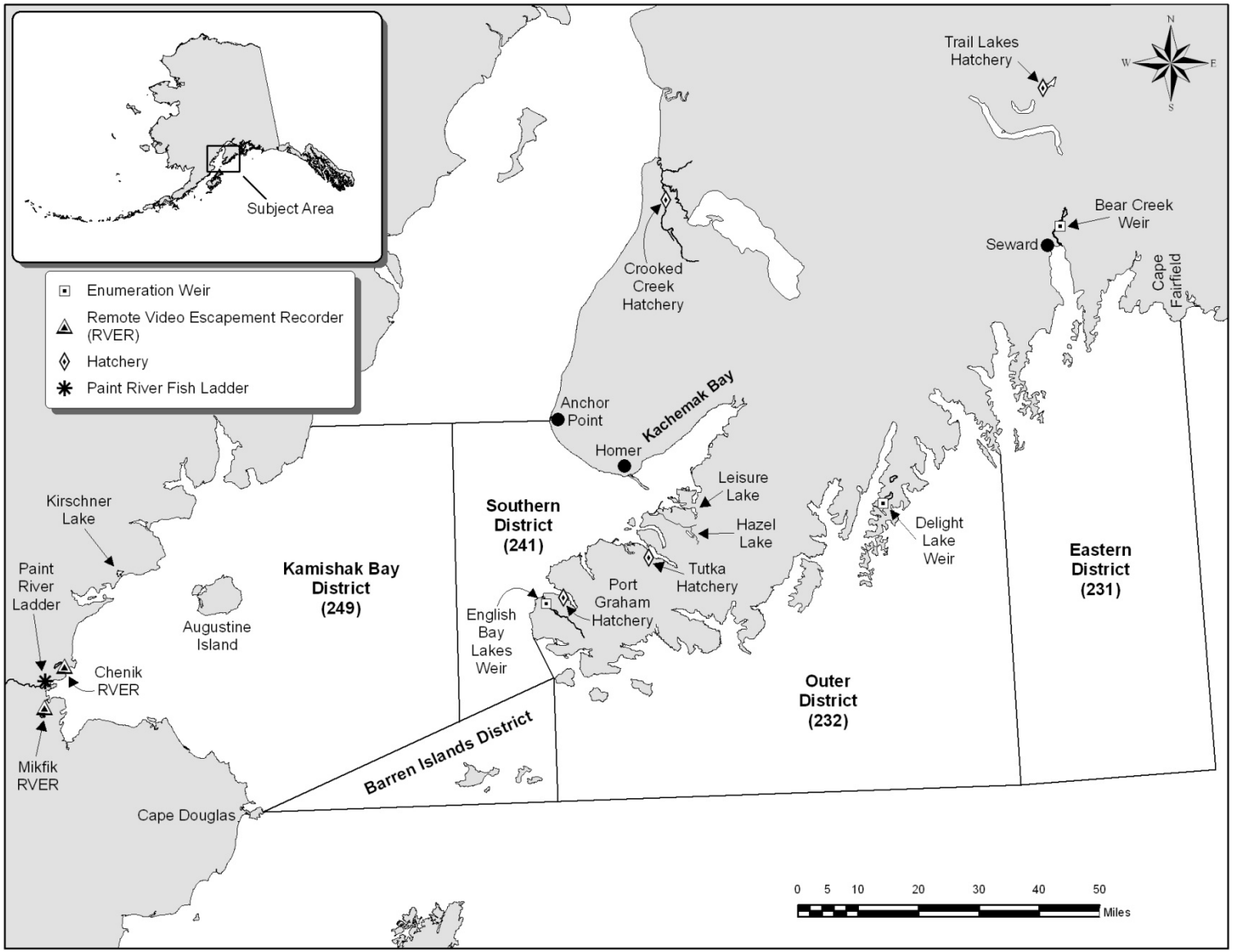

Figure 1.–Lower Cook Inlet management area showing commercial fishing districts, salmon hatcheries, weir and fish ladder locations, and remote video salmon monitoring sites.

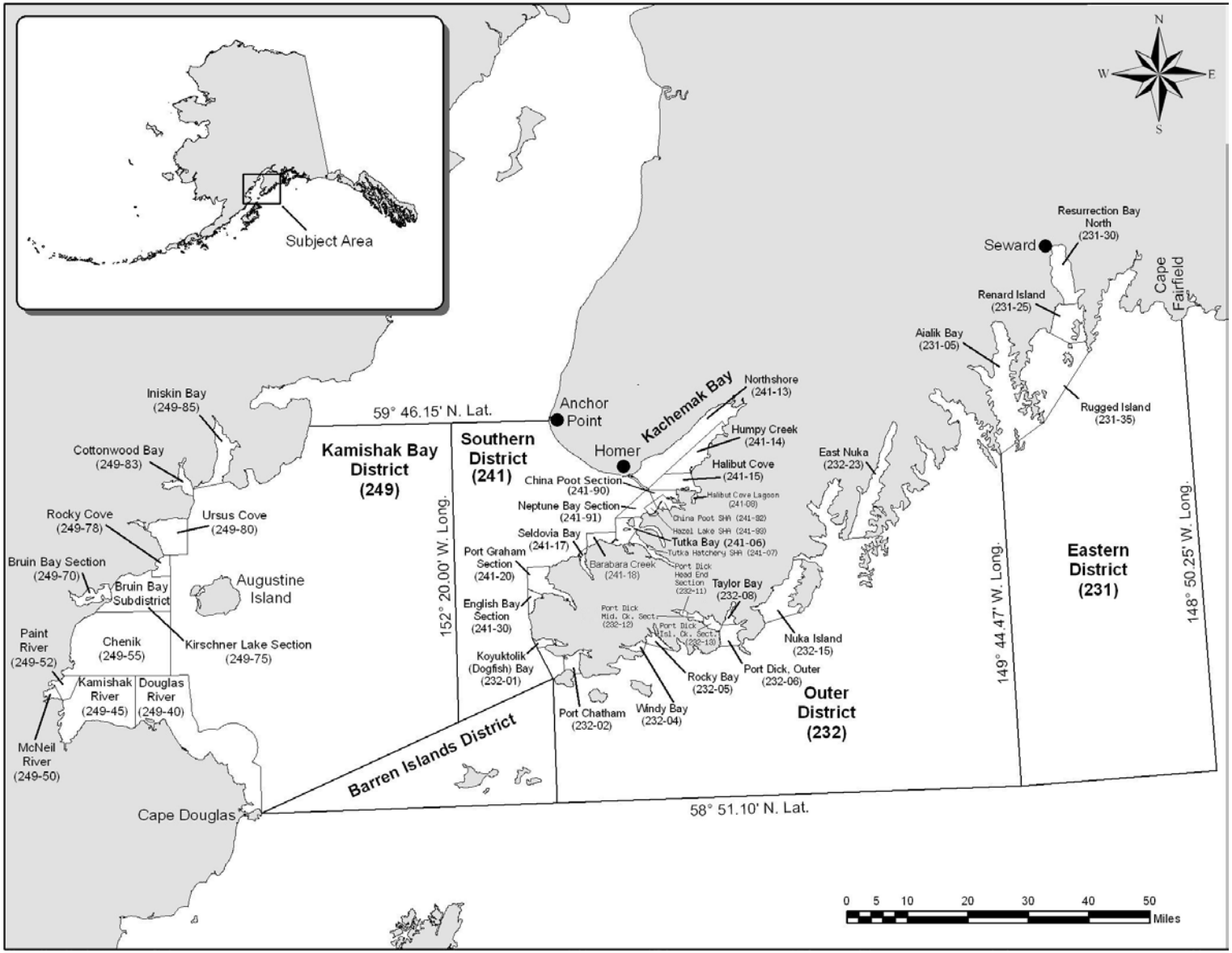

Figure 2.–Lower Cook Inlet management area showing commercial fishing districts and reporting subdistricts.

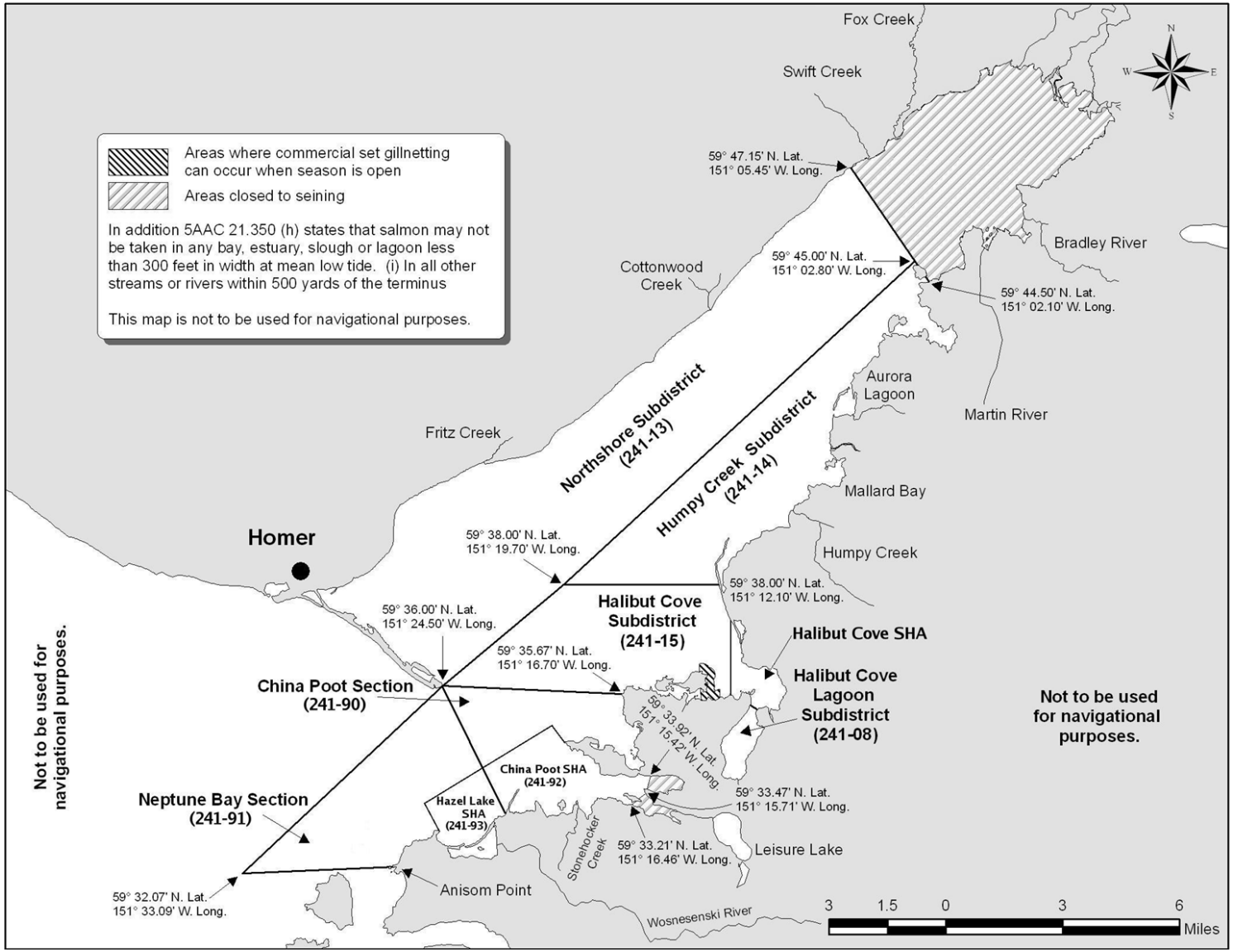

Figure 3.–Southern District of Lower Cook Inlet management area showing commercial fishing districts and reporting subdistricts, Chugachik Island to Anisom Point.

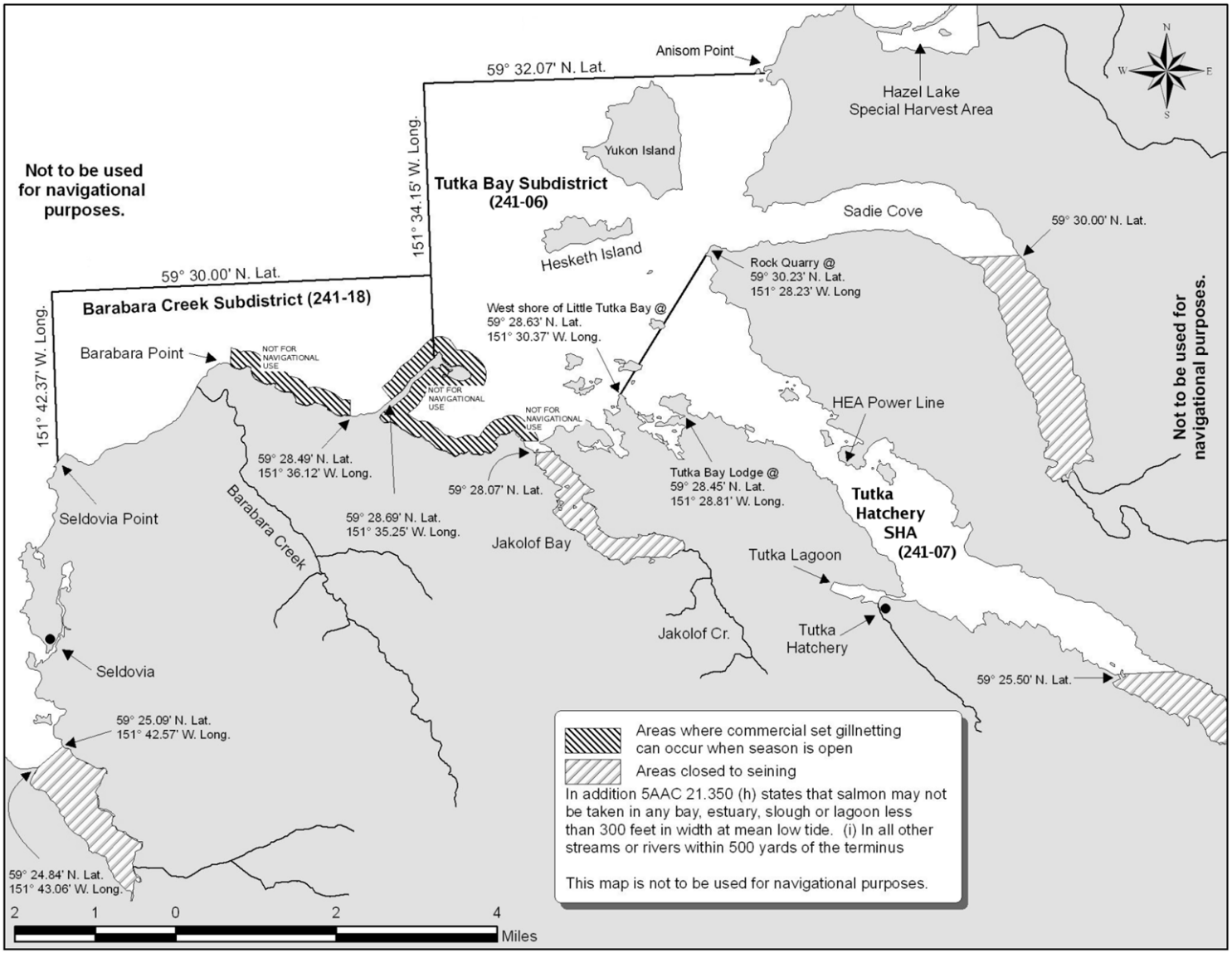

Figure 4.–Southern District of Lower Cook Inlet management area showing commercial fishing districts and reporting subdistricts, Anisom Point to Seldovia Point.

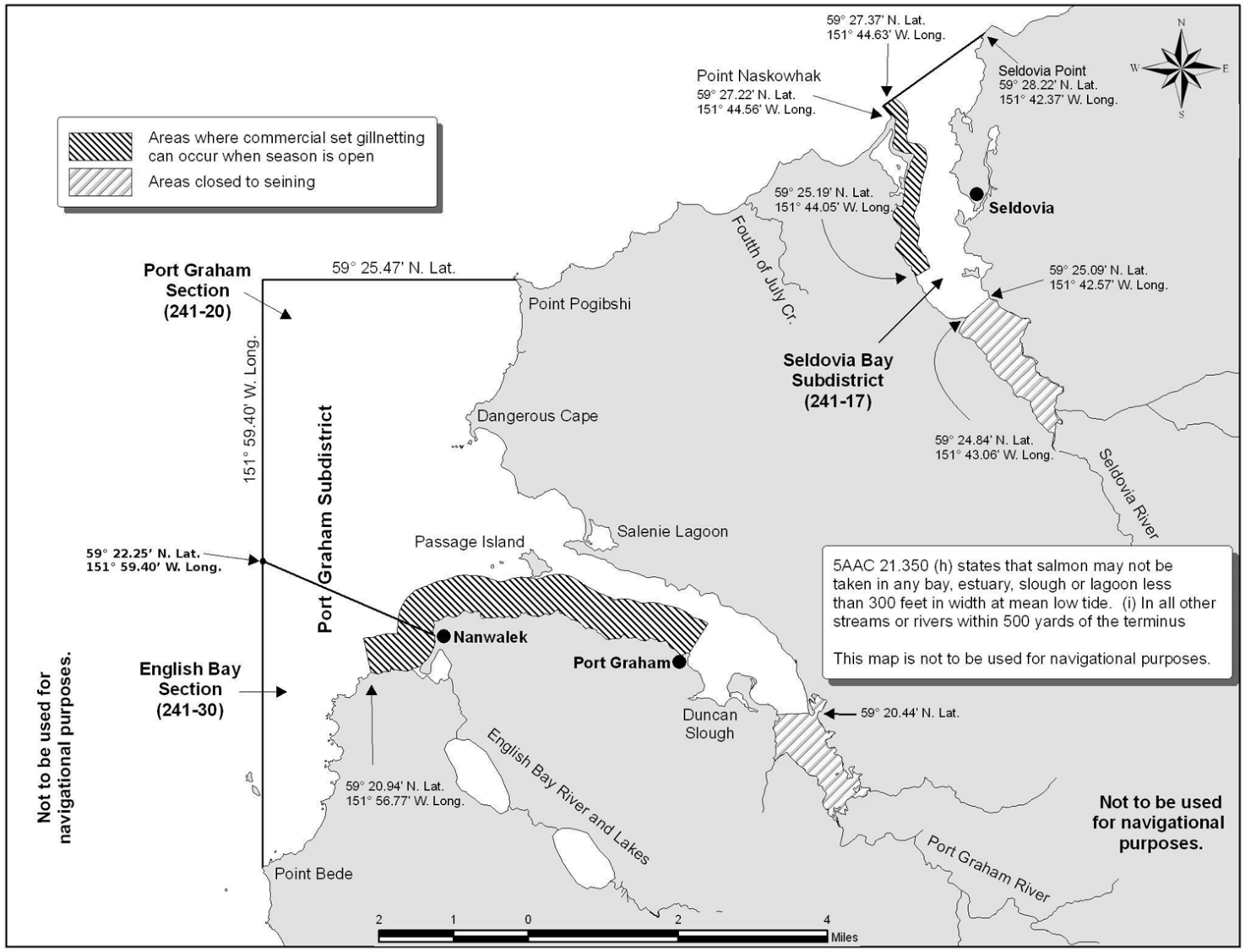

Figure 5.–Southern District of Lower Cook Inlet management area showing commercial fishing districts and reporting subdistricts, Seldovia Point to Point Bede.

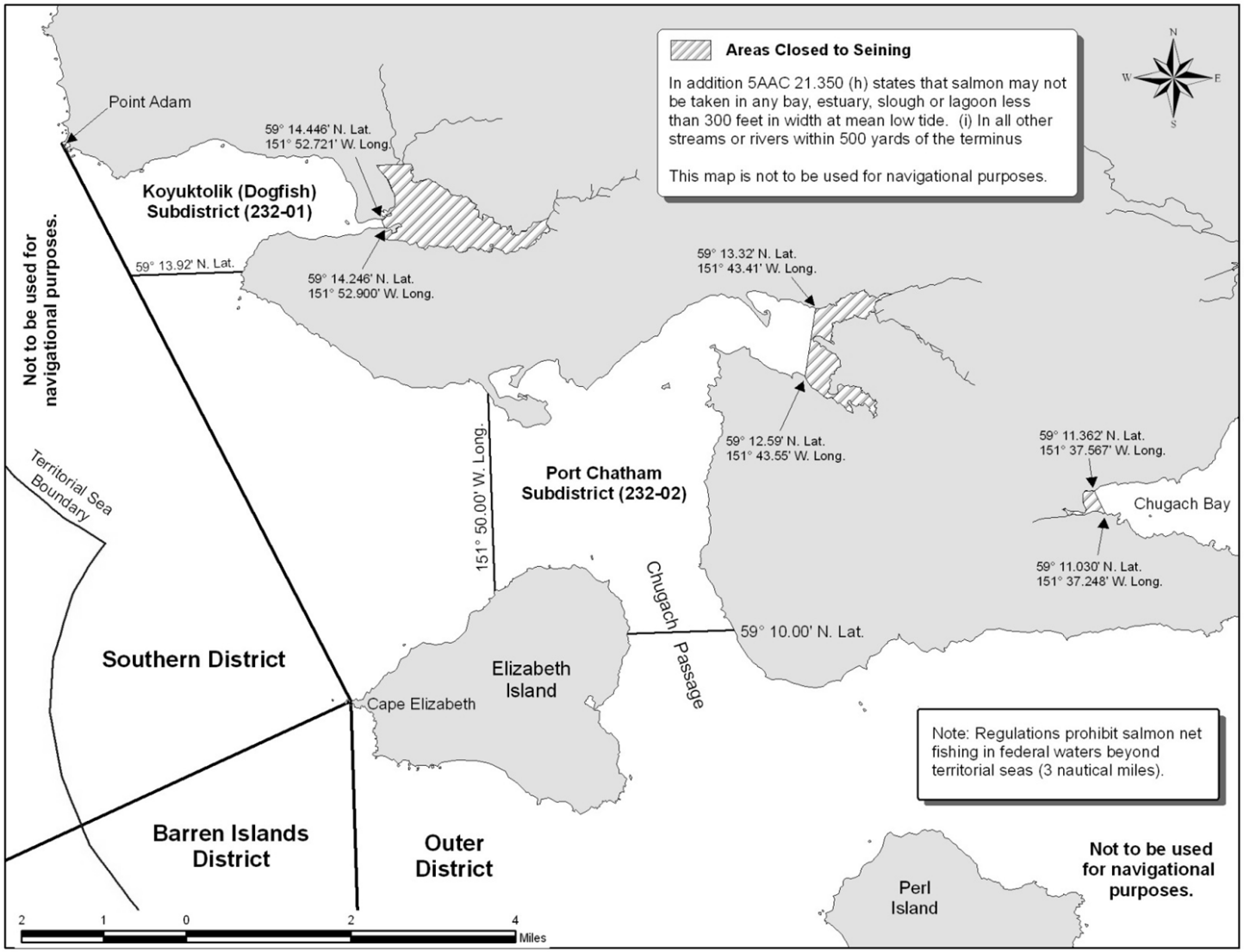

Figure 6.–Outer District of Lower Cook Inlet management area showing commercial fishing districts and reporting subdistricts, Point Adam to Chugach Bay.

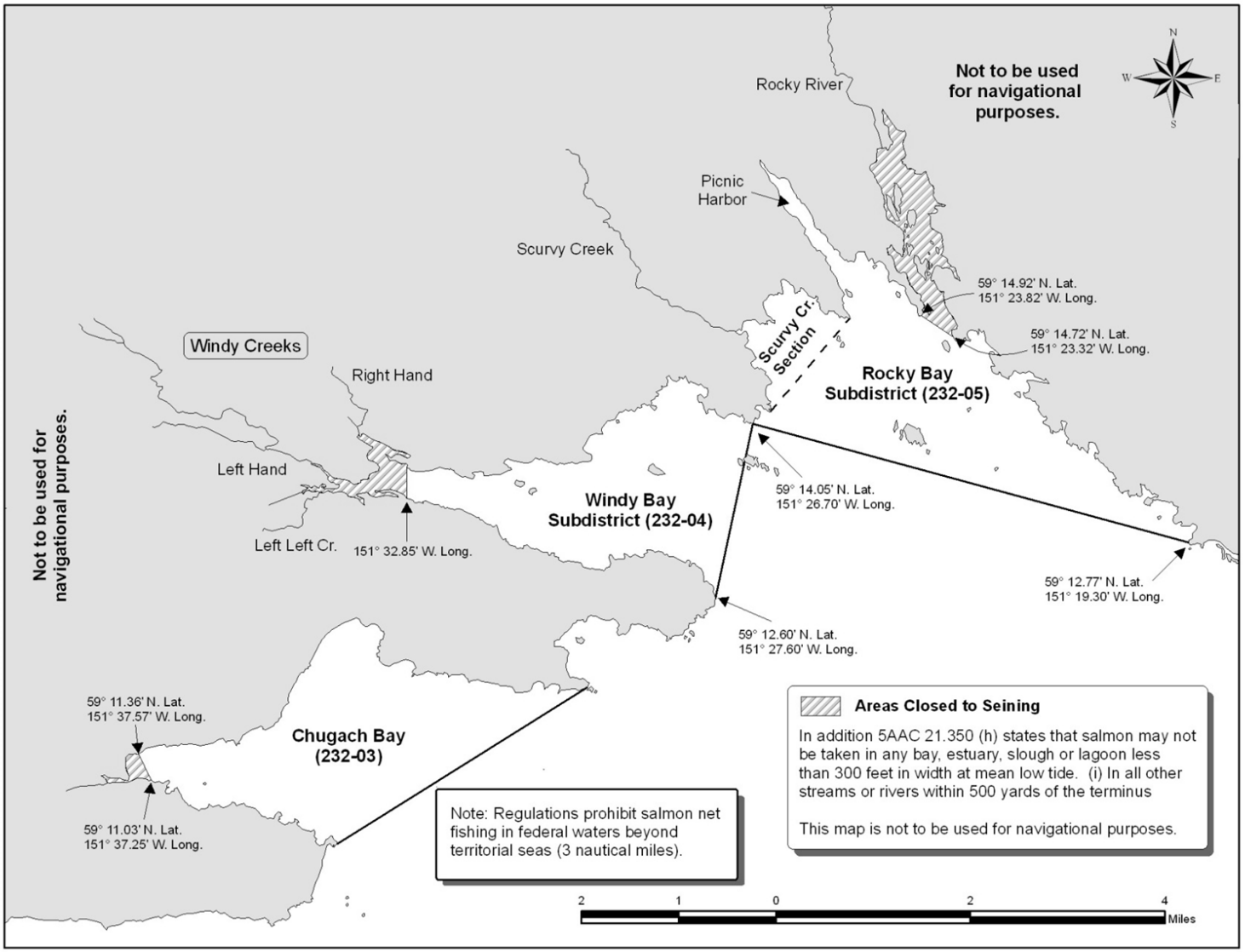

Figure 7.–Outer District of Lower Cook Inlet management area showing commercial fishing districts and reporting subdistricts, Chugach Bay to Rocky Bay.

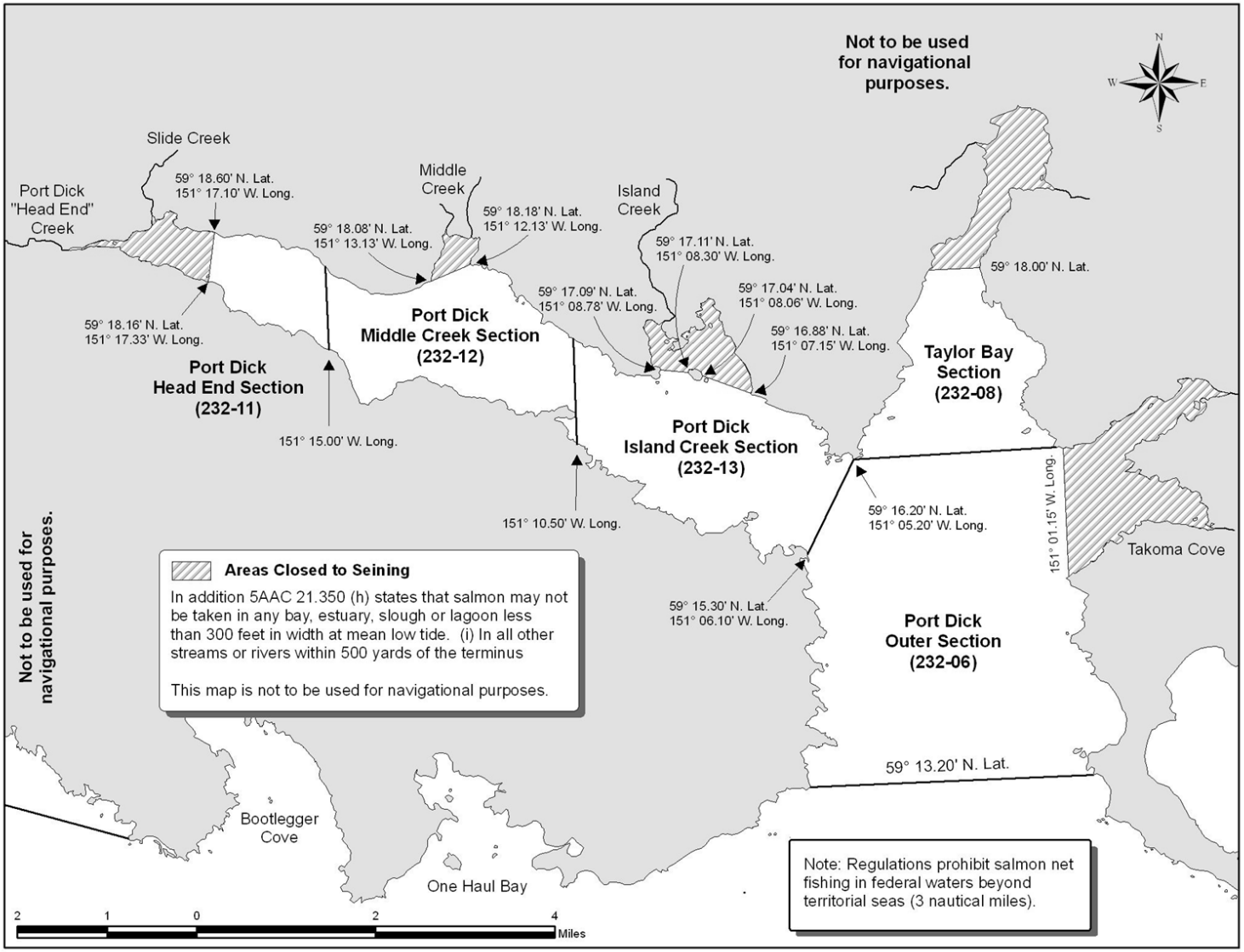

Figure 8.–Outer District of Lower Cook Inlet management area showing commercial fishing districts and reporting subdistricts, Port Dick area.

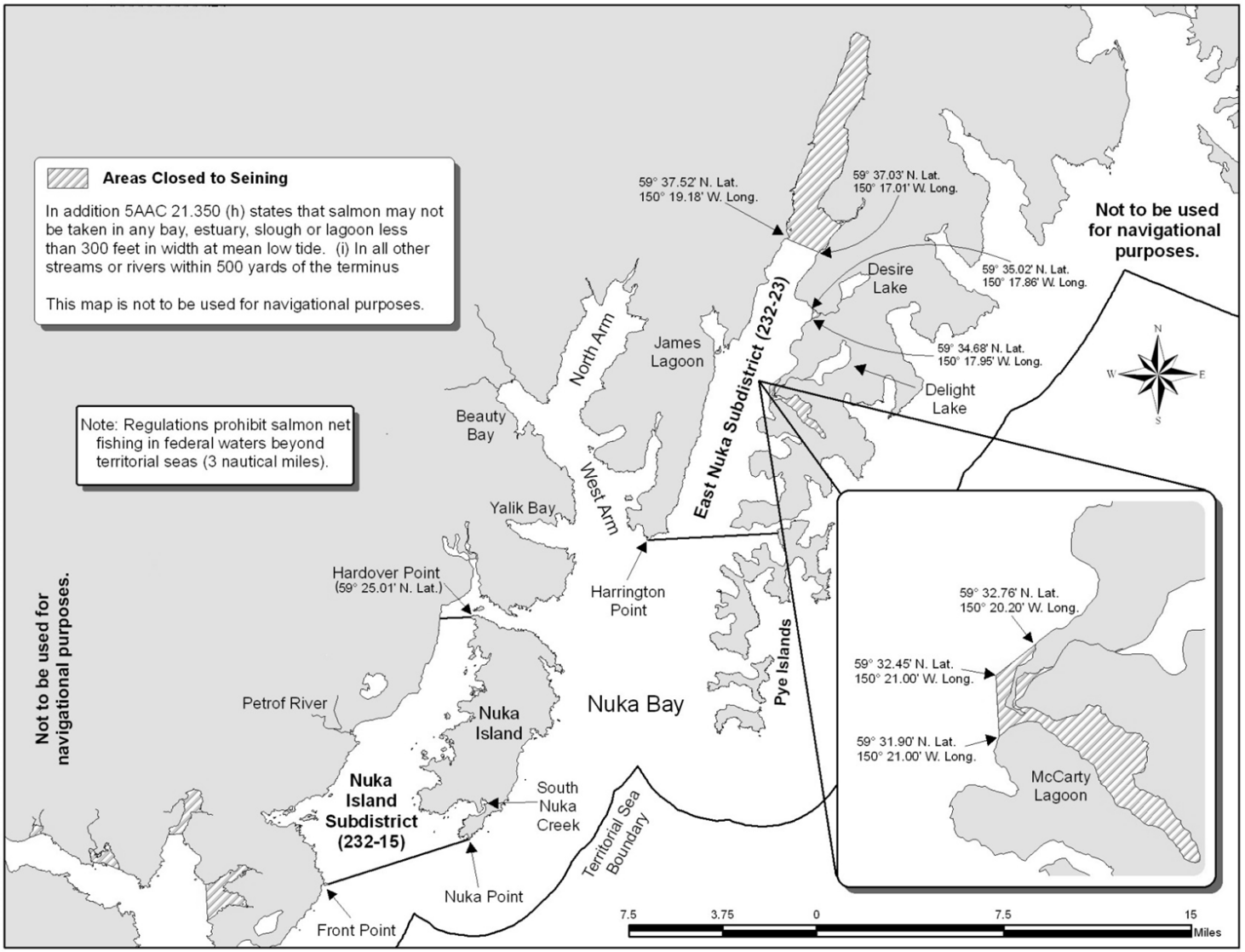

Figure 9.–Outer District of Lower Cook Inlet management area showing commercial fishing districts and reporting subdistricts, Nuka Bay area.

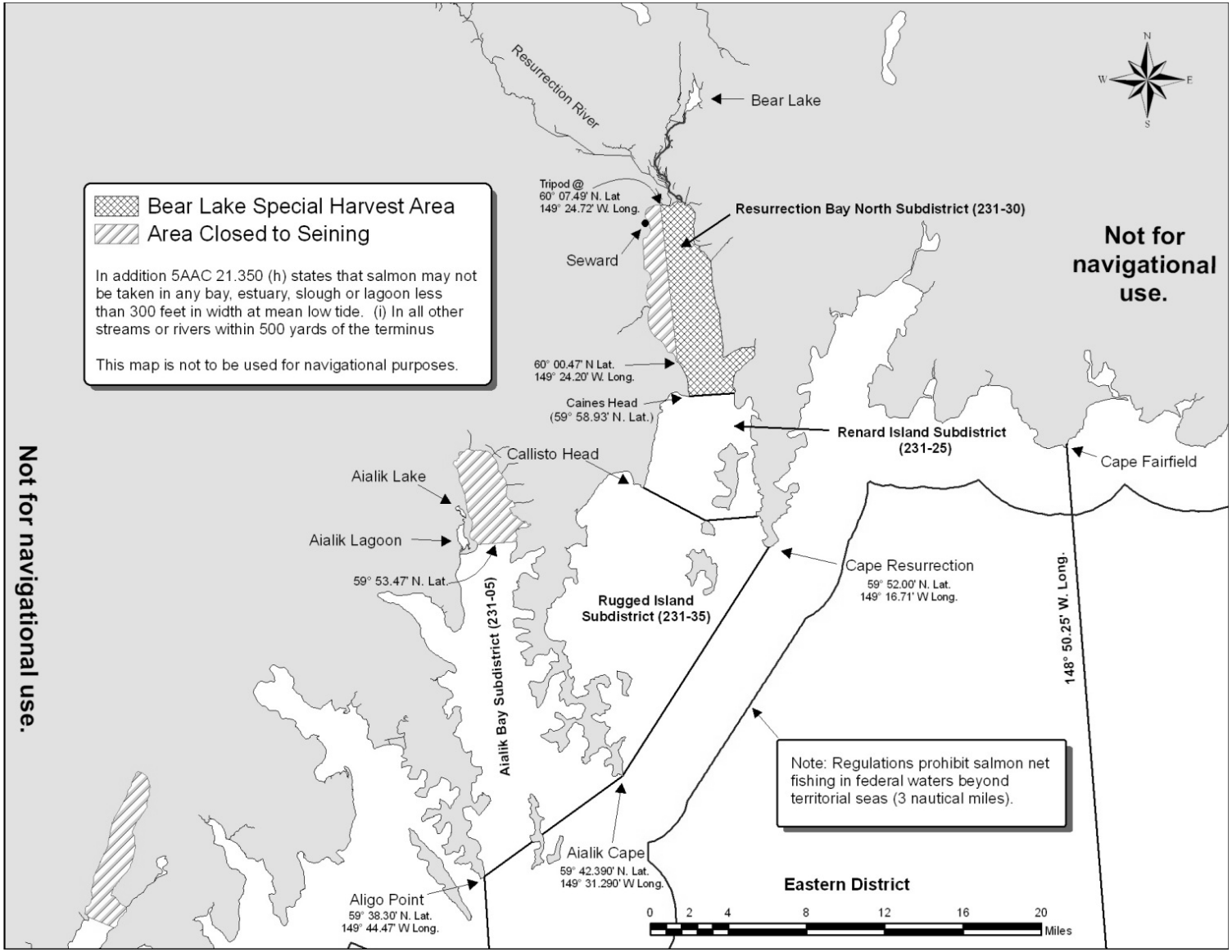

Figure 10.–Eastern District of Lower Cook Inlet management area showing commercial fishing districts, reporting subdistricts, and hatchery special harvest area (SHA), Aligo Point to Cape Fairfield.

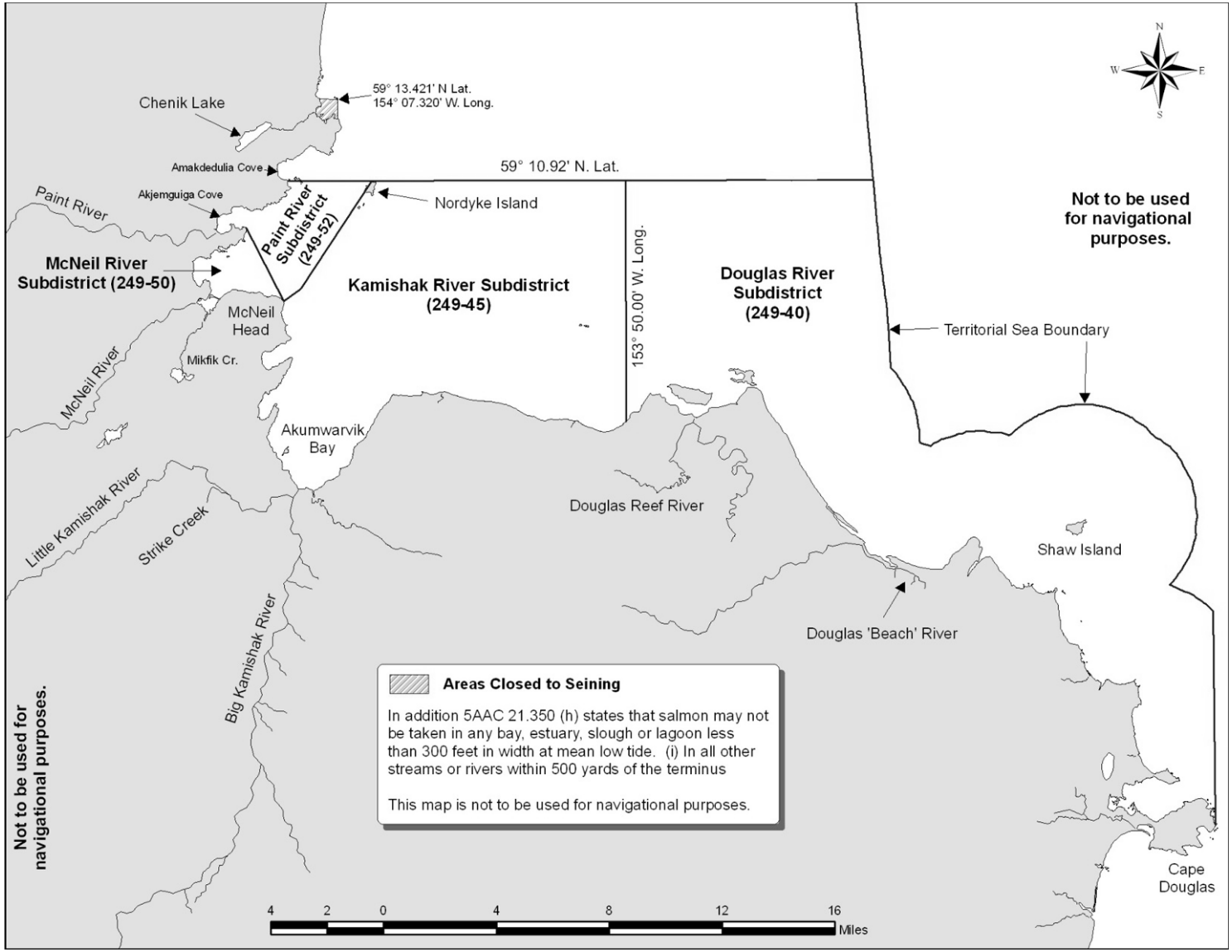

Figure 11.–Kamishak Bay District of Lower Cook Inlet management area showing commercial fishing districts and reporting subdistricts, Chenik Lake to Cape Douglas.

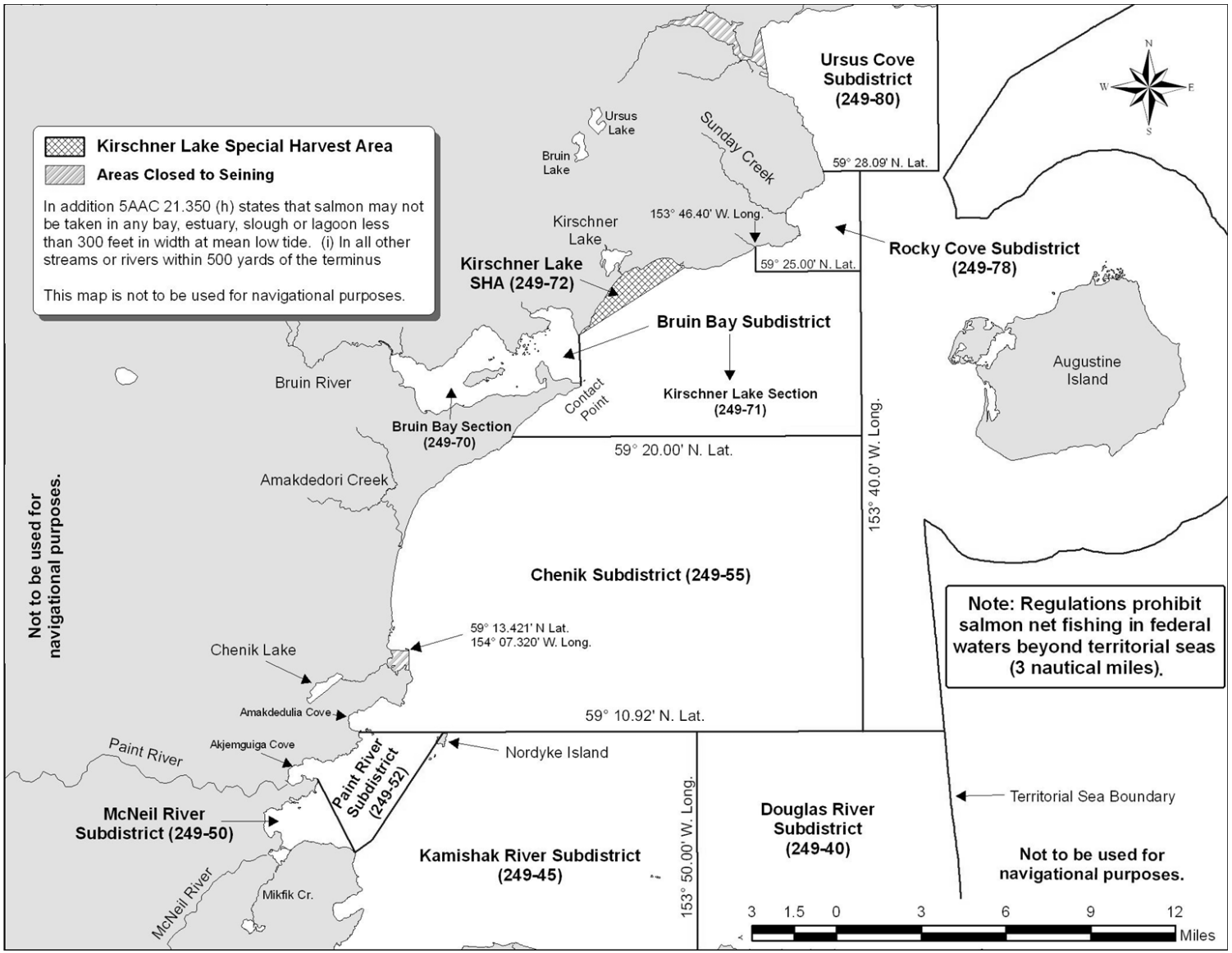

Figure 12.–Kamishak Bay District of Lower Cook Inlet management area showing commercial fishing districts, reporting subdistricts, and hatchery special harvest area, McNeil River to Ursus Cove.

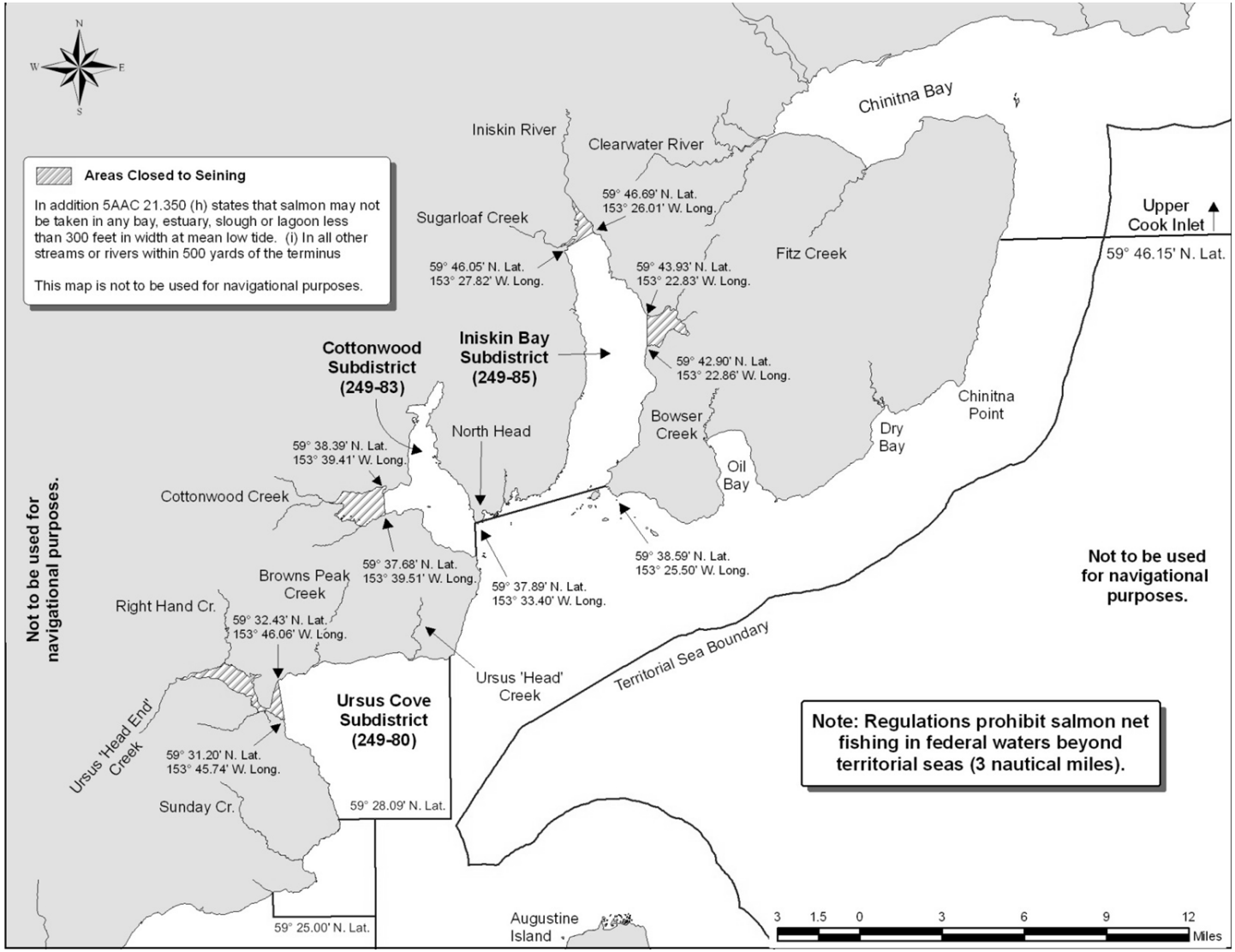

Figure 13.–Kamishak Bay District of Lower Cook Inlet management area showing commercial fishing districts, Ursus Cove to Chinitna Point.

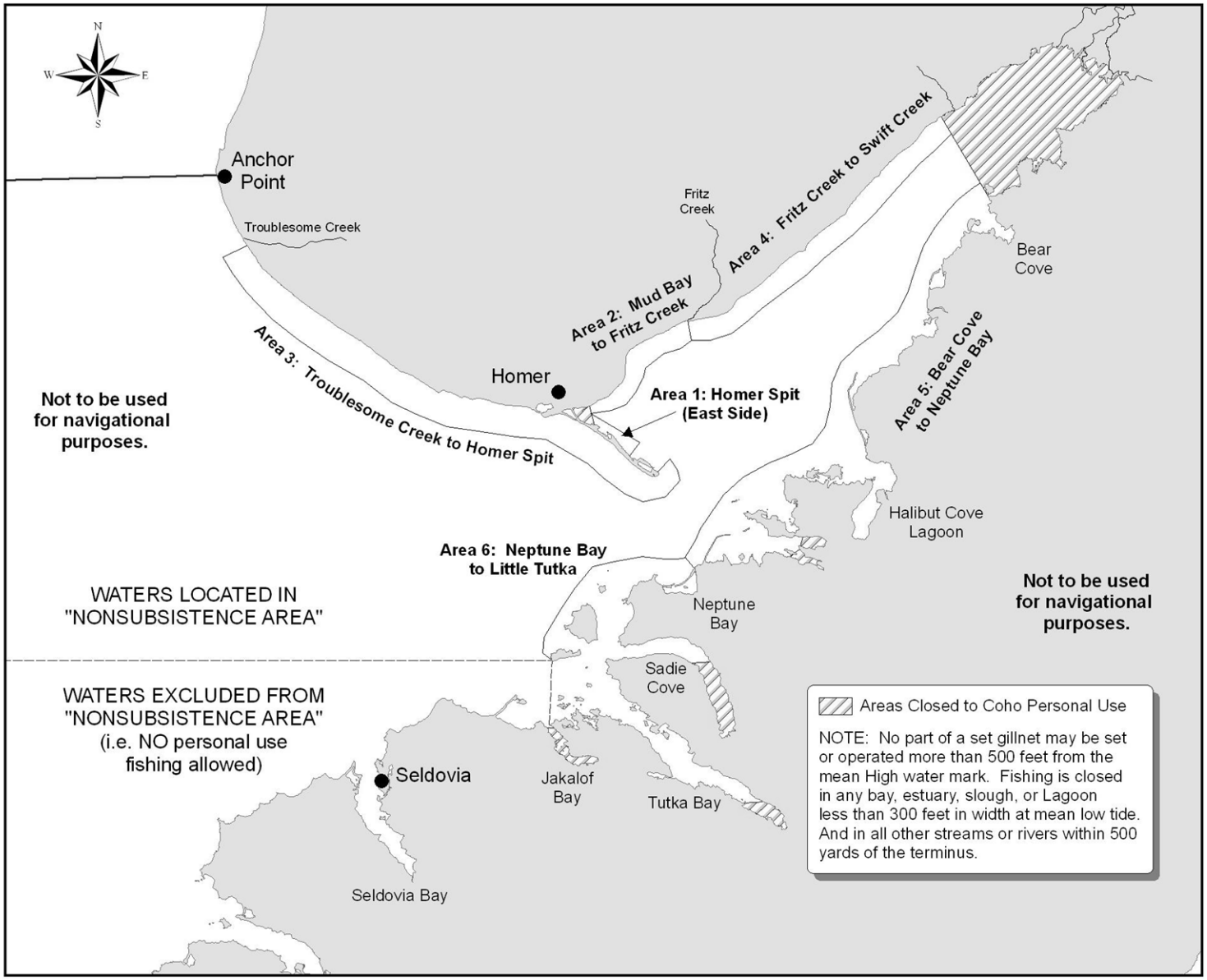

Figure 14.–Kachemak Bay personal use coho salmon fishery registration areas.

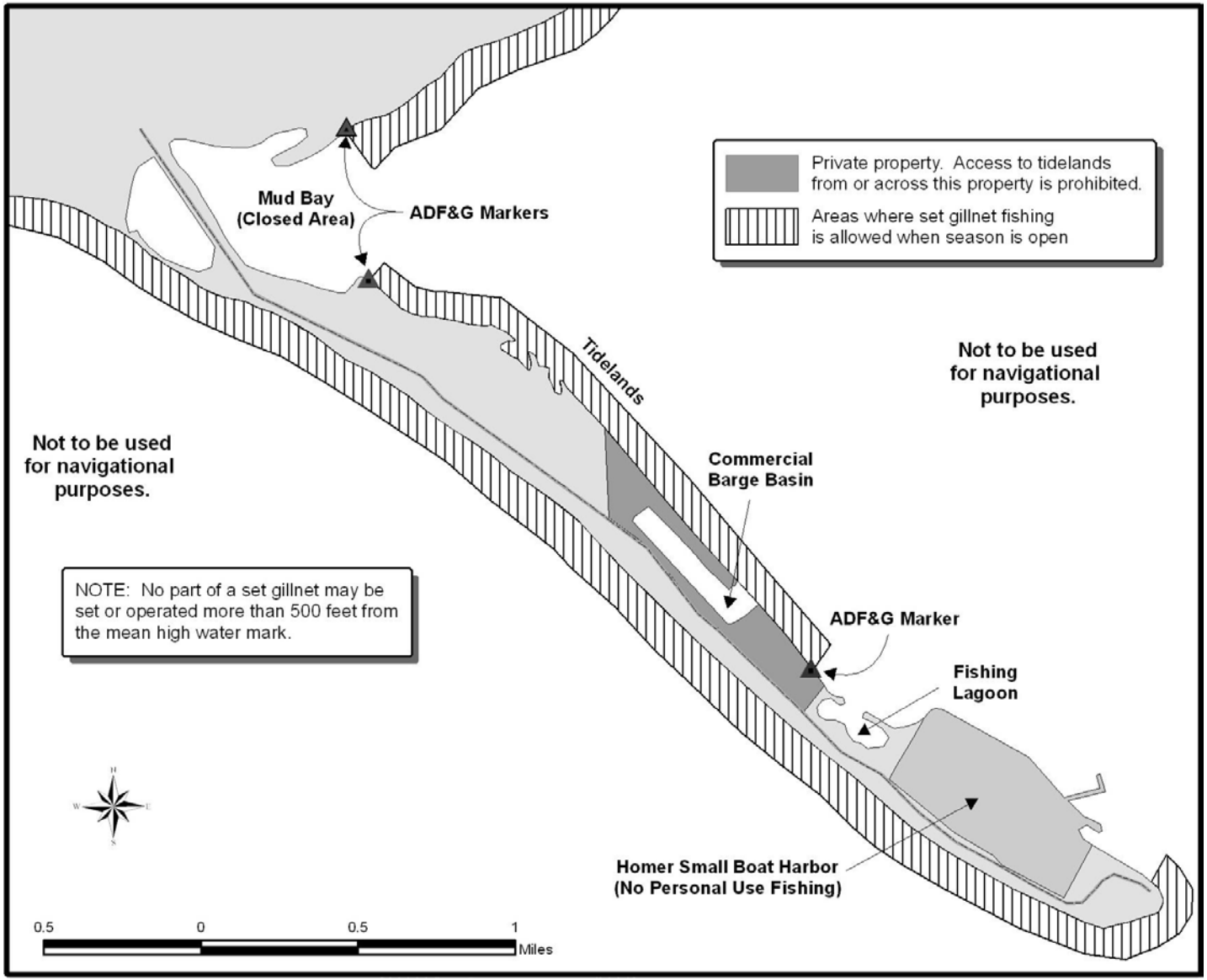

Figure 15.–Southern District personal use coho salmon fishery: Homer Spit area.

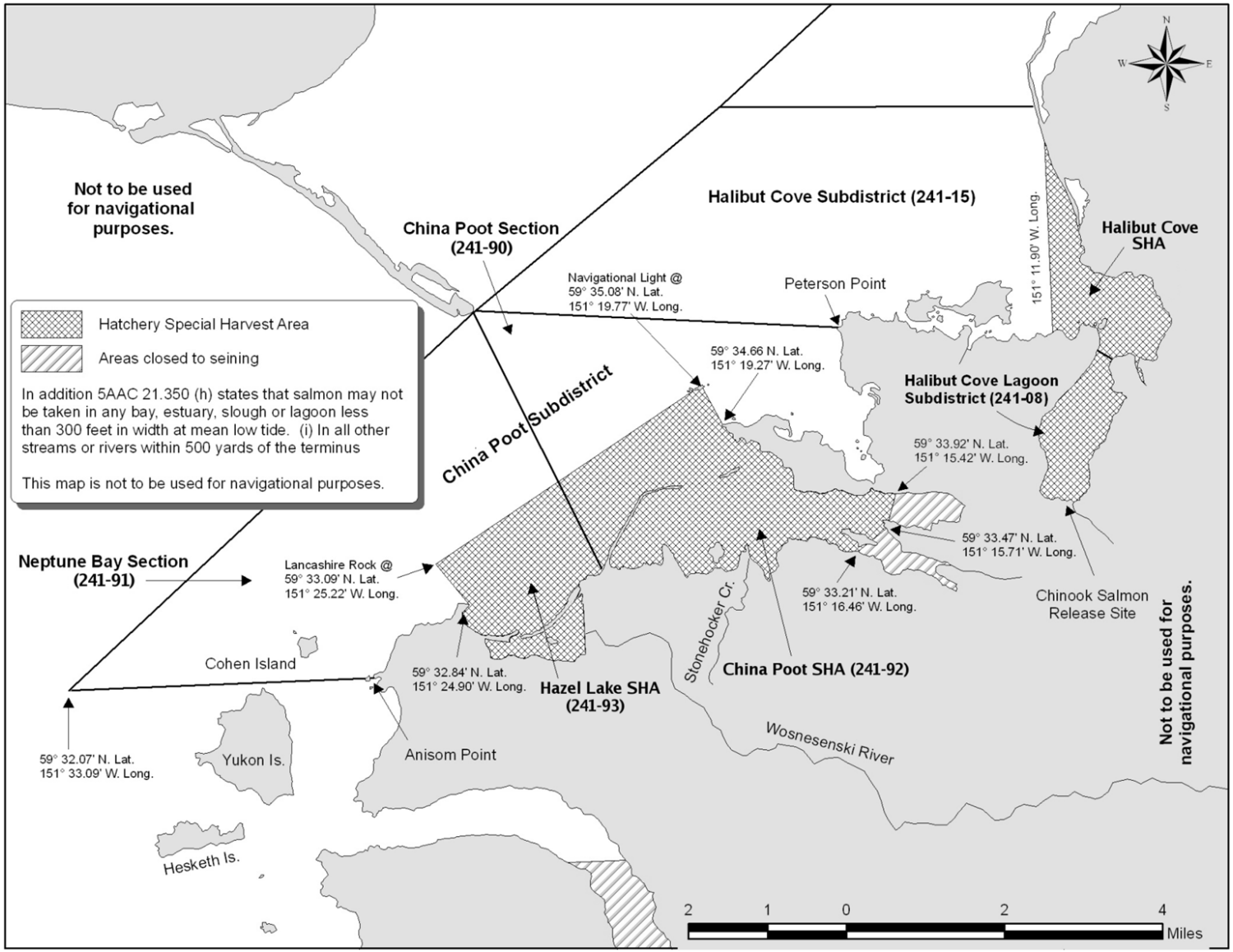

Figure 16.–Lower Cook Inlet management area, Southern District hatchery special harvest areas, Halibut Cove to Anisom Point.

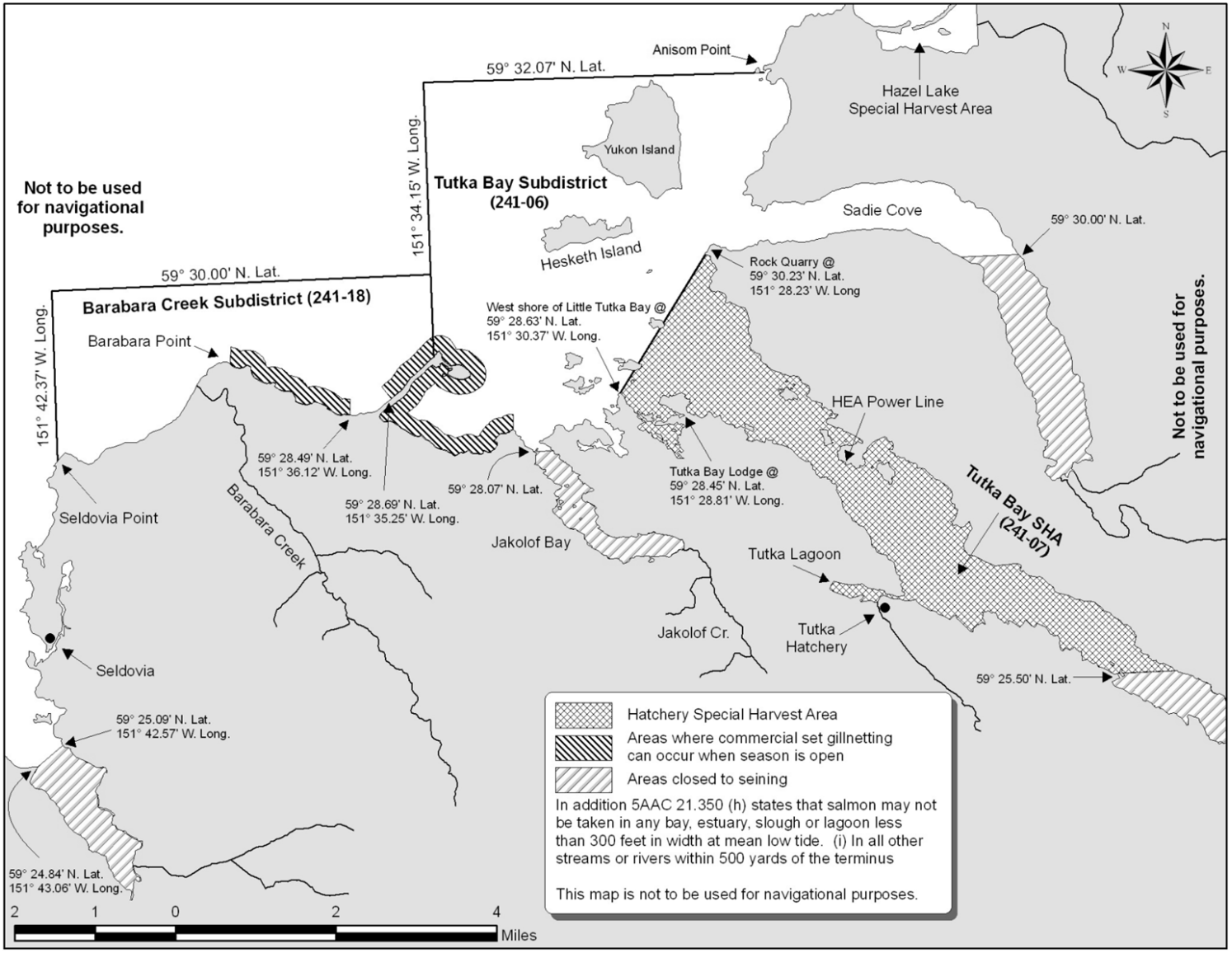

Figure 17.–Lower Cook Inlet management area, Southern District hatchery special harvest areas, Anisom Point to Seldovia Point.

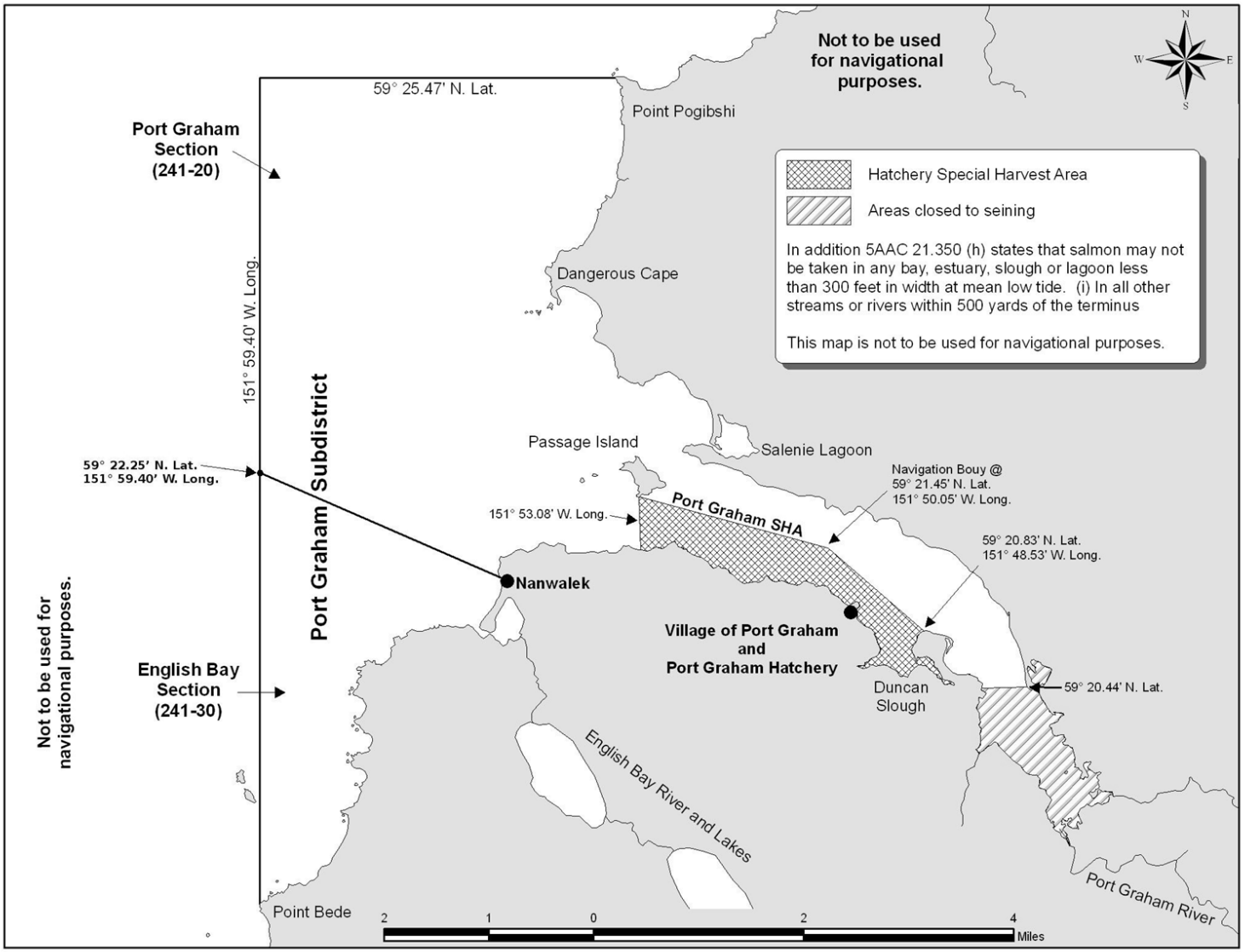

Figure 18.–Lower Cook Inlet management area, Southern District hatchery special harvest areas, Port Graham Area.

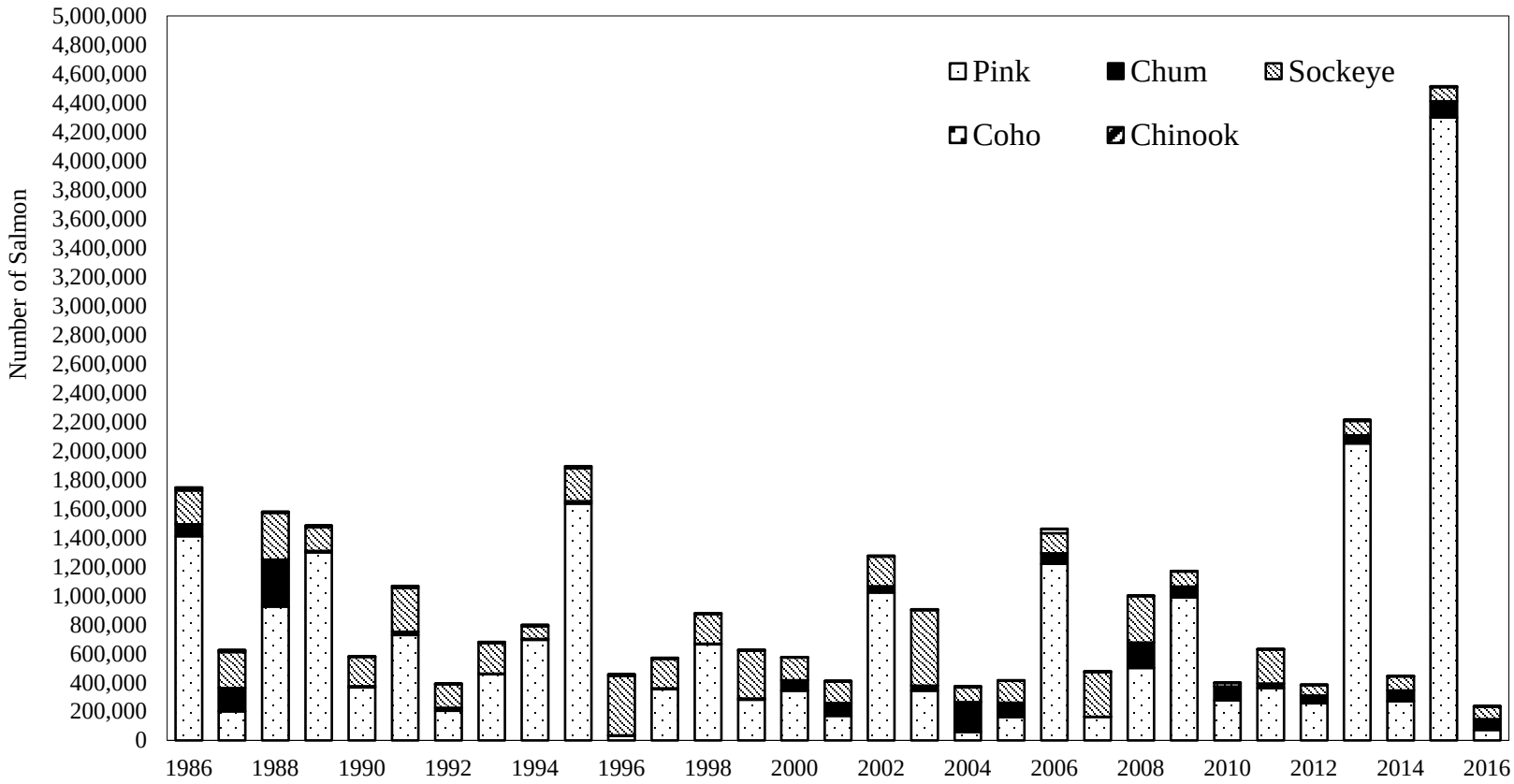

Figure 19.–Commercial common property salmon harvests in Lower Cook Inlet, 1986–2016.

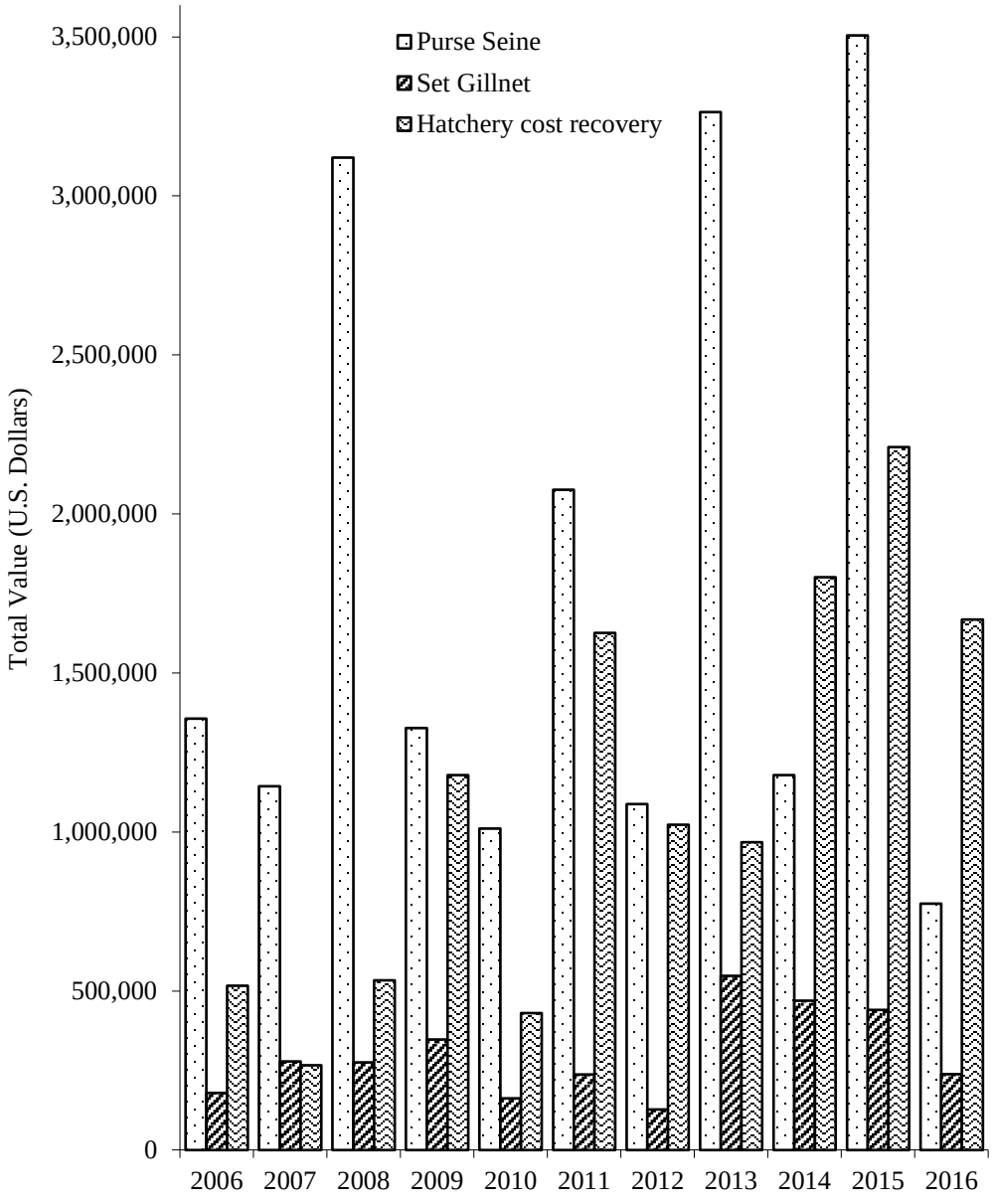

Figure 20.–Exvessel value of Lower Cook Inlet commercial salmon harvest, 2006–2016.

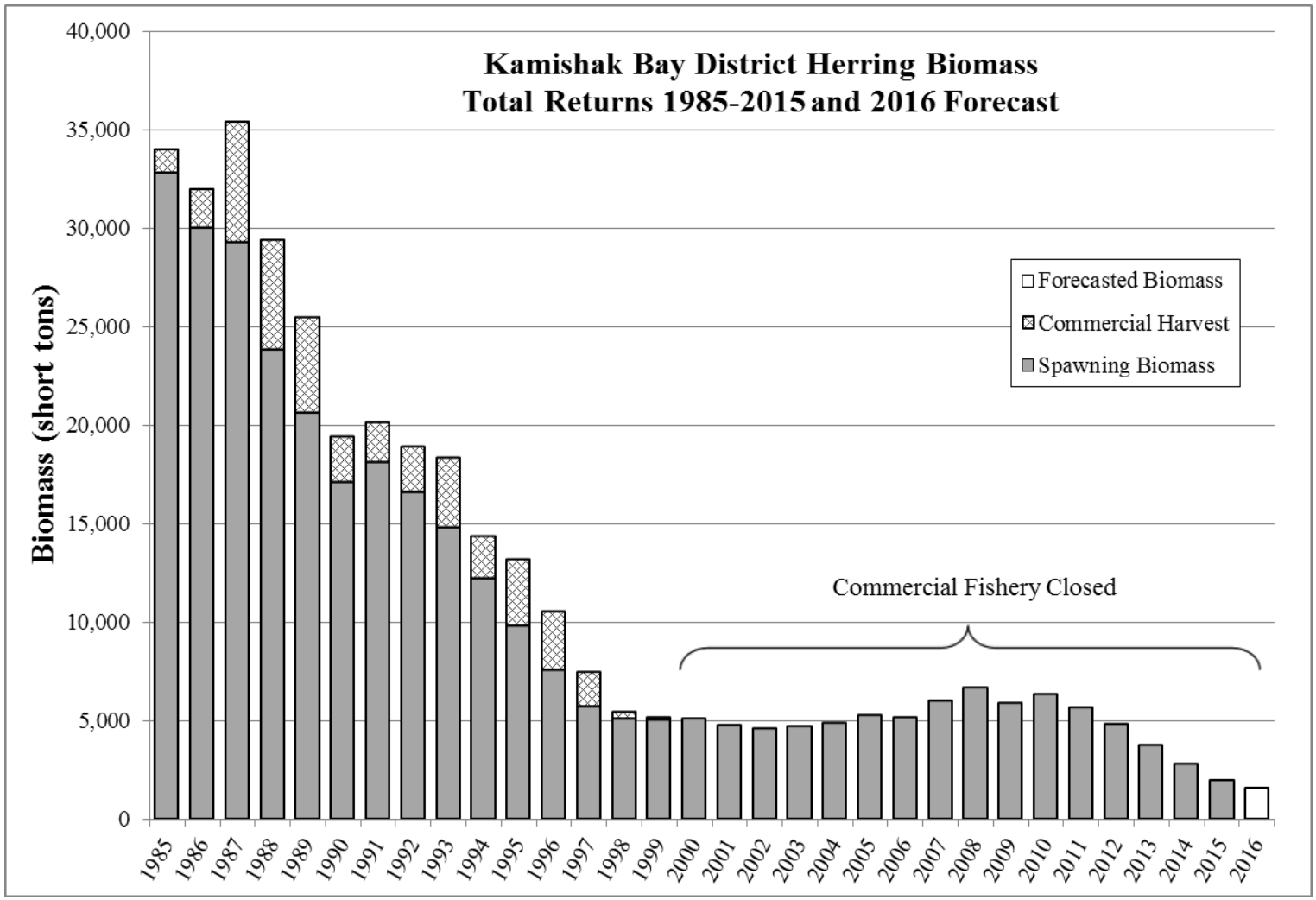

Figure 21.–Age-structured-assessment (ASA) biomass estimates and commercial harvests of Pacific herring in the sac roe seine fishery, Kamishak Bay District, Lower Cook Inlet, 1985–2015 and 2016 projection.

Note: Funding for herring stock assessment was cut in 2015; therefore, 2016 hindcast and 2017 forecast are not available. All spawning biomass estimates derived from 2015 ASA calculations.

Table 1.–Lower Cook Inlet Management Area commercial salmon harvest by gear and district, 2016.

District	Permits [a]	Chinook [a]	Sockeye [a]	Coho [a, b]	Pink [a]	Chum [a]	Total
Southern District	19	112	47,235	169	44,637	165	92,318
Outer District	13	1	7	2	5,369	60,800	66,179
Eastern District	[c]		[c]		[c]	[c]	[c]
Kamishak Bay District	5		18,218	578	350	10,984	30,130
Purse seine total	19	113	67,965	749	50,363	71,979	191,169
Southern District	21	731	19,427	687	21,872	2,124	44,841
Set gillnet total	21	731	19,427	687	21,872	2,124	44,841
Commercial common property total		844	87,392	1,436	72,235	74,103	236,010
Port Graham Hatchery					2,647		2,647
Tutka Bay Hatchery			23,708		23,783	12	47,503
Trail Lakes Hatchery			147,541		287	82	147,910
Hatchery cost recovery total[d]			171,249		26,717	94	198,060
Commercially sold total		844	258,641	1,436	98,952	74,197	434,070
Homepack		75	384	196	284	46	985
Hatchery donated fish[e]			1,484		404		1,888
Misc. Total		75	1,868	196	688	46	2,873
Lower Cook Inlet total		919	260,509	1,632	99,640	74,243	436,943

[a] Numbers of fish and numbers of permit holders delivering are from ADF&G fish ticket database.

[b] 200 coho salmon were harvested in the Seward Salmon Derby. These were sold by the sponsor to commercial processors. These fish were caught by sport permit holders using rod and reel (troll gear). This harvest is not included in the commercial harvest total catch.

[c] Confidential data. Fewer than 3 permit holders reporting.

[d] Hatchery sales for hatchery operating costs.

[e] Excess sockeye and pink salmon harvested at the Bear Creek weir and Tutka hatchery.

Table 2.–Total commercial salmon harvest by species from all gear types, Lower Cook Inlet area, including cost recovery for all Cook Inlet Area hatcheries, 1986–2016.

Year	Gear	n-permits [a]	Chinook [a]	Sockeye [a]	Coho [a]	Pink [a]	Chum [a]
1986	Purse Seine	61	51	213,054	15,258	1,394,049	80,262
1986	Set Gillnet	34	745	21,807	2,827	14,244	2,426
1986	Hatchery	0	0	0	0	0	0
	Total		796	234,861	18,085	1,408,293	82,688
1987	Purse Seine	67	526	220,648	10,970	192,207	156,965
1987	Set Gillnet	29	653	28,209	2,025	9,224	2,419
1987	Hatchery	0	0	0	0	0	0
	Total		1,179	248,857	12,995	201,431	159,384
1988	Purse Seine	72	549	306,309	4,742	895,420	319,768
1988	Set Gillnet	27	1,145	14,758	2,819	29,268	4,423
1988	Hatchery	0	0	0	0	0	0
	Total		1,694	321,067	7,561	924,688	324,191
1989	Purse Seine	65	612	149,301	5,864	1,280,716	9,428
1989	Set Gillnet	23	1,281	13,970	4,792	16,210	1,877
1989	Hatchery	0	0	0	0	0	0
	Total		1,893	163,271	10,656	1,296,926	11,305
1990	Purse Seine	71	199	188,032	733	353,781	5,013
1990	Set Gillnet	20	1,361	15,863	1,046	12,646	1,938
1990	Hatchery	0	0	0	5,876	17,243	0
	Total		1,560	203,895	7,655	383,670	6,951
1991	Purse Seine	68	576	281,250	7,068	722,535	22,623
1991	Set Gillnet	20	842	20,525	5,011	3,954	1,577
1991	Hatchery	0	0	0	0	0	0
	Total		1,418	301,775	12,079	726,489	24,200
1992	Purse Seine	61	603	143,537	3,049	187,853	20,511
1992	Set Gillnet	20	1,288	17,002	848	15,958	1,687
1992	Hatchery	0	0	16,105	1,528	275,957	5
	Total		1,891	176,644	5,425	479,768	22,203
1993	Purse Seine	51	1,079	195,896	1,710	445,283	1,776
1993	Set Gillnet	17	1,089	14,791	3,088	12,008	2,591
1993	Hatchery	0	0	0	0	0	0
	Total		2,168	210,687	4,798	457,291	4,367
1994	Purse Seine	30	127	73,543	7,024	670,944	3,049
1994	Set Gillnet	16	1,103	14,004	1,073	23,621	2,419
1994	Hatchery	0	1	27,871	4,968	953,364	1
	Total		1,231	115,418	13,065	1,647,929	5,469
1995	Purse Seine	46	225	207,237	9,867	1,593,453	11,676
1995	Set Gillnet	23	2,078	19,406	3,564	41,654	3,958
1995	Hatchery	0	0	38,780	1,318	1,213,357	2
	Total		2,303	265,423	14,749	2,848,464	15,636
1996	Purse Seine	34	126	339,626	3,892	17,546	946
1996	Set Gillnet	24	1,054	69,338	5,779	14,813	2,792
1996	Hatchery	0	1	41,492	1,334	420,431	26
	Total		1,181	450,456	11,005	452,790	3,764

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Year	Gear	n-permits [a]	Chinook [a]	Sockeye [a]	Coho [a]	Pink [a]	Chum [a]
1997	Purse Seine	23	126	144,091	1,185	288,969	1,736
1997	Set Gillnet	25	1,135	59,401	4,475	64,162	4,166
1997	Hatchery	0	0	36,681	3,177	2,461,300	6
	Total		1,261	240,173	8,837	2,814,431	5,908
1998	Purse Seine	39	119	177,250	2,325	639,505	883
1998	Set Gillnet	24	952	26,131	1,057	24,403	3,754
1998	Hatchery	0	0	80,648	10,717	793,911	10
	Total		1,071	284,029	14,099	1,457,819	4,647
1999	Purse Seine	43	273	302,070	2,873	276,742	3,606
1999	Set Gillnet	20	1,491	27,646	1,374	5,348	4,335
1999	Hatchery	0	0	147,063	2,502	858,398	0
	Total		1,764	476,779	6,749	1,140,488	7,941
2000	Purse Seine	36	168	129,133	506	321,342	67,769
2000	Set Gillnet	24	1,019	26,503	621	21,845	5,214
2000	Hatchery	0	1	66,693	169	1,044,119	271
	Total		1,188	222,329	1,296	1,387,306	73,254
2001	Purse Seine	25	123	119,806	909	156,657	85,473
2001	Set Gillnet	18	865	28,503	1,811	13,393	3,487
2001	Hatchery	0	0	60,619	34	422,881	9
	Total		988	208,928	2,754	592,931	88,969
2002	Purse Seine	25	40	158,284	1,502	1,013,649	38,541
2002	Set Gillnet	24	1,513	46,812	2,393	6,741	4,681
2002	Hatchery	0	0	84,194	311	949,671	37
	Total		1,553	289,290	4,206	1,970,061	43,259
2003	Purse Seine	27	302	438,236	3,121	335,147	30,625
2003	Set Gillnet	24	878	81,722	2,291	7,325	4,998
2003	Hatchery	0	0	122,024	253	513,649	63
	Total		1,180	641,982	5,665	856,121	35,686
2004	Purse Seine	24	258	84,633	5,647	57,878	205,445
2004	Set Gillnet	19	1,400	16,087	1,164	834	1,234
2004	Hatchery	0	0	29,363	0	2,458,843	0
	Total		1,658	130,083	6,811	2,517,555	206,679
2005	Purse Seine	29	85	134,649	914	161,255	97,274
2005	Set Gillnet	17	525	15,669	1,905	341	1,326
2005	Hatchery	0	0	81,058	1	2,144,818	2
	Total		610	231,376	2,820	2,306,414	98,602
2006	Purse Seine	24	50	125,878	26,019	1,206,631	69,810
2006	Set Gillnet	22	580	14,219	2,426	12,288	2,019
2006	Hatchery	0	0	83,464	0	252,658	125
	Total		630	223,561	28,445	1,471,577	71,954
2007	Purse Seine	19	28	278,570	1,827	162,762	266
2007	Set Gillnet	16	439	28,870	1,616	0	1,437
2007	Hatchery	0	0	58,514	26	124,649	74
	Total		467	365,954	3,469	287,411	1,777

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Year	Gear	n-permits [a]	Chinook [a]	Sockeye [a]	Coho [a]	Pink [a]	Chum [a]
2008	Purse Seine	25	42	293,363	740	498,930	174,128
2008	Set Gillnet	18	148	26,819	599	1,884	1,394
2008	Hatchery	0	0	87,208	2	4,886	208
	Total		190	407,390	1,341	505,700	175,730
2009	Purse Seine	13	1	65,771	9	985,451	71,700
2009	Set Gillnet	19	83	38,220	968	2,136	2,274
2009	Hatchery	0	0	175,539	1	1,760	0
	Total		84	279,530	978	989,347	73,974
2010	Purse Seine	14	10	8,615	589	274,859	93,245
2010	Set Gillnet	21	29	14,765	171	3,106	1,503
2010	Hatchery	0	0	69,219	31	246	7
	Total		39	92,599	791	278,211	94,755
2011	Purse Seine	23	36	211,700	49	359,058	29,741
2011	Set Gillnet	21	100	22,782	103	2,643	1,946
2011	Hatchery	0	0	158,272	0	205	4
	Total		136	392,754	152	361,906	31,691
2012	Purse Seine	16	47	61,728	142	245,190	54,177
2012	Set Gillnet	15	86	10,260	33	10,305	927
2012	Hatchery	0	0	114,592	7	772	330
	Total		133	186,580	182	256,267	55,434
2013	Purse Seine	11	141	61,305	1,955	2,048,707	51,684
2013	Set Gillnet	19	250	38,238	3,616	1,961	2,698
2013	Hatchery	0	0	70,193	0	48,017	20
	Total		391	169,736	5,571	2,098,685	54,402
2014	Purse Seine	20	18	64,898	269	267,808	67,865
2014	Set Gillnet	19	330	33,090	521	3,549	5,372
2014	Hatchery	0	20	173,030	1	161	278
	Total		368	271,018	791	271,518	73,515
2015	Purse Seine	19	59	60,149	1,100	4,272,374	100,165
2015	Set Gillnet	24	812	36,219	3,519	27,825	11,567
2015	Hatchery	0	0	148,802	200	2,088,584	1,737
	Total		871	245,170	4,819	6,388,783	113,469
Previous 10-yr Average	Purse Seine	18	43	123,198	3,270	1,032,177	71,278
	Set Gillnet	19	286	26,348	1,357	6,570	3,114
	Hatchery	0	2	113,883	27	252,194	278
	Total		331	263,429	4,654	1,290,941	74,670
2016	Purse Seine	19	153	68,234	774	50,442	71,984
2016	Set Gillnet	21	766	19,542	858	22,077	2,165
2016	Hatchery	0	0	172,733	0	27,121	94
	Total		919	260,509	1,632	99,640	74,243

[a] Numbers of fish and numbers of permit holders delivering are from ADF&G fish ticket database. These numbers do not include sport caught fish from the Seward salmon derby that were later sold. Historical numbers in this table include commercial homepack fish.

Table 3.–Mean price and estimated exvessel value of the total commercial salmon harvest excluding homepack by gear type, Lower Cook Inlet, 2016.

Purse Seine			Average		
Species	Number [a]	Pounds [a]	Weight	Price [a]	Value
Chinook	153	1,377	12.21	$1.43	$1,966
Sockeye	68,234	330,002	4.85	$1.45	$478,503
Coho	774	4,951	6.62	$0.63	$3,140
Pink	50,442	225,407	4.56	$0.21	$47,178
Chum	71,984	492,319	6.82	$0.50	$243,993
	191,587	1,054,056			$774,780

Set Gillnet			Average		
Species	Number [a]	Pounds [a]	Weight	Price [a]	Value
Chinook	766	7,563	10.32	$3.14	$23,757
Sockeye	19,542	107,576	5.55	$1.78	$190,984
Coho	858	4,703	6.83	$1.01	$4,735
Pink	22,077	90,292	4.43	$0.15	$13,896
Chum	2,165	13,790	6.78	$0.36	$4,905
	45,408	223,924			$238,277

Hatchery Sales			Average		
Species	Number [a]	Pounds [a]	Weight	Price [a]	Value
Chinook	0	0	0.00	$0.00	$0
Sockeye	172,733	795,792	4.60	$2.06	$1,642,913
Coho	0	0	0.00	$0.00	$0
Pink	27,121	118,476	4.37	$0.21	$24,290
Chum	94	767	8.16	$0.55	$422
	199,948	915,035			$1,667,624

Total Harvest			Average		
Species	Number [a]	Pounds [a]	Weight	Price [a]	Value
Chinook	919	8,940	10.58	$2.88	25,723
Sockeye	260,509	1,233,370	4.73	$1.87	2,312,399
Coho	1,632	9,654	6.72	$0.82	7,875
Pink	99,640	434,175	4.39	$0.20	85,363
Chum	74,243	506,876	6.82	$0.49	249,320
	436,943	2,193,015			$2,680,681

Gear Type	Value of Catch	No. of Permits [a]	Average Earnings
Purse Seine	$774,780	19	$40,778
Set Gillnet	$238,277	21	$11,347
Subtotal- Value of Common Property Fishery	$1,013,057		
Value of Hatchery Fishery	$1,667,624		
Grand total	$2,680,681		

[a] Mean prices are based on weighted average prices from ADF&G fish ticket database. Pounds and numbers of fish are based on fish ticket reporting.

Table 4.–Average price per pound paid to permit holders for salmon, Lower Cook Inlet, 1990–2016.

	Chinook salmon			Sockeye salmon			Coho salmon			Pink salmon			Chum salmon		
Year	Seine	Set Gillnet	Combined	Seine	Set Gillnet	Combined	Seine	Set Gillnet	Combined	Seine	Set Gillnet	Combined	Seine	Set Gillnet	Combined
1985	$1.53	$1.41	$1.41	$1.26	$1.28	$1.27	$0.81	$0.80	$0.80	$0.22	$0.22	$0.22	$0.43	$0.43	$0.43
1986	$1.10	$1.25	$1.25	$1.64	$1.42	$1.51	$0.84	$0.60	$0.62	$0.15	$0.16	$0.15	$0.34	$0.41	$0.38
1987	NA	NA	$1.25	NA	$1.82	$1.82	NA	NA	$1.00	NA	NA	$0.42	NA	NA	$0.84
1988	NA	NA	$1.25	NA	NA	$2.35	NA	NA	$1.80	NA	NA	$0.70	NA	NA	$0.46
1989	NA	$1.70	$1.70	NA	$1.96	$1.96	NA	NA	$0.70	NA	$0.30	$0.30	NA	$0.58	$0.58
1990	NA	NA	$1.35	$1.38	$1.89	$1.88	$0.50	$0.84	$0.84	$0.35	$0.30	$0.32	$0.40	$0.55	$0.55
1991	NA	$1.53	$1.53	NA	$1.45	$1.45	NA	NA	$0.29	NA	$0.25	$0.25	NA	$0.41	$0.41
1992	$0.97	$1.41	$1.29	$1.45	$1.46	$1.45	$0.43	$0.50	$0.44	$0.15	$0.15	$0.15	$0.26	$0.33	$0.27
1993	$0.89	$1.10	$1.02	$0.78	$1.00	$0.80	$0.42	$0.58	$0.52	$0.14	$0.13	$0.14	$0.30	$0.26	$0.28
1994	$0.90	$0.96	$0.95	$1.12	$1.23	$1.14	$0.66	$0.71	$0.66	$0.16	$0.15	$0.16	$0.15	$0.35	$0.25
1995	$0.85	$1.19	$1.17	$1.11	$1.20	$1.11	$0.47	$0.53	$0.49	$0.15	$0.16	$0.15	$0.23	$0.26	$0.24
1996	$0.76	$1.37	$1.32	$0.90	$1.00	$0.92	$0.29	$0.40	$0.36	$0.05	$0.06	$0.05	$0.15	$0.19	$0.18
1997	$0.69	$1.32	$1.29	$0.81	$0.84	$0.82	$0.29	$0.49	$0.46	$0.11	$0.10	$0.11	$0.19	$0.25	$0.23
1998	$0.68	$1.58	$1.58	$0.98	$1.01	$0.99	$0.55	$0.66	$0.60	$0.13	$0.14	$0.13	$0.19	$0.29	$0.28
1999	$0.97	$2.07	$2.04	$1.32	$1.67	$1.41	$0.45	$0.70	$0.62	$0.13	$0.16	$0.14	$0.10	$0.43	$0.35
2000	$0.75	$1.94	$1.86	$0.98	$1.01	$0.98	$0.45	$0.54	$0.49	$0.09	$0.15	$0.09	$0.29	$0.18	$0.28
2001	$0.75	$1.87	$1.76	$0.64	$0.73	$0.66	$0.30	$0.43	$0.39	$0.09	$0.05	$0.09	$0.36	$0.20	$0.35
2002	$0.30	$1.12	$1.10	$0.56	$0.68	$0.58	$0.17	$0.25	$0.22	$0.06	$0.03	$0.06	$0.16	$0.19	$0.16
2003	$0.25	$1.14	$1.02	$0.61	$0.74	$0.64	$0.20	$0.11	$0.16	$0.05	$0.02	$0.05	$0.15	$0.20	$0.15
2004	$0.33	$1.68	$1.56	$0.80	$1.16	$0.86	$0.44	$0.52	$0.45	$0.05	$0.07	$0.05	$0.20	$0.21	$0.20
2005	$0.83	$1.65	$1.54	$0.87	$1.30	$0.93	$0.29	$0.53	$0.45	$0.08	$0.10	$0.08	$0.22	$0.24	$0.22
2006	$0.50	$2.41	$2.26	$1.10	$1.74	$1.18	$0.50	$0.82	$0.53	$0.11	$0.11	$0.11	$0.31	$0.26	$0.31
2007	$0.70	$2.73	$2.70	$0.88	$1.45	$0.95	$0.50	$0.46	$0.48	$0.11	$0.11	$0.11	$0.25	$0.25	$0.25
2008	$0.65	$3.67	$3.57	$1.39	$1.64	$1.42	$0.50	$0.84	$0.66	$0.23	$0.23	$0.23	$0.55	$0.25	$0.55
2009	$1.00	$3.50	$3.45	$1.20	$1.49	$1.33	$0.52	$0.80	$0.80	$0.22	$0.18	$0.22	$0.54	$0.25	$0.53
2010	$0.50	$3.76	$3.57	$1.46	$1.88	$1.74	$1.08	$1.27	$1.12	$0.33	$0.25	$0.33	$0.79	$0.47	$0.79
2011	$1.93	$4.19	$3.85	$1.56	$1.56	$1.56	$0.52	$0.79	$0.70	$0.41	$0.30	$0.37	$0.83	$0.61	$0.81
2012	$2.08	$4.53	$4.09	$1.59	$1.80	$1.63	$0.75	$1.06	$0.80	$0.39	$0.25	$0.38	$0.70	$0.37	$0.70
2013	$1.02	$5.14	$4.53	$2.00	$2.21	$2.11	$0.83	$1.01	$0.95	$0.38	$0.33	$0.38	$0.53	$0.35	$0.52
2014	$2.67	$3.92	$3.89	$1.94	$2.23	$2.15	$0.75	$1.24	$1.11	$0.28	$0.26	$0.28	$0.59	$0.47	$0.57
2015	$1.70	$3.16	$3.11	$1.45	$1.86	$1.62	$0.42	$0.73	$0.64	$0.20	$0.18	$0.20	$0.45	$0.34	$0.43
10-year Average	$1.23	$3.51	$3.32	$1.40	$1.74	$1.51	$0.60	$0.87	$0.75	$0.25	$0.21	$0.24	$0.52	$0.35	$0.52
2016	$1.43	$3.14	$2.92	$1.45	$1.78	$1.60	$0.63	$1.01	$0.97	$0.21	$0.15	$0.19	$0.50	$0.36	$0.45

Note: These prices are based on weighted average prices from ADF&G fish ticket database and do not reflect postseason adjustments and bonuses. Caution should be used when estimating value from these prices.

Table 5.–Estimated exvessel value of commercial salmon harvest by gear type with previous 10-year average, Lower Cook Inlet, 2006–2016.

Purse seine												
											10-yr	
Species	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Average	2016
Chinook	344	305	228	34	15	648	483	689	411	624	378	1,966
Sockeye	605,442	1,080,994	1,924,898	347,202	58,349	1,485,538	461,300	644,508	618,967	424,498	765,170	478,503
Coho	96,927	5,112	2,183	41	4,131	157	706	9,366	1,314	2,892	13,326	3,140
Pink	473,506	57,072	408,666	665,639	328,849	423,068	300,992	2,403,739	264,127	2,788,824	591,740	47,178
Chum	180,231	443	784,343	314,421	619,305	166,691	323,923	205,517	294,110	287,699	320,998	243,993
	$1,356,450	$1,143,925	$3,120,319	$1,327,338	$1,010,648	$2,076,101	$1,087,404	$3,263,819	$1,178,929	$3,504,537	1,729,437	$774,780
Set gillnet												
Species												
Chinook	19,100	19,991	14,408	5,412	1,792	8,032	4,847	15,135	11,533	24,510	12,476	23,757
Sockeye	134,339	251,705	253,544	332,005	151,183	218,700	109,526	502,583	433,220	359,009	274,581	190,984
Coho	16,475	4,724	3,406	4,953	1,458	488	200	20,959	3,220	13,635	6,209	4,735
Pink	5,337	0	1,650	1,073	2,728	2,606	10,074	2,217	3,351	18,010	3,226	13,896
Chum	4,350	2,508	2,678	4,216	4,972	7,975	2,528	6,842	18,062	25,534	6,014	4,905
	$179,600	$278,928	$275,685	$347,659	$162,132	$237,801	$127,176	$547,736	$469,385	$440,698	291,789	$238,277
Hatchery sales												
Species												
Chinook	0	0	0	0	0	0	0	0	245	0	24	0
Sockeye	419,805	222,175	528,507	1,177,187	430,230	1,625,199	1,021,125	910,285	1,799,731	821,739	895,598	1,642,913
Coho	0	96	4	2	222	0	44	0	0	554	41	0
Pink	97,059	44,580	3,867	1,249	280	487	1,074	57,622	130	1,383,195	22,927	24,290
Chum	282	142	1,009	0	33	16	1,034	83	628	4,444	359	422
	$517,146	$266,993	$533,387	$1,178,437	$430,765	$1,625,702	$1,023,277	$967,990	$1,800,733	$2,209,932	927,159	$1,667,624
Average earnings												
Purse Seine	$56,519	$60,207	$124,813	$102,103	$72,189	$90,265	$67,963	$296,711	$58,946	$184,449	111,416	$40,778
Set Gillnet	$8,164	$17,433	$15,316	$18,298	$7,721	$11,324	$8,478	$28,828	$24,704	$18,362	15,863	$11,347
Number of permits fished												
Purse Seine	24	19	25	13	14	23	16	11	20	19	18	19
Set Gillnet	22	16	18	19	21	21	15	19	19	24	19	21

Table 6.–Preseason harvest or total run projections for the 2016 commercial common property salmon fishery by district and species, Lower Cook Inlet Area.

District/facility	Forecast type	Chinook[a]	Sockeye[a]	Coho[a]	Pink[b]	Chum[a]
Southern District	commercial harvest	353	52,600	2,000	47,000	5,600
Outer District	commercial harvest	4	14,300	40	194,000	56,800
Eastern District	commercial harvest	0	0	0	0	190
Kamishak Bay District	commercial harvest	0	36,800	0	83,000	2,700
Total Wild Stock		357	103,700	2,040	324,000	65,290
Tutka Lagoon Hatchery	total return	0	82,695	0	348,470	0
Port Graham Hatchery	total return	0	0	0	66,000	0
Kirschner Lake	total return	0	18,158	0	0	0
Leisure Lake	total return	0	22,476	0	0	0
Hazel Lake	total return	0		0	0	0
Resurrection Bay	total return	0	171,081	0	0	0
Paint River Fish Ladder	total return	0	0	0	15,000	0
English Bay Lakes	total return	0	6,305	0	0	0
Total Hatchery[c]			300,715	0	429,470	0
Total Hatchery and Wild		357	404,415	2,040	753,470	65,290

[a] Chinook, coho, chum, and natural sockeye salmon harvests are 2011–2015 average commercial harvests.

[b] Pink salmon commercial harvests are projected total run minus anticipated escapement.

[c] Hatchery operators provide total run forecasts.

Table 7.–Emergency orders issued for the commercial, personal use, and subsistence salmon fisheries in Lower Cook Inlet, 2016.

E.O. number/ Issue date	Description
2-F-H-001-16/ Friday, May 27	Southern district, set gillnet. Opens waters of the Southern District to commercial salmon harvest and establishes two weekly 48-hour set gillnet fishing periods in the Southern District excluding the Pt. Graham Subdistrict beginning at 6:00 a.m. on Mondays and Thursdays effective Monday, June 2. Defines seaward boundaries of commercial set gillnet gear using GPS coordinates. Extends the eastern boundary of the Halibut Cove set gillnet area approximately 400 feet eastwards.
2-F-H-002-16/ Friday, May 27	Kamishak District, purse seine. Establishes a 7 day per week fishing schedule in the Kamishak District.
2-F-H-003-16/ Friday, June 17	Southern and Kamishak districts, set gillnet and purse seine. Opens the commercial purse seine salmon fishing season in the Southern District and establishes a fishing schedule in portions of that district. Opens the Kirschner SHA and closes the Paint River SHA in the Kamishak District to common property harvest.
2-F-H-004-16/ Tuesday, June 28	Southern District, subsistence harvest. Expands the subsistence fishing schedule in the Port Graham Section of the Port Graham Subdistrict to 6-1/2 days per week.
2-F-H-005-16/ Tuesday, June 28	Kamishak and Southern districts, purse seine. Closes the special harvest areas at Kirschner Lake, China Poot Bay, and Neptune Bay.
2-F-H-006-16/ Friday, July 1	Kamishak and Eastern districts, purse seine. Opens portions of the Eastern District to daily Monday-Friday 16-hour 6:00 AM to 10:00 PM salmon purse seine fishing periods beginning on July 5. Suspends regulatory closed waters at Chenik Lagoon.
2-F-H-007-16/ Tuesday, July 5	Southern District, subsistence harvest. Modifies 2-F-H-004-16 by establishing a 48 hour subsistence fishing period following the conclusion of the ongoing fishing period in both the Port Graham and English Bay sections of the Port Graham Subdistrict.
2-F-H-008-16/ Thursday, July 7	Southern District, subsistence harvest. Supersedes 2-F-H-007-16 allowing subsistence harvest within 1/2 mile of Port Graham village on July 8 and July 9.
2-F-H-009-16/ Friday, July 8	Outer District, purse seine. Opens the Outer District to commercial salmon harvest and establishes fishing periods. Closes waters near the historic Petrof River markers to commercial harvest.
2-F-H-010-16/ Friday, July 15	Eastern and Kamishak districts, purse seine. Suspends commercial fishing periods in Resurrection Bay. Closes historic closed waters areas in the Douglas Reef and Akumwarvik Bay areas.
2-F-H-011-16/ Tuesday, July 19	Port Graham Subdistrict, set gillnet. Opens the Port Graham Subdistrict to commercial set gillnet harvest for regular 48-hour Monday and Thursday fishing periods beginning at 6:00 AM on those days.
2-F-H-012-16/ Friday, July 22	Southern and Kamishak districts, purse seine. Opens the Hazel Lake SHA, Kirschner Lake SHA, and the Humpy Creek and Seldovia subdistricts to commercial purse seine harvest on a schedule concurrent with current fishing periods in those areas.
2-F-H-013-16/ Thursday, July 28	Outer and Southern districts, purse seine. Allows commercial salmon harvest up to the freshwater of Humpy Creek. Opens the eastern portion of Dogfish Lagoon.
2-F-H-014-16/ Friday, July 29	Southern District, purse seine. Opens waters of the China Poot SHA, and the portion of the Tutka SHA seaward of the HEA powerlines.

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Table 7.–Page 2 of 2.

E.O. number/ Issue date	Description
2-F-H-014-16/ Friday, July 29	Southern District, purse seine. Opens waters of the China Poot SHA, and the portion of the Tutka SHA seaward of the HEA powerlines.
2-F-H-015-16/ Monday, August 1	Southern District, personal use fishing. Clarifies regulatory language regarding the scheduling of the Kachemak Bay Personal Use Coho fishery and associated closed waters.
2-F-H-016-16/ Friday, August 5	Outer Subdistrict, purse seine. Closes waters in the Port Dick area to commercial salmon harvest.
2-F-H-017-16/ Tuesday, August 9	Southern District, purse seine. Closes waters of the Tutka SHA and Seldovia Subdistrict to common property seine harvest.
2-F-H-018-16/ Friday, August 12	Southern and Outer districts, purse seine. Closes portions of the Outer District in the Windy Bay, Rocky Bay, and Nuka Island subdistricts. Opens the Port Graham Subdistrict excluding the SHA to commercial purse seine harvest.
2-F-H-019-16/ Friday, August 19	Outer District, purse seine. Opens the eastern portion of Dogfish Bay Lagoon for a 16-hour period on August 22.
2-F-H-020-16/ Monday, August 22	Southern District, personal use fishing. Closes the Kachemak Bay Personal Use set gillnet fishery for the 2016 season on August 24.
2-F-H-021-16/ Friday, September 16	Southern, Outer, Eastern, and Kamishak districts, purse seine. Closes the 2016 commercial purse seine fishing season.

Table 8.–Escapements relative to escapement goals and methods used to monitor escapements in 2016 for Chinook, chum, pink and sockeye salmon stocks in Cook Inlet, Alaska.

		Escapement goal				Monitoring method			
	2016	Type	Range						
Stock	Escapement	(BEG, SEG)	Lower	Midpoint	Upper	Aerial	Ground	Video	Weir
Chum salmon (12 with goals)									
Port Graham River	2,391	SEG	1,450	3,125	4,800		X		
Dogfish Lagoon	11,260	SEG	3,350	6,250	9,150		X		
Rocky River	4,620	SEG	1,200	3,300	5,400	X	X		
Port Dick Creek	9,323	SEG	1,900	3,175	4,450	X	X		
Island Creek	8,210	SEG	6,400	11,000	15,600	X	X		
Big Kamishak River	9,104	SEG	9,350	16,675	24,000	X			
Little Kamishak River	11,991	SEG	6,550	15,175	23,800	X			
McNeil River	26,262	SEG	24,000	36,000	48,000	X			
Bruin River	26,598	SEG	6,000	8,125	10,250	X			
Ursus Cove	7,032	SEG	6,050	7,950	9,850	X			
Cottonwood Creek	1,850	SEG	5,750	8,875	12,000	X			
Iniskin Bay	1,089	SEG	7,850	10,775	13,700	X			
Pink salmon (18 with goals)									
Humpy Creek	89,673	SEG	21,650	53,600	85,550		X		
China Poot Creek	698	SEG	2,900	5,550	8,200		X		
Tutka Creek	33,242	SEG	6,500	11,750	17,000		X		
Barabara Creek	2,813	SEG	1,900	5,425	8,950		X		
Seldovia Creek	15,694	SEG	19,050	29,000	38,950		X		
Port Graham River	14,629	SEG	7,700	13,775	19,850		X		
Dogfish Lagoon Cks.	2,307	SEG	1,200	4,800	8,400	X	X		
Port Chatham	1,140	SEG	7,800	14,400	21,000		X		
Windy Creek Right	1,400	SEG	3,350	7,150	10,950	X			
Windy Creek Left	500	SEG	3,650	16,800	29,950	X			
Rocky River	4,300	SEG	9,350	31,800	54,250		X		
Port Dick Creek	4,819	SEG	18,550	38,425	58,300	X	X		
Island Creek	1,735	SEG	7,200	17,750	28,300	X	X		
S. Nuka Island Creek	10	SEG	2,700	8,475	14,250	X			
Desire Lake	169	SEG	1,900	11,050	20,200	X			
Bruin River	86,632	SEG	18,650	87,200	155,750	X			
Sunday Creek	2,130	SEG	4,850	16,850	28,850	X			
Brown's Peak Creek	1,378	SEG	2,450	10,625	18,800	X			
Sockeye salmon (8 with goals)									
English Bay	7,673	SEG	6,000	9,750	13,500	X			X
Delight Lake	5,110	SEG	5,950	9,250	12,550	X			
Desire Lake	6,740	SEG	8,800	12,000	15,200	X			
Bear Lake	9,011	SEG	700	4,500	8,300				X
Aialik Lake	400	SEG	3,700	5,850	8,000	X			
Mikfik Lake	10,180	SEG	3,400	8,200	13,000	X		X	
Chenik Lake	19,510	SEG	3,500	8,750	14,000	X		X	
Amakdedori Creek	2,240	SEG	1,250	1,925	2,600	X			

Note: SEG = sustainable escapement goal, BEG = biological escapement goal.

APPENDIX A: SOUTHERN DISTRICT

Appendix A1.–Southern District commercial set gillnet salmon harvest (excluding homepacks) by fishing period, 2016.

			Permits		Chinook		Sockeye		Coho		Pink		Chum	
Period	Date	Hours	Fished	Landings	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
1 [a]	06/02-06/04	48	10	12	118	1,272	367	1,924					6	45
2 [a]	06/06-06/08	48	9	10	60	653	297	1,599					14	107
3 [a]	06/09-06/11	48	7	7	37	395	410	2,106					64	472
4 [a]	06/13-06/15	48	11	13	91	1,006	598	3,078					95	628
5 [a]	06/16-06/18	48	10	11	68	834	553	2,931					57	397
6 [a]	06/20-06/22	48	11	12	33	322	1,108	5,672	1	6	10	30	84	590
7 [a]	06/23-06/25	48	10	11	64	641	943	4,870	5	31	10	34	103	679
8 [a]	06/27-06/29	48	11	12	28	297	1,044	5,555	1	7	91	348	104	722
9 [a]	06/30-07/02	48	13	15	30	278	1,046	5,515	1	7	291	1,195	134	909
10 [a]	07/04-07/06	48	14	15	23	288	881	4,781	12	80	784	3,149	111	722
11 [a]	07/07-07/09	48	14	20	69	598	2,622	14,738	50	315	1,705	7,340	230	1,585
12 [a]	07/11-07/13	48	14	24	51	502	2,743	15,908	128	810	2,715	12,215	266	1,725
13 [a]	07/14-07/16	48	11	17	32	250	3,109	18,293	56	321	3,298	14,308	226	1,518
14 [a]	07/18-07/20	48	13	16	15	118	1,779	10,172	127	869	4,423	20,158	158	1,102
15 [a,b]	07/21-07/23	48	10	10	3	33	590	3,278	17	117	2,374	10,626	60	427
16 [a,b]	07/25-07/27	48	9	9			193	1,077	3	21	1,243	5,632	35	250
17 [a,b]	07/28-07/30	48	8	12	7	62	701	3,942	93	678	1,741	7,748	168	1,170
18 [a,b]	08/01-08/03	48	5	7	2	14	180	971	102	730	822	3,654	64	428
19 [a,b]	08/04-08/06	48	3	5			139	712	26	186	1,020	5,224	45	292
20 [a,b]	08/08-08/10	48	3	4			56	301	15	105	902	3,892	75	446
21 [a,b]	08/11-08/13	48	0	0										
22 [a,b,c]	08/15-08/17	48	[c]	[c]			[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]
23 [a,b,c]	08/18-08/20	48	[c]	[c]			[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]
35 [a,b]	09/29	18												
Total			21	246	731	7,563	19,427	107,774	687	4,703	21,872	97,261	2,124	14,385
Average weight						9.23		5.90		6.61		3.98		6.77

Note: No deliveries during Periods 24–35, from August 22 through September 29.

[a] Set gillnet sections located in Halibut Cove, Tutka Bay, Barabara Creek, and Seldovia Bay Subdistricts open to commercial harvest.

[b] Set gillnet section in Port Graham Section open to commercial harvest concurrent with Halibut Cove, Tutka Bay, Barabara Creek, and Seldovia Bay Subdistricts.

[c] Confidential data. Fewer than 3 permits reporting.

Appendix A2.–Southern District commercial purse seine salmon harvest (excluding homepacks) by period, 2016.

			Permits		Chinook		Sockeye		Coho		Pink		Chum	
Period	Date	Hours	Fished	Landings	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
1 [a]	6/20/2016	16	5	5	1	5	524	2,751			2	5	6	43
2 [a]	6/22/2016	16	3	3	3	42	495	2,713						
3 [a]	6/24/2016	16	4	4	5	47	1,821	9,906			1	6	2	16
4 [a]	6/27/2016	16	11	11	31	357	3,270	17,142			54	189	12	82
5 [a,b]	6/29/2016	16	11	12	45	555	2,545	12,404	1	5	122	454	10	52
6 [a,b,c]	7/1/2016	16	[c]	[c]			[c]	[c]						
7 [a,b]	7/4/2016	16	9	9	9	159	2,333	12,675			403	1,546	2	12
8 [a,b]	7/6/2016	16	10	10	1	3	4,319	24,741	1	10	1,087	4,047	4	28
9 [a,b]	7/8/2016	16	11	11	2	24	4,148	22,584	1	8	302	1,095	11	83
10 [a,b]	7/11/2016	16	10	11	2	10	3,340	14,800	5	31	1,476	5,598	14	101
11 [a,b]	7/13/2016	16	8	9	6	27	4,555	23,170	12	74	1,165	4,200	37	265
12 [a,b]	7/15/2016	16	12	13	1	12	3,624	19,273	23	125	1,187	4,346	12	105
13 [a,b]	7/18/2016	16	13	13	1	11	7,204	37,430	55	339	1,944	7,501	11	36
14 [a,b]	7/20/2016	16	14	15			3,784	19,810	41	240	4,402	19,350	13	82
15 [a,b]	7/22/2016	16	12	14	3	30	2,015	10,606	15	85	7,486	31,717	2	10
16 [a,d]	7/25/2016	16	13	13	2	44	965	4,831	7	41	5,991	23,899	5	42
17 [a,d,c]	7/27/2016	16	[c]	[c]			[c]	[c]					[c]	[c]
18 [a,d,c]	7/29/2016	16	[c]	[c]			[c]	[c]			[c]	[c]	[c]	[c]
19 [a,e]	8/1/2016	16												
20 [a,e]	8/3/2016	16	3	3			147	671	3	20	5,414	27,147		
21 [a,e]	8/5/2016	16	3	4			273	1,148			5,763	31,702		
22 [a,e]	8/8/2016	16	9	10			391	1,890	5	31	6,386	31,543	15	91
23 [a,f,c]	8/10/2016	16	[c]	[c]							[c]	[c]		
24 [a,f,c]	8/12/2016	16	[c]	[c]							[c]	[c]		
39 [a,g]	9/16/2016	16												
Total			18	176	112	1,326	47,235	246,924	169	1,010	44,637	196,649	165	1,102
Average weight						8.87		5.39		6.51		3.27		6.36

Note: No deliveries during Periods 25–39, from August 15 through September 16. Unless otherwise noted, regular closed waters were in effect.

[a] Waters of the Tutka Bay, China Poot, Neptune Bay and Halibut Cove subdistricts, excluding waters of the SHA in the Tutka Subdistrict is open to commercial salmon seine harvest for regular 16 hour periods.

[b] Waters of the Neptune Bay and China Poot SHAs closed to commercial salmon fishing.

[c] Confidential data. Fewer than 3 permits reporting.

[d] Waters of the China Poot SHA closed to commercial salmon fishing. Humpy Creek and Seldovia subdistricts open to commercial salmon harvest.

[e] Tutka Hatchery SHA seaward of powerlines open. Humpy Creek and Seldovia subdistricts open to commercial salmon harvest.

[f] Humpy Creek Subdistrict open to commercial salmon harvest.

Appendix A3.–Total commercial common property salmon harvest (excluding homepacks) in the Southern District, 1970–2016.

Year	Permits	Chinook	Sockeye	Coho	Pink	Chum
			Set gillnet			
1970		26	11,455	1,154	18,512	1,575
1971		41	18,398	1,449	8,564	1,352
1972		69	31,340	323	6,303	2,819
1973		134	23,970	1,089	20,222	2,374
1974		175	26,996	3,010	11,097	2,713
1975	32	96	26,588	2,337	49,490	4,020
1976	27	176	33,993	1,321	13,412	1,353
1977	25	175	54,404	869	38,064	2,765
1978	26	1,052	86,934	3,053	11,556	4,117
1979	39	483	34,367	7,595	69,368	5,266
1980	38	225	29,922	8,038	26,613	2,576
1981	40	222	53,665	6,735	68,794	8,524
1982	40	894	42,389	5,557	15,838	7,113
1983	39	822	41,707	1,799	20,553	4,377
1984	24	643	45,806	2,979	20,764	5,412
1985	34	924	23,163	3,908	22,898	4,217
1986	34	745	21,807	2,827	14,244	2,426
1987	29	653	28,209	2,025	9,224	2,419
1988	27	1,145	14,758	2,819	29,268	4,423
1989	23	1,281	13,970	4,792	16,210	1,877
1990	20	1,361	15,863	1,046	12,646	1,938
1991	20	842	20,525	5,011	3,954	1,577
1992	20	1,288	17,002	848	15,958	1,687
1993	17	1,089	14,791	3,088	12,008	2,591
1994	16	1,103	14,004	1,073	23,621	2,419
1995	23	2,078	19,406	3,564	41,654	3,958
1996	24	1,054	69,338	5,779	14,813	2,792
1997	25	1,135	59,401	4,475	64,162	4,166
1998	24	952	26,131	1,057	24,403	3,754
1999	20	1,491	27,646	1,374	5,348	4,335
2000	24	1,019	26,503	621	21,845	5,214
2001	18	865	28,503	1,811	13,393	3,487
2002	24	1,513	46,812	2,393	6,741	4,681
2003	24	878	81,722	2,291	7,325	4,998
2004	19	1,400	16,087	1,164	834	1,234
2005	17	525	15,669	1,905	341	1,326
2006	22	580	14,219	2,426	12,288	2,019
2007	16	439	28,870	1,616	0	1,437
2008	18	148	26,819	599	1,884	1,394
2009	19	83	38,220	968	2,136	2,274
2010	21	29	14,765	171	3,106	1,503
2011	21	100	22,782	103	2,643	1,946
2012	15	86	10,260	33	10,305	928
2013	18	234	38,238	3,466	1,804	2,685
2014	18	320	32,910	393	3,231	5,355
2015	24	752	36,061	3,102	27,726	11,539
Prior 10 yr avg.	19	277	26,314	1,288	6,512	3,108
2016	21	731	19,427	687	21,872	2,124

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Year	Permits	Chinook	Sockeye	Coho	Pink	Chum
			Purse seine			
1970		64	665	2,390	189,554	6,298
1971		0	5	1,702	41,502	1,505
1972		0	5	960	2,823	2,117
1973		5	102	152	77,352	1,214
1974		7	33	44	37,778	12
1975		46	805	702	844,125	1,408
1976		266	1,287	584	86,405	164
1977		7	259	386	118,961	3,969
1978		459	54,154	1,265	240,205	1,408
1979		716	2,975	3,251	917,541	2,955
1980		189	13,007	3,530	451,406	2,029
1981		802	24,215	1,241	1,385,188	12,396
1982		32	1,044	1,608	280,718	11,353
1983		36	91,964	1,634	669,701	9,904
1984		18	117,438	436	316,021	4,186
1985	37	49	60,890	350	496,000	1,292
1986	43	31	15,031	268	528,277	3,134
1987	38	505	61,453	138	81,298	2,611
1988	49	510	90,544	168	823,114	3,319
1989	57	608	84,082	1,875	971,278	1,264
1990	56	185	66,549	506	148,198	495
1991	50	556	142,560	4,388	148,143	357
1992	53	564	82,455	429	125,106	193
1993	42	1,073	131,367	1,341	271,303	197
1994	25	126	47,494	299	612,724	211
1995	39	211	132,892	1,593	1,220,316	572
1996	29	126	269,553	3,795	10,293	719
1997	19	126	121,184	1,122	160,595	92
1998	35	118	143,350	1,186	498,090	201
1999	37	269	198,862	1,388	242,003	289
2000	29	165	78,072	147	4,515	125
2001	19	121	99,866	895	107,967	293
2002	19	40	121,054	1,376	5,342	122
2003	21	301	391,768	3,117	47,913	732
2004	19	256	21,621	267	2,273	138
2005	23	85	65,333	816	32,201	422
2006	16	47	52,020	610	3,446	163
2007	13	27	61,193	1,710	10,394	127
2008	13	40	62,675	720	4,941	66
2009[a]	0	0	0	0	0	0
2010[a]	0	0	0	0	0	0
2011	5	26	9,945	24	512	16
2012	11	39	6,396	44	175,770	439
2013	11	140	28,032	1,902	33,288	265
2014	16	18	23,188	269	58,890	3,360
2015	19	52	54,783	997	141,604	1,450
Prior 10 yr avg	13	49	37,279	785	53,606	736
2016	19	112	47,235	169	44,637	165

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Year	Permits	Chinook	Sockeye	Coho	Pink	Chum
			Purse seine and set gillnet combined			
1970		90	12,120	3,544	208,066	7,873
1971		41	18,403	3,151	50,066	2,857
1972		69	31,345	1,283	9,126	4,936
1973		139	24,072	1,241	97,574	3,588
1974		182	27,029	3,054	48,875	2,725
1975		142	27,393	3,039	893,615	5,428
1976		442	35,280	1,905	99,817	1,517
1977		182	54,663	1,255	157,025	6,734
1978		1,511	141,088	4,318	251,761	5,525
1979		1,199	37,342	10,846	986,909	8,221
1980		414	42,929	11,568	478,019	4,605
1981		1,024	77,880	7,976	1,453,982	20,920
1982		926	43,433	7,165	296,556	18,466
1983		858	133,671	3,433	690,254	14,281
1984		661	163,244	3,415	336,785	9,598
1985		973	84,053	4,258	518,898	5,509
1986		776	36,838	3,095	542,521	5,560
1987		1,158	89,662	2,163	90,522	5,030
1988		1,655	105,302	2,987	852,382	7,742
1989		1,889	98,052	6,667	987,488	3,141
1990		1,546	82,412	1,552	160,844	2,433
1991		1,398	163,085	9,399	152,097	1,934
1992		1,852	99,457	1,277	141,064	1,880
1993		2,162	146,158	4,429	283,311	2,788
1994		1,229	61,498	1,372	636,345	2,630
1995		2,289	152,298	5,157	1,261,970	4,530
1996		1,180	338,891	9,574	25,106	3,511
1997		1,261	180,585	5,597	224,757	4,258
1998		1,070	169,481	2,243	522,493	3,955
1999		1,760	226,508	2,762	247,351	4,624
2000		1,184	104,575	768	26,360	5,339
2001		986	128,369	2,706	121,360	3,780
2002		1,553	167,866	3,769	12,083	4,803
2003		1,179	473,490	5,408	55,238	5,730
2004		1,656	37,708	1,431	3,107	1,372
2005		610	81,002	2,721	32,542	1,748
2006		627	66,239	3,036	15,734	2,182
2007		466	90,063	3,326	10,394	1,564
2008		188	89,494	1,319	6,825	1,460
2009 [a]		83	38,220	968	2,136	2,274
2010 [a]		29	14,765	171	3,106	1,503
2011		126	32,727	127	3,155	1,962
2012		125	16,656	77	186,075	1,367
2013		374	66,270	5,368	35,092	2,950
2014		338	56,098	662	62,121	8,715
2015		804	90,844	4,099	169,330	12,989
Prior 10-yr avg		326	63,593	2,072	60,118	3,844
2016		843	66,662	856	66,509	2,289

Source: ADF&G fish ticket database.

[a] No commercial common property purse seine fishing periods occurred in 2009 or 2010.

Appendix A4.–Anticipated daily and cumulative sockeye salmon escapement versus actual escapement to the English Bay weir, 2016.

	Actual		Anticipated	Apportioned SEG				
				Projected minimum		Projected maximum		
Date	Daily	Cumulative	percent	Daily	Cumulative	Daily	Cumulative	Comments
5/24	0	0	0.0%	0	0	0	0	Weir installed 5/24
5/25	0	0	0.0%	0	0	0	0	
5/26	0	0	0.1%	0	0	0	0	
5/27	16	16	0.1%	3	3	7	7	
5/28	1	17	0.1%	1	1	1	1	
5/29	21	38	0.2%	2	1	5	5	
5/30	38	76	0.2%	2	2	4	4	
5/31	34	110	0.2%	1	1	2	2	
6/1	13	123	0.3%	3	3	7	7	
6/2	42	165	0.3%	4	7	8	16	
6/3	2	167	0.3%	1	8	3	18	
6/4	92	259	1.2%	53	61	119	137	
6/5	3	262	1.6%	25	86	56	194	
6/6	47	309	2.1%	30	116	68	262	
6/7	95	404	2.9%	45	162	102	364	
6/8	76	480	3.7%	51	213	115	479	
6/9	67	547	4.6%	51	264	115	593	
6/10	260	807	5.5%	57	321	128	721	
6/11	122	929	7.0%	89	409	200	921	
6/12	191	1,120	7.9%	55	464	124	1,045	
6/13	43	1,163	8.9%	57	521	128	1,173	
6/14	100	1,263	10.3%	88	609	198	1,370	
6/15	11	1,274	11.3%	61	670	137	1,508	
6/16	302	1,576	12.4%	62	732	140	1,648	
6/17	41	1,617	13.1%	43	776	97	1,745	
6/18	100	1,717	14.6%	88	864	198	1,944	
6/19	156	1,873	16.5%	114	977	255	2,199	
6/20	53	1,926	19.9%	205	1,182	461	2,660	
6/21	147	2,073	22.1%	132	1,314	297	2,957	
6/22	336	2,409	24.7%	156	1,471	352	3,309	
6/23	160	2,569	27.9%	194	1,665	438	3,746	
6/24	10	2,579	31.6%	222	1,887	499	4,245	
6/25	3	2,582	35.3%	219	2,105	492	4,737	
6/26	107	2,689	37.9%	156	2,262	352	5,089	
6/27	145	2,834	41.5%	218	2,480	490	5,579	
6/28	122	2,956	47.6%	364	2,844	820	6,399	
6/29	161	3,117	53.4%	352	3,196	792	7,191	
6/30	71	3,188	57.4%	237	3,433	534	7,725	
7/1	29	3,217	60.6%	192	3,625	431	8,156	
7/2	0	3,217	64.1%	209	3,835	471	8,628	
7/3	22	3,239	67.3%	195	4,030	439	9,067	
7/4	0	3,239	69.6%	137	4,167	308	9,375	
7/5	241	3,480	72.9%	199	4,366	448	9,823	
7/6	530	4,010	75.6%	159	4,525	358	10,181	
7/7	62	4,072	78.7%	186	4,711	418	10,599	

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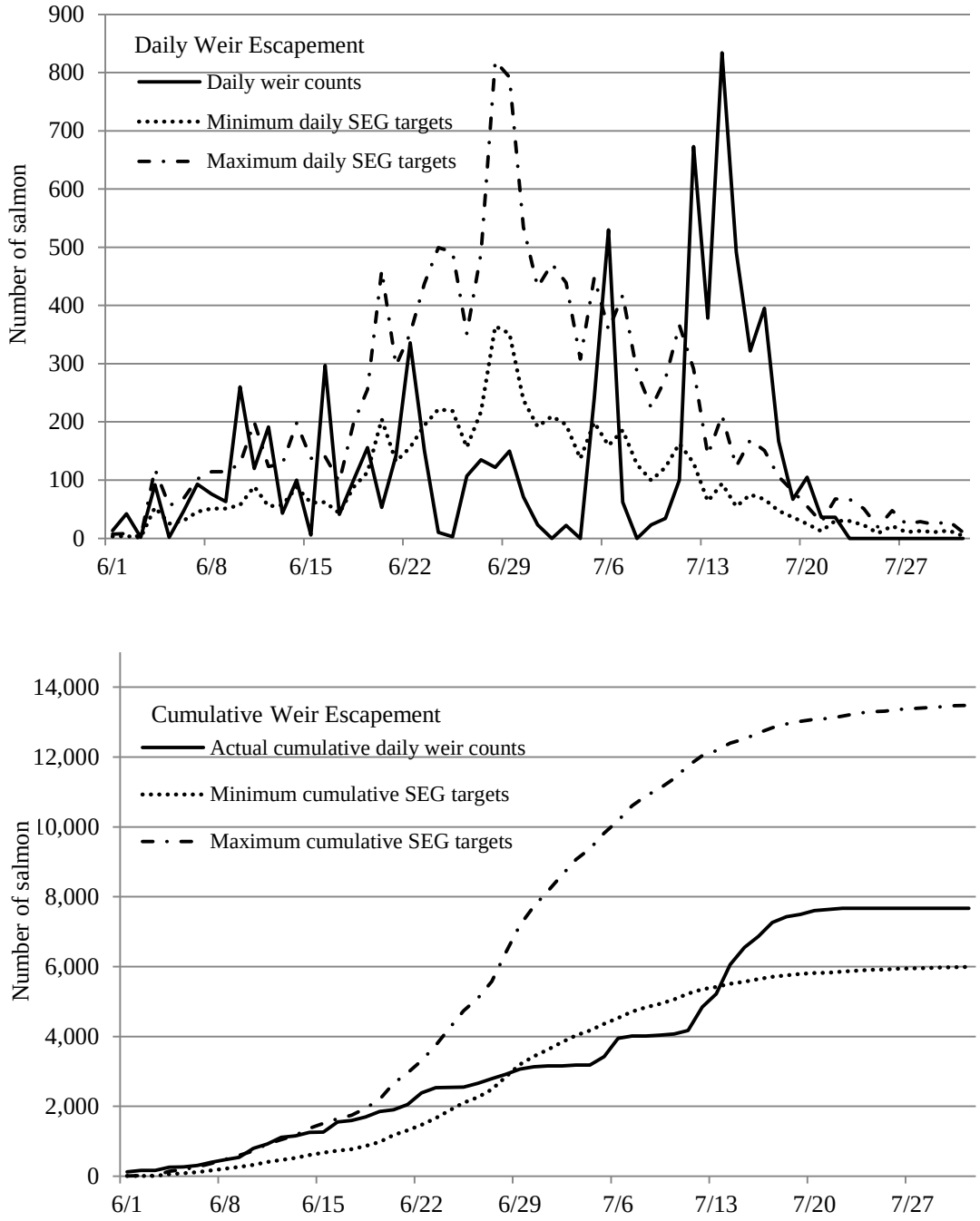
	Actual		Anticipated	Apportioned SEG				
				Projected minimum		Projected maximum		
Date	Daily	Cumulativee	percent	Daily	Cumulative	Daily	Cumulative	Comments
7/8	0	4,072	80.8%	127	4,838	286	10,885	
7/9	23	4,095	82.5%	100	4,937	224	11,109	
7/100	34	4,129	84.5%	122	5,059	274	11,383	
7/11	1003	4,232	87.2%	163	5,222	366	11,749	
7/12	673	4,905	89.4%	129	5,351	291	12,040	
7/13	393	5,298	90.4%	63	5,415	143	12,183	
7/14	842	6,140	92.0%	94	5,509	211	12,394	
7/15	506	6,646	92.9%	55	5,563	123	12,517	
7/16	332	6,978	94.1%	75	5,638	169	12,686	
7/17	400	7,378	95.3%	67	5,705	151	12,837	
7/18	172	7,550	96.0%	47	5,752	106	12,943	
7/19	69	7,619	96.6%	36	5,788	81	13,024	
7/20	105	7,724	97.1%	25	5,813	55	13,079	
7/21	36	7,760	97.3%	12	5,825	28	13,107	
7/22	36	7,796	97.8%	30	5,855	68	13,174	Last report from weir crew.
7/23	0	7,796	98.3%	30	5,885	67	13,242	
7/24	0	7,796	98.6%	23	5,908	51	13,293	
7/25	0	7,796	98.8%	9	5,916	19	13,312	
7/26	0	7,796	99.1%	21	5,938	48	13,360	
7/27	0	7,796	99.3%	11	5,949	25	13,384	
7/28	0	7,796	99.5%	13	5,961	29	13,413	
7/29	0	7,796	99.7%	11	5,972	24	13,437	
7/30	0	7,796	99.9%	13	5,985	30	13,467	
7/31	0	7,796	100.0%	4	5,990	10	13,477	

Note: English Bay River sustainable escapement goal range is 6,000–13,500 sockeye salmon. Anticipated escapement derived using historical run timing.



Appendix A5.–Minimum and maximum anticipated cumulative and daily escapement of sockeye salmon versus actual escapement through the English Bay weir, 2016.

Appendix A6.–Sockeye salmon escapement past the English Bay weir, 1927–1941 and 1993–2016.

Year	Sustainable escapement goal	Total weir passage	Broodstock harvested	Harvested for otoliths	Spawning escapement
1927		19,197	0		19,197
1928		24,025	0		24,025
1929		15,407	0		15,407
1930		18,858	0		18,858
1931		18,878	0		18,878
1932		22,933	0		22,933
1933		NS	0		NS
1934		NS	0		NS
1935		15,851	0		15,851
1936		15,767	0		15,767
1937		14,857	0		14,857
1938		16,779	0		16,779
1939		48,777	0		48,777
1940		30,357	0		30,357
1941		26,905	0		26,905
1942–1992		--- no weir in place ---			
1993	10,000–20,000	8,939	0		8,939
1994	10,000–20,000	13,800	0		13,800
1995	10,000–20,000	22,467	1,767		20,700
1996	10,000–20,000	12,335	1,230		11,105
1997	10,000–20,000	15,430	1,065		14,365
1998	10,000–20,000	15,432	1,296		14,136
1999	10,000–20,000	15,844	1,234		14,610
2000	10,000–20,000	12,613	1,376		11,237
2001	10,000–20,000	10,508	0		10,508
2002	6,000–13,500	16,550	1,573		14,977
2003	6,000–13,500	19,978	219		19,759
2004	6,000–13,500	16,435	1,390		15,045
2005	6,000–13,500	7,574	0		7,574
2006	6,000–13,500	16,533	0		16,533
2007	6,000–13,500	16,487	0		16,487
2008	6,000–13,500	11,993	0		11,993
2009	6,000–13,500	18,439	256		18,183
2010	6,000–13,500	12,253	0		12,253
2011	6,000–13,500	12,036	2,116		9,920
2012	6,000–13,500	3,855	411		3,444
2013	6,000–13,500	12,910	1,753	253	10,904
2014	6,000–13,500	7,995	877	163	6,955
2015	6,000-13,500	6,416	0	126	6,290
Previous 10-yr avg		11,892	541		11,296
2016	6,000–13,500	7,796	0	123	7,673

Appendix A7.–Pink and chum salmon escapements, as measured by ground survey, using area-under-the-curve (AUC) estimation (and peak Live+Carcass count, where noted) in the Southern District, 2016.

Location	Species	Survey number	Survey date (t_i)	Previous survey date	Days between surveys	Current live count, (c_i)	Previous live count	Previous + current live count	Fish days[a], (A_b)	Accum. fish days	Escape. Index[b]	Accum. Escape. Index[c]	Accum. Percent Escape.	Carcass Count	Live plus Carcass
Barabara	pink	^{t}start	7/7												
Creek		1	7/25	7/7	17.5	466	0	466	4,078	4,078	233	233	8%	4	470
(index		2	8/4	7/25	10	424	466	890	4,450	8,528	254	487	17%	14	438
system)		3	8/16	8/4	12	1,311	424	1,735	10,410	18,938	595	1,082	38%	55	1,366
		4	8/26	8/16	10	1,621	1,311	2,932	14,660	33,598	838	1,920	68%	77	1,698
		5	9/9	8/26	14	272	1,621	1,893	13,251	46,849	757	2,677	95%	311	583
		^{t}end	9/26		17.5				2,380	49,229	136	2,813	100%		
China	pink	^{t}start	7/15												
Poot Creek		1	8/2	7/15	17.5	13	0	13	114	114	7	7	1%	0	13
(index		2	8/15	8/2	13	389	13	402	2,613	2,727	149	156	22%	1	390
system)		3	8/30	8/15	15	404	389	793	5,948	8,674	340	496	71%	6	410
		^{t}end	9/16		17.5				3,535	12,209	202	698	100%		
Humpy	pink	^{t}start	6/25												
Creek		1	7/13	6/25	17.5	48	0	48	420	420	24	24	0%	0	48
(index		2	7/26	7/13	13	21,358	48	21,406	139,139	139,559	7,951	7,975	9%	16	21,374
system)		3	8/17	7/26	22	39,996	21,358	61,354	674,894	814,453	38,565	46,540	52%	413	40,409
		4	9/7	8/17	21	17,396	39,996	57,392	602,616	1,417,069	34,435	80,975	90%	4,814	22,210
		^{t}end	9/24		17.5				152,215	1,569,284	8,698	89,673	100%		
Humpy	chum	^{t}start	6/25												
Creek		1	7/13	6/25	17.5	132	0	132	1,155	1,155	66	66	37%	0	132
(not an		2	7/26	7/13	13	55	132	187	1,216	2,371	69	135	75%	2	57
index		3	8/17	7/26	22	8	55	63	693	3,064	40	175	97%	30	38
system)		4	9/7	8/17	21	0	8	8	84	3,148	5	180	100%	0	0
		^{t}end	9/7		0				0	3,148	0	180	100%		

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Location	Species	Survey number	Survey date (t_i)	Previous survey date	Days between surveys	Current live count, (c_i)	Previous live count	Previous + current live count	Fish days[a], (A_b)	Accum. fish days	Escape. Index[b]	Accum. Escape. Index[c]	Accum. Percent Escape.	Carcass Count	Live plus Carcass
Port	pink	tstart	6/24												
Graham		1	7/12	6/24	17.5	90	0	90	788	788	45	45	0%	0	90
River		2	7/29	7/12	17	1,974	90	2,064	17,544	18,332	1,003	1,048	7%	1	1,975
(index		3	8/11	7/29	13	7,474	1,974	9,448	61,412	79,744	3,509	4,557	31%	69	7,543
system)		4	9/2	8/11	22	4,762	7,474	12,236	134,596	214,340	7,691	12,248	84%	715	5,477
		tend	9/19		17.5				41,668	256,007	2,381	14,629	100%		
Port	chum	tstart	6/24												
Graham		1	7/12	6/24	17.5	1,495	0	1,495	13,081	13,081	748	748	31%	11	1,506
River		2	7/29	7/12	17	832	1,495	2,327	19,780	32,861	1,130	1,878	79%	410	1,242
(index		3	8/11	7/29	13	194	832	1,026	6,669	39,530	381	2,259	94%	355	549
system)		4	9/2	8/11	22	9	194	203	2,233	41,763	128	2,386	100%	22	31
		tend	9/19		17.5				79	41,842	5	2,391	100%		
Seldovia	pink	tstart	6/26												
River		1	7/14	6/26	17.5	16	0	16	140	140	8	8	0%	0	16
(index		2	7/28	7/14	14	5,168	16	5,184	36,288	36,428	2,074	2,082	13%	0	5,168
system)		3	8/8	7/28	11	4,366	5,168	9,534	52,437	88,865	2,996	5,078	32%	33	4,399
			8/29	8/8	21	6,509	4,366	10,875	114,188	203,053	6,525	11,603	74%	896	7,405
		4	9/14	8/29	16	1,165	6,509	7,674	61,392	264,445	3,508	15,111	96%	569	1,734
		tend	10/1		17.5				10,194	274,638	583	15,694	100%		
Seldovia	chum	tstart	6/26												
River		1	7/14	6/26	17.5	308	0	308	2,695	2,695	154	154	21%	0	308
(not an		2	7/28	7/14	14	469	308	777	5,439	8,134	311	465	65%	94	563
index		3	8/8	7/28	11	96	469	565	3,108	11,242	178	642	89%	26	122
system)			8/29	8/8	21	9	96	105	1,103	12,344	63	705	98%	0	9
		4	9/14	8/29	16	10	9	19	152	12,496	9	714	99%	0	10
		tend	10/1		17.5				88	12,584	5	719	100%		
Tutka Bay	pink	tstart	7/25												
Lagoon Creek		1	8/12	7/25	17.5	31,703	0	31,703	277,401	277,401	15,852	15,852	50%	1,539	33,242
(index system)		tend	8/29		17.5				277,401	554,803	15,852	31,703	100%		

Note: The value used for the final escapement index for each stock is underlined.

[a] Fish days (A_b) = (Days between surveys * (prev. count + current count)) ÷ 2. AUC equations from Bue et al. 1998.

[b] Escapement index = A_b / 17.5 day stream-life estimate.

[c] Area-under-the-curve (AUC) estimate equals the cumulative escapement index.

Appendix A8.–Estimated pink and chum salmon escapements in thousands of fish for the major spawning systems in the Southern District of the Lower Cook Inlet Area, 1975–2016.

	Pink salmon							Chum salmon
	Humpy Creek	China Poot Creek	Tutka Lagoon Creek	Barabara Creek	Seldovia River	Port Graham River	Total pink salmon escapement	Port Graham River
1975	64.0	21.6	17.6	22.7	36.2	27.3	189.4	3.0
1976	27.2	2.0	11.5	0.2	25.6	6.5	73.0	0.4
1977	86.0	3.9	14.0	5.7	35.7	20.6	165.9	5.2
1978	46.1	11.2	15.0	1.4	24.6	6.7	105.0	4.8
1979	200.0	20.6	10.6	10.0	43.7	32.7	317.6	2.2
1980	64.4	12.3	17.3	5.8	65.5	40.2	205.5	1.1
1981	115.0	5.0	21.1	16.8	62.7	18.4	239.0	4.8
1982	31.9	3.1	18.5	2.1	38.4	28.9	122.9	2.5
1983	104.0	14.1	12.9	14.8	27.9	4.6	178.3	1.9
1984	84.2	8.4	10.5	1.0	14.2	10.9	129.2	2.1
1985	117.0	1.9	14.0	1.6	22.8	26.3	183.6	0.5
1986	49.7	11.5	13.4	1.8	28.2	17.5	122.1	0.6
1987	26.6	3.1	4.8	0.3	7.6	3.8	46.2	1.5
1988	21.4	3.9	11.2	0.7	16.9	7.9	62.0	3.0
1989	93.0	8.5	11.9	4.5	26.2	19.1	163.2	1.3
1990	27.0	4.2	38.5	3.9	27.8	20.1	121.5	2.6
1991	17.4	2.6	16.8	10.9	30.0	29.0	106.7	1.1
1992	14.9	4.1	26.7	2.2	14.7	5.4	68.0	1.4
1993	36.0	1.6	27.4	11.9	43.4	12.8	133.1	2.5
1994	14.1	5.7	14.5	4.5	24.4	7.6	70.8	5.2
1995	89.3	2.0	15.9	10.8	48.5	10.0	176.5	3.8
1996	9.0	2.8	3.5	2.4	17.8	7.0	42.5	3.7
1997	78.3	2.8	45.0	12.5	39.1	12.5	190.2	4.1
1998	17.5	5.7	17.5	2.8	31.5	12.6	87.6	5.1
1999	12.8	0.7	27.9	3.9	12.2	9.7	67.2	6.6
2000	22.4	7.5	19.0	5.6	53.5	15.6	123.6	11.4
2001	30.5	6.6	4.5	2.3	12.3	10.3	66.5	6.0
2002	37.1	6.5	15.9	3.2	26.9	58.5	148.1	5.3
2003	90.9	6.7	30.9	5.1	35.1	14.9	183.6	2.9
2004	28.9	3.3	17.8	5.4	56.8	44.0	156.2	1.2
2005	93.8	9.2	133.6	14.4	98.6	69.1	418.7	0.7
2006	48.4	7.2	25.8	3.6	70.0	31.2	186.2	2.2
2007	54.0	6.2	5.7	25.2	69.4	25.6	186.1	1.9
2008	90.9	5.1	14.1	16.6	53.5	24.7	204.9	1.8
2009	5.2	1.1	3.8	2.6	14.6	14.0	41.3	1.0
2010	70.7	2.2	2.1	13.9	25.9	16.6	131.5	1.4
2011	1.7	3.5	22.0	8.2	46.2	20.9	102.4	1.8
2012	67.9	8.4	10.4	1.4	44.7	34.5	167.3	0.7
2013	6.7	7.1	9.5	17.4	36.8	11.9	89.5	1.9
2014	44.4	1.4	10.2	3.6	35.9	32.3	127.7	3.7
2015	38.0	7.4	81.6	25.2	108.8	82.4	343.3	4.0
Previous 10-yr average	42.8	5.0	18.5	11.8	50.6	29.4	158.0	2.1
2016	89.7	0.7	33.2	2.8	15.7	14.6	156.7	2.4

Note: Area-under-the-curve escapement indices are derived from periodic ground surveys with a 17.5 day stream-life factor applied.

APPENDIX B: OUTER DISTRICT

Appendix B1.–Outer District commercial purse seine salmon harvest (excluding homepacks) by period, 2016.

Period	Date	Hours	Permits Fished	Permits Landings	Chinook Number	Chinook Pounds	Sockeye Number	Sockeye Pounds	Coho Number	Coho Pounds	Pink Number	Pink Pounds	Chum Number	Chum Pounds
1 [a]	7/11/2016	16	4	4			1	5			48	177	2,507	18,296
2 [a,b]	7/13/2016	16	[b]	[b]							[b]	[b]	[b]	[b]
3 [a]	7/15/2016	16												
4 [a]	7/18/2016	16												
5 [a,b]	7/20/2016	16	[b]	[b]							[b]	[b]	[b]	[b]
6 [a,b]	7/22/2016	16	[b]	[b]							[b]	[b]	[b]	[b]
7 [a]	7/25/2016	16	7	7			1	3	2	12	273	1,194	10,677	75,662
8 [a]	7/27/2016	16	6	6							234	1,218	4,266	31,065
9 [a,c]	7/29/2016	16	8	9	1	1	3	19			1,712	6,880	14,303	94,192
10 [a,c]	8/1/2016	16	6	6							870	4,703	5,452	35,430
11 [a,c]	8/3/2016	16	5	5							705	4,164	622	4,042
12 [a,c]	8/5/2016	16	3	3							739	4,645	2,095	13,575
13 [d]	8/8/2016	16												
14 [d,b]	8/10/2016	16	[b]	[b]			[b]	[b]			[b]	[b]	[b]	[b]
15 [d,e]	8/12/2016	16												
Total			13	46	1	1	7	36	2	12	5,369	27,126	60,800	412,743
Average weight						NA		5.14		6.00		5.05		6.79

Note: Unless otherwise noted, regular closed waters were in effect.

[a] Portions of East Nuka Subdistrict, Windy Bay Subdistrict, Rocky Bay Subdistrict, and Port Dick Middle and Head End sections open to commercial harvest for 16-hour periods.

[b] Confidential data. Fewer than 3 permits reporting.

[c] Waters in the eastern portion of Dogfish Lagoon open to commercial salmon harvest.

[d] Portions of East Nuka Subdistrict, Windy Bay Subdistrict, Rocky Bay Subdistrict, and Dogfish Bay Subdistrict open to commercial harvest for 16 hour periods.

[e] No deliveries during Periods 15–31 that occurred from August 22 through September 16.

Appendix B2.–Total commercial common property salmon harvest (excluding homepacks) in Outer District 1970–2016.

Year	Permits	Landings	Chinook	Sockeye	Coho	Pink	Chum
1970			5	1,037	243	434,700	137,408
1971			0	1,625	174	310,706	118,995
1972			7	26,092	17	963	43,466
1973			1	2,006	31	195,342	76,286
1974			1	206	21	1,300	11,924
1975			0	124	7	159,908	11,348
1976			7	18,886	0	93	412
1977			34	33,733	78	1,129,250	70,167
1978			236	10,695	45	70,080	19,224
1979			30	25,297	135	1,945,536	180,558
1980			10	22,514	16	154,041	32,246
1981			61	18,133	485	1,714,115	238,393
1982			129	66,781	92	67,523	63,075
1983			14	16,835	54	199,794	27,203
1984			3	28,411	90	89,068	3,077
1985	34	632	19	91,957	3,210	618,222	11,844
1986	40	539	6	48,472	5,052	401,755	11,701
1987	32	396	14	31,845	2,481	23,890	28,663
1988	32	185	5	9,501	2	6,094	71,202
1989	10	66	1	10,286	72	52,677	43
1990	47	265	2	17,404	74	191,320	614
1991	35	255	2	6,408	12	359,664	14,337
1992	5	6	0	572	1	146	181
1993	21	143	2	4,613	119	159,159	970
1994	6	17	0	5,930	993	13,200	32
1995	13	78	12	17,642	1,272	192,098	474
1996	3	12	0	14,999	96	7,199	3
1997	9	27	0	6,255	63	128,373	1,575
1998	10	41	0	15,991	45	102,172	611
1999	8	29	3	51,117	1,482	32,484	2,062
2000	11	72	2	21,623	20	306,555	302
2001	5	23	0	7,339	5	48,559	408
2002	11	86	0	21,154	74	569,955	3,810
2003	6	21	1	26,615	4	281,663	137
2004	9	25	2	11,082	13	42,636	27,911
2005	5	20	0	1	3	110,195	12,524
2006	11	162	3	3,198	1,139	1,121,892	12,883
2007	5	31	1	32,461	113	147,409	49
2008	16	146	0	1,704	0	467,592	100,819
2009	11	150	1	8	9	853,037	35,126
2010	10	101	0	3,003	16	272,427	22,463
2011	13	106	10	46,356	25	357,472	25,763
2012	15	70	8	77	98	69,359	51,313
2013	11	229	1	119	53	2,015,105	49,062
2014	15	99	0	24,264	0	163,938	59,702
2015	19	359	0	613	41	4,096,578	97,974
Previous 10-yr avg.	13	145	2	11,180	149	956,481	45,515
2016	13	46	1	7	2	5,369	60,800

Source: ADF&G fish ticket database.

Appendix B3.–Pink and chum salmon escapements measured by aerial survey using area-under-the-curve (AUC) estimation (peak count used where noted) in Outer District, 2016.

Location	Species	Survey number	Survey date (t_i)	Previous survey date (t_i-1)	Days between surveys (t_i-t_{i-1})	Current live count, (c_i)	Previous live count (c_{i-1})	Previous + current live count (c_i+c_{i-1})	Fish days[a], (A_b)	Accum. fish days, (A_b)	Escape index[b]	Accum. Escape. Index[c]	Accum. Percent Escape.	Peak count
Delight Lake	pink	[t]start	7/1											
(not an index		1	7/1	7/1	0	0	0	0	0	0	0	0	0%	
system)		2	7/13	7/1	12	0	0	0	0	0	0	0	0%	
		3	7/30	7/13	17	0	0	0	0	0	0	0	0%	
		4	8/9	7/30	10	0	0	0	0	0	0	0	0%	
		5	8/28	8/9	19	200	0	200	1,900	1,900	109	109	83%	
		6	9/1	8/28	4	0	200	200	400	2,300	23	131	100%	
		[t]end	9/1		0				0	2,300	0	131	100%	200
Desire Lake	pink	[t]start	7/1											
(index		1	7/1	7/1	0	0	0	0	0	0	0	0	0%	
system)		2	7/13	7/1	12	0	0	0	0	0	0	0	0%	
		3	7/30	7/13	17	0	0	0	0	0	0	0	0%	
		4	8/9	7/30	10	130	0	130	650	650	37	37	22%	
		5	8/28	8/9	19	0	130	130	1,235	1,885	71	108	64%	
		6	9/1	8/28	4	100	0	100	200	2,085	11	119	70%	
		[t]end	9/18		17.5				875	2,960	50	169	100%	130
Dogfish Lagoon	chum	[t]start	7/7											
Creeks		1	7/7	7/7	0	0	0	0	0	0	0	0	0%	
(index		2	7/13	7/7	6	680	0	680	2,040	2,040	117	117	3%	
system)		3	7/27	7/13	14	5,050	680	5,730	40,110	42,150	2,292	2,409	54%	
		4	7/30	7/27	3	4,290	5,050	9,340	14,010	56,160	801	3,209	71%	
		5	8/9	7/30	10	80	4,290	4,370	21,850	78,010	1,249	4,458	99%	
		[t]end	8/26		17.5				700	78,710	40	4,498	100%	5,050
Dogfish Lagoon	pink	[t]start	7/7											
Creeks		1	7/7	7/7	0	0	0	0	0	0	0	0	0%	
(not an index		2	7/13	7/7	6	0	0	0	0	0	0	0	0%	
system)		3	7/27	7/13	14	0	0	0	0	0	0	0	0%	
		4	7/30	7/27	3	300	0	300	450	450	26	26	23%	
		5	8/9	7/30	10	0	300	300	1,500	1,950	86	111	100%	
		[t]end	8/9		0				0	1,950	0	111	100%	300

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Location	Species	Survey number	Survey date (t_i)	Previous survey date (t_i-1)	Days between surveys (t_i-t_{i-1})	Current live count, (c_i)	Previous live count (c_{i-1})	Previous + current live count (c_i+c_{i-1})	Fish days[a], (A_b)	Accum. fish days, (A_b)	Escape. index[b]	Accum. Escape. Index[c]	Accum. Percent Escape.	Peak count
James Lagoon Creeks *(not an index system)*	chum	[t]start	6/25											
		1	7/13	6/25	17.5	10	0	10	88	88	5	5	0%	
		2	7/30	7/13	17	1,260	10	1,270	10,795	10,883	617	622	35%	
		3	8/28	7/30	29	80	1,260	1,340	19,430	30,313	1,110	1,732	98%	
		[t]end	9/14		17.5				700	31,013	40	1,772	100%	1,260
James Lagoon Creeks *(not an index system)*	pink	[t]start	7/13											
		1	7/13	7/13	0	0	0	0	0	0	0	0	0%	
		2	7/30	7/13	17	100	0	100	850	850	49	49	37%	
		3	8/28	7/30	29	0	100	100	1,450	2,300	83	131	100%	
		[t]end	8/28		0				0	2,300	0	131	100%	100
Petrof River *(not an index system)*	chum	[t]start	6/19											
		1	7/7	6/19	17.5	11	0	11	96	96	6	6	1%	
		2	7/13	7/7	6	90	11	101	303	399	17	23	3%	
		3	7/30	7/13	17	760	90	850	7,225	7,624	413	436	60%	
		4	8/9	7/30	10	85	760	845	4,225	11,849	241	677	94%	
		5	8/28	8/9	19	0	85	85	808	12,657	46	723	100%	
		[t]end	8/28		0				0	12,657	0	723	100%	760[d]
Petrof River *(not an index system)*	pink	[t]start	7/7											
		1	7/7	7/7	0	0	0	0	0	0	0	0	0%	
		2	7/13	7/7	6	0	0	0	0	0	0	0	0%	
		3	7/30	7/13	17	0	0	0	0	0	0	0	0%	
		4	8/9	7/30	10	0	0	0	0	0	0	0	0%	
		5	8/28	8/9	19	10	0	10	95	95	5	5	52%	
		[t]end	9/14		17.5				88	183	5	10	100%	10

-continued-

Location	Species	Survey number	Survey date (t_i)	Previous survey date (t_i-1)	Days between surveys (t_i-t_{i-1})	Current live count, (c_i)	Previous live count (c_{i-1})	Previous + current live count (c_i+c_{i-1})	Fish days[a], (A_b)	Accum. fish days, (A_b)	Escape. index[b]	Accum. Escape. Index[c]	Accum. Percent Escape.	Peak count
Port Dick-	chum	[t]start	6/19											
Headend Creek		1	7/7	6/19	17.5	4,000	0	4,000	35,000	35,000	2,000	2,000	21%	
(index		2	7/13	7/7	6	3,620	4,000	7,620	22,860	57,860	1,306	3,306	35%	
system)		3	7/30	7/13	17	5,520	3,620	9,140	77,690	135,550	4,439	7,746	83%	
		4	8/9	7/30	10	0	5,520	5,520	27,600	163,150	1,577	9,323	100%	
		5	8/28	8/9	19	0	0	0	0	163,150	0	9,323	100%	
		[t]end	8/28		0				0	163,150	0	9,323	100%	5,520
Port Dick-	pink	[t]start	7/7											
Headend Creek		1	7/7	7/7	0	0	0	0	0	0	0	0	0%	
(index		2	7/13	7/7	6	0	0	0	0	0	0	0	0%	
system)		3	7/30	7/13	17	500	0	500	4,250	4,250	243	243	15%	
Ground survey dind		4	8/9	7/30	10	1,430	500	1,930	9,650	13,900	551	794	47%	
Index used		5	8/28	8/9	19	100	1,430	1,530	14,535	28,435	831	1,625	97%	
		[t]end	9/14		17.5				875	29,310	50	1,675	100%	1,430
Port Dick-	chum	[t]start	6/19											
Island creek		1	7/7	6/19	17.5	20	0	20	175	175	10	10	0%	
(index		2	7/13	7/7	6	1,400	20	1,420	4,260	4,435	243	253	3%	
system)		3	7/30	7/13	17	8,210	1,400	9,610	81,685	86,120	4,668	4,921	66%	
		4	8/9	7/30	10	88	8,210	8,298	41,490	127,610	2,371	7,292	98%	
		5	8/28	8/9	19	100	88	188	1,786	129,396	102	7,394	99%	
		[t]end	9/14		17.5				875	130,271	50	7,444	100%	8,210[d]
Port Dick-	pink	[t]start	7/7											
Island creek		1	7/7	7/7	0	0	0	0	0	0	0	0	0%	
(index		2	7/13	7/7	6	0	0	0	0	0	0	0	0%	
system)		3	7/30	7/13	17	0	0	0	0	0	0	0	0%	
		4	8/9	7/30	10	80	0	80	400	400	23	23	1%	
		5	8/28	8/9	19	1,600	80	1,680	15,960	16,360	912	935	54%	
		[t]end	9/14		17.5				14,000	30,360	800	1,735	100%	1,600

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Location	Species	Survey number	Survey date (t_i)	Previous survey date (t_i-1)	Days between surveys (t_i-t_{i-1})	Current live count, (c_i)	Previous live count (c_{i-1})	Previous + current live count (c_i+c_{i-1})	Fish days[a], (A_b)	Accum. fish days, (A_b)	Escape. index[b]	Accum. Escape. Index[c]	Accum. Percent Escape.	Peak count
Port Dick-	chum	tstart	6/19											
Middle Creek		1	7/7	6/19	17.5	70	0	70	613	613	35	35	11%	
(not an index		2	7/13	7/7	6	60	70	130	390	1,003	22	57	18%	
system)		3	7/30	7/13	17	310	60	370	3,145	4,148	180	237	73%	
		4	8/9	7/30	10	0	310	310	1,550	5,698	89	326	100%	
		5	8/28	8/9	19	0	0	0	0	5,698	0	326	100%	
		tend	8/28		0				0	5,698	0	326	100%	310
Port Dick-	pink	tstart	7/7											
Middle Creek		1	7/7	7/7	0	0	0	0	0	0	0	0	0%	
(not an index		2	7/13	7/7	6	0	0	0	0	0	0	0	0%	
system)		3	7/30	7/13	17	0	0	0	0	0	0	0	0%	
		4	8/9	7/30	10	20	0	20	100	100	6	6	3%	
		5	8/28	8/9	19	150	20	170	1,615	1,715	92	98	57%	
		tend	9/14		17.5				1,313	3,028	75	173	100%	150
Port Dick-	chum	tstart	6/19											
Slide Creek		1	7/7	6/19	17.5	210	0	210	1,838	1,838	105	105	10%	
(not an index		2	7/13	7/7	6	400	210	610	1,830	3,668	105	210	20%	
system)		3	7/30	7/13	17	800	400	1,200	10,200	13,868	583	792	77%	
Ground survey		4	8/9	7/30	10	13	800	813	4,065	17,933	232	1,025	99%	
Index used		5	8/28	8/9	19	0	13	13	124	18,056	7	1,032	100%	
		tend	8/28		0				0	18,056	0	1,032	100%	800
Port Dick-	pink	tstart	7/7											
Slide Creek		1	7/7	7/7	0	0	0	0	0	0	0	0	0%	
(not an index		2	7/13	7/7	6	0	0	0	0	0	0	0	0%	
system)		3	7/30	7/13	17	0	0	0	0	0	0	0	0%	
Ground survey		4	8/9	7/30	10	60	0	60	300	300	17	17	6%	
Index used		5	8/28	8/9	19	230	60	290	2,755	3,055	157	175	60%	
		tend	9/14		17.5				2,013	5,068	115	290	100%	230
Rocky River	chum	tstart	6/19											
(index		1	7/7	6/19	17.5	10	0	10	88	88	5	5	0%	
system)		2	7/13	7/7	6	551	10	561	1,683	1,771	96	101	2%	
		3	7/30	7/13	17	4,620	551	5,171	43,954	45,724	2,512	2,613	63%	
		4	8/9	7/30	10	190	4,620	4,810	24,050	69,774	1,374	3,987	95%	
		5	8/28	8/9	19	130	190	320	3,040	72,814	174	4,161	100%	
		6	9/1	8/28	4	0	130	130	260	73,074	15	4,176	100%	
		tend	9/1		0				0	73,074	0	4,176	100%	4,620[d]

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Location	Species	Survey number	Survey date (t_i)	Previous survey date (t_i-1)	Days between surveys (t_i-t_{i-1})	Current live count, (c_i)	Previous live count (c_{i-1})	Previous + current live count (c_i+c_{i-1})	Fish days[a], (A_b)	Accum. fish days, (A_b)	Escape. index[b]	Accum. Escape. Index[c]	Accum. Percent Escape.	Peak count
Rocky River	pink	[t]start	7/7											
(index		1	7/7	7/7	0	0	0	0	0	0	0	0	0%	
system)		2	7/13	7/7	6	0	0	0	0	0	0	0	0%	
		3	7/30	7/13	17	4,300	0	4,300	36,550	36,550	2,089	2,089	58%	
		4	8/9	7/30	10	50	4,300	4,350	21,750	58,300	1,243	3,331	93%	
		5	8/28	8/9	19	300	50	350	3,325	61,625	190	3,521	99%	
		6	9/1	8/28	4	25	300	325	650	62,275	37	3,559	100%	
		[t]end	9/18		17.5				219	62,494	13	3,571	100%	4,300[d]
South Nuka	pink	[t]start	8/9											
Island Creek		1	8/9	8/9	0	0	0	0	0	0	0	0	0%	
(index		2	8/28	8/9	19	10	0	10	95	95	5	5	83%	
system)		3	9/1	8/28	4	0	10	10	20	115	1	7	100%	
		[t]end	9/1		0				0	115	0	7	100%	10[d]
Taylor Bay	pink	[t]start	7/7											
Creek		1	7/7	7/7	0	0	0	0	0	0	0	0	0%	
(not an index		2	8/9	7/7	33	10	0	10	165	165	9	9	63%	
system)		3	8/28	8/9	19	0	10	10	95	260	5	15	100%	
		[t]end	8/28		0				0	260	0	15	100%	10
Windy Bay-	pink	[t]start	7/7											
Left Creek		1	7/7	7/7	0	0	0	0	0	0	0	0	0%	
(index		2	7/13	7/7	6	0	0	0	0	0	0	0	0%	
system)		3	7/30	7/13	17	500	0	500	4,250	4,250	243	243	52%	
		4	8/9	7/30	10	80	500	580	2,900	7,150	166	409	88%	
		5	8/28	8/9	19	10	80	90	855	8,005	49	457	98%	
		6	9/1	8/28	4	10	10	20	40	8,045	2	460	99%	
		[t]end	9/18		17.5				88	8,133	5	465	100%	500[d]
Windy Bay-	pink	[t]start	7/7											
Right Creek		1	7/7	7/7	0	0	0	0	0	0	0	0	0%	
(index		2	7/13	7/7	6	0	0	0	0	0	0	0	0%	
system)		3	7/30	7/13	17	1,400	0	1,400	11,900	11,900	680	680	60%	
		4	8/9	7/30	10	70	1,400	1,470	7,350	19,250	420	1,100	97%	
		[t]end	8/26		17.5				613	19,863	35	1,135	100%	1,400[d]

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Location	Species	Survey number	Survey date (t_i)	Previous survey date (t_i-1)	Days between surveys (t_i-t_{i-1})	Current live count, (c_i)	Previous live count (c_{i-1})	Previous + current live count (c_i+c_{i-1})	Fish days[a], (A_b)	Accum. fish days, (A_b)	Escape. index[b]	Accum. Escape. Index[c]	Accum. Percent Escape.	Peak count
Windy Bay-	chum	[t]start	6/19											
Right Creek		1	7/7	6/19	17.5	20	0	20	175	175	10	10	10%	
(not an index		2	7/13	7/7	6	130	20	150	450	625	26	36	36%	
system)		3	7/30	7/13	17	0	130	130	1,105	1,730	63	99	100%	
			8/9	7/30	10	0	0	0	0	1,730	0	99	100%	
		[t]end	8/9		0				0	1,730	0	99	100%	<u>130</u>[d]

Note: The value used for the final escapement index for each stock is underlined. AUC equations from Bue et al. 1998. Final counts include fish observed in bays if no further harvest occurred.

[a] Fish days (A_b) = (Days between surveys * (prev. count + current count)) ÷ 2

[b] Escapement index = A_b / 17.5 day stream-life estimate.

[c] Area-under-the-curve (AUC) estimate equals the cumulative escapement index.

[d] Peak count used for final escapement index.

Appendix B4.–Pink and chum salmon escapements measured by ground survey using area-under-the-curve (AUC) estimation (Live+Carcass peak count used where noted) in Outer District, 2016.

Location	Species	Survey number	Survey date (t_i)	Previous survey date (t_i-1)	Days between surveys (t_i-t_{i-1})	Current live count, (c_i)	Previous live count (c_{i-1})	Previous + current live count (c_i+c_{i-1})	Fish days[a], (A_b)	Accum. fish days, (A_b)	Escape. index[b]	Accum. Escape. Index[c]	Accum. Percent Escape.	Carcass Count	Live plus Carcass
Dogfish Lagoon	chum	[t]start	7/2												
Creeks		1	7/20	7/2	17.5	1,987	0	1,987	17,386	17,386	994	994	9%	75	2,062
(Index		2	8/3	7/20	14	2,509	1,987	4,496	31,472	48,858	1,798	2,792	25%	1,405	3,914
system)		3	8/19	8/3	16	4,454	2,509	6,963	55,704	104,562	3,183	5,975	53%	1,251	5,705
		4	9/6	8/19	18	2,952	4,454	7,406	66,654	171,216	3,809	9,784	87%	2,482	5,434
		[t]end	9/23		17.5				25,830	197,046	1,476	11,260	100%		
Dogfish Lagoon	pink	[t]start	7/20												
Creeks		1	7/20	7/20	0	0	0	0	0	0	0	0	0%	0	0
(not an		2	8/3	7/20	14	38	0	38	266	266	15	15	1%	5	43
index system)		3	8/19	8/3	16	1,318	38	1,356	10,848	11,114	620	635	28%	3	1,321
		4	9/6	8/19	18	980	1,318	2,298	20,682	31,796	1,182	1,817	79%	207	1,187
		[t]end	9/23		17.5				8,575	40,371	490	2,307	100%		
Port Chatham	chum	[t]start	8/7												
Creeks		1	8/25	8/7	17.5	51	0	51	446	446	26	26	56%	14	65
(not an		2	9/8	8/25	14	0	51	51	357	803	20	46	100%	0	0
index system)		[t]end	9/8		0				0	803	0	46	100%		
Port Chatham	pink	[t]start	8/7												
Creeks		1	8/25	8/7	17.5	1,089	0	1,089	9,529	9,529	545	545	48%	13	1,102
(Index		2	9/8	8/25	14	178	1,089	1,267	8,869	18,398	507	1,051	92%	244	422
system)		[t]end	9/25		17.5				1,558	19,955	89	1,140	100%		
Port Dick-	chum	[t]start	6/23												
Headend Creek		1	7/11	6/23	17.5	5,663	0	5,663	49,551	49,551	2,832	2,832	36%	15	5,678
(Index		2	8/9	7/11	29	152	5,663	5,815	84,318	133,869	4,818	7,650	96%	1,175	1,327
system)		3	8/31	8/9	22	182	152	334	3,674	137,543	210	7,860	99%	104	286
Aerial survey		4	9/13	8/31	13	3	182	185	1,203	138,745	69	7,928	100%	5	8
Index used		[t]end	9/30		17.5				26	138,772	2	7,930	100%		
Port Dick-	pink	[t]start	6/23												
Headend Creek		1	7/11	6/23	17.5	2	0	2	18	18	1	1	0%	0	2
(Index		2	8/9	7/11	29	1,837	2	1,839	26,666	26,683	1,524	1,525	32%	5	1,842
system)		3	8/31	8/9	22	1,851	1,837	3,688	40,568	67,251	2,318	3,843	80%	25	1,876
		4	9/13	8/31	13	331	1,851	2,182	14,183	81,434	810	4,653	97%	26	357
		[t]end	9/30		17.5				2,896	84,330	166	4,819	100%		

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Location	Species	Survey number	Survey date (t_i)	Previous survey date (t_i-1)	Days between surveys (t_i-t_{i-1})	Current live count, (c_i)	Previous live count (c_{i-1})	Previous + current live count (c_i+c_{i-1})	Fish days[a], (A_b)	Accum. fish days, (A_b)	Escape. index[b]	Accum. Escape. Index[c]	Accum. Percent Escape.	Carcass Count	Live plus Carcass
Port Dick-	chum	tstart	7/4												
Island Creek		1	7/22	7/4	17.5	3,762	0	3,762	32,918	32,918	1,881	1,881	22%	52	3,814
(Index system)		2	8/10	7/22	19	1,190	3,762	4,952	47,044	79,962	2,688	4,569	54%	1,172	2,362
Aerial survey		3	9/1	8/10	22	2,800	1,190	3,990	43,890	123,852	2,508	7,077	83%	694	3,494
Index used		tend	9/18		17.5				24,500	148,352	1,400	8,477	100%		
Port Dick-	pink	tstart	7/4												
Island Creek		1	7/22	7/4	17.5	2	0	2	18	18	1	1	0%	0	2
(Index		2	8/10	7/22	19	9	2	11	105	122	6	7	1%	0	9
system)		3	9/1	8/10	22	821	9	830	9,130	9,252	522	529	56%	10	831
Aerial survey		tend	9/18		17.5				7,184	16,436	411	939	100%		
Port Dick-	chum	tstart	6/23												
Slide Creek		1	7/11	6/23	17.5	584	0	584	5,110	5,110	292	292	19%	0	584
(not an		2	8/9	7/11	29	405	584	989	14,341	19,451	819	1,111	71%	286	691
index system)		3	8/31	8/9	22	173	405	578	6,358	25,809	363	1,475	94%	72	245
		tend	9/17		17.5				1,514	27,322	87	<u>1,561</u>	100%		
Port Dick-	pink	tstart	7/11												
Slide Creek		1	7/11	7/11	0	0	0	0	0	0	0	0	0%	0	0
(not an		2	8/9	7/11	29	10	0	10	145	145	8	8	3%	0	10
index system)		3	8/31	8/9	22	255	10	265	2,915	3,060	167	175	58%	1	256
		tend	9/17		17.5				2,231	5,291	128	<u>302</u>	100%		

Note: The value used for the final escapement index for each stock is underlined. AUC equations from Bue et al. 1998. Final counts include fish observed in bays if no further harvest occurred.

[a] Fish days (A_b) = (Days between surveys * (prev. count + current count)) ÷ 2

[b] Escapement index = A_b / 17.5 day stream-life estimate.

[c] Area-under-the-curve estimate equals the cumulative escapement index.

Appendix B5.–Sockeye salmon aerial survey counts from the Outer District, 2016.

Location	Survey number	Survey date	Live count	Peak count
Delusion Lake	1	08/28/16	70	70
Desire Lake	1	07/01/16	2,130	
	2	07/13/16	350	
	3	07/30/16	5,810	
	4	08/09/16	2,160	
	5	08/28/16	6,740	
	6	09/01/16	1,250	
	7	09/30/16	940	6,740
Delight Lake	1	07/01/16	830	
	2	07/13/16	2,391	
	3	07/30/16	1,640	
	4	08/09/16	462	
	5	08/28/16	5,110	
	6	09/01/16	580	
	7	09/30/16	1,400	5,110

Appendix B6.–Estimated pink, chum, and sockeye salmon escapements in thousands of fish for the major spawning systems in the Outer District of the Lower Cook Inlet Area, 1975–2016.

	Pink salmon										
Year	Dogfish Lagoon	Port Chatham	Windy Right Creek	Windy Left Creek	Rocky River	Port Dick Creek	Island Creek	South Nuka Creek	Desire Lake Creek	James Lagoon[a]	Total index count
1975	2.3	7.7	18.7	9.7	4.4	62.8	0.1	28.0	0.4		134.1
1976			0.2	0.2	2.7	12.7			0.6		16.4
1977	8.1	14.2	11.1	47.3	36.7	109.3	0.6	12.0	0.8		240.1
1978	0.6	0.3	0.3	1.1	8.2	44.9	0.4		1.0		56.8
1979	7.3	20.8	10.4	74.8	85.0	116.0	0.6	15.0	3.0		332.9
1980	0.3	7.7	3.3	10.9	6.4	56.1	2.2	0.3	16.0	4.6	103.2
1981	2.6	11.2	4.7	31.3	25.0	106.0	25.0	16.0	5.0	14	226.8
1982	2.6	2.0	4.7	4.4	6.6	19.9	15.0	0.4	12.0	6	67.6
1983	1.0	3.5	4.3	11.9	16.6	64.1	15.3	22.2	8.5	5.1	147.4
1984	0.6	7.8	3.4	2.5	9.0	44.6	35.0	0.6	23.0	4	126.5
1985	0.2	8.9	5.4	8.9	12.1	65.3	27.9	3.6	62.5	9	194.8
1986	0.4	11.5	2.5	2.2	12.0	41.6	16.6	7.0	32.0	6.6	125.8
1987	1.2	10.2	2.0	5.6	4.5	4.5	0.1	2.8	11.0	1.1	41.9
1988	0.3	21.0	1.3	3.4	5.4	12.0	7.2	1.2	2.5	1.7	54.3
1989	0.2	31.7	6.6	25.2	10.3	55.4	6.7	7.3	47.0	4.9	190.4
1990	7.1	27.8	7.1	7.5	18.0	41.7	25.0	13.3	1.0	3.8	148.5
1991	9.3	23.8	20.7	34.5	26.1	54.2	24.4	16.4	1.3	4.4	210.7
1992		4.3	3.9	8.2	25.4	6.9	12.5	6.1	0.4	0.4	67.7
1993	0.3	22.2	13.6	25.9	70.0	37.0	12.1	34.3	19.3	3.3	234.7
1994	1.3	3.3	2.2	3.0	17.1	18.1	28.3	1.4		0.8	74.7
1995	13.3	14.0	11.4	31.6	56.3	6.6	10.6	6.2		0.6	150.0
1996	2.3	8.6	9.9	2.5	80.1	23.2	40.1	6.8			173.5
1997	20.0	42.7	13.9	64.6	48.1	36.9	71.1	9.3	6.2		312.8
1998	6.7	22.2	19.5	12.9	165.0	59.1	83.6	14.0	6.2		389.2
1999	12.4	10.7	5.2	24.0	17.2	8.5	8.6	2.4	6.8		95.8
2000	11.1	16.7	23.0	20.1	131.6	124.4	70.8	13.6	21.1	3.9	432.4
2001	2.0	17.9	10.3	61.8	73.0	44.7	81.8	20.7	67.5	2.3	379.7
2002	1.3	18.1	14.4	28.9	112.5	108.0	44.1	14.8	78.4	3.1	420.5
2003	5.2	35.0	23.3	82.8	287.4	107.7	118.6	41.4	34.8		736.2
2004	3.2	26.4	12.0	23.3	53.8	13.3	33.6	6.4	24.3		196.3
2005	22.3	44.4	22.2	72.0	198.7	122.2	26.4	11.2	46.0		565.4
2006	8.0	24.2	17.1	65.2	67.8	51.5	107.7	5.1	74.8		421.4
2007	4.1	14.5	18.3	37.3	190.0	44.2	87.2	6.6	11.8		414.0
2008	8.0	16.4	12.5	64.1	90.9	34.2	49.7	12.3	9.5		297.6
2009	9.2	25.3	15.0	57.3	173.6	41.7	44.5	19.9	73.9		460.4
2010	6.3	3.0	6.4	24.2	27.0	41.1	69.5		3.0		180.6
2011	3.9	15.8	1.7	12.2	22.7	16.9	10.2		0.6	0.3	84.0
2012	11.4	5.4	5.8	11.7	15.7	18.1	20.1	1.3	2.3	0.0	91.7
2013	26.4	57.4	11.7	47.8	75.8	55.8	26.0	8.4	56.9	24.4	366.4
2014	8.8	10.3	5.7	10.1	17.1	48.7	50.4	11.0	0.4	1.0	162.7
2015	50.1	42.6	17.0	33.6	107.9	98.0	50.4	8.9	46.3	30.3	454.8
10-yr avg.	13.6	21.5	11.1	36.4	78.9	45.0	51.6	9.2	27.9	11.2	295.2
2016	2.3	1.1	1.4	0.5	4.3	4.8	1.7	0.0	0.2	0.1	16.3

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	Chum salmon					Sockeye salmon			
Year	Dogfish Lagoon	Rocky River	Port Dick Creek	Island Creek	Total index count	Delusion Lake [a]	Delight Lake	Desire Lake	Total index count
1975	5.0	25.0	4.0	7.4	41.4		2.0	6.5	8.5
1976	3.0	12.0	1.5	1.0	17.5		6.0	11.0	17.0
1977	6.4	10.5	5.0	11.1	33.0		5.2	10.7	15.9
1978	9.3	6.3	8.9	16.9	41.4		5.5	10.0	15.5
1979	8.2	35.0	4.0	16.8	64.0			12.0	20.0
1980	4.0	23.0	4.2	10.9	42.1		7.3	17.0	24.3
1981	11.5	12.5	4.1	17.5	45.6			12.0	12.0
1982	8.5	2.8	1.7	8.7	21.7		13.1	18.0	31.1
1983	5.3	4.0	4.5	36.2	50.0		5.1	12.0	17.1
1984	8.6	3.5	2.7	25.6	40.4		5.4	15.0	20.4
1985	4.9	2.5	1.0	9.1	17.5		16.3	18.0	34.3
1986	2.5	2.0	1.7	8.6	14.8		8.8	10.0	18.8
1987	2.0	0.2	6.1	13.2	21.5		8.1	13.4	21.5
1988	8.6	0.3	9.0	7.8	25.7		0.8	9.0	9.8
1989	1.8	1.2	3.3	4.8	11.1		4.8	9.0	13.8
1990	1.0	0.8	1.1	2.3	5.2			9.5	9.5
1991	3.1		7.4	17.3	27.8		4.1	8.2	12.3
1992	0.8	1.7	5.4	6.7	14.6		5.9	11.9	17.8
1993	5.4	0.1	2.5	3.6	11.6		5.0	11.0	16.0
1994	11.3	1.9	3.5	8.8	25.5		5.6	10.5	16.1
1995	4.2	5.1	3.3	7.7	20.3		15.8	15.8	31.6
1996	6.7	2.0	2.3	6.9	17.9		9.4	9.4	18.8
1997	12.7	1.1	1.9	5.2	20.9		6.0 [b]	14.7	20.7
1998	9.8	0.7	1.8	3.4	15.7		5.0 [b]	7.9	12.9
1999	18.8	5.4	2.9	16.0	43.5		5.9	14.6	20.5
2000	19.6	4.2	3.4	12.1	39.3		12.3	4.0	16.3
2001	6.1	3.0	1.8	6.3	17.2	2.8	10.1	5.5	15.6
2002	10.1	5.7	12.3	15.3	43.4	3.6	12.1 [c]	16.0	28.1
2003	13.3	5.5	5.6	16.3	40.7	2.0	9.0 [c]	8.4	17.4
2004	3.6	17.2	8.6	15.1	44.5	1.0	11.0 [c]	10.7	21.7
2005	2.7	6.1	4.8	20.7	34.3	1.1	4.6 [c]	4.8	29.4
2006	5.4	11.2	2.8	5.6	25.0	1.0	13.3 [c]	18.6	31.9
2007	4.9	1.6	2.8	3.1	12.4	2.1	5.0 [c]	10.0	15
2008	6.2	3.8	11.8	12.9	34.7	1.8	11.3 [c]	10.7	22.0
2009	4.4	2.5	5.6	9.3	21.8	1.3	12.7 [c]	16.0	28.7
2010	12.7	1.3	2.4	3.4	19.8	0.6	7.1 [c]	6.3	13.4
2011	12.9	4.5	7.1	11.8	36.3	1.8	7.6 [c]	9.6	17.2
2012	8.8	3.2	8.4	14.9	35.2		7.0 [c]	8.8	15.8
2013	9.3	8.1	4.1	8.8	30.4	1.7	3.4 [c]	8.4	11.8
2014	11.2	6.9	1.8	2.7	22.6	0.0	[c]	11.5	11.5
2015	13.3	3.1	13.2	18.5	48.2	0.1	3.2 [c]	2.8	6.1
Previous 10-yr avg.	8.9	4.6	6.0	9.1	28.6	1.1	17.8	10.3	28.1
2016	11.3	4.6	9.3	8.2	32.3	0.1	5.1 [c]	6.7	11.9

[a] Non-index stream.

[b] Escapement derived from weir counts.

[c] Escapement derived from a combination of weir, video counts, and/or aerial counts.

APPENDIX C: EASTERN DISTRICT

Appendix C1.–Eastern District common property commercial purse seine salmon harvest (excluding homepacks) by period, 2016.

			Permits		Chinook		Sockeye		Coho		Pink		Chum	
Period	Date	Hours	Fished	Landings	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
1[a]	7/5	16	[a]	[a]			[a]	[a]			[a]	[a]	[a]	[a]
2[a]	7/6	16	[a]	[a]			[a]	[a]					[a]	[a]
3	7/7	16												
4[a]	7/8	16	[a]	[a]			[a]	[a]			[a]	[a]	[a]	[a]
5[b]	7/11	16												
Total			2	5	0	0	2,505	9,938	0	0	7	24	30	237
Average weight						0.00		3.97		0.00		3.43		7.90

[a] Confidential data. Fewer than 3 permits reporting.

[b] No deliveries during Periods 5–9 that occurred from July 11 through July 15.

Appendix C2.–Historic commercial common property and derby commercial sales harvest (excluding homepacks) by species in the Eastern District, 1970–2016.

		Commercial Common property harvest					Derby sales
Year	Permits	Chinook	Sockeye	Coho	Pink	Chum	Coho
1970		11	4,895	691	50,946	1,305	
1971		32	2,203	1,115	5	423	
1972		12	413	903	18,232	767	
1973		5	3,057	801	1,919	55	
1974		0	193	524	378	7	
1975		0	596	124	383	2	
1976		0	5	200	35,423	45	
1977		0	5,776	360	1,349	3,229	
1978		0	2	582	29,738	100	
1979		0	0	296	0	0	
1980		0	122	426	155,779	720	
1981		0	9,270	470	44,989	3,279	
1982		0	3,092	950	143,639	7,698	
1983		0	25,932	594	36,154	7,934	
1984		47	54,459	536	135,290	10,534	
1985	14	11	24,311	1	92,403	5,146	
1986	10	0	3,055	3	40,243	3,757	
1987	9	0	3,687	1	14,333	14,913	
1988	13	1	20,253	1	1,740	24,668	
1989	12	0	8,538	3,913	92	312	
1990	8	0	7,682	127	11,815	307	1,642
1991	6	1	4,703	331	167,250	80	917
1992	7	0	432	1,131	60,007	86	477
1993	6	0	171	247	10,616	9	1,428
1994	6	1	1,610	3,835	44,987	2,792	1,608
1995	19	0	25,626	918	12,000	330	2,960
1996	17	0	36,981	1	35	223	2,600
1997	9	0	11,044	0	1	66	2,167
1998	7	1	9,797	1,094	38,829	51	2,554
1999	11	1	22,682	3	1,930	1,232	1,289
2000	13	0	19,193	332	4,099	1,273	1,689
2001	3	0	2,629	0	0	6	2,155
2002	7	0	14,647	0	0	5	2,687
2003	10	0	7,341	0	0	19	3,821
2004	8	0	16,645	0	0	1	4,400
2005	15	0	19,297	3	13,072	385	4,788
2006	13	0	32,393	1	3,460	270	2,274
2007	11	0	15,407	0	0	53	2,850
2008	11	0	57,060	0	0	34	1,223
2009							1,570
2010							1,100
2011	16	0	56,111	0	24	112	1,207
2012							1,400
2013							1,380
2014	2	0	5,306	0	753	354	606
2015	3	0	4,633	0	155	115	1,408
Previous 10-yr avg.	9	0	28,485	0	732	156	1,502
2016	2	0	2,505	0	7	30	200

Source: ADF&G fish ticket database.

Appendix C3.–Anticipated daily and cumulative sockeye salmon escapement versus actual escapement through the Bear Creek weir, 2016

	Actual Escapement to Bear Lake			Anticipated SEG plus CIAA brood goal [a]				Actual weir donations[b]		Actual weir cost recovery		Actual Total sockeye at Bear Creek weir	
			Antic.	Minimum		Maximum							
Date	Daily	Total	percent	Daily	Total	Daily	Total	Daily	Total	Daily	Total	Daily	Total
5/13	1	1	0.0%	0	0	0	0					1	1
5/14	0	1	0.0%	0	0	0	0					0	1
5/15	0	1	0.0%	0	0	0	0					0	1
5/16	3	4	0.0%	0	0	0	0					3	4
5/17	3	7	0.0%	0	0	0	0					3	7
5/18	4	11	0.0%	0	0	0	0					4	11
5/19	19	30	0.0%	0	0	0	0					19	30
5/20	34	64	0.0%	0	0	0	0					34	64
5/21	22	86	0.0%	0	0	0	0					22	86
5/22	21	107	0.0%	1	1	3	3					21	107
5/23	56	163	0.1%	3	4	6	9					56	163
5/24	164	327	0.1%	3	7	6	15					164	327
5/25	166	493	0.1%	3	9	6	21					166	493
5/26	287	780	0.2%	5	14	10	31					287	780
5/27	326	1,106	0.3%	5	19	11	42					326	1,106
5/28	254	1,360	0.5%	12	31	27	69					254	1,360
5/29	289	1,649	1.1%	38	70	84	153					289	1,649
5/30	338	1,987	1.9%	53	123	116	269					338	1,987
5/31	679	2,666	2.4%	28	150	61	330					679	2,666
6/1	423	3,089	3.0%	40	190	88	418					423	3,089
6/2	622	3,711	3.6%	40	231	88	506					622	3,711
6/3	824	4,535	4.1%	32	263	71	577					824	4,535
6/4	981	5,516	5.1%	62	325	137	714					981	5,516
6/5	1,466	6,982	6.1%	64	390	141	854					1,466	6,982
6/6	1,488	8,470	7.5%	89	479	196	1,050					1,488	8,470
6/7	888	9,358	9.5%	124	603	271	1,322					888	9,358
6/8	904	10,262	11.4%	124	727	272	1,594			1,850	1,850	2,754	12,112
6/9	914	11,176	13.9%	161	887	352	1,946			2,168	4,018	3,082	15,194
6/10	0	11,176	16.4%	157	1,044	344	2,290			3,906	7,924	3,906	19,100
6/11	313	11,489	18.4%	127	1,172	279	2,569			2,999	10,923	3,312	22,412
6/12	0	11,489	20.3%	119	1,290	261	2,830			2,908	13,831	2,908	25,320
6/13	715	12,204	22.0%	108	1,398	237	3,067			3,998	17,829	4,713	30,033
6/14	571	12,775	24.1%	134	1,532	293	3,360			1,828	19,657	2,399	32,432
6/15	0	12,775	25.8%	110	1,642	241	3,601			1,094	20,751	1,094	33,526
6/16	0	12,775	27.9%	137	1,779	301	3,902			3,322	24,073	3,322	36,848
6/17	0	12,775	30.4%	157	1,937	345	4,247			2,132	26,205	2,132	38,980
6/18	0	12,775	32.0%	101	2,038	222	4,469			1,960	28,165	1,960	40,940
6/19	0	12,775	34.0%	127	2,165	280	4,749				28,165	0	40,940
6/20	0	12,775	37.0%	195	2,360	427	5,175			2,222	30,387	2,222	43,162
6/21	0	12,775	39.6%	163	2,523	358	5,533			1,074	31,461	1,074	44,236
6/22	0	12,775	42.7%	200	2,723	439	5,972			2,120	33,581	2,120	46,356
6/23	0	12,775	45.7%	189	2,912	415	6,387			264	33,845	264	46,620
6/24	0	12,775	48.7%	188	3,100	412	6,798			996	34,841	996	47,616
6/25	0	12,775	51.8%	199	3,299	436	7,235			1,770	36,611	1,770	49,386
6/26	0	12,775	54.0%	138	3,437	303	7,537			1,710	38,321	1,710	51,096

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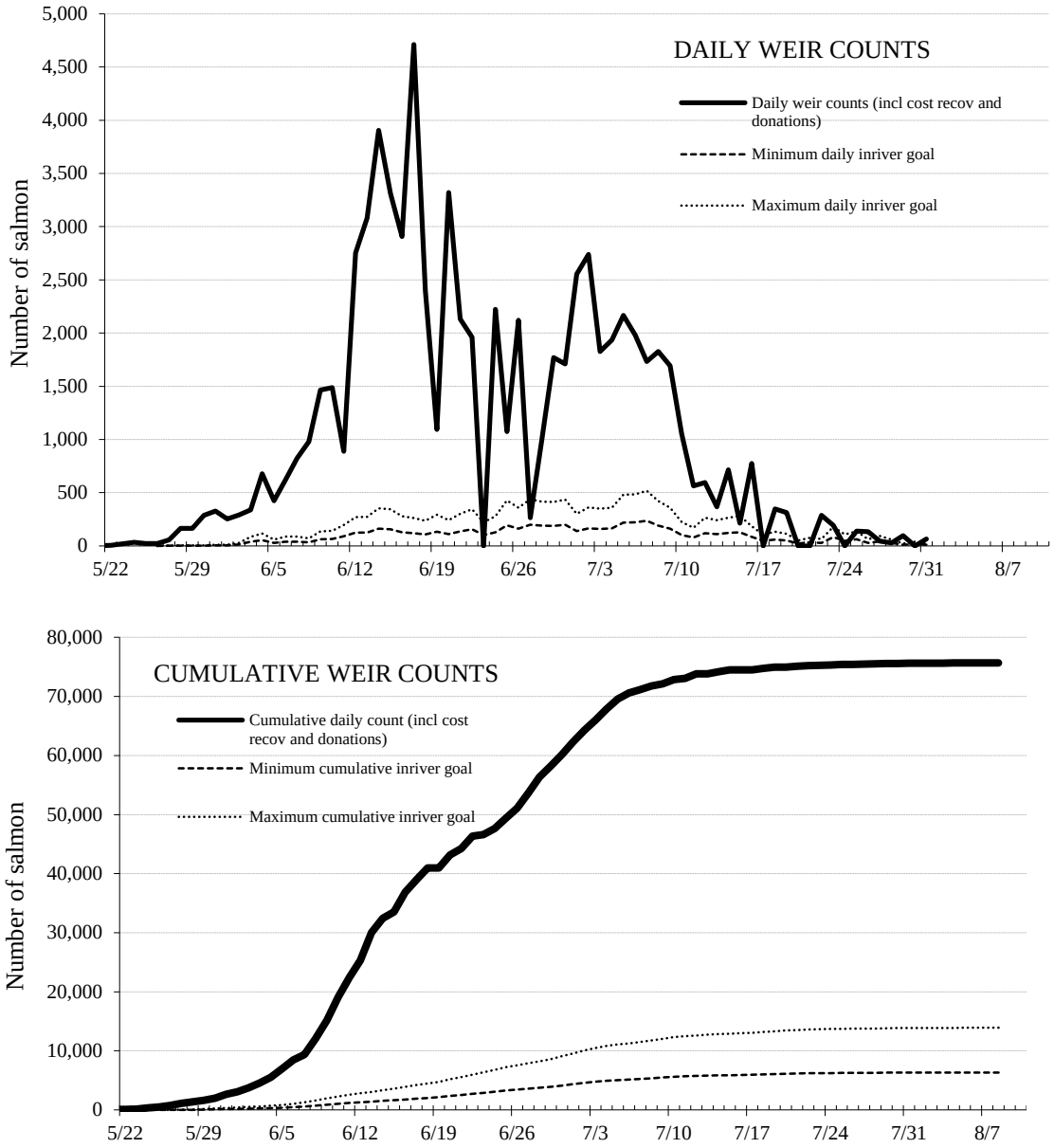
	Actual Escapement to Bear Lake			Anticipated SEG plus CIAA brood goal [a]				Actual weir donations[b]		Actual weir cost recovery		Actual Total sockeye at Bear Creek weir	
			Antic.	Minimum		Maximum							
Date	Daily	Total	percent	Daily	Total	Daily	Total	Daily	Total	Daily	Total	Daily	Total
6/27	0	12,775	56.5%	165	3,602	361	7,899			2,554	40,875	2,554	53,650
6/28	0	12,775	59.0%	159	3,761	349	8,248			2,738	43,613	2,738	56,388
6/29	0	12,775	61.6%	164	3,924	359	8,606			1,826	45,439	1,826	58,214
6/30	0	12,775	65.1%	220	4,144	482	9,088			1,936	47,375	1,936	60,150
7/1	0	12,775	68.5%	221	4,364	484	9,572			2,166	49,541	2,166	62,316
7/2	0	12,775	72.2%	237	4,601	519	10,091			1,980	51,521	1,980	64,296
7/3	0	12,775	75.2%	192	4,793	420	10,511			1,732	53,253	1,732	66,028
7/4	0	12,775	77.8%	163	4,956	357	10,869			1826	55,079	1,826	67,854
7/5	0	12,775	79.4%	103	5,058	225	11,094			1,692	56,771	1,692	69,546
7/6	0	12,775	80.6%	78	5,137	172	11,265			1,054	57,825	1,054	70,600
7/7	0	12,775	82.5%	120	5,257	263	11,529			564	58,389	564	71,164
7/8	0	12,775	84.3%	111	5,368	243	11,772			594	58,983	594	71,758
7/9	0	12,775	86.2%	121	5,489	266	12,038			366	59,349	366	72,124
7/10	0	12,775	88.2%	128	5,617	282	12,319			714	60,063	714	72,838
7/11	0	12,775	89.5%	84	5,701	184	12,503			212	60,275	212	73,050
7/12	0	12,775	90.3%	48	5,749	106	12,609			776	61,051	776	73,826
7/13	0	12,775	91.2%	60	5,810	133	12,741				61,051	0	73,826
7/14	0	12,775	92.0%	52	5,861	113	12,855			346	61,397	346	74,172
7/15	0	12,775	92.4%	23	5,885	51	12,906	312	312		61,397	312	74,484
7/16	0	12,775	92.9%	35	5,919	76	12,982		312		61,397	0	74,484
7/17	0	12,775	93.4%	29	5,949	64	13,046		312		61,397	0	74,484
7/18	0	12,775	94.7%	82	6,030	179	13,225	286	598		61,397	286	74,770
7/19	0	12,775	95.4%	49	6,079	108	13,333	192	790		61,397	192	74,962
7/20	0	12,775	96.4%	62	6,141	136	13,469		790		61,397	0	74,962
7/21	0	12,775	96.9%	28	6,170	62	13,530	139	929		61,397	139	75,101
7/22	0	12,775	97.5%	42	6,212	92	13,623	133	1,062		61,397	133	75,234
7/23	0	12,775	97.9%	27	6,239	60	13,682	46	1,108		61,397	46	75,280
7/24	0	12,775	98.1%	10	6,249	22	13,704	27	1,135		61,397	27	75,307
7/25	0	12,775	98.4%	17	6,266	38	13,742	96	1,231		61,397	96	75,403
7/26	0	12,775	98.5%	9	6,276	21	13,763		1,231		61,397	0	75,403
7/27	0	12,775	98.6%	7	6,283	16	13,779	64	1,295		61,397	64	75,467
7/28	0	12,775	98.7%	5	6,288	12	13,791	43	1,338		61,397	43	75,510
7/29	0	12,775	99.1%	23	6,311	51	13,841	49	1,387		61,397	49	75,559
7/30	0	12,775	99.3%	11	6,323	25	13,866		1,387		61,397	0	75,559
8/1	0	12,775	99.4%	5	6,330	10	13,882		1,441		61,397	0	75,613
8/2	0	12,775	99.4%	3	6,333	7	13,889	6	1,447		61,397	6	75,619
8/3	0	12,775	99.4%	2	6,335	4	13,893	29	1,476		61,397	29	75,648
8/4	0	12,775	99.5%	1	6,336	2	13,895	8	1,484	17	61,414	25	75,673
8/5	0	12,775	99.6%	11	6,347	24	13,919		1,484	8	61,422	8	75,681
8/6	0	12,775	99.7%	2	6,349	4	13,923		1,484	4	61,426	4	75,685
8/7	0	12,775 [c]	99.7%	2	6,351	5	13,928		1,484	5	61,431	5	75,690

Note: Bear Creek sustainable escapement goal is 700–8,300 sockeye salmon. CIAA broodstock goal is 5,670 for a desired inriver run of 6,370–13,970 fish.

[a] Projected daily goal based on expected run timing applied to minimum and maximum cumulative goals at the end of the run.

[b] Weir harvest is cost recovery and donations of excess fish above daily SEG plus broodstock needs.

[c] A total of 3,764 sockeye salmon were beach seined from the lake for use as broodstock.



Appendix C4.–Sockeye salmon counts at the Bear Creek weir versus minimum and maximum desired inriver run, 2016.

Note: A total of 75,685 sockeye salmon returned to the Bear Creek weir in 2016. Of those, 12,775 were passed through the weir into Bear Lake. An additional 62,910 were harvested at the weir for cost recovery or donated to the public. A total of 3,764 were harvested from Bear Lake for use as hatchery broodstock. Total estimated natural spawning escapement is estimated at 9,011 fish. The "desired inriver run" is the CIAA hatchery broodstock goal (5,670) added to the sustainable escapement goal range (700–8,300) for this species.

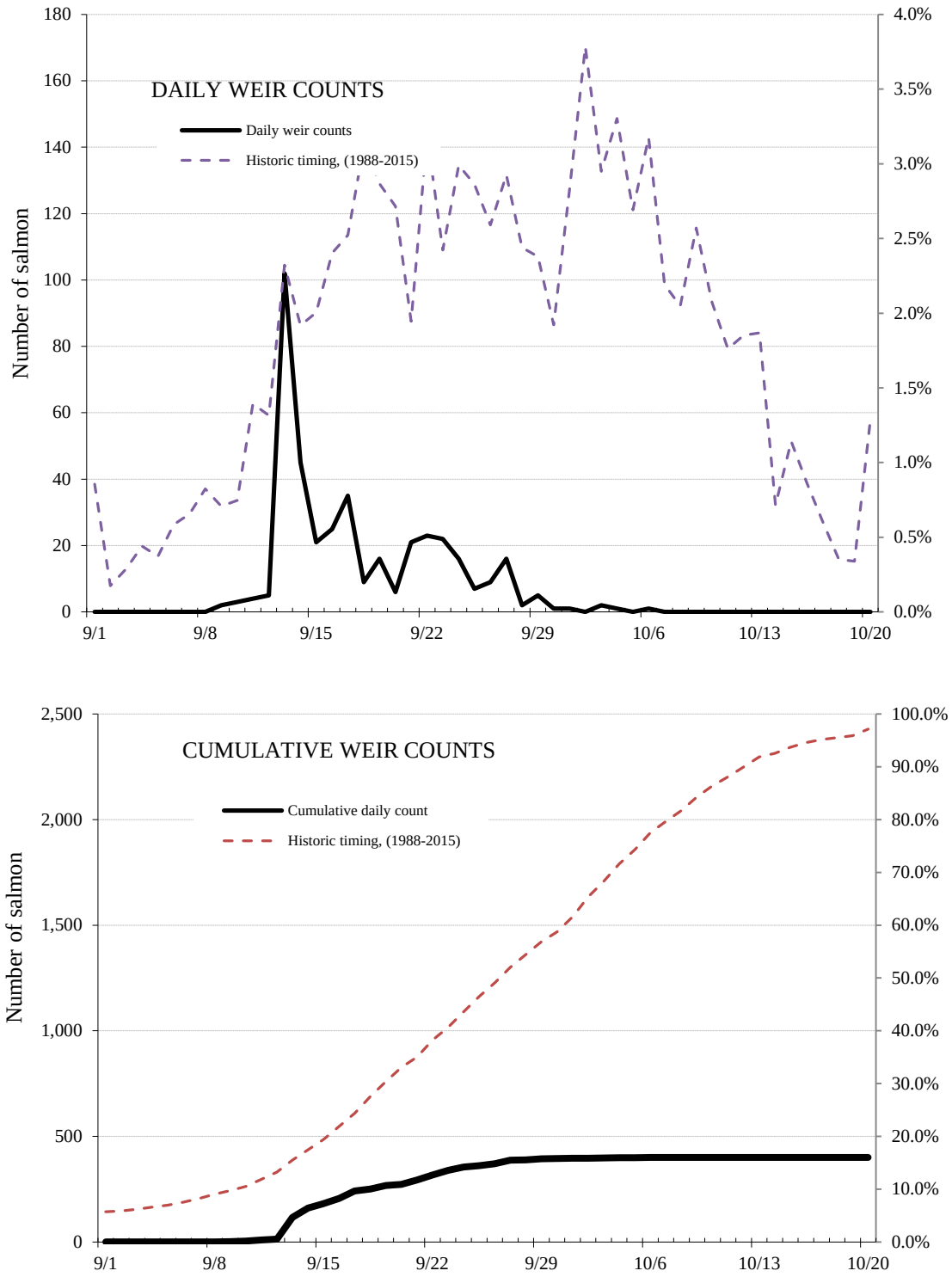
Appendix C5.–Coho salmon escapement through the Bear Creek weir, 2016.

	Escapement to Bear Lake		Antic.	Broodstock harvest[a]		Weir donations		Cumulative coho at Bear Creek weir	
Date	Daily	Total	percent	Daily	Total	Daily	Total	Daily	Total
9/9	2	2	4.9%	0	0	0	0	2	2
9/10	3	5	5.3%	0	0	0	0	3	5
9/11	4	9	7.3%	0	0	0	0	4	9
9/12	5	14	8.6%	0	0	0	0	5	14
9/13	46	60	12.5%	56	56	0	0	102	116
9/14	1	61	15.2%	44	100	0	0	45	161
9/15	0	61	17.4%	21	121	0	0	21	182
9/16	0	61	20.9%	25	146	0	0	25	207
9/17	0	61	24.4%	35	181	0	0	35	242
9/18	0	61	27.4%	9	190	0	0	9	251
9/19	0	61	30.8%	16	206	0	0	16	267
9/20	0	61	33.8%	6	212	0	0	6	273
9/21	0	61	34.9%	21	233	0	0	21	294
9/22	0	61	36.2%	23	256	0	0	23	317
9/23	0	61	37.2%	22	278	0	0	22	339
9/24	0	61	39.6%	16	294	0	0	16	355
9/25	0	61	41.9%	7	301	0	0	7	362
9/26	0	61	43.8%	9	310	0	0	9	371
9/27	0	61	45.8%	16	326	0	0	16	387
9/28	0	61	47.9%	2	328	0	0	2	389
9/29	0	61	50.0%	5	333	0	0	5	394
9/30	0	61	52.1%	1	334	0	0	1	395
10/1	0	61	55.4%	1	335	0	0	1	396
10/2	0	61	59.1%	0	335	0	0	0	396
10/3	0	61	62.0%	2	337	0	0	2	398
10/4	0	61	65.6%	1	338	0	0	1	399
10/5	0	61	68.9%	0	338	0	0	0	399
10/6	0	61	72.6%	1	339	0	0	1	400
10/7	0	61	74.8%	0	339	0	0	0	400
10/8	0	61	75.6%	0	339	0	0	0	400
10/9	0	61	77.4%	9[b]	348	0	0	0	409
10/10	89	150	79.7%	-89[c]	259	0	0	0	409
10/11	0	150	82.7%	0	259	0	0	0	409

[a] A total of 257 fish were harvested for broodstock by CIAA.

[b] Unassigned counting error at the weir.

[c] A total of 89 coho salmon were removed from the raceways on October 10 and released into Bear Lake.



Appendix C6.–Coho salmon counts at the Bear Creek weir, 2016.

Appendix C7.–Adult sockeye and coho salmon escapement, and Dolly Varden char and smolt outmigrations past Bear Creek weir, 1992–2016.

	Upstream migration to Bear Lake								Downstream migration to Resurrection Bay			
	Sockeye				Coho							
Year	Weir harvest, (sold or donated)	Brood stock harvest	Spawning escapement	Total run at weir	Weir harvest, (sold or donated)	Brood stock harvest	Spawning escapement	Total run at weir	Sockeye (smolt)	Coho (smolt)	Dolly Varden (adult)	Comments
1992			1,925	1,925	1,234	689	1,132	3,055	133,787	112,852	2,186	Est. 800 coho below weir after closure.
1993	1,663	218	4,827	6,708	7,199	678	794	8,671	345,767	53,495	378	5,000 pink salmon below weir.
1994	8,047	1,370	7,335	16,752	4,927	1,038	475	6,440	253,886	54,422	627	Est. 300 coho below weir after closure.
1995	20,869	1,808	6,526	29,203	1,125	1,726	444	3,295	73,500	89,200	278	
1996	7,945	1,813	6,199	15,957	723	608	380	1,711	156,000	154,900	406	Est. 3,600 coho below weir after closure.
1997	10,051	720	7,225	17,996		598	276	874	276,000	114,100	630	Est. 750 coho below weir after closure.
1998	21,020	2,272	6,155	29,447	9,862	780	350	11,023	107,800	92,200	1,203	Coho reported below weir after closure.
1999	9,146	1,982	5,833	17,439	2,499	939	368	3,812	75,800	106,800	2,212	23 coho below weir after closure.
2000	1,670	3,984	7,844	13,716	5,390	719	597	6,765	175,000	70,900	2,195	Est. 200 coho below weir after closure.
2001	3,558	4,195	8,606	16,364	1,754	644	495	2,893	387,500	101,400	1,168	Est. 20 coho below weir after closure.
2002	2,722	4,226	8,278	15,227	1,745	864	875	3,484	107,200	94,200	1,168	
2003	2,776	3,735	9,498	16,010	2,065	1,021	395	3,506	1,326,476	208,120	231	
2004		3,725	8,198	11,923	1,224	876	572	2,672	123,213	73,397	158	
2005	31,905	3,122	10,285	45,312	1,536	808	546	2,947	1,420,428	65,448	51	
2006	30,651	4,060	8,338	43,049	681	892	516	2,089	1,962,415	49,980	95	
2007	7,250	4,265	8,575	20,090		727	386	1,113	1,347,874	78,891	64	
2008	3,706	4,172	9,264	17,142	403	697	368	1,467	308,459	63,943	60	
2009	32,515	2,954	10,364	45,833		529	535		241,106	54,829	44	181 coho below weir after closure.
2010	2,943	4,004	8,880	15,827	248	490	492	1,230	598,911	48,867	349	
2011	4,894	3,612	9,608	18,114		491	359	850	477,844	40,433	2,681	
2012	1,802	4,428	8,031	14,381	31	578	315	924	466,990	45,936	1,425	4,000 pink salmon below weir.
2013	3,162	3,606	9,004	15,772	2,044	1,103	300	3,447	791,705	36,219	759	
2014	15,569	3,857	9,233	28,659	671	567	534	1,772	393,553	21,113	191	
2015	37,821	3,945	9,560	51,326	1,013	705	261	1,979	728,764	91,657	263	
Prev 10yr	14,031	3,890	9,086	27,019	518	679	407	1,604	731,762	53,187	593	
2016	62,915	3,764	9,011	75,690	0	250	150	400	904,494	71,199	181	

Source: http://www.ciaanet.org/Projects/2016_BEAR%20LAKE%20RPT.pdf.

Appendix C8.–Sockeye salmon aerial survey counts from the Eastern District, 2016.

Location	Survey number	Survey date	Live count	Peak count
Aialik Lake and creek	1	7/1/16	210	
	2	7/13/16	400	
	3	8/9/16	93	
	4	8/28/16	11	
	5	9/30/16	0	400

Appendix C9.–Estimated sockeye and pink salmon escapements in thousands of fish for the major spawning systems in the Eastern District of the Lower Cook Inlet Area, 1975–2016.

	Pink salmon							Sockeye salmon		
Year	Aialik Lagoon	Bear Creek	Salmon Creek	Tonsina Creek	Thumb Cove	Humpy Cove	Total	Aialik Lake	Bear Lake [a,b]	Total
1975								8.0	0	8.0
1976	0.4	10.0	16.9	5.7	2.0	1.4	36.4	8.0	0.6	8.6
1977								5.0	0	5.0
1978		7.8	11.0	1.5	2.0	0.9	23.2	3.0	0	3.0
1979								5.0	0	5.0
1980		13.3	15.5	0.7	1.2	5.7	36.4	6.6	1.5	8.1
1981		0.4	0.1	0.2	1.0	0.4	2.1	1.8	0.7	2.5
1982	5.0	7.9	21.0	7.5	7.9	4.0	53.3	22.4	0.5	22.9
1983	3.0	0.8	0.5	5.4	4.9	2.0	16.6	20.0	0.7	20.7
1984	4.0	7.7	10.2	6.0	4.2	2.5	34.6	22.0	0.5	22.5
1985	9.4	4.1	2.1	48.2	14.5	5.0	83.3	8.0	1.1	9.1
1986	6.0	14.0	8.3	11.2	4.0	0.9	44.4	7.6	0.8	8.4
1987	1.5	3.5	1.7	3.4	2.7	0.3	13.1	9.2	0.3	9.5
1988	0.7	0.2	0.1	0.1	0.3	0.4	1.8	13.0	0.1	13.1
1989	0.8	1.7	1.6	0.5	4.2	1.0	9.8	6.5	0.1	6.6
1990		4.4		1.2		3.8	9.4	5.7	0.1	5.8
1991		15.4		0.3	3.4		19.1	3.7	0.7	4.4
1992		2.3			0.4		2.7	2.5	1.9	4.4
1993		6.6		3.2	5.5	0.9	16.2	3.0	4.8	7.8
1994		34.8		7.0	10.8	2.2	54.8	7.3	7.3	14.6
1995	1.1	38.6		0.5	9.3	1.8	51.3	2.6	6.5	9.1
1996		8.0		0.4	9.5	3.4	21.3	3.5	6.2	9.7
1997		6.3		0.4	4.7	2.2	13.6	11.4	7.2	18.6
1998	0.4	13.2		2.3	21.0	1.2	38.1	4.9	6.2	11.1
1999	0.9	7.8		0.5	9.2	4.0	22.4	3.8	5.8	9.6
2000		35.6		6.6	8.5	1.7	52.4	4.3	7.8	12.1
2001		3.0		2.8	3.1	0.3	9.2	5.1	8.6	13.7
2002		2.7		6.9	3.7	1.8	15.1	6.1	8.3	14.4
2003		4.4		5.2	5.1	2.6	17.3	5.4	9.5	14.9
2004		1.2		3.5	4.3	1.0	10.0	10.1	8.2	18.3
2005	0.8	34.5		9.9	8.7	14.6	68.5	5.3	10.3	15.6
2006		9.0		6.5	5.2	1.9	22.6	4.8	8.3	13.1
2007								5.4	8.6	13.9
2008								4.2	9.3	13.5
2009								3.1	10.4	13.5
2010								5.3	8.9	14.2
2011								3.5	9.6	13.1
2012	0.0	4.1						2.1	8.0	10.1
2013	0.0	8.1		5.3	0.6	1.8	15.8	3.5	9.0	12.5
2014							0.0	0.5	9.1	9.6
2015	0.8						0.8	3.2	9.6	12.7
10-yr avg.	0.3	7.1		5.9	2.9	1.8	9.8	3.6	9.1	12.6
2016								0.4	9.0	9.4

[a] Weir counts.

[b] Beginning in 1994, Bear Lake escapement figures are derived from total weir count minus number of fish collected for hatchery broodstock.

APPENDIX D: KAMISHAK BAY DISTRICT

Appendix D1.–Kamishak Bay District commercial salmon harvest (excluding homepacks) by period, 2016.

			Permits		Chinook		Sockeye		Coho		Pink		Chum	
Period	Date	Hours	Fished	Landings	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
1 [a]	06/01-06/04	160												
2 [a]	06/05-06/11	160												
3 [a]	06/12-06/18	160												
4 [a]	06/19-06/25	160												
5 [a,b,c]	06/26-07/02	160	[c]	[c]			[c]	[c]			[c]	[c]	[c]	[c]
6 [a,b,c,d]	07/03-07/09	160	[c]	[c]			[c]	[c]			[c]	[c]		
7 [a,b,c,d]	07/10-07/16	160	[c]	[c]			[c]	[c]			[c]	[c]		
8 [a,b,c,d]	07/17-07/23	160	[c]	[c]			[c]	[c]			[c]	[c]	[c]	[c]
9 [a,d]	07/24-07/30	160	3	3			1,411	6,654	1	7	68	270	2,735	20,154
10 [a,c,d]	07/31-08/06	160	[c]	[c]			[c]	[c]			[c]	[c]	[c]	[c]
11 [a,c,d]	08/07-08/13	160	[c]	[c]			[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]
12 [a,d,e]	08/14-08/20	160												
Total			5	13			18,218	72,905	578	3,929	350	1,599	10,984	78,237
Average weight						NA		4.00		6.80		4.57		7.12

Note: Unless otherwise noted, all Kamishak Bay Subdistricts were open to commercial harvest from June 1, 2016, to September 18, 2016, with regular closed waters in effect.

[a] Waters of Kamishak Bay District open to commercial purse seine harvest with the McNeil and Paint River subdistricts closing after June 20.

[b] Waters of Kirschner Lake SHA closed June 29–July 26.

[c] Confidential data. Fewer than 3 permits reporting.

[d] Regulatory closed waters at Chenik Lagoon suspended.

[e] No deliveries during Periods 12–15 that occurred from August 14 through September 17.

Appendix D2.–Total commercial common property harvest (excluding homepacks) by species in the Kamishak Bay District 1970–2016.

Year	Permits	Landings	Chinook	Sockeye	Coho	Pink	Chum
1970			0	2,846	218	22,500	95,841
1971			0	3	121	32,094	26,327
1972			0	47	31	342	26,374
1973			0	1	28	12,568	35,584
1974			0	0	2,915	48	4,554
1975			0	29	3,041	9,432	4,868
1976			1	3,988	1,111	1,112	48,848
1977			1	7,425	105	6,308	65,659
1978			0	4,619	1,584	982	48,669
1979			9	1,778	1,116	58,484	28,711
1980			0	3,877	2,495	101,864	35,921
1981			1	4,972	1,845	66,097	73,501
1982			11	18,014	38,685	43,871	108,946
1983			1	11,207	7,138	1,405	142,901
1984			2	24,642	13,230	137,133	70,595
1985	10	72	6	78,076	2,024	194	8,139
1986	25	386	14	146,496	9,935	423,774	61,670
1987	32	439	7	123,663	8,079	72,686	110,565
1988	38	634	33	186,011	4,471	64,468	220,579
1989	20	144	3	46,395	4	256,669	7,809
1990	30	318	12	96,397	26	2,448	3,597
1991	33	479	17	127,579	2,337	47,478	7,849
1992	23	232	39	60,078	1,488	2,594	20,051
1993	14	89	4	59,745	3	4,205	600
1994	8	17	0	18,509	1,897	33	14
1995	7	27	2	31,077	6,084	169,039	10,300
1996	2	3	0	18,093	0	19	1
1997	3	6	0	5,608	0	0	3
1998	4	4	0	8,112	0	414	20
1999	6	8	0	29,409	0	325	23
2000	10	41	1	10,245	7	6,173	66,069
2001	7	40	2	9,972	9	131	84,766
2002	5	53	0	1,429	52	438,352	34,604
2003	2	13	0	12,512	0	5,571	29,737
2004	6	46	0	35,285	5,367	12,969	177,395
2005	8	37	0	50,018	92	5,787	83,943
2006	5	34	0	38,267	24,269	77,833	56,494
2007	4	24	0	169,509	4	4,959	37
2008	11	44	2	171,924	20	26,397	73,209
2009	9	81	0	65,763	0	132,414	36,574
2010	9	54	10	5,612	573	2,432	70,782
2011	5	38	0	99,288	0	1,050	3,850
2012	6	34	0	55,255	0	61	2,425
2013	5	15	0	33,154	0	314	2,357
2014	8	20	0	12,137	0	44,227	4,449
2015	2	3	0	0	0	33,735	626
Previous 10-yr avg.	6	35	1	65,091	2,487	32,342	25,080
2016	5	13	0	18,218	578	350	10,984

Source: ADF&G fish ticket database.

Appendix D3.–Anticipated daily and cumulative sockeye salmon escapement versus actual escapement past the video monitoring site at Chenik Lake, 2016.

	Actual		Antic.	Apportioned sustainable escapement goals				
				Projected minimum		Projected maximum		
Date	Daily	Cumulative	percent	Daily	Cumulative	Daily	Cumulative	Comments
6/16	5	5	0.1%	77	718	310	2,871	Camera installed on 6/16.
6/17	7	12	0.1%	218	936	872	3,743	
6/18	4	16	0.1%	243	1,178	971	4,714	
6/19	115	131	0.3%	299	1,477	1,195	5,909	
6/20	6	137	0.3%	99	1,576	397	6,305	
6/21	1	138	0.3%	182	1,758	726	7,031	
6/22	0	138	0.4%	132	1,890	527	7,558	
6/23	0	138	0.4%	11	1,901	46	7,604	
6/24	0	138	0.8%	9	1,910	37	7,641	
6/25	189	327	4.5%	51	1,961	203	7,844	
6/26	1,178	1,505	8.7%	230	2,191	921	8,765	
6/27	1,393	2,898	14.1%	143	2,334	571	9,336	
6/28	100	2,998	14.2%	124	2,458	496	9,832	
6/29	11	3,009	15.5%	51	2,509	203	10,035	
6/30	1,203	4,212	18.4%	9	2,518	38	10,073	
7/1	2,963	7,175	20.6%	17	2,535	67	10,140	
7/2	1,191	8,366	26.9%	1	2,535	2	10,142	
7/3	2,023	10,389	33.8%	92	2,628	370	10,512	
7/4	215	10,604	42.3%	66	2,694	262	10,774	
7/5	25	10,629	45.2%	88	2,781	350	11,125	
7/6	70	10,699	50.4%	9	2,791	38	11,162	
7/7	1,229	11,928	54.1%	42	2,832	166	11,329	
7/8	47	11,975	54.4%	21	2,853	85	11,413	
7/9	254	12,229	54.7%	39	2,893	157	11,570	
7/10	236	12,465	56.2%	110	3,003	440	12,011	
7/11	0	12,465	62.7%	35	3,037	139	12,150	
7/12	398	12,863	66.8%	109	3,146	435	12,585	
7/13	88	12,951	70.4%	159	3,305	636	13,221	
7/14	90	13,041	71.8%	61	3,366	244	13,465	
7/15	390	13,431	72.1%	25	3,392	102	13,566	
7/16	691	14,122	72.6%	34	3,426	138	13,704	
7/17	0	14,122	72.6%	15	3,440	58	13,762	
7/18	125	14,247	75.2%	17	3,457	67	13,829	
7/19	822	15,069	77.1%	5	3,462	21	13,850	
7/20	563	15,632	79.6%	13	3,475	52	13,901	
7/21	766	16,398	79.9%	6	3,481	24	13,926	
7/22	440	16,838	81.1%	8	3,490	33	13,959	
7/23	379	17,217	81.7%	2	3,492	9	13,968	
7/24	122	17,339	82.8%	0	3,492	0	13,968	
7/25	144	17,483	85.9%	0	3,492	1	13,969	
7/26	503	17,986	86.9%	0	3,492	1	13,970	
7/27	183	18,169	90.0%	2	3,494	7	13,977	
7/28	368	18,537	94.6%	1	3,495	3	13,980	
7/29	118	18,655	96.3%	0	3,495	0	13,980	
7/30	156	18,811	97.0%	0	3,495	2	13,982	
7/31	0	18,811	98.0%	0	3,495	0	13,982	Hard drive filled

-continued-

Appendix D3.–Page 2 of 2.

	Actual		Antic.	Apportioned sustainable escapement goals				
				Projected minimum		Projected maximum		
Date	Daily	Cumulative	percent	Daily	Cumulative	Daily	Cumulative	Comments
8/1	0	18,811	98.4%	0	3,495	0	13,982	no count
8/2	0	18,811	98.9%	0	3,495	0	13,982	no count
8/3	173	18,984	99.1%	0	3,495	0	13,982	Fresh drive installed, partial count
8/4	88	19,072	99.4%	0	3,495	0	13,982	
8/5	111	19,183	99.6%	0	3,495	0	13,982	
8/6	195	19,378	99.8%	0	3,495	2	13,984	
8/7	56	19,434	99.9%	0	3,495	0	13,984	
8/8	38	19,472	99.9%	0	3,495	0	13,984	
8/9	3	19,475	99.9%	0	3,495	0	13,984	
8/10	15	19,490	99.9%	0	3,495	0	13,984	
8/11	20	19,510	100.0%	0	3,495	0	13,984	
8/12	0	19,510	100.0%	0	3,495	0	13,984	
8/13	0	19,510	100.0%	0	3,495	0	13,984	
8/14	0	19,510	100.0%	0	3,495	0	13,984	
8/15	0	19,510	100.0%	0	3,495	0	13,984	
8/16	0	19,510	100.0%	0	3,495	0	13,984	
8/17	0	19,510	100.0%	0	3,495	0	13,984	
8/18	0	19,510	100.0%	0	3,495	0	13,984	
8/19	0	19,510	100.0%	0	3,495	0	13,984	
8/20	0	19,510	100.0%	0	3,495	0	13,984	
8/21	0	19,510	100.0%	0	3,495	0	13,984	
8/22	0	19,510	100.0%	0	3,495	0	13,984	
8/23	0	19,510	100.0%	0	3,495	0	13,984	Hard drive turned off 8/23 afternoon.

Note: Anticipated escapement derived from run timing and Chenik Lake sockeye salmon sustainable escapement goal (3,500–14,000 fish).

Appendix D4.–Anticipated daily and cumulative sockeye salmon escapement versus actual escapement past the video monitoring site at Mikfik Lake, 2016.

	Actual		Antic	Apportioned sustainable escapement goal				
				Projected minimum		Projected maximum		
Date	Daily	Cumulative	percent	Daily	Cumulative	Daily	Cumulative	Comments
5/25	0	0	0.0%	0	0	0	0	Camera installed, 5/25.
5/26	0	0	0.0%	0	0	0	0	
5/27	0	0	0.0%	0	0	0	0	
5/28	0	0	0.1%	5	5	19	19	
5/29	0	0	0.2%	0	0	0	0	
5/30	0	0	0.2%	0	0	0	0	
5/31	0	0	0.3%	5	5	18	18	
6/1	0	0	0.7%	15	15	58	58	
6/2	0	0	2.9%	74	89	282	340	
6/3	0	0	3.8%	30	119	116	456	
6/4	0	0	5.3%	51	171	197	653	
6/5	0	0	6.6%	43	213	163	816	
6/6	0	0	6.7%	6	219	23	839	
6/7	369	369	7.6%	29	249	112	951	
6/8	1,031	1,400	8.6%	33	282	128	1,078	
6/9	74	1,474	11.4%	95	377	363	1,442	
6/10	317	1,791	15.8%	149	526	568	2,010	
6/11	192	1,983	27.5%	398	923	1,521	3,531	
6/12	382	2,365	29.5%	70	994	269	3,800	
6/13	707	3,072	43.3%	469	1,463	1,792	5,592	
6/14	1,107	4,179	48.5%	177	1,640	678	6,271	
6/15	764	4,943	50.6%	72	1,712	274	6,545	
6/16	101	5,044	51.4%	25	1,737	96	6,641	
6/17	0	5,044	55.5%	139	1,876	533	7,174	
6/18	225	5,269	56.6%	37	1,914	143	7,317	
6/19	116	5,385	62.4%	199	2,112	759	8,076	
6/20	0	5,385	67.4%	170	2,283	651	8,727	
6/21	5	5,390	70.3%	98	2,381	376	9,103	
6/22	21	5,411	71.7%	48	2,429	183	9,287	
6/23	0	5,411	72.2%	15	2,444	57	9,343	
6/24	0	5,411	76.8%	159	2,603	609	9,952	
6/25	1,243	6,654	77.6%	25	2,628	96	10,048	
6/26	1,066	7,720	78.7%	39	2,667	148	10,196	
6/27	44	7,764	82.1%	114	2,781	437	10,633	
6/28	0	7,764	83.4%	45	2,826	173	10,806	
6/29	0	7,764	84.1%	22	2,848	84	10,890	
6/30	0	7,764	84.1%	0	2,848	0	10,890	
7/1	4	7,768	84.1%	0	2,849	2	10,892	
7/2	359	8,127	84.9%	27	2,876	105	10,997	
7/3	68	8,195	84.9%	1	2,877	3	11,000	
7/4	262	8,457	85.1%	8	2,885	30	11,030	
7/5	106	8,563	85.4%	8	2,893	31	11,060	
7/6	584	9,147	89.2%	132	3,025	504	11,564	
7/7	160	9,307	91.6%	79	3,103	301	11,865	
7/8	0	9,307	92.0%	13	3,116	51	11,916	
7/9	28	9,335	92.2%	9	3,126	36	11,952	

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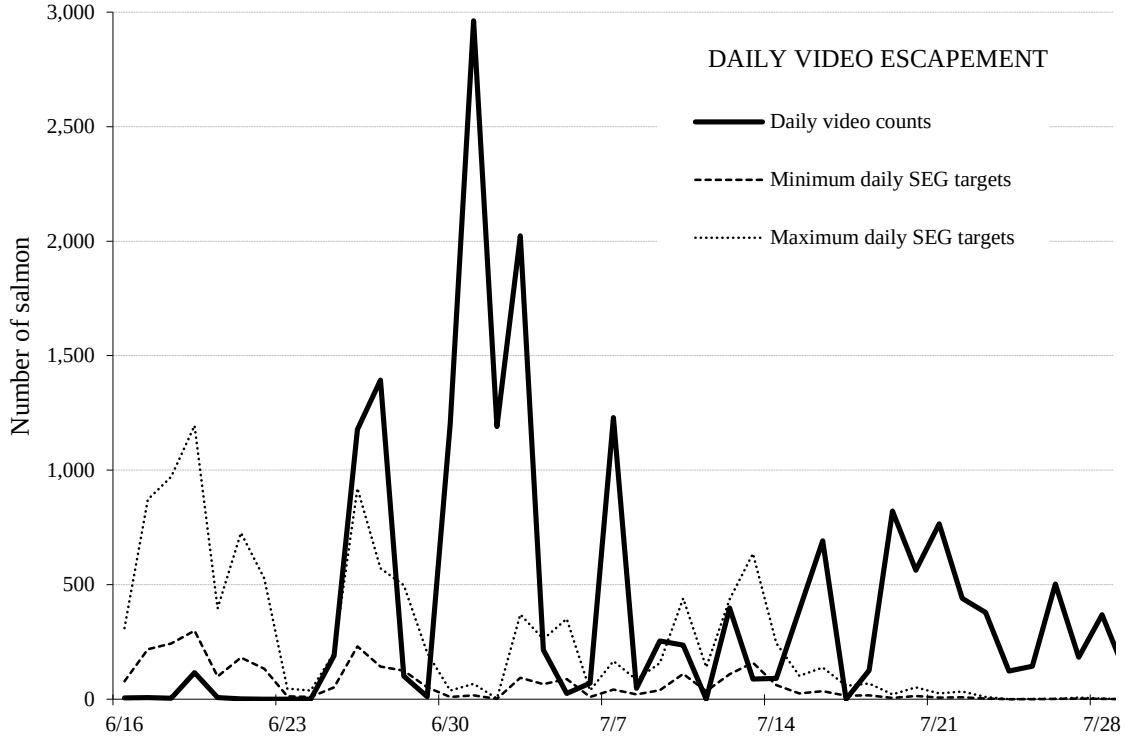
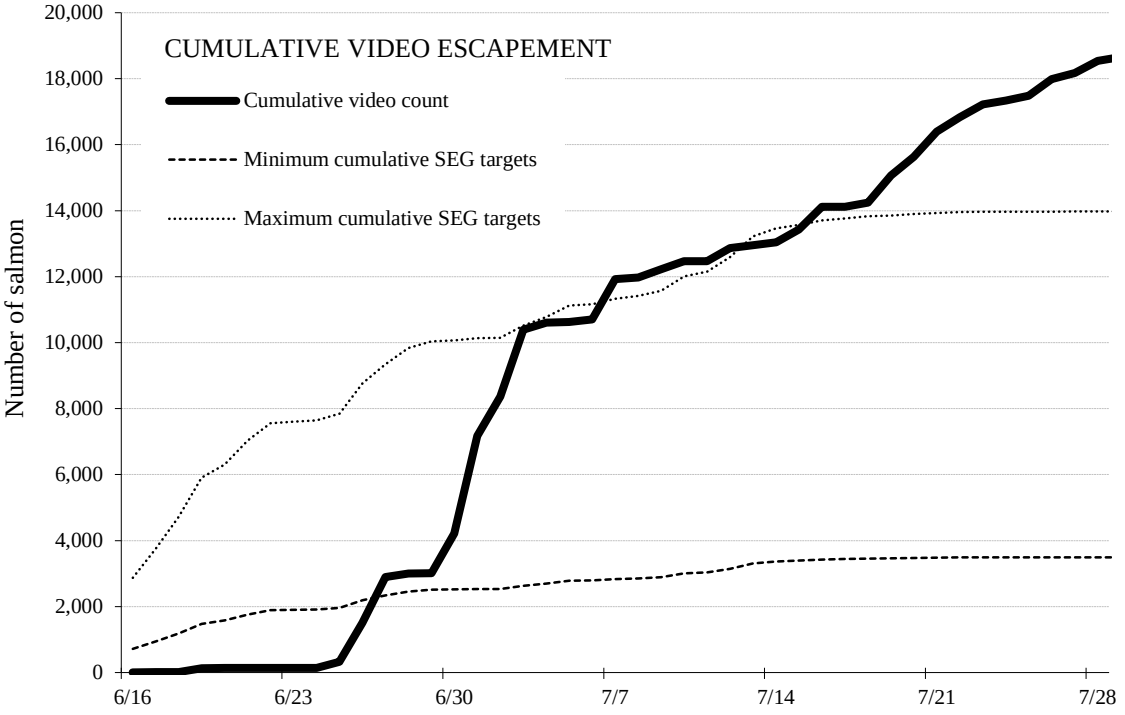
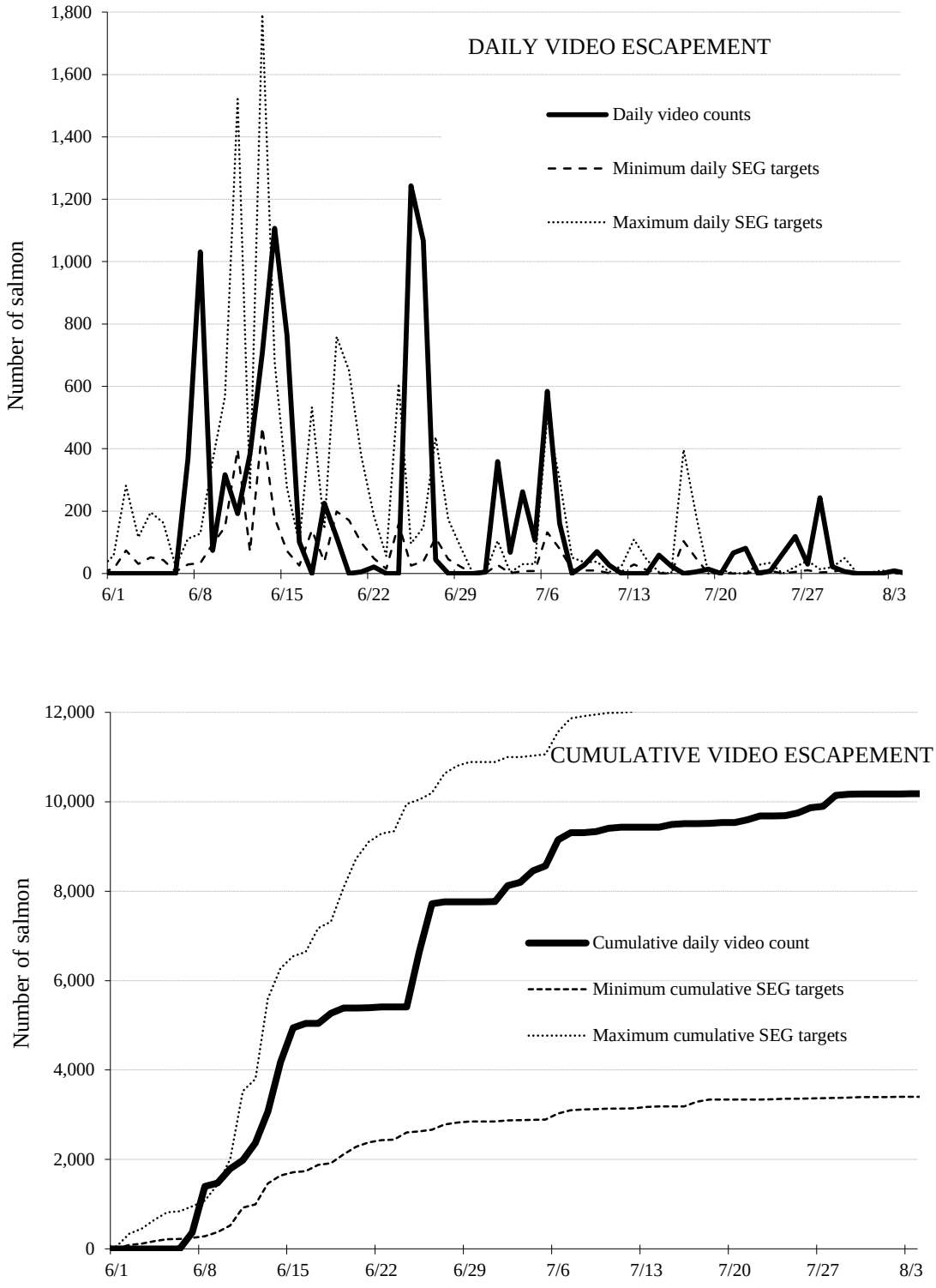
	Actual		Antic	Apportioned sustainable escapement goal				
				Projected minimum		Projected maximum		
Date	Daily	Cumulative	percent	Daily	Cumulative	Daily	Cumulative	Comments
7/10	70	9,405	92.5%	10	3,136	38	11,990	
7/11	26	9,431	92.6%	1	3,137	4	11,994	
7/12	0	9,431	92.7%	6	3,143	25	12,019	
7/13	0	9,431	93.6%	29	3,172	109	12,128	
7/14	0	9,431	93.9%	12	3,184	45	12,172	
7/15	59	9,490	94.0%	1	3,185	4	12,177	
7/16	24	9,514	94.0%	0	3,185	0	12,177	
7/17	0	9,514	97.0%	104	3,288	397	12,573	
7/18	5	9,519	98.5%	50	3,338	189	12,762	
7/19	14	9,533	98.5%	0	3,338	0	12,762	
7/20	0	9,533	98.5%	3	3,341	11	12,773	
7/21	66	9,599	98.6%	0	3,341	1	12,774	
7/22	81	9,680	98.6%	0	3,341	1	12,775	
7/23	0	9,680	98.8%	7	3,348	27	12,802	
7/24	8	9,688	99.0%	9	3,357	35	12,837	
7/25	63	9,751	99.0%	0	3,357	0	12,837	
7/26	119	9,870	99.2%	5	3,363	21	12,857	
7/27	30	9,900	99.5%	11	3,373	41	12,898	
7/28	243	10,143	99.6%	4	3,377	14	12,912	
7/29	22	10,165	99.8%	5	3,382	20	12,932	
7/30	6	10,171	100.1%	13	3,395	49	12,981	
7/31	0	10,171	100.2%	0	3,395	1	12,982	
8/1	0	10,171	100.2%	1	3,396	3	12,985	
8/2	0	10,171	100.3%	3	3,399	10	12,995	
8/3	9	10,180	100.3%	0	3,399	1	12,996	
8/4	0	10,180	100.3%	0	3,399	0	12,996	
8/5	0	10,180	100.3%	0	3,399	0	12,996	
8/6	0	10,180	100.3%	1	3,400	2	12,998	
8/7	0	10,180	100.3%	0	3,400	1	12,999	
8/8	0	10,180	100.3%	0	3,400	1	13,000	
8/9	0	10,180	100.3%	0	3,400	0	13,000	
8/10	0	10,180	100.3%	0	3,400	0	13,000	
8/11	0	10,180	100.3%	0	3,400	0	13,000	
8/12	0	10,180	100.3%	0	3,400	0	13,000	
8/13	0	10,180	100.3%	0	3,400	0	13,000	
8/14	0	10,180	100.3%	0	3,400	0	13,000	
8/15	0	10,180	100.3%	0	3,400	0	13,000	
8/16	0	10,180	100.3%	0	3,400	0	13,000	
8/17	0	10,180	100.3%	0	3,400	0	13,000	
8/18	0	10,180	100.3%	0	3,400	0	13,000	
8/19	0	10,180	100.3%	0	3,400	0	13,000	Camera removed, 8/19.

Note: Anticipated escapement derived from run timing and Mikfik Lake sockeye salmon sustainable escapement goal of 3,400–13,000 fish.





Appendix D5.–Minimum and maximum anticipated cumulative and daily escapement of sockeye salmon versus actual escapement past the video monitoring station at Chenik Lake, 2016.



Appendix D6.–Minimum and maximum anticipated cumulative and daily escapement of sockeye salmon versus actual escapement past the Mikfik Lake video monitoring station, 2016.

Appendix D7.–Sockeye salmon escapement into Chenik Lake and Mikfik Lake, 1927–2016.

Year	Chenik	Mikfik
1927	7,069 [a]	
1928	31,007 [a]	
1929	30,440 [a]	
1930	23,638 [a]	
1931	33,514 [a]	
1932	53,012 [a]	
1933	39,222 [a]	
1934	35,778 [a]	
1935	16,041 [a]	
1936	19,349 [a]	
1937	8,256 [a]	
1938	3,804 [a]	
1939	4,076 [a]	
…	(No weir from 1940–1988)	
1989	12,000 [a]	
1990	17,000 [a]	
1991	10,200 [a]	
1992	9,269 [a]	7,800 [b]
1993	4,000 [a]	6,400 [b]
1994	808 [a]	9,500 [b]
1995	1,086 [a]	10,100 [b]
1996	2,990 [a]	10,500 [b]
1997	2,338 [a]	8,500 [b]
1998	1,880 [b]	9,515 [c]
1999	2,850 [b]	20,000 [d]
2000	4,800 [b]	10,386 [c]
2001	250 [b]	3,289 [c]
2002	4,650 [b]	16,700 [b]
2003	13,825 [b]	11,000 [d]
2004	17,000 [b]	16,000 [d]
2005	13,037 [e]	6,499 [c]
2006	13,493 [e]	14,983 [c]
2007	18,230 [c]	10,975 [c]
2008	10,647 [c]	9,104 [c]
2009	15,264 [c]	20,965 [c]
2010	17,460 [c]	5,221 [c]
2011	10,330 [c]	395 [d]
2012	16,505 [c]	3,131 [c]
2013	11,333 [c]	4,042 [c]
2014	17,797 [c]	18,062 [c]
2015	19,073 [c]	3,502 [c]
Previous 10-yr average	15,103	9,007
2016	19,510 [c]	10,180 [c]

[a] Escapement derived from weir counts.

[b] Escapement derived from aerial surveys.

[c] Escapement derived from video counts.

[d] Video count was supplemented with aerial survey count to compensate for video “down-time”.

[e] Video count was supplemented with weir counts to compensate for video “down-time”.

Appendix D8.–Pink and chum salmon escapements as measured by aerial survey using area-under-the-curve (AUC) estimation (and peak aerial survey counts, where noted) in the Kamishak Bay District, 2016.

Location	Species	Survey number	Survey date (t_i)	Previous survey date (t_i-1)	Days between surveys (t_i-t_{i-1})	Current live count, (c_i)	Previous live count (c_{i-1})	Previous + current live count (c_i+c_{i-1})	Fish days[a], (A_b)	Accum. fish days, (A_b)	Escape. Index[b]	Accum. Escape. Index[c]	Accum. Percent Escape.	Peak count
Amakdedori	pink	[t]start	6/27											
Creek		1	6/27	6/27	0	0	0	0	0	0	0	0	0%	
(not an index		2	7/8	6/27	11	0	0	0	0	0	0	0	0%	
system)		3	7/14	7/8	6	0	0	0	0	0	0	0	0%	
		4	8/3	7/14	20	60	0	60	600	600	34	34	2%	
		5	8/26	8/3	23	1,800	60	1,860	21,390	21,990	1,222	1,257	58%	
		[t]end	9/12		17.5				15,750	37,740	900	2,157	100%	1,860
Big	chum	[t]start	6/26											
Kamishak		1	7/14	6/26	17.5	500	0	500	4,375	4,375	250	250	3%	
River		2	8/3	7/14	20	855	500	1,355	13,550	17,925	774	1,024	11%	
		3	8/26	8/3	23	8,730	855	9,585	110,228	128,153	6,299	7,323	80%	
(index		4	9/2	8/26	7	50	8,730	8,780	30,730	158,883	1,756	9,079	100%	
system)		[t]end	9/19		17.5				438	159,320	25	9,104	100%	9,585
Brown's	chum	[t]start	6/20											
Peak Creek		1	7/8	6/20	17.5	50	0	50	438	438	25	25	5%	
(not an index		2	7/14	7/8	6	20	50	70	210	648	12	37	7%	
system)		3	8/3	7/14	20	277	20	297	2,970	3,618	170	207	41%	
		4	8/26	8/3	23	130	277	407	4,681	8,298	267	474	95%	
		5	9/2	8/26	7	0	130	130	455	8,753	26	500	100%	
		[t]end	9/2		0				0	8,753	0	500	100%	407
Brown's	pink	[t]start	7/8											
Peak Creek		1	7/8	7/8	0	0	0	0	0	0	0	0	0%	
(index		2	7/14	7/8	6	0	0	0	0	0	0	0	0%	
system)		3	8/3	7/14	20	600	0	600	6,000	6,000	343	343	25%	
		4	8/26	8/3	23	690	600	1,290	14,835	20,835	848	1,191	86%	
		5	9/2	8/26	7	70	690	760	2,660	23,495	152	1,343	97%	
		[t]end	9/19		17.5				613	24,108	35	1,378	100%	1,290

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Location	Species	Survey number	Survey date (t_i)	Previous survey date (t_i-1)	Days between surveys (t_i-t_{i-1})	Current live count, (c_i)	Previous live count (c_{i-1})	Previous + current live count (c_i+c_{i-1})	Fish days[a], (A_b)	Accum. fish days, (A_b)	Escape. Index[b]	Accum. Escape. Index[c]	Accum. Percent Escape.	Peak count
Bruin River	chum	[t]start	6/20											
(index		1	7/8	6/20	17.5	3,210	0	3,210	28,088	28,088	1,605	1,605	6%	
system)		2	7/14	7/8	6	3,800	3,210	7,010	21,030	49,118	1,202	2,807	11%	
		3	8/3	7/14	20	4,063	3,800	7,863	78,630	127,748	4,493	7,300	27%	
		4	8/26	8/3	23	19,400	4,063	23,463	269,825	397,572	15,419	22,718	85%	
		5	9/2	8/26	7	0	19,400	19,400	67,900	465,472	3,880	26,598	100%	
		[t]end	9/2		0				0	465,472	0	26,598	100%	19,400
Bruin River	pink	[t]start	7/8											
(index		1	7/8	7/8	0	0	0	0	0	0	0	0	0%	
system)		2	7/14	7/8	6	0	0	0	0	0	0	0	0%	
		3	8/3	7/14	20	29,100	0	29,100	291,000	291,000	16,629	16,629	19%	
		4	8/26	8/3	23	47,250	29,100	76,350	878,025	1,169,025	50,173	66,801	77%	
		5	9/2	8/26	7	14,830	47,250	62,080	217,280	1,386,305	12,416	79,217	91%	
		[t]end	9/19		17.5				129,763	1,516,068	7,415	86,632	100%	47,250
Cottonwood	chum	[t]start	6/26											
Creek		1	7/14	6/26	17.5	130	0	130	1,138	1,138	65	65	4%	
(index		2	8/3	7/14	20	285	130	415	4,150	5,288	237	302	18%	
system)		3	8/26	8/3	23	200	285	485	5,578	10,865	319	621	38%	
		4	9/2	8/26	7	1,410	200	1,610	5,635	16,500	322	943	57%	
		[t]end	9/19		17.5				12,338	28,838	705	1,648	100%	1,410
Douglas River	chum	[t]start	6/20											
(not an index		1	7/8	6/20	17.5	30	0	30	263	263	15	15	2%	
system)		2	8/3	7/8	26	346	30	376	4,888	5,151	279	294	36%	
		3	8/26	8/3	23	230	346	576	6,624	11,775	379	673	82%	
		4	9/2	8/26	7	140	230	370	1,295	13,070	74	747	91%	
		[t]end	9/19		17.5				1,225	14,295	70	817	100%	346
Douglas	chum	[t]start	6/20											
Reef River		1	7/8	6/20	17.5	2	0	2	18	18	1	1	0%	
(not an index		2	8/26	7/8	49	550	2	552	13,524	13,542	773	774	87%	
system)		3	9/2	8/26	7	7	550	557	1,950	15,491	111	885	100%	
		[t]end	9/19		17.5				61	15,552	4	889	100%	550

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Location	Species	Survey number	Survey date (t_i)	Previous survey date (t_i-1)	Days between surveys (t_i-t_{i-1})	Current live count, (c_i)	Previous live count (c_{i-1})	Previous + current live count (c_i+c_{i-1})	Fish days[a], (A_b)	Accum. fish days, (A_b)	Escape. Index[b]	Accum. Escape. Index[c]	Accum. Percent Escape.	Peak count
Douglas	pink	[t]start	7/8											
Reef River		1	7/8	7/8	0	0	0	0	0	0	0	0	0%	
(not an index		2	8/26	7/8	49	1,830	0	1,830	44,835	44,835	2,562	2,562	88%	
system)		3	9/2	8/26	7	0	1,830	1,830	6,405	51,240	366	2,928	100%	
		tend	9/2		0				0	51,240	0	2,928	100%	1,830
Iniskin River	chum	[t]start	6/20											
(index		1	7/8	6/20	17.5	2	0	2	18	18	1	1	0%	
system)		2	7/14	7/8	6	1	2	3	9	27	1	2	0%	
		3	8/3	7/14	20	585	1	586	5,860	5,887	335	336	31%	
		4	8/26	8/3	23	430	585	1,015	11,673	17,559	667	1,003	92%	
		5	9/2	8/26	7	0	430	430	1,505	19,064	86	1,089	100%	
		[t]end	9/2		0				0	19,064	0	1,089	100%	585
Little	chum	[t]start	6/20											
Kamishak		1	7/8	6/20	17.5	91	0	91	796	796	46	46	0%	
River		2	7/14	7/8	6	901	91	992	2,976	3,772	170	216	2%	
(index		3	8/3	7/14	20	7,498	901	8,399	83,990	87,762	4,799	5,015	42%	
system)		4	8/26	8/3	23	2,390	7,498	9,888	113,712	201,474	6,498	11,513	96%	
		5	9/2	8/26	7	0	2,390	2,390	8,365	209,839	478	11,991	100%	
		[t]end	9/2		0				0	209,839	0	11,991	100%	7,498

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Location	Species	Survey number	Survey date (t_i)	Previous survey date (t_i-1)	Days between surveys (t_i-t_{i-1})	Current live count, (c_i)	Previous live count (c_{i-1})	Previous + current live count (c_i+c_{i-1})	Fish days[a], (A_b)	Accum. fish days, (A_b)	Escape. Index[b]	Accum. Escape. Index[c]	Accum. Percent Escape.	Peak count
Little	pink	[t]start	7/8											
Kamishak		1	7/8	7/8	0	0	0	0	0	0	0	0	0%	
River		2	7/14	7/8	6	0	0	0	0	0	0	0	0%	
(not an index		3	8/3	7/14	20	0	0	0	0	0	0	0	0%	
system)		4	8/26	8/3	23	0	0	0	0	0	0	0	0%	
		5	9/2	8/26	7	30	0	30	105	105	6	6	29%	
		[t]end	9/19		17.5				263	368	15	21	100%	30
McNeil	chum	[t]start	6/13											
River		1	6/27	6/13	14	3,830	0	3,830	26,427	26,427	1,915	1,915	8%	
(index		2	7/8	6/27	11	10,170	3,830	14,000	77,000	103,427	5,580	7,495	32%	
system)		3	7/14	7/8	6	8,060	10,170	18,230	54,690	158,117	3,963	11,458	49%	
Final Escap.		4	8/3	7/14	20	4,861	8,060	12,921	129,210	287,327	9,363	20,821	90%	
26,262		[t]end	8/16		14				33,541	320,868	2,431	23,251	100%	10,170
North Head	chum	[t]start	6/26											
Creek		1	7/14	6/26	17.5	100	0	100	875	875	50	50	17%	
(not an index		2	8/3	7/14	20	130	100	230	2,300	3,175	131	181	62%	
system)		3	8/26	8/3	23	30	130	160	1,840	5,015	105	287	98%	
		4	9/2	8/26	7	1	30	31	109	5,124	6	293	100%	
		[t]end	9/19		17.5				9	5,132	1	293	100%	130
North Head	pink	[t]start	7/14											
Creek		1	7/14	7/14	0	0	0	0	0	0	0	0	0%	
(not an index		2	8/3	7/14	20	0	0	0	0	0	0	0	0%	
system)		3	8/26	8/3	23	1,810	0	1,810	20,815	20,815	1,189	1,189	73%	
		4	9/2	8/26	7	100	1,810	1,910	6,685	27,500	382	1,571	97%	
		[t]end	9/19		17.5				875	28,375	50	1,621	100%	1,810
Sugarloaf	chum	[t]start	6/26											
Creek		1	7/14	6/26	17.5	31	0	31	271	271	16	16	8%	
(not an index		2	8/3	7/14	20	123	31	154	1,540	1,811	88	104	56%	
system)		3	8/26	8/3	23	0	123	123	1,415	3,226	81	184	100%	
		4	9/2	8/26	7	0	0	0	0	3,226	0	184	100%	
		[t]end	9/2		0				0	3,226	0	184	100%	123

-continued-

Location	Species	Survey number	Survey date (t_i)	Previous survey date (t_i-1)	Days between surveys (t_i-t_{i-1})	Current live count, (c_i)	Previous live count (c_{i-1})	Previous + current live count (c_i+c_{i-1})	Fish days[b], (A_b)	Accum. fish days, (A_b)	Escape. Index[c]	Accum. Escape. Index[d]	Accum. Percent Escape.	Peak count
Sunday	chum	[t]start	6/20											
Creek		1	7/8	6/20	17.5	20	0	20	175	175	10	10	1%	
(not an index		2	7/14	7/8	6	40	20	60	180	355	10	20	2%	
system)		3	8/3	7/14	20	636	40	676	6,760	7,115	386	407	49%	
		4	8/26	8/3	23	10	636	646	7,429	14,544	425	831	100%	
		5	9/2	8/26	7	0	10	10	35	14,579	2	833	100%	
		[t]end	9/2		0				0	14,579	0	833	100%	636
Sunday	pink	[t]start	7/8											
Creek		1	7/8	7/8	0	0	0	0	0	0	0	0	0%	
(index		2	7/14	7/8	6	0	0	0	0	0	0	0	0%	
system)		3	8/3	7/14	20	0	0	0	0	0	0	0	0%	
		4	8/26	8/3	23	2,130	0	2,130	24,495	24,495	1,400	1,400	75%	
		5	9/2	8/26	7	55	2,130	2,185	7,648	32,143	437	1,837	99%	
		[t]end	9/19		17.5				481	32,624	28	1,864	100%	2,130
Ursus	chum	[t]start	6/20											
Lagoon		1	7/8	6/20	17.5	40	0	40	350	350	20	20	0%	
Creeks		2	7/14	7/8	6	120	40	160	480	830	27	47	1%	
(index		3	8/3	7/14	20	2,673	120	2,793	27,930	28,760	1,596	1,643	23%	
system)		4	8/26	8/3	23	280	2,673	2,953	33,960	62,720	1,941	3,584	51%	
		5	9/2	8/26	7	4,846	280	5,126	17,941	80,661	1,025	4,609	66%	
		[t]end	9/19		17.5				42,403	123,063	2,423	7,032	100%	4,846
Ursus	pink	[t]start	7/8											
Lagoon		1	7/8	7/8	0	0	0	0	0	0	0	0	0%	
Creeks		2	7/14	7/8	6	0	0	0	0	0	0	0	0%	
(not an index		3	8/3	7/14	20	0	0	0	0	0	0	0	0%	
system)		4	8/26	8/3	23	24,020	0	24,020	276,230	276,230	15,785	15,785	76%	
		5	9/2	8/26	7	80	24,020	24,100	84,350	360,580	4,820	20,605	100%	
		[t]end	9/19		17.5				700	361,280	40	20,645	100%	24,020

Note: The value used as the final escapement index if underlined. *Source*: Bue et al. 1998.

[a] Fish days (A_b) = (Days between surveys x (prev. count + current count)) ÷ 2.

[b] Escapement index = A_b / 17.5 day stream-life estimate (except McNeil River chum calculations use a 13.8 day stream-life estimate plus a run-timing adjustment)

[c] The McNeil River chum salmon AUC index is not the final escapement index. After applying a run-timing expansion factor, the final escapement index was 26,262 For all other stocks, the area-under-the-curve estimate equals the cumulative escapement index.

Appendix D9.–Sockeye salmon aerial survey counts from the Kamishak Bay District, 2016.

Location	Survey number	Survey date	Live count	Peak count
Amakdedori Creek	1	06/27/16	1,490	
	2	07/08/16	2,240	
	3	07/14/16	1,030	
	4	08/03/16	775	
	5	08/26/16	40	2,240
Big Kamishak	1	07/14/16	0	
	2	08/03/16	83	
	3	08/26/16	0	
	4	09/02/16	0	83
Mikfik Lake [a]	1	6/6/2016	0	
	2	6/16/2016	1,520	
	3	6/27/2016	950	1,520

[a] Aerial surveys are used for inseason management but the final escapement index (10,180) was derived by video monitoring.

Appendix D10.–Estimated pink, chum, and sockeye salmon escapements in thousands of fish for the major spawning systems in the Kamishak Bay District of the Lower Cook Inlet Area, 1975–2016.

	Pink salmon						
Year	Big Kamishak River	Little Kamishak River	Amakdedori Creek	Bruin Bay River	Sunday Creek	Brown's Peak Creek	Total of index streams
1975			5.0	20.0	20.0	10.0	50.0
1976	8.0	6.0		13.5	0.3	1.2	15.0
1977				60.0	9.0	13.0	82.0
1978	12.0	0.4	0.9	33.0	0.2	0.9	34.1
1979	10.0	3.5	6.0	200.0	12.0	15.0	227.0
1980	2.0	0.6	3.8	400.0	5.2	2.3	407.5
1981			1.5	95.0	14.2	17.7	126.9
1982	5.0	2.2	6.3	75.0	12.0	3.5	90.5
1983			0.2	4.0	4.7	1.7	10.4
1984		0.1		110.0	12.0	6.8	128.8
1985		1.6	1.0	3.5	11.4	7.0	21.9
1986	5.0	2.0	6.0	1,200.0	109.0	28.0	1,337.0
1987			0.4	24.0	29.7	40.2	93.9
1988	1.0	0.5	1.0	29.0	18.0	17.0	64.0
1989			2.0	350.0	103.0	120.0	573.0
1990			0.1	19.0	2.8	1.0	22.8
1991		0.9	0.7	74.9	20.9	16.7	112.5
1992			3.2	3.2	2.9	5.0	11.1
1993			1.7	86.4	57.8	41.6	185.8
1994			0.7	5.9	3.1	1.3	10.3
1995			4.5	307.3	95.9	96.7	499.9
1996	16.7			27.5	2.8	2.4	32.7
1997			1.7	162.7	52.5	42.3	257.5
1998	2.0			134.9	24.0	7.9	166.8
1999	5.7	4.2		2.9	5.3	2.6	10.8
2000	14.9	13.0		176.7	39.8	9.8	226.3
2001			6.0	18.5	26.2	19.2	63.9
2002		3.4	0.9	1,598.5	81.9	27.5	1,707.9
2003				138.7	346.7	285.0	770.4
2004		3.0		66.5	31.5	18.1	116.1
2005				98.3	116.2	61.0	275.5
2006		77.0		515.1	70.0	35.7	620.9
2007		5.1		350.4	394.8	249.4	994.6
2008		34.3		150.7	20.4	17.4	188.5
2009	10.4	0.8	9.2	1,067.4	106.3	63.6	1,237.3
2010			0.7	40.3	6.6	3.1	50.0
2011	9.3	13.1	4.2	4.5	0.8	2.0	7.4
2012	2.7	9.3	3.0	31.8	1.3	2.8	35.9
2013		0.5	8.0	15.0	6.0	4.1	25.1
2014		4.8	2.4	121.6	7.7	4.0	133.3
2015	0.7	1.5	24.9	40.8	60.4	29.1	130.3
10-yr avg.	5.8	16.3	7.5	233.8	67.4	41.1	342.3
2016	0.0	0.0	2.2	86.6	2.1	1.4	92.3

-continued-

	Chum salmon							
Year	Big Kamishak River	Little Kamishak River	McNeil River	Bruin Bay	Ursus Cove[a]	Cottonwood Creek	Iniskin Bay	Total of index streams
1975	1.1	1.9	1.5	1.5	5.0	8.0	7.0	26.0
1976	24.0	21.0	9.5	4.0	6.0	5.0	13.5	83.5
1977			35.8	18.0	9.3	10.0	4.4	61.7
1978	23.0	30.0	109.1	4.0	9.7	12.5	11.4	135.6
1979	15.0	15.0	10.5	15.0	5.0	2.5	4.0	64.5
1980	10.0	13.0	10.0	15.0	8.0	4.2	9.3	67.5
1981	11.0	6.0	44.6	10.0	10.0	9.0	9.0	85.0
1982	25.0	18.0	36.6	10.0	9.0	7.0	12.8	106.8
1983	25.0	25.0	56.3	5.5	7.7	8.3	12.0	131.5
1984	19.0	12.0	26.6	8.0	7.0	6.5	9.8	83.3
1985	6.0	4.5	10.5	2.0	3.0	3.0	5.0	33.0
1986	24.0	17.0	31.9	1.0	11.0	11.0	5.9	91.9
1987	12.0	18.0	40.5	10.0	9.9	17.0	9.1	102.0
1988	15.0	13.0	59.8	7.0	9.4	16.0	9.5	118.9
1989	30.0	12.0	48.9	8.0	6.3	8.0	5.9	104.2
1990	2.5	7.9	13.9	4.0	3.8	4.3	8.4	38.9
1991	8.7	8.4	6.8	6.0	1.3	7.7	8.3	50.4
1992	4.5	7.1	23.3	8.5	1.7	6.1	3.4	50.5
1993	9.1	6.3	19.3	6.0	7.7	12.0	8.0	66.5
1994		9.0	15.7	6.1	6.2	10.2	18.9	65.4
1995			12.1	6.6	11.1	15.4	22.7	70.2
1996	11.1	4.4	24.4	14.9	7.6	16.1	7.8	78.0
1997			32.2	8.8	6.2	5.6	15.4	63.5
1998	7.1	9.7	19.9	9.4	4.6	2.3	18.6	75.2
1999	11.6	8.9	10.2	10.3	21.0	12.0	23.3	100.6
2000	45.3	26.9	17.7	13.6	41.7	24.1	23.6	193.8
2001	36.3	27.2	16.9	21.8	37.7	15.9	13.8	169.7
2002	17.4	16.4	17.5	9.9	17.1	42.2	28.5	142.8
2003	16.4	22.2	30.1	13.1	30.4	72.8	18.7	196.9
2004	57.9	45.3	14.6	15.9	16.0	16.3	22.0	184.6
2005	25.7	12.1	22.5	21.2	12.2	17.9	16.5	123.0
2006	58.2	42.9	19.3	7.0	15.7	13.2	15.6	180.8
2007	14.8	15.6	22.3	3.1	20.9	12.5	5.3	85.8
2008	4.5	21.3	10.8	17.5	6.5	11.6	20.0	91.2
2009	15.0	4.2	18.4	10.1	12.9	19.4	30.8	111.2
2010		18.4	13.8	6.2	11.8	15.8	19.3	82.0
2011	5.5	19.3	31.0	3.5	10.6	4.7	16.5	91.2
2012	12.4	30.3	10.4	16.8	2.8	4.1	3.0	77.2
2013	3.3	6.7	9.5	8.9	10.3	5.2	5.9	49.8
2014	5.7	15.1	17.5	3.6	5.3	7.1	13.0	67.2
2015	7.0	14.4	20.5	11.0	14.8	17.0	7.5	92.1
Prev. 10-yr avg.	14.0	18.8	17.4	8.8	11.2	11.1	13.7	94.0
2016	9.1	12.0	26.3	26.6	7.0	1.9	1.1	84.0

-continued-

	Sockeye salmon				
Year	Mikfik Lake	Chenik Lake	Amakdedori Creek	Kamishak Rivers	Total of index streams
1975	6.0	0.1	0.8		6.9
1976	10.0	0.9	1.6		12.5
1977	9.8	0.2	2.6		12.6
1978	12.0	0.1	2.6	1.0	15.7
1979	6.0	0.0	1.0	0.4	7.4
1980	6.5	3.5	2.6	0.1	12.7
1981	5.3	2.5	1.9	0.8	10.5
1982	35.0	8.0	3.2	10.0	56.2
1983	7.0	11.0	1.2	5.0	24.2
1984	6.0	13.0	1.4	2.5	22.9
1985	20.0	3.5	0.9	0.8	25.2
1986	7.8	7.0	1.9	5.0	21.7
1987	9.0	10.0	1.1		20.1
1988	10.1	9.0	0.4	0.5	20.0
1989	11.5	12.0	1.2	0.5	25.2
1990	8.8	17.0	1.8	0.2	27.8
1991	9.7	10.2 [b]	1.9	0.7	22.5
1992	7.8	9.3 [b]	1.9	4.9	23.9
1993	6.4	4.0 [b]	2.0		12.4
1994	9.5	0.8 [b]	0.8		11.1
1995	10.1	1.1 [b]	2.4		13.6
1996	10.5	3.0 [b]	2.9	1.8	14.2
1997	8.5	2.3 [b]	1.5		12.3
1998	9.5 [d]	1.9	4.1		18.6
1999	20.0 [c]	2.9	8.8	2.2	29.6
2000	10.4 [d]	4.8	3.3	1.5	20.5
2001	3.3 [d]	0.3	2.7	2.5	8.8
2002	16.7 [d]	4.7	3.2	3.3	27.9
2003	11.0 [c]	13.8	11.8	2.6	39.2
2004	16.0 [c]	17.0	7.2	0.8	41.0
2005	6.5 [d]	13.0 [c]	1.7	3.9	25.1
2006	15.0 [d]	13.5 [c]	0.3		28.8
2007	11.0 [d]	18.2 [d]	3.8	0.1	33.2
2008	9.1 [d]	10.6 [d]	3.2	0.2	23.1
2009	21.0 [d]	15.3 [d]	2.2	0.1	38.6
2010	5.2 [d]	17.5 [d]	1.2	0.1	24.0
2011	0.4 [c]	10.3 [d]	3.4	1.6	15.8
2012	3.1 [d]	16.5 [d]	0.8	1.1	21.5
2013	4.0 [d]	11.3 [d]	1.5	0.1	17.0
2014	18.1 [d]	17.8 [d]	4.3	0.2	40.3
2015	3.5 [d]	19.1 [d]	2.9	1.2	26.7
Previous 10-yr avg.	9.0	15.0	2.4	0.5	27.0
2016	10.2 [d]	19.5 [d]	2.2	0.1	32.0

Note: Unless otherwise noted, estimated escapements are derived from aerial surveys.

[a] "Ursus Cove" is the sum of Ursus Lagoon RH Creek and Ursus Lagoon Creek.

[b] Escapement derived from weir counts.

[c] Escapement derived from a combination of weir, video counts, and/or aerial counts.

[d] Escapement derived from video counts.

APPENDIX E: SUBSISTENCE, PERSONAL USE AND HOMEPACK HARVESTS

Appendix E1.–Subsistence net and rod and reel salmon harvest in numbers of fish by species for the village of Port Graham, Lower Cook Inlet, 1979–2016.

		Reported Harvest						
Year	Households Reporting	Chinook salmon	Sockeye salmon	Coho salmon	Pink salmon	Chum salmon	Dolly Varden	Total salmon
1979		222	777	506	1,170	494	0	3,169
1980								
1981		116	1,694	625	298	150	0	2,883
1982	34	107	820	602	858	183	15	2,570
1983	30	67	1,026	431	174	95	1	1,793
1984	23	27	2,037	125	269	6	0	2,464
1985	23	141	481	91	32	24	0	769
1986	27	123	274	179	237	13	12	826
1987	33	20	219	575	230	70	20	1,114
1988	27	96	411	459	542	75	18	1,583
1989	20	51	94	460	640	58	159	1,303
1990	32	211	524	803	1,013	102	666	2,653
1991	33	155	58	541	1,494	185	257	2,433
1992	36	129	98	475	745	178	398	1,625
1993	31	253	154	346	997	135	214	1,885
1994	42	273	260	859	866	461	1,133	2,719
1995 [a]	49	486	379	369	786	376	66	2,396
1996	48	255	684	341	312	251	161	1,843
1997	25	202	324	203	497	152	57	1,378
1998	16	164	271	243	459	240	20	1,377
1999	21	383	382	427	150	214	64	1,556
2000	35	241	784	252	355	483	0	2,115
2001	15	104	176	57	20	32	0	389
2002	23	250	417	90	150	74	0	981
2003	16	321	1,991	425	266	150	87	3,153
2004 [b]	50	283	572	514	363	130	0	1,862
2005	46	265	192	51	349	52	0	909
2006	14	192	31	1	26	24	207	274
2007	24	92	552	0	74	63	12	781
2008 [c]	18	77	550	0	36	22	37	685
2009	25	33	1,982	132	49	69	40	2,265
2010	16	30	116	124	24	37	0	331
2011	15	35	684	107	132	150	0	1,108
2012	7	24	661	14	282	26	0	1,007
2013	10	15	1,034	66	27	86	0	1,228
2014	7	19	1,089	166	410	922	0	2,606
2015	4	36	842	47	539	872	0	2,336
Previous 10-year Average	14	55	754	66	160	227	42	1,262
2016	12	2	0	20	10	40	0	72

Source: Data on file with ADF&G, Division of Subsistence; gear types include set gillnet, rod/reel, and handline.

[a] Salmon totals and permits include 3 reports from nonresidents of Port Graham Village.

[b] ADF&G Division of Subsistence estimate.

[c] Harvest reports for 2008 incomplete.

Appendix E2.–Subsistence net and rod and reel salmon harvest in numbers of fish by species for the village of Nanwalek (formerly English Bay), Lower Cook Inlet, 1978–2016.

Year	Households reporting	Chinook salmon	Sockeye salmon	Coho salmon	Pink salmon	Chum salmon	Dolly Varden	Total salmon
1978								
1979		137	1,545	2,437	2,186	305	0	6,610
1980								
1981		24	1,075	314	621	19	0	2,053
1982	27	17	1,534	891	2,074	37	75	4,553
1983	16	0	1,454	40	13	0	0	1,507
1984	1	18	1,225	385	404	0	0	2,032
1985	1	5	696	530	313	2	0	1,546
1986	17	2	373	302	825	1	144	1,503
1987	22	1	682	339	484	44	20	1,550
1988	21	8	610	385	1,214	35	70	2,252
1989	24	0	63	695	855	16	523	1,629
1990	28	54	638	614	1,947	49	2,833	3,302
1991	30	8	630	1,512	3,093	36	848	5,279
1992	35	71	437	675	676	58	1,331	1,917
1993	25	24	994	567	1,666	122	577	3,373
1994	28	27	570	511	1,113	43	473	2,264
1995	38	99	1,416	169	487	0	465	2,171
1996	27	55	1,060	598	437	25	221	2,175
1997	1	0	1	0	14	1	0	16
1998	3	5	18	0	0	0	31	23
1999	32	102	2,775	1,320	1,873	890	631	6,960
2000	32	18	3,880	1,579	1,251	471		7,199
2001	34	29	909	1,238	1,434	196		3,806
2002	56	96	10,203	967	1,681	414	230	13,361
2003	35	144	3,221	513	1,306	381	102	5,565
2004	24	52	2,968	842	1,277	95	291	5,234
2005	23	27	1,934	1,142	1,259	128	605	4,490
2006	39	111	2,215	1,179	2,038	207	679	5,750
2007								
2008	53	46	3,615	1,345	2,646	76	315	7,728
2009	19	11	1,515	396	865	71	420	2,858
2010	20	0	1,514	1,324	1,030	271	365	4,139
2011	41	18	5,009	1,381	2,499	362		9,269
2012[a]	1	0	300	400	200	5	50	905
2013[a]	4	2	3,854	2,619	383	811	500	7,669
2014[a]	3	3	377	0	4	143	0	527
2015[a]	1	0	35	0	0	0	0	35
Previous 10-yr average	20	21	2,048	960	1,074	216	291	4,815
2016[a]	20	15	620	677	12	199	0	1,523

Source: Data on file with ADF&G, Division of Subsistence; gear types include set gillnet, rod/reel, and handline.

[a] Limited reporting from Nanwalek residents in 2012–2016 may have resulted in a conservative estimate of harvest.

Appendix E3.–Salmon set gillnet harvest in numbers of fish by species and permit/effort information for the Seldovia area subsistence fishery, Lower Cook Inlet, 1997–2016.

	Permits				Reported harvest					
Year	Issued	Returned	Fished	Not Fished	Chinook	Sockeye	Coho	Pink	Chum	Total
Early Season: April–May[a]										
1997	19	16	12	4	44	19	0	0	0	63
1998	20	19	10	9	132	61	0	8	0	201
1999	16	15	12	3	150	130	0	0	38	318
2000	28	21	17	4	189	249	0	0	14	452
2001	19	17	14	3	134	124	0	0	0	258
2002	20	18	12	6	123	222	0	0	3	348
2003	19	13	10	3	67	210	0	1	54	332
2004	13	10	9	1	91	63	0	0	15	169
2005	15	13	4	9	46	0	0	0	0	46
2006	15	12	6	6	12	10	0	1	0	23
2007	15	12	5	7	19	27	0	0	0	46
2008	10	8	3	5	3	15	0	0	0	18
2009	6	5	1	4	14	0	0	0	0	14
2010	11	8	2	6	0	54	0	0	0	54
2011	4	2	1	1	0	49	0	0	0	49
2012	16	6	2	4	3	26	0	0	0	29
2013	7	5	4	1	1	93	0	0	0	93
2014	12	8	4	4	3	69	0	0	2	74
2015	6	4	4	0	16	70	0	4	0	90
Prev 10-yr average	10	7	3	4	7	41	0	1	0	49
2016	3	3	3	0	7	53	0	2	1	63
Late Season: August[b]										
1997	1	1	0	1	0	0	0	0	0	0
1998	3	2	1	1	0	0	0	0	0	0
1999	0	0	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0	0	0	0
2002	1	1	1	0	0	9	13	31	6	59
2003	1	1	1	0	0	10	1	12	1	24
2004	1	1	1	0	0	0	4	0	0	4
2005	3	2	2	0	0	70	13	93	12	188
2006	2	2	1	1	0	0	0	21	0	21
2007	4	4	3	1	0	24	9	80	27	140
2008	2	2	2	0	0	16	41	65	5	127
2009	12	9	8	1	0	78	10	44	14	146
2010	5	4	3	1	2	46	31	66	35	180
2011	3	2	1	1	0	6	0	10	0	16
2012	4	1	1	0	0	3	0	20	0	23
2013	5	3	3	0	1	5	1	45	10	62
2014	9	7	6	1	2	47	0	5	63	117
2015	2	2	0	2	0	0	0	0	0	0
Prev 10-yr average	5	4	3	1	1	23	9	36	15	83
2016	1	1	0	1	0	0	0	0	0	0

Source: Data on file with ADF&G, Division of Subsistence; gear types include set gillnet, rod/reel, and handline.

[a] Early season dates in 1996 and 1997 from April 1 to May 20; subsequent years were from April 1 to May 30.

[b] Late season dates are restricted to the first 2 weekends in August.

Appendix E4.–Personal use/subsistence set gillnet salmon harvest in numbers of fish by species and effort, Southern District (excluding the Port Graham/Nanwalek subsistence fishery and the Seldovia subsistence fishery), Lower Cook Inlet, 1975–2016.

	Permits				Reported harvest						
Year	Issued	Returned	Fished	Not fished	Chinook	Sockeye	Coho	Pink	Chum	Other	Total
1975	292	276	221	55	4	47	1,960	632	61	95	2,799
1976	242	221	138	83	16	46	1,962	1,513	56	75	3,668
1977	197	179	137	42	12	46	2,216	639	119	84	3,116
1978	311	264	151	113	4	35	2,482	595	34	89	3,239
1979	437	401	238	163	6	37	2,118	2,251	41	130	4,583
1980	533	494	299	195	43	32	3,491	1,021	25	153 [a]	4,765
1981	403	383	283	100	15	73	4,370	718	68	0	5,244
1982	395	372	301	71	41	49	7,398	956	154	0	8,598
1983	344	328	210	118	5	17	2,701	305	44	2	3,074
1984	368	346	219	127	3	25	3,639	804	105	27	4,603
1985	328	302	205	97	5	49	3,317	138	34	3	3,546
1986	349	310	247	63	7	68	3,831	3,132	56	0	7,094
1987	363	339	250	89	5	50	3,979	279	61	0	4,374
1988	439	417	300	117	14	73	5,007	1,445	75	0	6,614
1989	477	453	333	120	41	156	7,219	883	53	49	8,401
1990	578	543	420	123	12	200	8,323	1,846	69	0	10,450
1991	472	459	295	164	8	47	4,931	366	23	0	5,375
1992	365	350	239	111	5	63	2,277	643	21	0	3,009
1993	326	317	215	102	6	44	1,992	463	18	0	2,523
1994	286	284	224	60	66	80	4,097	1,178	18	0	5,439
1995	235	232	178	54	118	108	2,916	343	7	0	3,492
1996	299	293	213	80	302	102	3,347	1,022	24	0	4,797
1997	276	264	186	78	384	191	1,817	257	12	0	2,661
1998	227	214	142	72	135	20	1,461	167	5	0	1,788
1999	146	141	111	30	276	119	1,803	168	3	0	2,369
2000	213	206	151	55	104	28	2,064	304	4	0	2,504
2001	154	148	112	34	86	27	1,579	150	16	0	1,858
2002	122	113	93	20	61	33	1,521	251	12	0	1,878
2003	104	96	72	24	17	57	1,071	170	9	0	1,324
2004	91	83	65	18	7	56	1,554	172	16	0	1,805
2005	108	96	69	27	8	57	833	296	13	0	1,207
2006	89	82	62	20	15	41	1,295	221	5	0	1,577
2007	141	133	95	38	10	113	1,431	641	34	0	2,229
2008	146	142	107	35	2	92	1,844	687	14	0	2,639
2009	145	142	90	52	9	273	646	101	4	1	1,034
2010	128	122	82	41	14	149	875	251	17	0	1,306
2011	119	112	81	31	15	223	806	145	5	3	1,197
2012	98	95	69	26	5	137	1,471	275	6	0	1,894
2013	123	118	89	29	9	122	1,732	135	3	0	2,001
2014	160	154	115	39	13	310	2,273	20	178	0	2,794
2015	136	131	91	40	10	509	1,373	152	22	6	2,072
Prev. 10-year Avg.	129	123	88	35	10	197	1,375	263	29	1	1,874
2016	170	169	118	50	18	166	2,033	8	335	0	2,560

Note: Figures after 1991 include information from both returned permits and inseason oral reports.

[a] Steelhead trout *Oncorhynchus mykiss*.

Appendix E5.–Summary of personal use/subsistence salmon gillnet permit holders in the Southern District of Lower Cook Inlet (excluding the Port Graham/Nanwalek subsistence fishery and the Seldovia subsistence fishery) by area of residence, 1990–2016.

	Homer/ Fritz Cr.		Anchorage Area[a]		Halibut Cove		Anchor Pt./ Ninilchik		Seldovia		Pt. Nanwalek		Kenai/ Soldotna		Other		Total Permits
Year	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	Issued
1990	441	76.3%	36	6.2%	5	0.9%	65	11.2%	12	2.1%	0	0.0%	6	1.0%	13	2.2%	578
1991	384	81.4%	27	5.7%	8	1.7%	41	8.7%	6	1.3%	0	0.0%	4	0.8%	2	0.4%	472
1992	302	82.7%	21	5.8%	5	1.4%	32	8.8%	3	0.8%	0	0.0%	1	0.3%	1	0.3%	365
1993	242	74.2%	25	7.7%	5	1.5%	44	13.5%	3	0.9%	0	0.0%	5	1.5%	2	0.6%	326
1994	235	82.2%	20	7.0%	4	1.4%	21	7.3%	1	0.3%	0	0.0%	1	0.3%	4	1.4%	286
1995	191	81.3%	15	6.4%	7	3.0%	20	8.5%	1	0.4%	0	0.0%	0	0.0%	1	0.4%	235
1996	241	80.6%	16	5.4%	7	2.3%	26	8.7%	3	1.0%	1	0.3%	2	0.7%	3	1.0%	299
1997	232	84.1%	13	4.7%	3	1.1%	20	7.2%	4	1.4%	0	0.0%	1	0.4%	3	1.1%	276
1998	175	77.1%	18	7.9%	2	0.9%	24	10.6%	5	2.2%	0	0.0%	2	0.9%	1	0.4%	227
1999	96	65.8%	18	12.3%	1	0.7%	23	15.8%	3	2.1%	0	0.0%	4	2.7%	1	0.7%	146
2000	168	78.9%	15	7.0%	2	0.9%	21	9.9%	4	1.9%	0	0.0%	1	0.5%	2	0.9%	213
2001	109	70.8%	10	6.5%	3	1.9%	20	13.0%	5	3.2%	0	0.0%	4	2.6%	3	1.9%	154
2002	85	70.2%	7	5.8%	3	2.5%	14	11.6%	6	5.0%	0	0.0%	5	4.1%	1	0.8%	121
2003	74	71.2%	9	8.7%	2	1.9%	11	10.6%	4	3.8%	0	0.0%	4	3.8%	0	0.0%	104
2004	70	76.9%	9	9.9%	2	2.2%	7	7.7%	2	2.2%	0	0.0%	1	1.1%	0	0.0%	91
2005	80	74.1%	12	11.1%	2	1.9%	8	7.4%	1	0.9%	0	0.0%	3	2.8%	2	1.9%	108
2006	74	84.1%	6	6.8%	1	1.1%	4	4.5%	0	0.0%	0	0.0%	2	2.3%	1	1.1%	88
2007	116	82.3%	11	7.8%	3	2.1%	7	5.0%	0	0.0%	0	0.0%	1	0.7%	3	2.1%	141
2008	121	82.9%	3	2.1%	2	1.4%	13	8.9%	2	1.4%	0	0.0%	3	2.1%	2	1.4%	146
2009	107	73.8%	11	7.6%	1	0.7%	19	13.1%	2	1.4%	0	0.0%	5	3.4%	0	0.0%	145
2010	103	80.5%	8	6.3%	1	0.8%	9	7.0%	2	1.6%	0	0.0%	5	3.9%	0	0.0%	128
2011	87	68.0%	13	10.2%	2	1.6%	9	7.0%	2	1.6%	0	0.0%	6	4.7%	0	0.0%	119
2012	75	76.5%	7	7.1%	1	1.0%	10	10.2%	0	0.0%	0	0.0%	5	5.1%	0	0.0%	98
2013	102	82.9%	9	7.3%	0	0.0%	7	5.7%	0	0.0%	0	0.0%	5	4.1%	0	0.0%	123
2014	125	78.1%	13	8.1%	1	0.6%	11	6.9%	1	0.6%	0	0.0%	8	5.0%	1	0.6%	160
2015	112	82.4%	12	8.8%	0	0.0%	9	6.6%	0	0.0%	0	0.0%	3	2.2%	0	0.0%	136
Previous 10-year Average	102	79.1%	9	7.2%	1	0.9%	10	7.5%	1	0.6%	0	0.0%	4	3.3%	1	0.5%	128.4
2016	139	81.8%	12	7.1%	1	0.6%	10	5.9%	2	1.2%	0	0.0%	6	3.5%	0	0.0%	170

[a] After 1989, "Anchorage Area" includes Mat-Su Valley, Eagle River, Chugiak, and/or Fort Richardson.

Appendix E6.–Historical harvest and numbers of permits actively fished by area for the Southern District personal use coho salmon set gillnet fishery, 1981–2016.

	Troublesome Creek to tip of Homer Spit		East side of Homer Spit		Mud Bay to Fritz Creek		Fritz Creek to Swift Creek		Bear Cove to Neptune Bay		Neptune Bay to Little Tutka Bay	
Year	Permits	Coho salmon	Permits	Coho salmon	Permits	Coho salmon	Permits	Coho salmon	Permits	Coho salmon	Permits	Coho salmon
1981		68		419		1,239		2,382		259		3
1982		118		471		3,307		3,260		237		5
1983		18		126		944		1,319		202		92
1984		25		274		1,686		1,517		102		35
1985		119		87		1,218		1,681		261		51
1986		36		490		1,415		1,651		166		73
1987		101		590		1,103		1,953		180		52
1988		78		472		1,248		2,769		384		56
1989		234		1,259		1,591		3,455		616		74
1990		287		2,117		1,748		3,478		465		228
1991		328		1,585		798		1,873		245		51
1992		37		938		464		719		116		18
1993		86		881		295		627		74		29
1994		211		1,413		596		1,558		314		5
1995		414		1,124		372		769		202		35
1996	16	220	85	1,871	39	364	38	603	32	272	3	17
1997	19	149	81	1,294	36	133	32	134	13	83	5	24
1998	10	86	77	1,062	29	162	10	39	13	75	3	37
1999	4	25	67	1,225	11	123	4	43	16	286	9	101
2000	11	210	84	1,372	18	169	15	126	16	120	7	67
2001	12	94	55	920	10	90	8	185	19	189	10	101
2002	11	212	38	624	13	99	8	195	13	201	10	190
2003	7	81	29	627	10	57	7	43	12	135	7	128
2004	2	75	23	610	8	131	9	228	15	365	8	145
2005	4	23	27	305	4	43	8	126	16	190	10	146
2006	1	20	20	388	9	179	9	248	18	375	5	85
2007	0	0	24	179	11	153	32	885	20	170	8	44
2008	1	28	23	322	30	368	25	776	16	259	12	91
2009	5	29	12	39	15	52	32	310	18	187	8	29
2010	0	0	15	118	18	65	38	466	28	194	13	32
2011	3	31	15	54	10	49	44	536	27	103	14	33
2012	3	0	11	72	13	32	42	1,202	19	140	7	25
2013	2	0	11	38	22	137	56	1,252	21	219	11	86
2014	5	52	27	591	22	574	37	780	13	194	10	82
2015	3	4	23	264	19	279	28	647	13	117	4	32
Previous 10-year Average	2	19	18	205	17	191	34	710	19	196	9	54
2016	7	115	28	382	30	550	30	780	14	124	9	82

Appendix E7.–Salmon retained from the commercial harvest for personal use (homepack) by species and gear type from Lower Cook Inlet districts, 1996–2016.

	Permits deliv.		Chinook salmon		Sockeye salmon		Coho salmon		Pink salmon		Chum salmon	
Year	Set Gillnet	Purse Seine	Set Gillnet	Purse Seine	Set Gillnet	Purse Seine	Set Gillnet	Purse Seine	Set Gillnet	Purse Seine	Set Gillnet	Purse Seine
1996	1	2	6		19	32	5					
1997	1		1		11							
1998												
1999												
2000												
2001												
2002	1				20				100		3	
2003	2		3		2				750			
2004	1		2		38		10		9		4	
2005	3	1	7		79	10	38		121		8	
2006	4	3	9		58	169	73	17	72		13	7
2007	4		1		204		76		3			
2008	2				39		7		40		6	
2009	3		1		35		14		23		9	
2010	2		2		29		4				3	
2011	3	1	2	3	62		3		487		27	
2012	7		4		63		61		323		31	
2013	6		16		155		150		157		13	
2014	8	1	10		180	3	128		318		17	
2015	16	4	60	7	158	120	417	62	99	302	28	
Previous 10-year average	6	2	11	2	98	58	93	16	152	60	15	1
2016	14	11	35	40	115	269	171	25	205	79	41	5

Note: No homepacks from commercial harvest reported before 1996. Regulations requiring reporting of fish harvested but not sold (5 AAC 39.130(c)(10)) on fish tickets established in 2008.

Appendix E8.–Lower Cook Inlet commercial homepack and personal use harvest by permit holder community of residence, 2016.

Commercial Homepack[a]							
Community	Permits	Chinook	Sockeye	Coho	Pink	Chum	Total
Anchor Point	1		2	3		2	7
Halibut Cove	2	2	46	2			50
Homer	10	64	245	130	102	3	544
Port Graham	1	1	4				5
Seldovia	8	6	87	52	182	41	368
Seward	2	1		1			2
USA balance	1	1		8			9
Total	25	75	384	196	284	46	985

Southern District Personal Use set gillnet fishery [b]								
	Permits		Chinook	Sockeye	Coho	Pink	Chum	Total
Community	issued	returned	salmon	salmon	salmon	salmon	salmon	salmon
Anchorage area	12	12	4	9	132	0	19	164
Anchor Pt./Ninilchik/Nikolaevsk	10	10	1	9	105	0	5	120
Fairbanks	0	0						
Halibut Cove	1	1	0	0	0	0	0	0
Homer	139	138	11	82	1,750	6	305	2,154
Kenai/Soldotna	6	6	2	66	46	2	6	122
Port Graham/Nanwalek	0	0						
Seldovia	2	2	0	0	0	0	0	0
Total	170	169	18	166	2,033	8	335	2,560

Port Graham/Nanwalek subsistence fishery								
	Permits		Chinook	Sockeye	Coho	Pink	Chum	Total
Community	issued	returned	salmon	salmon	salmon	salmon	salmon	salmon
Anchorage area	1	1	0	0	0	0	0	0
Homer	0	0	0	0	0	0	0	0
Nanwalek	20	20	15	620	677	12	199	1,523
Port Graham	12	12	2	0	20	10	40	72
Valdez	1	0	3	2	0	0	0	5
Total	34	33	20	622	697	22	239	1,600

Seldovia subsistence fishery [d,e]								
	Permits		Chinook	Sockeye	Coho	Pink	Chum	Total
Community	issued	returned	salmon	salmon	salmon	salmon	salmon	salmon
Anchorage area	0	0						
Homer	0	0						
Nanwalek	0	0						
Ninilchik	0	0						
Port Graham/Nanwalek	0	0						
Seldovia	4	4	7	53	0	2	1	63
Total	4	4	7	53	0	2	1	63

[a] Homepack fish as defined in 5 AAC 39.010 as finfish retained from lawfully taken commercial catch for that person's own use.

[b] As defined in 5 AAC 77.549 *Personal Use Coho Salmon Fishery Management Plan*.

[c] Defined as subsistence harvest from the Port Graham and Nanwalek Sections of the Port Graham Subdistrict in the Southern District.

[d] Defined as subsistence harvest from the Seldovia Subdistrict in the Southern District.

[e] Includes harvests from both early and late season Seldovia subsistence fisheries.

APPENDIX F: HATCHERY PRODUCTION AND RETURNS

Appendix F1.–Summary of salmon runs to Lower Cook Inlet hatchery release sites, 2016.

Sockeye salmon

Hatchery or release site, (hatchery [a])	BY 2011 Release	BY 2012 Release	2016 Forecast Run	Estimated CPF[b] Contribution	Estimated Sales Harvest[c] Contribution	Broodstock & Unharvested Contribution	Estimated Total Run	2016 Eggs Collected
Bear Lake and Resurrection Bay, (TLH)	4,580,000	4,290,000	171,081	2,505	104,260	12,774	119,539	5,006,997
Hidden Lake, (TLH)	948,000	860,000	26,147	1,777	0	774	2,551	0
Leisure and Hazel lakes, (TLH)	3,314,000	3,250,000	22,476	40,941	10,575	214	51,730	0
Kirschner Lake, (TLH)	300,000	0	18,158	5,893	44,765	0	50,658	0
English Bay Lakes, (TLH)	213,000	211,000	6,305	unknown	0	7,673	unknown	0
Tutka Bay Lagoon, (TLH)[d]	511,000	599,500	82,695	14,360	13,133	6,992	34,485	4,273,494
Port Graham Hatchery, (TLH)	102,000	0	0	0	0	0	0	0
Shell Lake	0	0	0	0	0	0	0	87,595
Total Sockeye Salmon	9,968,000	9,210,500	326,862	65,476	172,733	28,427	258,963	9,280,491

Coho salmon

Hatchery or release site, (hatchery)	BY 2013 Release	2016 Forecast Run	Estimated CPF Contribution	Estimated Sales Harvest Contribution	Broodstock & Unharvested Contribution	Estimated Total Run	Eggs Collected
Bear Lake and Resurrection Bay, (TLH)	566,000	18,780	NA	0	409	NA	288,711
Total Coho Salmon	566,000	18,780	NA	0	409	NA	288,711

Pink salmon

Hatchery or release site, (hatchery)	BY 2014 Release	2016 Forecast Run	Estimated CPF Contribution	Estimated Sales Harvest Contribution	Broodstock & Unharvested Contribution	Estimated Total Run	Eggs Collected
Tutka Bay Lagoon Hatchery (TBLH)	11,249,240	348,470	49,829	24,180	141,728	215,737	66,003,411
Port Graham hatchery site (TBLH)	2,200,060	66,000	0	2,647	12,783	15,430	9,076,353
Total Pink Salmon	13,449,300	414,470	48,829	26,827	154,511	231,167	75,079,764
Total-All Salmon			115,305	199,560	183,347	490,130	84,648,966

[a] TLH = Trail Lakes Hatchery, TBLH = Tutka Bay Lagoon Hatchery.

[b] Common Property Fisheries (CPF) include commercial, sport, personal use, and subsistence harvests. Harvest estimate based on harvest location, not on otolith sampling.

[c] Hatchery cost recovery sales in number of fish.

[d] Includes hatchery donated fish. Tutka Bay Lagoon Hatchery has not produced sockeye salmon since 2004. Returns of this species are from remote releases from the Trail Lakes Hatchery. Sockeye salmon eggs collected at this facility were taken back to the Trail Lakes Hatchery for incubation.

Appendix F2.–Daily sockeye salmon sales and broodstock collection; sales and broodstock summary in numbers of fish for Cook Inlet Aquaculture Association, 2016.

			Sales Harvest[a]		Donated		Broodstock	
Date	Gear	Location	Daily	Cumulative	Daily	Cumulative	Daily	Cumulative
5/23	Purse seine	Resurrection Bay	116	116				
5/26	Purse seine	Resurrection Bay	35	151				
5/27	Purse seine	Resurrection Bay	210	361				
5/30	Purse seine	Resurrection Bay	66	427				
5/31	Purse seine	Resurrection Bay	667	1,094				
6/2	Purse seine	Resurrection Bay	1,915	3,009				
6/3	Purse seine	Resurrection Bay	627	3,636				
6/4	Purse seine	Resurrection Bay	522	4,158				
6/5	Purse seine	Resurrection Bay	1,613	5,771				
6/6	Purse seine	Resurrection Bay	931	6,702				
6/7	Purse seine	Resurrection Bay	480	7,182				
6/8	Purse seine	Resurrection Bay	2,686	9,868				
6/9	Purse seine	Resurrection Bay	6,562	16,430				
6/10	Purse seine	Resurrection Bay	2,682	19,112				
6/12	Purse seine	Resurrection Bay	1,336	20,448				
6/13	Purse seine	Resurrection Bay	4,077	24,525				
6/14	Purse seine	Resurrection Bay	3,317	27,842				
6/15	Purse seine	Resurrection Bay	2,145	29,987				
6/16	Purse seine	Resurrection Bay	448	30,435				
6/17	Purse seine	Resurrection Bay	2,794	33,229				
6/18	Purse seine	Resurrection Bay	979	34,208				
6/21	Purse seine	Resurrection Bay	682	34,890				
6/22	Purse seine	Resurrection Bay	2,446	37,336				
6/23	Purse seine	Resurrection Bay	896	38,232				
6/24	Purse seine	Resurrection Bay	48	38,280				
6/29	Purse seine	Resurrection Bay	1,820	40,100				
7/1	Purse seine	Resurrection Bay	1,250	41,350				
6/8	Weir or beach seine	Bear Lake	1,850	1,850				
6/9	Weir or beach seine	Bear Lake	2,168	4,018				
6/10	Weir or beach seine	Bear Lake	3,906	7,924				
6/11	Weir or beach seine	Bear Lake	2,999	10,923				
6/12	Weir or beach seine	Bear Lake	2,908	13,831				
6/13	Weir or beach seine	Bear Lake	3,998	17,829				
6/14	Weir or beach seine	Bear Lake	1,828	19,657				
6/15	Weir or beach seine	Bear Lake	1,094	20,751				
6/16	Weir or beach seine	Bear Lake	3,322	24,073				
6/17	Weir or beach seine	Bear Lake	2,132	26,205				
6/18	Weir or beach seine	Bear Lake	1,960	28,165				
6/20	Weir or beach seine	Bear Lake	2,222	30,387				
6/21	Weir or beach seine	Bear Lake	1,074	31,461				
6/22	Weir or beach seine	Bear Lake	2,120	33,581				
6/23	Weir or beach seine	Bear Lake	264	33,845				
6/24	Weir or beach seine	Bear Lake	996	34,841				
6/25	Weir or beach seine	Bear Lake	1,770	36,611				
6/26	Weir or beach seine	Bear Lake	1,710	38,321				
6/27	Weir or beach seine	Bear Lake	2,554	40,875				
6/28	Weir or beach seine	Bear Lake	2,738	43,613				
6/29	Weir or beach seine	Bear Lake	1,826	45,439				
6/30	Weir or beach seine	Bear Lake	1,936	47,375				

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			Sales Harvest[a]		Donated		Broodstock	
Date	Gear	Location	Daily	Cumulative	Daily	Cumulative	Daily	Cumulative
7/1	Weir or beach seine	Bear Lake	2,166	49,541				
7/2	Weir or beach seine	Bear Lake	1,980	51,521				
7/3	Weir or beach seine	Bear Lake	1,732	53,253				
7/4	Weir or beach seine	Bear Lake	1,826	55,079				
7/5	Weir or beach seine	Bear Lake	1,692	56,771				
7/6	Weir or beach seine	Bear Lake	1,054	57,825				
7/7	Weir or beach seine	Bear Lake	564	58,389				
7/8	Weir or beach seine	Bear Lake	594	58,983				
7/9	Weir or beach seine	Bear Lake	366	59,349				
7/10	Weir or beach seine	Bear Lake	714	60,063				
7/11	Weir or beach seine	Bear Lake	212	60,275				
7/12	Weir or beach seine	Bear Lake	776	61,051				
7/14	Weir or beach seine	Bear Lake	346	61,397				
7/15	Weir or beach seine	Bear Lake		61,397	312	312		
7/18	Weir or beach seine	Bear Lake		61,397	286	598		
7/19	Weir or beach seine	Bear Lake		61,397	192	790		
7/21	Weir or beach seine	Bear Lake		61,397	139	929		
7/22	Weir or beach seine	Bear Lake		61,397	133	1,062		
7/23	Weir or beach seine	Bear Lake		61,397	46	1,108		
7/24	Weir or beach seine	Bear Lake		61,397	27	1,135	546	546
7/25	Weir or beach seine	Bear Lake		61,397	96	1,231	146	692
7/27	Weir or beach seine	Bear Lake		61,397	64	1,295	429	1,121
7/28	Weir or beach seine	Bear Lake		61,397	43	1,338	288	1,409
7/29	Weir or beach seine	Bear Lake		61,397	49	1,387	289	1,698
7/30	Weir or beach seine	Bear Lake		61,397		1,387	153	1,851
7/31	Weir or beach seine	Bear Lake		61,397	54	1,441	431	2,282
8/1	Weir or beach seine	Bear Lake		61,397		1,441	416	2,698
8/2	Weir or beach seine	Bear Lake		61,397	6	1,447	613	3,311
8/3	Weir or beach seine	Bear Lake		61,397	29	1,476	453	3,764
8/4	Weir or beach seine	Bear Lake	17	61,414	8	1,484		
8/5	Weir or beach seine	Bear Lake	8	61,422				
8/6	Weir or beach seine	Bear Lake	4	61,426				
7/5	Purse seine	Tutka Bay	4,023	4,023				
7/7	Purse seine	Tutka Bay	7,301	11,324				
7/9	Purse seine	Tutka Bay	4	11,328				
7/21	Purse seine	Tutka Bay	592	11,920				
7/29	Purse seine	Tutka Bay	1,213	13,133				
9/19	Purse seine	Tutka Bay					335	335
9/21	Purse seine	Tutka Bay					307	642
9/23	Purse seine	Tutka Bay					353	995
9/25	Purse seine	Tutka Bay					387	1,382
9/26	Purse seine	Tutka Bay					359	1,741
9/27	Purse seine	Tutka Bay					335	2,076
9/28	Purse seine	Tutka Bay					299	2,375

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			Sales Harvest[a]		Donated		Broodstock	
Date	gear	Location	Daily	Cumulative	Daily	Cumulative	Daily	Cumulative
9/29	Purse seine	Tutka Bay					309	2,684
9/30	Purse seine	Tutka Bay					277	2,961
7/3	Purse seine	Hazel Lake SHA	417	417				
7/6	Purse seine	Hazel Lake SHA	466	883				
7/7	Purse seine	Hazel Lake SHA	8,057	8,940				
7/10	Purse seine	Hazel Lake SHA	1,514	10,454				
7/17	Purse seine	Hazel Lake SHA	121	10,575				
7/3	Purse seine	Kirschner Lake	12,324	12,324				
7/5	Purse seine	Kirschner Lake	4,044	16,368				
7/8	Purse seine	Kirschner Lake	5,180	21,548				
7/13	Purse seine	Kirschner Lake	7,929	29,477				
7/17	Purse seine	Kirschner Lake	8,143	37,620				
7/24	Purse seine	Kirschner Lake	7,145	44,765				
9/9	Beach seine	English Bay Lakes					0	0
9/15	Beach seine	" "					0	0
9/20	Beach seine	English Bay Lakes					0	0
9/15	weir or beach seine	Hidden Lake[b]					36	36
9/28	weir or beach seine	Hidden Lake[b]					38	74

Hatchery escapement summary in numbers of fish[c]	
Donated fish (Harv code 37)	1,484
Raceway harvest (Harvest code 22)	0
Viable broodstock (spawned,eggs in incubators)	6,472
Unviable broodstock (green/over-ripe/bad)	134
Unspawned fish (e.g. excess males/females)	0
Holding mortalities (raceway, pen mortalities)	193
Estimated unharvested return	0
Total hatchery harvest	8,283

Sales summary	
Whole fish sales (Harv code 21)	160,674
Broodstock carcass sales (Harv code 22)	0
Total sales	160,674

[a] Source: ADF&G fish ticket database.

[b] CIAA projects conducted in Upper Cook Inlet.

[c] Data from CIAA and ADF&G fish ticket database.

Appendix F3.–Daily pink salmon sales and broodstock collection; sales and broodstock summary in numbers of fish for Cook Inlet Aquaculture Association, 2016.

			Sales harvest[a]		Donated		Broodstock harvest[b]	
Date	Gear	Location	Daily	Cumulative	Daily	Cumulative	Daily	Cumulative
7/5	Purse seine	Tutka Bay Lagoon	3,743	3,743				
7/7	Purse seine	Tutka Bay Lagoon	9,031	12,774				
7/9	Purse seine	Tutka Bay Lagoon	1,331	14,105	404	404		
7/21	Purse seine	Tutka Bay Lagoon	1,619	15,724				
7/29	Purse seine	Tutka Bay Lagoon	8,052	23,776				
8/5	Purse seine	Tutka Bay Lagoon					544	544
8/7	Purse seine	Tutka Bay Lagoon					718	1,262
8/8	Purse seine	Tutka Bay Lagoon					1,508	2,770
8/9	Purse seine	Tutka Bay Lagoon					2,932	5,702
8/10	Purse seine	Tutka Bay Lagoon					2,024	7,726
8/11	Purse seine	Tutka Bay Lagoon					1,408	9,134
8/12	Purse seine	Tutka Bay Lagoon					6,000	15,134
8/13	Purse seine	Tutka Bay Lagoon					6,000	21,134
8/14	Purse seine	Tutka Bay Lagoon					1,286	22,420
8/15	Purse seine	Tutka Bay Lagoon					2,094	24,514
8/17	Purse seine	Tutka Bay Lagoon					2,484	26,998
8/18	Purse seine	Tutka Bay Lagoon					868	27,866
8/19	Purse seine	Tutka Bay Lagoon					5,440	33,306
8/20	Purse seine	Tutka Bay Lagoon					4,544	37,850
8/21	Purse seine	Tutka Bay Lagoon					6,598	44,448
8/22	Purse seine	Tutka Bay Lagoon					5,085	49,533
8/23	Purse seine	Tutka Bay Lagoon					3,745	53,278
8/24	Purse seine	Tutka Bay Lagoon					2,891	56,169
8/25	Purse seine	Tutka Bay Lagoon					2,812	58,981
8/26	Purse seine	Tutka Bay Lagoon					6,800	65,781
8/27	Purse seine	Tutka Bay Lagoon					5,292	71,073
8/28	Purse seine	Tutka Bay Lagoon					5,110	76,183
8/29	Purse seine	Tutka Bay Lagoon					4,411	80,594
8/30	Purse seine	Tutka Bay Lagoon					5,257	85,851
8/31	Purse seine	Tutka Bay Lagoon					3,053	88,904
9/1	Purse seine	Tutka Bay Lagoon					4,369	93,273
9/2	Purse seine	Tutka Bay Lagoon					4,185	97,458
9/3	Purse seine	Tutka Bay Lagoon					4,481	101,939
9/4	Purse seine	Tutka Bay Lagoon					4,728	106,667
9/5	Purse seine	Tutka Bay Lagoon					4,010	110,677
9/6	Purse seine	Tutka Bay Lagoon					5,132	115,809
9/7	Purse seine	Tutka Bay Lagoon					3,056	118,865
9/8	Purse seine	Tutka Bay Lagoon					402	119,267
9/9	Purse seine	Tutka Bay Lagoon					3,460	122,727
9/10	Purse seine	Tutka Bay Lagoon					1,797	124,524
9/11	Purse seine	Tutka Bay Lagoon					2,834	127,358
9/14	Purse seine	Tutka Bay Lagoon					413	127,771

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			Sales harvest[a]		Donated		Broodstock harvest[b]	
Date	Gear	Location	Daily	Cumulative	Daily	Cumulative	Daily	Cumulative
7/3	Purse seine	Kirschner Lake	14	14				
7/5	Purse seine	Kirschner Lake	29	43				
7/8	Purse seine	Kirschner Lake	64	107				
7/13	Purse seine	Kirschner Lake	36	143				
7/24	Purse seine	Kirschner Lake	144	287				
7/24 - 7/25	Purse seine	Port Graham					396	396
7/30	Purse seine	Port Graham					113	509
8/6 - 8/8	Purse seine	Port Graham					7,090	7,599
8/9 - 8/12	Purse seine	Port Graham					5,858	13,457
8/13 - 8/15	Purse seine	Port Graham					973	14,430
8/16	Purse seine	Port Graham					1,000[c]	15,430
8/16	Purse seine	Port Graham	2,647	2,647			-2,647	12,783
7/10	Purse seine	Hazel Lake SHA	3	3				
7/17	Purse seine	Hazel Lake SHA	4	7				

Hatchery escapement summary in numbers of fish	
Donated fish (Harv code 37)	404
Raceway harvest	0
Viable broodstock (spawned,eggs in incubators)	80,089
Unviable broodstock (green/over-ripe/bad)	33,045
Unspawned fish (e.g. excess males/females)	0
Holding mortalities (raceway, pen mortalities)	27,402
Estimated unharvested return	33,242
Total hatchery harvest	173,778

Sales summary	
Whole fish sales (Harv code 21)	26,717
Broodstock carcass sales (Harv code 22)	25,592
Total sales	52,309

[a] From ADF&G fish ticket database.

[b] Data from CIAA.

[c] Broodstock harvested by common property permit holder outside of the SHA, then sold by the processor alive to the hatchery.

Appendix F4.–Daily coho salmon sales and broodstock collection; sales and broodstock summary in numbers of fish for Cook Inlet Aquaculture Association, 2016.

			Sales harvest		Broodstock harvest		Weir donations	
Date	Gear	Location	Daily	Cumulative	Daily	Cumulative	Daily	Cumulative
9/13	Weir	Bear Creek			56	56		
9/14	Weir	Bear Creek			44	100		
9/15	Weir	Bear Creek			21	121		
9/16	Weir	Bear Creek			25	146		
9/17	Weir	Bear Creek			35	181		
9/18	Weir	Bear Creek			9	190		
9/19	Weir	Bear Creek			16	206		
9/20	Weir	Bear Creek			6	212		
9/21	Weir	Bear Creek			21	233		
9/22	Weir	Bear Creek			23	256		
9/23	Weir	Bear Creek			22	278		
9/24	Weir	Bear Creek			16	294		
9/25	Weir	Bear Creek			7	301		
9/26	Weir	Bear Creek			9	310		
9/27	Weir	Bear Creek			16	326		
9/28	Weir	Bear Creek			2	328		
9/29	Weir	Bear Creek			5	333		
9/30	Weir	Bear Creek			1	334		
10/1	Weir	Bear Creek			1	335		
10/2	Weir	Bear Creek			0	335		
10/3	Weir	Bear Creek			2	337		
10/4	Weir	Bear Creek			1	338		
10/5	Weir	Bear Creek			0	338		
10/6	Weir	Bear Creek			1	339		
10/7	Weir	Bear Creek			0	339		
10/8	Weir	Bear Creek			0	339		
10/9	Weir	Bear Creek			8[a]	347		
10/10	Weir	Bear Creek			-89[b]	258		

Hatchery escapement summary in numbers of fish	
Donated fish (Harv code 37)	0
Raceway harvest (Harvest code 22)	0
Viable broodstock (spawned,eggs in incubators)	133
Unviable broodstock (green/over-ripe/bad)	1
Brood stock for ADF&G “Salmon in the classroom” project	0
Holding mortalities (raceway, pen mortalities)	125
Escapement for hatchery watershed	150
Total hatchery return	409

Sales and donation summary	
Whole fish sales (Harv code 21)	0
Carcass sale (Harv code 22)	0
Total sales	0

[a] Unassigned counting error at the weir.

[a] Eighty-nine fish were released into Bear Lake from the holding pen.

Appendix F5.–Historical harvest contributions, and total run of sockeye and coho salmon to Cook Inlet hatchery release sites, 1978–2016.

	Sockeye salmon					Coho salmon[a]			
Return Year	Hatchery contrib. to the ccpf	Hatchery contrib. to broodstock esc.	Hatchery contrib. to cost recov.	Hatchery donated	Total hatchery run	Hatchery contrib. to broodstock esc.	Hatchery contrib. to cost recov.	Hatchery donated	Total hatchery run
1978						100			100
1979	299,858	3,974			303,833	7,089			7,089
1980	638,058	30,927			668,985	6,376			6,376
1981	358,726	9,700			368,460				
1982	23,990	19,283			45,218				
1983	151,400	16,103			173,903				
1984	231,444	50,800			287,758	4,620			4,620
1985	415,493	179,400			608,252	5,335			5,335
1986	808,503	12,020			841,552	1,938			1,938
1987	521,349	34,600			572,648	300			300
1988	676,669	594			686,184				
1989	251,532	12,000	78,731		356,263				
1990	370,195	2,708	8,513		389,059		5,855		5,855
1991	479,910	86,650	3,604		590,136		6,035		6,035
1992	378,823	24,103	9,198		420,374	689	1,234		1,923
1993	459,756	38,231	37,620		551,457	678	7,199		7,877
1994	205,837	17,655	51,140		277,632	731	4,967		5,698
1995	260,844	6,010	63,404		344,048				
1996	348,846	5,455	76,272		445,157	608	723		1,331
1997	184,409	1,645	90,464		284,310	594	2,690		3,284
1998	110,659	3,561	81,889		211,166	780	9,905		10,685
1999	968,473	16,317	182,311		1,236,748	939	2,499		3,438
2000	216,149	17,681	94,666	13,690	356,263	976	5,370	5,146	11,492
2001	656,309	17,773	67,786	7,343	840,524	644	1,754	1,758	4,156
2002	754,609	19,744	85,830	1,364	966,783	1,044	2,352	1,436	4,832
2003	1,080,584	20,311	124,388	2,275	1,306,299	1,234	2,228	1,816	5,278
2004	1,112,259	11,167	29,943		1,251,938	972	1,224	1,215	3,411
2005	924,377	7,379	74,673	1,302	1,104,598	953	1,536	1,518	4,007
2006	382,433	14,600	77,590	784	514,373	754	600	1,511	2,865
2007	345,027	12,754	57,305	271	450,136	608			608
2008	134,226	7,658	88,836	201	245,704	525	350	402	1,277

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Return Year	Sockeye salmon					Coho salmon			
	Hatchery contrib. to the ccpf	Hatchery contrib. to broodstock esc.	Hatchery contrib. to cost recov.	Hatchery donated	Total hatchery run	Hatchery contrib. to broodstock esc.	Hatchery contrib. to cost recov.	Hatchery donated	Total hatchery run
2009	26,798	10,403	174,980	782	235,419	483		138	621
2010	78,645	10,214	69,833	465	194,834	452		220	672
2011	94,153	7,572	159,860	211	261,585	454		385	839
2012		12,035	114,593	254	126,628	578		321	899
2013	10,732	9,364	71,913	1,129	93,138	354		2,044	2,398
2014	8,374	10,318	172,400	1,671	192,763	383		671	1,054
2015	4,633	15,693	143,544	2,062	165,932	486	1	727	1,214
Previous 10-yr avg.	120,558	11,061	113,085	783	245,487	508	317	713	1,538
2016	10,087	6,725	171,249	1,484	189,545	268	0	0	268

Note: Harvest estimates of hatchery fish are from CIAA.

[a] Historic return locations documented were Bear Lake, Fritz Creek, Halibut Cove Lagoon, Grouse Lake, Caribou Lake, Homer Spit, Resurrection Bay, and Seldovia. Releases of hatchery coho salmon in LCI began in 1966. No returns were documented prior to 1978. Includes CIAA Trail Lake Hatchery production and F&G Ship Creek Complex production.

Appendix F6.–Estimated historical harvest contributions and total runs of pink salmon to greater Cook Inlet hatchery release sites, 1978–2016.

Return Year	Brood year	Fry release	Hatchery contribution to the ccpf	Hatchery contribution cost recovery	Hatchery contribution broodstock esc.	Hatchery donated	Total hatchery run	Estimated marine survival
1978	1976	318,280			3,700		3,700	1.16%
1979	1977	4,820,937			369,000		369,000	7.65%
1980	1978	9,243,717			315,000		315,000	3.41%
1981	1979	6,795,244	963,350		47,279		1,010,629	14.87%
1982	1980	10,268,753	181,400		4,400		185,800	1.81%
1983	1981	15,475,435	577,200				577,200	3.73%
1984	1982	15,232,750	230,000				230,000	1.51%
1985	1983	18,142,463	463,600				463,600	2.56%
1986	1984	23,818,500	380,135	55	50		380,240	1.60%
1987	1985	26,265,176	84,500				84,500	0.32%
1988	1986	8,278,967	836,000				836,000	10.10%
1989	1987	15,589,360	877,600				877,600	5.63%
1990	1988	36,977,190	167,400				167,400	0.45%
1991	1989	36,974,370	204,800				204,800	0.55%
1992	1990	30,602,576	97,577	276,000	69,000		442,577	1.45%
1993	1991	33,760,487	228,376	409,431	102,000		739,807	2.19%
1994	1992	48,700,000	604,037	959,064	153,966		1,717,067	3.53%
1995	1993	62,395,000	1,210,572	1,213,322	182,348		2,606,242	4.18%
1996	1994	63,358,000	19,510	423,306	140,152		582,968	0.92%
1997	1995	111,469,975	172,262	2,465,108	188,197		2,825,567	2.53%
1998	1996	89,918,000	507,850	787,538	175,468		1,470,856	1.64%
1999	1997	90,000,000	222,228	857,902	151,903		1,232,033	1.37%
2000	1998	64,797,691	8,580	1,043,705	269,808		1,322,093	2.04%
2001	1999	66,287,812	108,735	421,530	198,148		728,413	1.10%
2002	2000	126,635,207	9,791	1,041,529	252,777		1,304,097	1.03%
2003	2001	105,971,985	2,924	616,155	261,457	590	881,126	0.83%
2004	2002	125,167,000	1,523	2,459,189	117,222		2,577,934	2.06%
2005	2003	84,247,031	4,779	2,138,538	84,088		2,227,405	2.64%
2006	2004	26,567,983	5,000	246,781	27,741		279,522	1.05%
2007	2005	13,883,682		112,801			112,801	0.81%
2008	2006	13,282,049						
2009	2007							
2010	2008							
2011	2009							
2012	2010							
2013	2011	11,246,399		48,017	143,884		191,901	1.71%
2014	2012	18,603,000		32	28,739		28,771	0.15%
2015	2013	51,298,000		2,087,024	165,008		2,252,032	4.39%
2016	2014	14,474,300	14,750	23,776	127,771	404	166,701	1.15%
2017	2015	12,744,276						

Note: Harvest estimates of hatchery fish are from CIAA. CCPF = Commercial Common Property Fleet.

Appendix F7.–Tutka Bay Lagoon Hatchery salmon releases, 1977–2016.

Year released	Sockeye	Pink	Chum
1977	91,347 [a]	318,280 [a]	
1978	400,000 [a]	4,820,937 [a]	
1979		9,243,717 [a]	732,000 [a]
1980		6,795,244 [a]	5,872 [a]
1981		10,268,753 [a]	7,992 [a]
1982		15,475,435 [a]	15,440 [a]
1983		15,232,750 [a]	1,117,745 [a]
1984		18,142,463 [a]	140,500 [a]
1985		23,537,000 [a]	9,777 [a]
1986		26,234,600 [a]	18,000 [a]
1987		8,240,700 [a]	445,700 [a]
1988		15,589,360 [a]	3,211,200 [a]
1989		36,977,190 [a]	2,164,393 [a]
1990	355,347 [a]	36,684,662 [a]	1,508,557 [a]
1991		30,000,000 [a]	
1992		31,950,000 [a]	
1993		48,700,000 [a]	
1994		61,100,000 [a]	
1995		63,000,000 [a]	
1996	75,000 [a]	105,000,000 [a]	
1997	245,000 [a]	89,000,000 [a]	
1998		90,000,000 [a]	
1999	100,000 [a]	60,132,000 [a]	
2000		65,120,870 [a]	
2001		99,336,410 [a]	
2002		99,371,000 [a]	
2003		67,967,000 [a]	
2004		47,964,360 [a]	
2005	[b]		
2006	[b]		
2007	[b]		
2008	[b]		
2009	[b]		
2010	[b]		
2011	[b]		
2012	[b]	11,246,399 [a]	
2013		18,603,000 [c]	
2014		51,298,000 [c]	
2015		12,274,240 [c]	
2016		11,433,515 [c]	

[a] No thermal marking.

[b] Sockeye salmon fry reared and thermally marked at Trail Lakes Hatchery, remote released as smolt at Tutka Bay Hatchery. Release numbers are included in releases for Trail Lakes Hatchery.

[c] Thermally marked.

Appendix F8.–Trail Lakes Hatchery salmon releases, 1983–2016.

Year released	Chinook	Sockeye	Coho	Chum
1983		2,310,751	1,039,673	
1984	406,755	1,236,864	1,283,815	
1985	398,586	1,805,792	1,538,361	455,809
1986	217,648	516,000	1,530,116	
1987	268,399	3,718,311	1,702,446	
1988	98,429	9,074,486	945,999	
1989		5,690,000	1,337,340	
1990		7,679,698	840,585	
1991		6,345,252 [a]	390,841	
1992		7,575,637 [a]	255,533	
1993		7,979,820 [a]	620,588	
1994		6,640,000 [a]	320,000	
1995		6,339,485 [a]	516,400	
1996		4,110,638 [a]	75,000	
1997		10,857,470 [a]	601,700	
1998		7,653,000 [a]	409,000	
1999		9,923,500 [a]	357,000	
2000		12,521,000 [a]	418,000 [b]	
2001		1,140,000 [a]	432,000 [b]	
2002		18,907,200 [a]	528,500 [b]	
2003		16,128,000 [a]	761,000 [b]	
2004		17,272,000 [a]	996,000 [b]	
2005		9,959,000 [a]	988,000 [b]	
2006		5,785,000 [a]	1,146,000 [b]	
2007		12,668,800 [a]	956,000 [b]	
2008		13,203,000 [a]	685,000 [b]	
2009		7,953,000 [a]	382,000 [b]	
2010		8,616,000 [a]	435,000 [b]	
2011		9,324,200 [a]	437,000 [b]	
2012		7,636,300 [a]	315,000 [b]	
2013		7,482,000 [a]	405,000 [b]	
2014		9,368,500 [a]	523,000 [b]	
2015		8,302,700 [a]	546,000 [b]	
Previous 10-year average		9,033,950	583,000	
2016		6,001,790 [a]	546,600 [b]	

[a] Thermal marking of sockeye salmon releases began in 1991 (BY 1990).

[b] Thermal marking of coho salmon releases began in 2000 (BY 1999).

Appendix F9.–Port Graham Hatchery salmon releases, 1991–2016.

Year	Sockeye	Coho	Pink
1991	84,757		255,000
1992	144,982		1,810,487
1993	194,700		
1994	830,159		1,295,000
1995			358,000
1996	292,134		6,469,975
1997	199,000	29,963	918,000
1998			
1999	918,348		4,617,362 [a]
2000	906,057		1,142,726 [a]
2001			27,298,797 [a]
2002			6,600,985 [a]
2003	694,647 [a]		57,200,000 [a]
2004	159,616 [a]		36,282,671 [a]
2005	203,000 [a]		26,567,983 [a]
2006	422,060 [a]		13,883,682 [a]
2007			13,282,049 [a]
2008			
2009	[b]		
2010			
2011			
2012			
2013	[b]		[c]
2014			[c]
2015			2,200,060 [a]
2016			1,310,762 [a]

[a] Thermally marked.

[b] Remote releases from Trail Lakes Hatchery.

[c] Remote releases from Tutka Bay Lagoon Hatchery.

Appendix F10.–Ship Creek Hatchery Complex, (Fort Richardson, Elmendorf, and William Jack Hernandez combined) hatchery salmon fry releases, 1966–2016.

Year released	Chinook	Coho
1966	166,874	0
1967	538,356	38,200
1968	82,400	199,700
1969	95,900	264,000
1970	45,700	225,400
1971	217,390	92,343
1972	71,814	87,700
1973	166,134	683,685
1974	212,540	210,300
1975	91,100	281,800
1976	513,400	895,200
1977	351,952	775,803
1978	747,629	617,822
1979	1,088,542	1,471,899
1980	770,235	602,394
1981	391,950	1,553,864
1982	0	1,096,569
1983	578,441	424,542
1984	1,021,553	831,147
1985	1,727,379	660,854
1986	1,474,079	1,991,102
1987	869,520	731,202
1988	1,624,351	1,333,453
1989	3,008,315	1,970,126
1990	2,256,778	1,281,500
1991	1,693,355	1,215,136
1992	1,765,804	1,329,869
1993	1,863,391	1,194,994
1994	1,709,950	994,250
1995	1,695,164	1,121,768
1996	1,899,284	1,042,477
1997	1,801,410	1,136,845
1998	1,531,021	1,249,781
1999	1,340,334	1,113,016
2000	2,289,290	0
2001	1,353,660	1,226,342
2002	1,451,227 [a]	1,273,443 [a]
2003	5,635,091 [a]	1,117,566 [a]
2004	1,958,790 [a]	1,308,038 [a]
2005	2,369,684 [a]	1,442,233 [a]
2006	1,922,667 [a]	1,235,317 [a]
2007	1,849,714 [a]	1,193,374 [a]
2008	1,309,790 [a]	989,853 [a]
2009	1,205,594 [a]	1,168,549 [a]
2010	2,006,157 [a]	1,336,861 [a]
2011	1,741,377 [a]	1,050,001 [a]
2012	1,853,150 [a]	968,716 [a]
2013	1,428,414 [a]	1,079,549 [a]
2014	2,102,235 [a]	947,363 [a]
2015	1,772,104 [a]	1,107,838 [a]
Previous 10-year average	1,767,479	1,107,742
2016	2,291,484 [a]	1,240,626 [a]

[a] Thermally marked.

Appendix F11.–Historic releases of Chinook salmon from hatcheries to Lower Cook Inlet, 1924–2016.

	Southern District (241)						Eastern District (231)					
Year	Halibut Cove Lagoon	Homer Spit	Tutka Bay	Kasitsna Bay	Seldovia Harbor	English Bay Lakes	Resurrection Bay	Alaska Sea-Life Center	Thumb Cove	Box Canyon	Lowell Creek	Spring Creek
1924												1,387,000
1972				33,800								
1975	3,463											
1976	16,183		26,000							25,100		
1977	49,947									50,036		
1978	126,306									150,488		
1979	224,708									257,530		
1980	155,054											
1981	101,861											
1983	200,900									54,521		
1984	84,000	88,753							71,427		39,206	
1985	98,000	152,226					53,587				132,708	
1986	101,331	103,946									100,900	
1987	94,100	103,860			80,420						95,963	
1988	93,874	219,572			111,435		109,020				95,673	
1989	115,682	212,737			108,300		109,464				122,800	75,063
1990	112,458	210,087			98,525	109,465	112,831				216,220	
1991	92,363	190,915			91,592		373,165				93,200	
1992	117,850	353,255			112,935		261,803				108,390	
1993	100,228	312,292			106,497		193,742				104,870	
1994	98,872	320,836			107,246		165,596				104,477	
1995	37,577	339,074			116,165		220,146				95,256	
1996	97,729	312,289			118,274		300,000				115,000	
1997	78,133	318,706			103,757		203,932				219,355	
1998	65,893	289,830			69,461		205,133				101,992	
1999	79,221	222,781			74,057		88,066				85,502	
2000	83,277	219,984			68,114		212,873				109,461	
2001	106,719	208,062			102,793		113,147				114,748	
2002	106,279	190,026			83,045		100,314				93,296	
2003	106,844	206,292			107,521		109,976				110,331	
2004	103,771	168,743			88,682		126,280	30,066			89,388	
2005	112,521	220,822			114,984		211,549	218,759			100,088	
2006	117,549	224,053			113,974		303,217	120,000				
2007	54,560	226,972			54,276		117,842	115,716				
2008	58,674	212,141			54,464		142,469					
2009	35,065	164,234			44,487							
2010	111,134	213,503			114,421		110,671				109,779	
2011	107,338	219,787			103,382		223,881					
2012	110,253	221,547			95,800		219,743					
2013	60,666	216,292			63,311		141,550					
2014	85,856	206,254			74,259		183,464					
2015	102,718	210,543			72,233		298,542					
Previous 10-yr avg.	84,381	211,533			79,061		193,487				109,779	
2016	110,596	214,139			102,552		320,711					

Appendix F12.–Historic releases of sockeye salmon from hatcheries to Lower Cook Inlet, 1925–2016.

	Southern District (241)					Outer (232)		Kamishak District (249)					Eastern District (231)		
Year	Leisure Lake	Hazel Lake	Halibut Cove Lagoon	Tutka Bay Lagoon	English Bay Lakes	Pt Graham Subdist.	Port Dick Lake	Chenik Lake	Paint River Lakes	Kirschner Lake	Bruin Lake	Ursus Lake	Bear Lake	Resurrection Bay	Grouse Lake
1925															846,360
1926															4,085,727
1981	1,094,713							1,096,718							
1982	1,527,876														
1983	2,113,239														
1984	2,110,000														
1985	2,018,000														
1986	2,250,303							839,000	820,026						
1987	2,022,000						704,900	1,005,000		866,700					
1988	2,100,000	783,000					221,700	2,601,000	2,207,300	521,000					
1989	2,000,000	1,000,000					430,000	3,500,000	2,000,000	250,000					
1990	2,000,000	1,500,000			855,347			3,250,000	2,000,000	250,000			2,577,962		
1991	2,000,000	1,300,000			255,071	84,757		2,100,000	750,000	250,000	250,000		1,604,922		
1992	2,000,000	1,000,000			290,298	144,982		2,750,000	750,000	250,000	250,000	250,000	1,482,489		
1993	2,000,000	1,000,000			755,692			1,400,000	750,000	250,000	250,000	250,000	1,810,261		
1994					820,174	9,985				208,000			170,000		570,000
1995	1,632,000	1,061,000						1,129,000	588,000	251,000	251,000	252,000	330,000		993,000
1996	1,490,000	1,030,000		75,000	292,134			951,000	500,000	250,000	250,000	250,000	780,638		217,605
1997	2,000,000	1,000,000		245,000	199,000					250,000			788,000		2,428,000
1998	1,877,000	1,218,000								234,000			772,000		1,514,000
1999	265,400	453,100		100,000	918,348					172,700			1,380,000		
2000	1,708,000	1,248,000			906,057					249,000			1,796,000		
2001	89,000												145,000		
2002	2,246,200	1,280,100							507,700	301,500			3,210,300		
2003	2,240,000	1,547,000			694,647					298,000			1,801,000		
2004	2,002,000	351,000			50,096	109,520				251,000			3,012,000		
2005	2,252,000	1,558,000		96,000	203,000					316,000			3,422,000		
2006	680,000			260,000		422,060							3,393,000		
2007	2,315,000	1,411,000		143,800						254,000			3,056,000		
2008	2,053,000	1,161,000		483,000	246,000					300,000			2,400,000	1,600,000	
2009	1,225,000	1,186,000		301,000		112,000							2,543,000	1,675,000	
2010	1,933,000	1,218,000		278,000	202,000					255,000			2,200,000	1,650,000	
2011	1,415,000	1,244,000		281,900	203,300					160,000			2,488,000		
2012	2,074,000	1,240,000		371,300	213,000					300,000			2,490,000	1,305,000	
2013	1,800,000	1,450,000		511,000	211,000	102,000							2,548,000	2,090,000	
2014	1,353,000	1,223,000		599,500	209,000					217,000			2,405,000	1,742,000	
2015	1,051,000	621,000		523,500	200,200					237,000			2,415,000	1,758,000	
2016				531,625						185,000			2,374,000	1,680,165	

Appendix F13.–Historical releases of coho salmon from hatcheries to Lower Cook Inlet, 1963–2016.

	Southern District (241)							Eastern District (231)						
Year	Caribou Lake	Fritz Creek	Halibut Cove Lagoon	Homer Spit	Kasitsna Bay Creek	Seldovia	Port Graham Sub.	Resurrection Bay	Seward Lagoon	Bear Lake	Grouse Lake	Lowell Creek	misc. small releases combined	Total coho salmon released
1963										148,057				148,057
1964										43,000				43,000
1965										69,800				69,800
1966										360,100				360,100
1967										246,400				246,400
1968									42,400	0				42,400
1969									27,100	47,900				75,000
1970									38,600	6,400			3,200	45,000
1971									10,900	50,983				61,883
1972					241,400				66,500	606,100				914,000
1973			326,800						30,200	443,300				800,300
1974			755,279						100,000	450,800				1,306,079
1975	141,217		475,600						100,700	449,900				1,167,417
1976	155,700		461,244			112,661			100,600	260,200	35,200			1,125,605
1977			7,253			99,380			100,456	45,902	35,003			287,994
1978		66,545							148,999	254,394	53,455			523,393
1979		44,717	47,810	23,015					98,566	265,963	44,010			524,081
1980		21,315							100,757	150,011	50,286			322,369
1981		55,006							109,958	246,545	54,953			466,462
1982									53,970	227,800	13,238			295,008
1983									82,506	248,801				331,307
1984	119,071					59,840			67,722	220,000	53,100			519,733
1985	139,789	31,242				81,924			50,256	300,446	56,134			659,791
1986	137,951					71,496			212,812	445,693			53,607	867,952
1987	150,000					45,000			66,525	223,300		57,232	257,461	542,057
1988	150,000			62,547		80,000			118,741	347,155		63,806		822,249
1989				153,869					272,346	490,000		66,606		982,821
1990	180,000			122,945		50,000			145,619	426,911		63,733		989,208
1991	180,000			100,236		50,000			119,057	390,060		30,400	4,000	869,753
1992	150,000			100,570					154,219	255,533		59,492		719,814
1993	150,000			116,129					159,091	620,588		64,361	8,000	1,110,169
1994	63,600			156,213					221,577	320,000		38,000		799,390
1995				110,701					133,700	516,400		50,698		811,499

-continued-

	Southern District (241)							Eastern District (231)					
Year	Caribou Lake	Fritz Creek	Halibut Cove Lagoon	Homer Spit	Kasitsna Bay Creek	Seldovia	Port Graham	Resurrection Bay	Seward Lagoon	Bear Lake	Grouse Lake	Lowell Creek	Total coho salmon released
1996				149,000					182,000	425,000		69,000	825,000
1997				120,242			29,963		144,112	601,700		61,687	957,704
1998				148,410			30,000		74,365	409,000		65,687	727,462
1999				129,602					109,142	357,000		62,580	658,324
2000				122,338					145,693	418,000		54,184	740,215
2001				225,042					124,703	432,000		125,618	907,363
2002				216,355					121,743	528,500		119,512	986,110
2003				325,735					123,718	658,000		124,225	1,231,678
2004				243,243				192,000	323,798	691,000		131,989	1,582,030
2005				220,707					132,229	893,000		132,276	1,378,212
2006				449,216		114,000			131,326	562,000		277,261	1,533,803
2007				228,244		97,000			132,811	758,000		130,892	1,346,947
2008				217,843		88,000			233,365	502,000			1,041,208
2009				157,696					91,979	338,000		91,833	679,508
2010				130,206					134,008	435,000		133,947	833,161
2011				129,080					255,252	437,000			821,332
2012				107,250					249,309	315,000			671,559
2013				132,027					216,444	405,000			753,471
2014				76,535					97,675	523,000			697,210
2015				122,963					279,546	546,000			948,509
Previous 10-year avg.				175,106					182,172	482,100		158,483	932,671
2016				122,602					272,212	546,600			941,414

Appendix F14.–Historical releases of pink salmon from hatcheries to greater Cook Inlet, 1975–2016.

	Southern District (241)					Eastern District (231)	Kamishak Bay District (249)	Upper Cook Inlet (247-50, -60)		
Year	Tutka Bay	Halibut Cove Lagoon	Halibut Cove-bight	Homer Spit	Port Graham Subdistrict	Resurrection Bay	Paint River	Eklutna River	Ingram Creek	Total pink salmon released
1975		50,916								50,916
1976										
1977		318,280								318,280
1978	4,820,937									4,820,937
1979	9,243,717									9,243,717
1980	6,245,103						550,141			6,795,244
1981	9,759,144						509,609			10,268,75
1982	15,070,927						404,508			15,475,43
1983	14,730,794						501,956			15,232,75
1984	18,142,463									18,142,46
1985	23,537,000							281,50		23,818,50
1986	22,228,600	4,006,000						30,576		26,265,17
1987	4,385,600	3,001,400		594,50				38,267	259,200	8,278,967
1988	12,003,878	3,022,491		310,01					252,975	15,589,36
1989	30,091,053	6,229,062		331,69					325,380	36,977,19
1990	23,689,702	6,000,000		603,84					311,101	36,974,37
1991	23,657,112	6,039,062		303,82	255,000					30,602,57
1992	25,700,000	5,950,000		300,00	1,810,487					33,760,48
1993	48,700,000									48,700,00
1994	61,100,000				1,295,000					62,395,00
1995	63,000,000				358,000					63,358,00
1996	105,000,000				6,469,975					111,469,9
1997	89,000,000				918,000					89,918,00
1998	90,000,000									90,000,00
1999	60,132,000				4,617,362	48,329				64,797,69
2000	65,120,870				1,142,726	24,216				66,287,81
2001	99,336,410				27,298,797					126,635,2
2002	99,371,000				6,600,985					105,971,9
2003	67,967,000				57,200,000					125,167,0
2004	47,964,360				36,282,671					84,247,03
2005					26,567,983					26,567,98
2006					13,883,682					13,883,68
2007					13,282,049					13,282,04
2008										
2009										
2010										
2011										
2012	8,100,399		3,146,000[a]							11,246,39
2013	4,353,000				14,250,000					18,603,00
2014	51,110,000				188,000					51,298,00
2015	11,249,240				2,200,060		1,025,000			14,474,30
2016	11,433,515				1,310,762					12,744,27

[a] Released outside of Halibut Cove Lagoon, 1 kilometer east.

Appendix F15.–Harvest of sockeye salmon returning to China Poot and Neptune Bays in the Southern District of Lower Cook Inlet, 1979–2016.

Return year	Sport harvest [a]	Personal use dip net harvest [b]	Commercial harvest [c]	Hatchery cost recovery [d]	Unharvested [e]	Total run
1979	650					650
1980	1,000	953	58			2,011
1981	1,500		81			1,581
1982	450	1,320	1		1,430	3,201
1983	480	5,466	81		10	6,037
1984	500	1,794	263		500	3,057
1985	500	796	6		920	2,222
1986	100	1,815	83		200	2,198
1987	200	1,231				1,431
1988	500	1,910	63,550		470	66,430
1989	1,000	5,416	35,795			42,211
1990	500	5,835	49,900			56,235
1991	1,000	1,528	109,625			112,153
1992	300	3,468	68,643	7,336		79,747
1993	400	4,551	114,002			118,953
1994	500	5,715	35,704	3,025		44,944
1995	1,000	8,605	120,590	12,497	450	143,142
1996	1,000	4,773	211,716	14,235	441	232,165
1997	650	4,773	116,094		1,130	122,647
1998	640	4,773	79,642	20,579	380	106,014
1999	640	4,773	154,424	16,188	522	176,547
2000	640	4,773	60,199	18,103	256	83,971
2001	640	4,773	90,649	27,037	57	123,156
2002	640	4,773	96,996	29,517	51	131,977
2003	640	4,773	330,642	35,557	121	371,733
2004	640	4,773	20,379	12,991	448	39,231
2005	640	4,773	60,848	29,737	1	95,999
2006	640	4,773	50,643	23,283	820	80,159
2007	640	4,773	61,193	22,586	501	89,693
2008	640	4,773	62,175	1,907	103	69,598
2009	640	4,773		205	223	5,841
2010	640	4,773		1,007	45	6,465
2011	640	4,773	6,553		18	11,984
2012	640	4,773	5,559	11,938	45	22,955
2013	640	4,773	15,554	8,755	13	29,735
2014	640	4,773	7,280		366	13,059
2015	640	4,773	16,644		36	22,093
2016	640	4,773	35,528	10,575	214	51,730

[a] Sport harvest figures for 1997–2016 represent the estimated previous 10-year average.

[b] Personal use harvest data for 1979–1981 from permits issued from the Homer office. Data from 1983 to 1995 is from historical sport fish harvest reports (e. g., Mills 1984). Data from 1996 to current is an average of the last 5 years that the data was collected specifically for this fishery.

[c] The final commercial harvest figures are the total common property seine harvest in the Neptune and China Poot subdistricts.

[d] From cost recovery conducted in China Poot and Neptune Bays.

[e] Unharvested fish are the total count by ADF&G ground survey staff of sockeye salmon remaining in China Poot Creek.

Appendix F16.–Commercial harvest and escapement of sockeye salmon at Chenik Lake in the Kamishak Bay District of Lower Cook Inlet, 1976–2016.

Return year	Commercial harvest	Cost recovery	Escapement [a]	Total run
1976	[b]		900	900
1977	[b]		200	200
1978	[b]		100	100
1979	[b]		[c]	[c]
1980	[b]		3,500	3,500
1981	[b]		2,500	2,500
1982	[b]		8,000	8,000
1983	2,800		11,000	13,800
1984	16,500		13,000	29,500
1985	10,624		3,500	14,124
1986	111,348		7,000	118,348
1987	97,411		10,000	107,411
1988	161,936		9,000	170,936
1989	38,905		12,000	50,905
1990	70,347		17,000	87,347
1991	51,773		10,189	61,962
1992	5,609	8,769	9,269	14,878
1993	19,988		4,000	23,988
1994	[b]		808	808
1995	[b]		1,086	1,086
1996	[b]		2,990	2,990
1997	[b]		2,338	2,338
1998	[b]		1,880	1,880
1999	[b]		2,850	2,850
2000	[b]		4,800	4,800
2001	[b]		250	250
2002	[b]		4,650	4,650
2003	[b]		13,825	13,825
2004	33,177		17,000	50,177
2005	47,013		13,037 [d]	60,050
2006	11,783		13,493 [d]	25,276
2007	161,630		18,230 [e]	179,860
2008	171,255		10,647 [e]	181,902
2009	65,727		15,264 [e]	80,991
2010	5,471		17,460 [e]	22,931
2011	82,826		10,330 [e]	93,156
2012	55,255		16,505 [e]	71,760
2013	33,154		11,333 [e]	44,487
2014	7,241		17,774 [e]	25,015
2015			19,073 [e]	19,073
2016	8,779		19,510 [e]	28,289

[a] Estimated from aerial surveys between 1976–1990 and 1998–present, weir counts between 1991 and 1997, unless otherwise noted.

[b] Closed to fishing.

[c] No data.

[d] Estimated from a combination of weir, video counts, and/or aerial counts.

.[e] Estimated from video counts.

Appendix F17.–Commercial harvest of sockeye salmon at Kirschner Lake in the Kamishak Bay District of Lower Cook Inlet, 1989–2016.

Return year	Common property commercial harvest	Cost recovery	Broodstock	Unharvested [a]	Total run
1989	190				190
1990	14,465				14,465
1991	42,654				42,654
1992	40,043				40,043
1993	36,322				36,322
1994	14,465	16,787			31,252
1995	8,772	5,350			14,122
1996	18,093	13,511			31,604
1997	2,842	6,125			8,967
1998	8,112	19,390			27,502
1999	22,256	17,504			39,760
2000	10,236	21,391			31,627
2001	9,198	29,740			38,938
2002		32,492			32,492
2003	11,671	38,741			50,412
2004		16,372			16,372
2005		14,969			14,969
2006	24,130	26,310			50,440
2007	7,725	27,719			35,444
2008		11,588			11,588
2009		18,771			18,771
2010		8,858			8,858
2011	12,732			210	12,942
2012		1,260		1,300	2,560
2013		8,288			8,288
2014	3,068	16,555			19,623
2015		23,571	3,666		27,237
2016	5,893	44,765			50,658

[a] A barrier falls at the outlet of Kirschner Lake immediately above the intertidal zone precludes any escapement from entering this lake.

Appendix F18.–Commercial harvest and escapement of pink and sockeye salmon in the Tutka Bay Subdistrict in the Southern District of Lower Cook Inlet, 1975–2016.

	Sockeye salmon [a]				Pink salmon [a]					
Return year	Comm. Harvest	Cost Recov.	Brood stock	Total Run	Comm. Harvest	Cost Recov.	Brood stock	Escapement	Sport catch	Total Run
1975	12,600			12,600	89,200		0	17,600		106,800
1976	14,200			14,200	73,100		10,800 [b]	11,500		95,400
1977	21,300			21,300	21,900		6,528	14,000		42,428
1978	92,100			92,100	167,862		21,100	15,000		203,962
1979	15,600			15,600	421,816		21,200	10,600	2,000	455,616
1980	13,200			13,200	321,513		26,897	17,300	5,000	370,710
1981	41,000			41,000	1,026,574		22,000	28,000	6,000	1,082,574
1982	15,800			15,800	184,876		41,200	18,500	2,000	246,576
1983	35,900			35,900	615,459		53,800	12,900	5,000	687,159
1984	26,700			26,700	241,054		41,000	10,500	8,000	300,554
1985	14,886			14,886	491,181		43,000	14,000	8,000	556,181
1986	16,340			16,340	400,150		43,000	13,400	8,000	464,550
1987	14,659			14,659	56,465		22,000	4,800	500	83,765
1988	12,900			12,900	723,929		65,000	11,200	8,500	808,629
1989	13,461			13,461	632,147		5,100	11,900	10,000	659,147
1990	7,922			7,922	20,183	17,243	62,000	38,500	2,000	139,926
1991	7,039	34		7,073	14,691	101,837	103,100	16,820	2,000	238,448
1992	8,578			8,578	41,642	275,897	67,324	25,921	2,500	413,284
1993	5,797	8		5,805	128,347	409,431	107,242	27,403	2,000	674,423
1994	9,129	8		9,137	498,436	953,231	154,000	14,546	2,000	1,622,213
1995	12,323	3		12,326	1,212,342	1,213,322	166,052	15,899	3,000	2,610,615
1996	20,226	74		20,300	6,941	420,411	138,021	3,456	1,000	569,829
1997	9,686			9,686	130,406	2,375,653	216,786	45,000	2,100	2,769,945
1998	8,480			8,480	504,764	792,542	153,580	17,473	2,000	1,470,359
1999	18,711 [c]	88		18,799	222,228	857,902	151,903	27,947	2,000	1,261,980
2000	6,602	896		7,498	8,580	1,043,705	179,970	19,048	1,500	1,252,803
2001	16,500	5		16,505	109,682	421,408	179,006	4,451	1,500	716,047
2002	14,338			14,338	4,825	703,205	161,864	15,884	1,500	887,278
2003	24,090	2		24,092	5,074	507,215	207,285	30,866	1,500	751,940
2004	5,827			5,827	1,523	1,175,326	0 [d]	17,846	1,500	1,196,195
2005	6,262			6,262	4,789	1,631,806		133,600	1,500	1,771,695
2006	5,895			5,895	11,223			25,800	1,500	38,523
2007	8,449			8,449	3			5,700	1,500	7,203
2008	6,431	14,604	150	21,185	1,924	377		14,100	1,500	17,901
2009	9,203	11,584	3,067	23,854	2,139			3,800	1,500	7,439
2010	6,324	38,087	4,894	49,305	2,536	161		2,100	1,500	6,297
2011	10,571	7,836		18,407	2,394	5	12,665 [e]	21,974	1,500	38,538
2012	4,893	17,756	2,590	25,239	4,681	171	8,140	10,436	1,500	24,928
2013	16,285	9,707		25,992	866	39,153	143,884	9,541	1,500	194,944
2014	27,425	30,404	4,205	62,034	11,004	32	22,401	10,152	1,500	45,089
2015	47,002	32,455	6,769	86,226	111,957	2,087,024	165,008	82,400	1,500	2,447,889
2016	14,473	13,133	2,961	30,567	48,333	23,776	127,771	33,242	1,500	234,622

[a] Data from CIAA.

[b] Start of enhancement at Tutka Lagoon Hatchery.

[c] First return of enhanced BY95 sockeye salmon. Previous year's harvest is intercepted China Poot runs and wild production.

[d] CIAA announced suspension of operations at Tutka Lagoon Hatchery.

[e] CIAA resumed operations at Tutka Lagoon Hatchery.

Appendix F19.–Harvest of salmon from the Port Graham Section of the Port Graham Subdistrict in the Southern District of Lower Cook Inlet, 1985–2016.

	Sockeye salmon			Pink salmon					
Return year	Commercial harvest	Subsist. harvest[a]	Cost recovery	Commercial harvest	Subsist. harvest[a]	Cost recovery	Broodstock (plus excess)	Escapement	Total run
1985	787	481		3,668	32			26,300	30,000
1986	363	274		4,658	237			17,500	22,395
1987	246	219		359	230			3,800	4,389
1988	103	411		126	542			7,900	8,568
1989		94			640			19,100	19,740
1990		524			1,013			20,100	21,113
1991		58			1,494			29,000	30,494
1992		98			745			5,400	6,145
1993		154			997			12,800	13,797
1994		260			866			7,600	8,466
1995		379			786		16,224	10,000	27,010
1996	5,203	684		821	312		2,131	7,000	10,264
1997	8,597	324		46,854	497	85,354	21,888	12,500	167,093
1998	3,652	271		598	459		21,888	12,600	35,545
1999		382			150			9,700	9,850
2000	1,153	784			355		89,838	15,600	105,793
2001		176			20		34,773	10,300	45,093
2002	3,576	417		14	150	238,672	146,433	58,500	443,769
2003	5,034	1,991			266		78,241	14,900	93,407
2004	1,032	572			363	1,283,517	99,376	44,000	1,427,256
2005		192			349	510,802	84,088	69,100	664,339
2006		31			26	247,990	27,741	31,200	306,957
2007		552	23		74	117,962		25,600	143,636
2008	2,971	550	26,274		36	2,670		24,700	27,406
2009	9,057	1,982	8,292		49	866		14,000	14,915
2010	740	116			24			16,600	16,624
2011	59	687			132			20,883	21,015
2012	30	661	30	21,645	282		[b]	34,486	56,413
2013	463	1,034		13,188	27		[c]	11,893	25,108
2014	42	136		43,442	164		1,740	32,295	77,641
2015	29	842		34,522	539		[d]	82,356	117,417
2016		0		1,000	10	2,647	11,342	14,629	29,628

[a] Harvest as reported by Port Graham subsistence permit holders. The preponderance of harvest reported on the Port Graham permits are from the Port Graham section of the Port Graham Subdistrict.

[b] Commercial Common Property pink salmon; 19,918 fish of the 21,645 harvested commercially were sold alive to processor for resale to hatchery as broodstock.

[c] Commercial Common Property pink salmon; 11,800 fish of the 13,188 harvested commercially were sold alive to processor for resale to hatchery as broodstock.

[d] Commercial Common Property pink salmon; 21,408 fish of the 34,522 harvested commercially were sold alive to processor for resale to hatchery as broodstock.

Appendix F20.–Harvest of salmon in the English Bay Section of the Port Graham Subdistrict of the Southern District of Lower Cook Inlet, 1985–2016.

	Sockeye salmon			Coho salmon			Pink salmon		
Return year	Commercial harvest	Subsist. harvest [a]	Cost recovery	Commercial harvest	Subsist. harvest [a]	Cost recovery	Commercial harvest	Subsist. harvest [a]	Cost recovery
1985	2,712	696		2,250	530		8,830	313	
1986	1,592	373		1,475	302		4,106	825	
1987	2,114	682		1,352	339		1,985	484	
1988	1,254	610		1,384	385		10,562	1,214	
1989		63			695			855	
1990		638			614			1,947	
1991		630			1,512			3,093	
1992		437			675			676	
1993		994			567			1,666	
1994		570			511			1,113	
1995	2,580	1,416		1,823	169		10,168	487	
1996	6,981	1,060	5,934	1,553	598		658	437	
1997	16,657	1	7,817	1,414			12,940	14	
1998	8,080	18	6,202	23			760		1
1999		2,775	660		1,320			1,873	
2000	984	3,880			1,579			1,251	
2001		909			1,238			1,434	
2002	10,912	10,203	20,245	1	967		6	1,681	
2003	16,525	3,221	45,011	2	513		82	1,306	
2004	1,537	2,968		3	842			1,277	
2005		1,934			1,142			1,259	
2006		2,215			1,179			2,038	
2007	4,270	[b]		3	[b]			[b]	
2008	2,421	3,615			1,345			2,646	
2009	491	1,515			396			865	
2010	1,157	1,514			1,324			1,030	
2011	1,375	5,009			1,381		702	2,499	200
2012		300			400			200	
2013		3,854			2,619			383	
2014		211							
2015		35							
2016		620			677			12	

[a] Harvest as reported by Nanwalek subsistence permit holders. The preponderance of harvest reported on the Nanwalek permits are from the English Bay section of the Port Graham Subdistrict.

[b] No data available.

Appendix F21.–English Bay- Second Lake eggtakes and fry release locations, 1989–2016

Egg takes from English Bay Lakes (Second Lake)				Fry and smolt releases using eggs taken from English Bay Lakes[a]				
Brood year	adults harvested	green eggs taken	eyed eggs	English Bay Lakes	Port Graham	Tutka Bay Lagoon	Kirschner Lake	Hazel Lake
1989	383	427,000		855,347				
1990	291	420,000		255,071				
1991	362	512,000		290,298				
1992	966	995,000	200,000	755,692				
1993	1,031	1,100,000	865,728	820,174				
1994	1,236	1,408,800	926,900	0[b]				
1995	1,750	2,209,000	1,896,000	292,134				
1996	1,498	1,593,155	1,133,059	199,000				
1997	1,289	1,331,000	1,152,000	0[c]				
1998	1,289	1,462,185	1,330,632	918,348				
1999	1,234	1,228,000	1,126,000	906,057				
2000	1,376	1,478,000	1,260,000	0[b]				
2001	0							
2002	1,248	1,419,416	806,530	694,647				
2003	200	205,343	168,457	50,096	109,520			
2004	1,390	1,562,000	1,349,000	203,400	422,060			
2005	0							
2006	0							
2007	372	510,000	409,000	246,000	112,000			
2008	0							
2009	240	307,000	288,000	202,000		58,200		
2010	1,023	1,113,000	1,013,000	203,300		371,300	160,000	
2011	2,110	2,504,876	2,204,262	213,000	102,000	511,000		1,240,000
2012	412	432,022	383,597	211,000				
2013	1,753	2,120,000	1,904,000	209,000				
2014	877	1,093,154	847,069	200,200				
2015	0							
2016	0							

[a] Indicates total resultant release of fry and/or smolt from associated brood year.

[b] All eggs destroyed due to infectious hematopoietic necrosis virus.

c All eggs lost due to fire at the hatchery facility.

Appendix F22.–Thermal marks on pink salmon otoliths sampled from the Southern District commercial common property purse seine fishery, 2015 and 2016.

Release location	2015	2016
Port Graham Hatchery	0 (0.0%)	2 (0.6%)
Tutka Bay Hatchery	210 (66.5%)	317 (91.1%)
PWS hatcheries (combined)	4 (1.3%)	0 (0.0%)
unmarked[a]	102 (32.3%)	29 (8.3%)
sum[b]	316	348

[a] Unmarked otoliths include wild and possibly unmarked Kitoi Bay Hatchery pink salmon.
[b] Otoliths that were damaged or malformed were excluded. In 2015 159 marks were excluded, in 2016 48 marks were excluded.

Appendix F23.–Thermal marks on pink salmon otoliths sampled from the Port Graham and Tutka SHA cost recovery harvests, 2016.

Release location	2015[a]	2016[a]
Port Graham Hatchery	0 (0.0%)	60 (35.5%)
Tutka Bay Hatchery	301 (96.5%)	98 (58.0%)
PWS hatcheries (combined)	2 (0.6%)	1 (0.6%)
unmarked[b]	9 (2.9%)	10 (5.9%)
Sum[b]	312	169

[a] Unmarked otoliths include wild and possibly unmarked Kitoi Bay Hatchery fish.
[b] Otoliths that were damaged or malformed were excluded. In 2015 69 marks were excluded, in 2016 11 marks were excluded.

Appendix F24.–Thermally marked sockeye salmon otoliths sampled from LCI commercial set gillnet fishery, 2013–2016.

	2013	2014	2015[a]	2016[b]
Kachemak Bay releases	15 (3.9%)	134 (17.9%)	129 (13.3%)	253 (23.8%)
EBL	1 (0.3%)	21 (2.8%)	14 (1.4%)	12 (1.1%)
Hidden Lake	(0.0%)	1 (0.1%)	(0.0%)	(0.0%)
Resurrection Bay releases	(0.0%)	5 (0.7%)	61 (6.3%)	(0.0%)
Main Bay Hatchery (PWS)	(0.0%)	4 (0.5%)	17 (1.7%)	97 (9.1%)
unmarked[c]	366 (95.8%)	583 (77.9%)	752 (77.3%)	703 (66.0%)
total[d]	382	748	973	1,065

[a] Due to releases of the same thermal mark from multiple locations , it was not possible to determine the exact release location for many sockeye salmon in 2015.
[b] Incomplete results: 548 of the 1,637 otoliths collected from the set gillnet fishery in 2016 still need to be analyzed.
[c] Unmarked otoliths include both wild as well as possibly unmarked Kitoi Bay Hatchery sockeye salmon.
[d] Otoliths that were damaged or malformed were excluded.

Appendix F25.–Thermally marked sockeye salmon otoliths sampled from LCI commercial purse seine fishery, 2015 and 2016.

	2015	2016
Kachemak Bay releases	160 (43.4%)	427 (46.4%)
Resurrection Bay releases	0 (0.0%)	29 (3.2%)
unmarked[a]	209 (56.6%)	464 (50.4%)
total[b]	369	920

[a] Unmarked otoliths include both wild as well as possibly unmarked Kitoi Bay Hatchery sockeye salmon.
[b] Otoliths that were damaged or malformed were excluded.

Appendix F26.–Thermally marked sockeye salmon otoliths sampled from the Tutka SHA cost recovery harvest, 2015 and 2016.

	2015	2016
K-Bay releases	142 (95.9%)	85 (94.4%)
unmarked[a]	6 (4.1%)	5 (5.6%)
total[b]	148	90

[a] Unmarked otoliths include both wild as well as possibly unmarked Kitoi Bay Hatchery sockeye salmon.
[b] Otoliths that were damaged or malformed were excluded.

Appendix F27.–Occurrence of hatchery pink salmon in LCI index streams, 2016. Otoliths were collected from spawned out carcasses.

Location, collection date	AFK	CCH	SGH	WNH	PGH	TBLH	PWS hatcheries combined	LCI hatcheries combined	Hatchery total	no mark	questionable mark	Total, (excluding questionable marks)	Total % hatchery	Total % PWS	Total % LCI	% questionable	% unmarked
Barabara Creek, 8/16/2016					1		0	1	1	39		40	2.5%	0.0%	2.5%	0.0%	97.5%
Barabara Creek, 8/26/2016	3	1	6			2	10	2	12	36	1	48	25.0%	20.8%	4.2%	2.0%	75.0%
Barabara Creek, 9/9/2016	9	3	7	2	1	1	21	2	23	68	5	91	25.3%	23.1%	2.2%	5.2%	74.7%
Barabara Creek- combined	12	4	13	2	2	3	31	5	36	143	6	179	20.1%	17.3%	2.8%	3.4%	79.9%
Humpy Creek, 8/17/2016							0	0	0	37		37	0.0%	0.0%	0.0%	0.0%	100.0%
Humpy Creek, 8/24/2016			1				1	0	1	58	1	59	1.7%	1.7%	0.0%	1.7%	98.3%
Humpy Creek, 9/7/2016							0	0	0	96		96	0.0%	0.0%	0.0%	0.0%	100.0%
Humpy Creek - combined	0	0	1	0	0	0	1	0	1	191	1	192	0.5%	0.5%	0.0%	0.5%	99.5%
Port Dick- Head End, 8/9/2016							0	0	0	3		3	0.0%	0.0%	0.0%	0.0%	100.0%
Port Dick- Head End, 8/31/2016							0	0	0	28	1	28	0.0%	0.0%	0.0%	3.4%	100.0%
Port Dick- Head End, 9/13/2016							0	0	0	9		9	0.0%	0.0%	0.0%	0.0%	100.0%
Port Dick Creek- Head End - combined	0	0	0	0	0	0	0	0	0	40	1	40	0.0%	0.0%	0.0%	2.5%	100.0%
Port Graham River, 8/11/2016					4		0	4	4	39	8	43	9.3%	0.0%	9.3%	15.7%	90.7%
Port Graham River, 9/2/2016	1	1	1		15	3	3	18	21	60	15	81	25.9%	3.7%	22.2%	15.6%	74.1%
Port Graham River - combined	1	1	1	0	19	3	3	22	25	99	23	124	20.2%	2.4%	17.7%	18.5%	79.8%
Seldovia River, 8/8/2016							0	0	0	26		26	0.0%	0.0%	0.0%	0.0%	100.0%
Seldovia River, 8/29/2016	2	2	1		3	4	5	7	12	80	4	92	13.0%	5.4%	7.6%	4.2%	87.0%
Seldovia River, 9/14/2016				1	1		1	1	2	95	2	97	2.1%	1.0%	1.0%	2.0%	97.9%
Seldovia River - combined	2	2	1	1	4	4	6	8	14	201	6	215	6.5%	2.8%	3.7%	2.8%	93.5%
Tutka Lagoon Creek, 8/12/2016						95	0	95	95		1	95	100.0%	0.0%	100.0%	1.0%	0.0%
Tutka Lagoon Creek, 9/12/2016		1				83	1	83	84	3	11	87	96.6%	1.1%	95.4%	11.2%	3.4%
Tutka Lagoon Creek - combined	0	1	0	0	0	178	1	178	179	3	12	182	98.4%	0.5%	97.8%	6.6%	1.6%
China Poot Creek, 8/30/2016							0	0	0	8		8	0.0%	0.0%	0.0%	0.0%	100.0%
Dogfish Lagoon Creeks, 9/6/2016	2	1		1	5		4	5	9	76	7	85	10.6%	4.7%	5.9%	7.6%	89.4%
English Bay River, 9/8/2016	3	4			10		7	10	17	64	15	81	21.0%	8.6%	12.3%	15.6%	79.0%
Port Dick- Island Creek, 9/1/2016							0	0	0	10		10	0.0%	0.0%	0.0%	0.0%	100.0%
Total	20	13	16	4	40	188	53	228	281	835	71	1,116	25.2%	4.7%	20.4%	6.4%	74.8%
Percent of total fish in creeks	1.8%	1.2%	1.4%	0.4%	3.6%	16.8%	4.7%	20.4%	25.2%	74.8%	6.4%	100.0%					
Percent of hatchery fish in creeks	7.1%	4.6%	5.7%	1.4%	14.2%	66.9%	18.9%	81.1%	100.0%								
Percent of PWS hatchery fish by facility	37.7%	24.5%	30.2%	7.5%													
Percent of LCI hatchery fish by facility					17.5%	82.5%											

Note: AFK = Armin F. Koernig Hatchery; CCH = Cannery Creek Hatchery; SGH = Solomon Gulch Hatchery; WNH = Wally Noerenberg Hatchery; PGH = Port Graham Hatchery; TBLH = Tutka Bay Lagoon Hatchery.

Appendix F28.–Occurrence of hatchery pink salmon in LCI index streams, 2015. Otoliths were collected from spawned out carcasses.

Location, collection date	AFK	CCH	SGH	WNH	PGH	TBLH	PWS hatcheries combined	LCI hatcheries combined	Hatchery total	no mark	questionable mark	Total, (excluding questionable marks)	Total % hatchery	Total % PWS	Total % LCI	% questionable	% unmarked
Barabara Creek, 8/14/2015			5				5	0	5	91		96	5.2%	5.2%	0.0%	0.0%	94.8%
Barabara Creek, 8/28/2015	1		6	5			12	0	12	75	9	87	13.8%	13.8	0.0%	9.4%	86.2%
Barabara Creek, 9/10/2015	3	9		7		5	19	5	24	68	4	92	26.1%	20.7	5.4%	4.2%	73.9%
Barabara Creek- combined	4	9	11	12	0	5	36	5	41	234	13	275	14.9%	13.1	1.8%	4.7%	85.1%
China Poot Creek, 8/27/2015			5		1		5	1	6	34	2	40	15.0%	12.5	2.5%	4.8%	85.0%
China Poot Creek, 9/9/2015							0	0	0	88	8	88	0.0%	0.0%	0.0%	8.3%	100.0
China Poot Creek - combined	0	0	5	0	1	0	5	1	6	122	10	128	4.7%	3.9%	0.8%	7.8%	95.3%
Humpy Creek, 8/19/2015			1				1	0	1	88	7	89	1.1%	1.1%	0.0%	7.3%	98.9%
Humpy Creek, 9/3/2015	1		1				2	0	2	94		96	2.1%	2.1%	0.0%	0.0%	97.9%
Humpy Creek - combined	1	0	2	0	0	0	3	0	3	182	7	185	1.6%	1.6%	0.0%	3.8%	98.4%
Port Dick Creek- Head End,							0	0	0	31	2	31	0.0%	0.0%	0.0%	6.1%	100.0
Port Dick Creek- Head End,	4	8		2			14	0	14	72	4	86	16.3%	16.3	0.0%	4.4%	83.7%
Port Dick Creek- Head End -	4	8	0	2	0	0	14	0	14	103	6	117	12.0%	12.0	0.0%	5.1%	88.0%
Port Dick- Island Creek, 9/2/2015	12	3	2	5			22	0	22	74		96	22.9%	22.9	0.0%	0.0%	77.1%
Port Dick- Island Creek,	8	5		1			14	0	14	78	4	92	15.2%	15.2	0.0%	4.2%	84.8%
Port Dick- Island Creek -	20	8	2	6	0	0	36	0	36	152	4	188	19.1%	19.1	0.0%	2.1%	80.9%
Port Graham River, 8/6/2015							0	0	0	94	2	94	0.0%	0.0%	0.0%	2.1%	100.0
Port Graham River, 8/24/2015							0	0	0	95	1	95	0.0%	0.0%	0.0%	1.0%	100.0
Port Graham River - combined	0	0	0	0	0	0	0	0	0	189	3	189	0.0%	0.0%	0.0%	1.6%	100.0
Seldovia River, 8/4/2015							0	0	0	92	4	92	0.0%	0.0%	0.0%	4.2%	100.0
Seldovia River, 9/8/2015	3	3	1	2			9	0	9	86	1	95	9.5%	9.5%	0.0%	1.0%	90.5%
Seldovia River - combined	3	3	1	2	0	0	9	0	9	178	5	187	4.8%	4.8%	0.0%	2.7%	95.2%
Tutka Lagoon Creek, 8/13/2015						66	0	66	66		30	66	100.0	0.0%	100.0	31.3	0.0%
Tutka Lagoon Creek, 9/4/2015						77	0	77	77		19	77	100.0	0.0%	100.0	19.8	0.0%
Tutka Lagoon Creek - combined	0	0	0	0	0	143	0	143	143	0	49	143	100.0	0.0%	100.0	34.3	0.0%
Dogfish Bay Creeks, 8/20/2015	3	1				1	4	1	5	89	2	94	5.3%	4.3%	1.1%	2.1%	94.7%
English Bay River, 8/11/2015			31	1		3	32	3	35	56	5	91	38.5%	35.2	3.3%	5.2%	61.5%
South Nuka Bay, 9/2/2015	5					1	5	1	6	75	15	81	7.4%	6.2%	1.2%	15.6	92.6%
Tutka Head End Creek, 8/26/2015			5			59	5	59	64	15	17	79	81.0%	6.3%	74.7%	17.7	19.0%
Total	40	29	57	23	1	212	149	213	362	1,395	136	1,757	20.6%	8.5%	12.1%	7.7%	79.4%
Percent of total fish in creeks	2.3%	1.7%	3.2%	1.3%	0.1%	12.1%	8.5%	12.1%	20.6%	79.4%	7.7%	100%					
Percent of hatchery fish in creeks	11.0%	8.0%	15.7%	6.4%	0.3%	58.6%	41.2%	58.8%	100%								
Percent of PWS hatchery fish by	26.8%	19.5%	38.3%	15.4%													
Percent of LCI hatchery fish by					0.5%	99.5%											

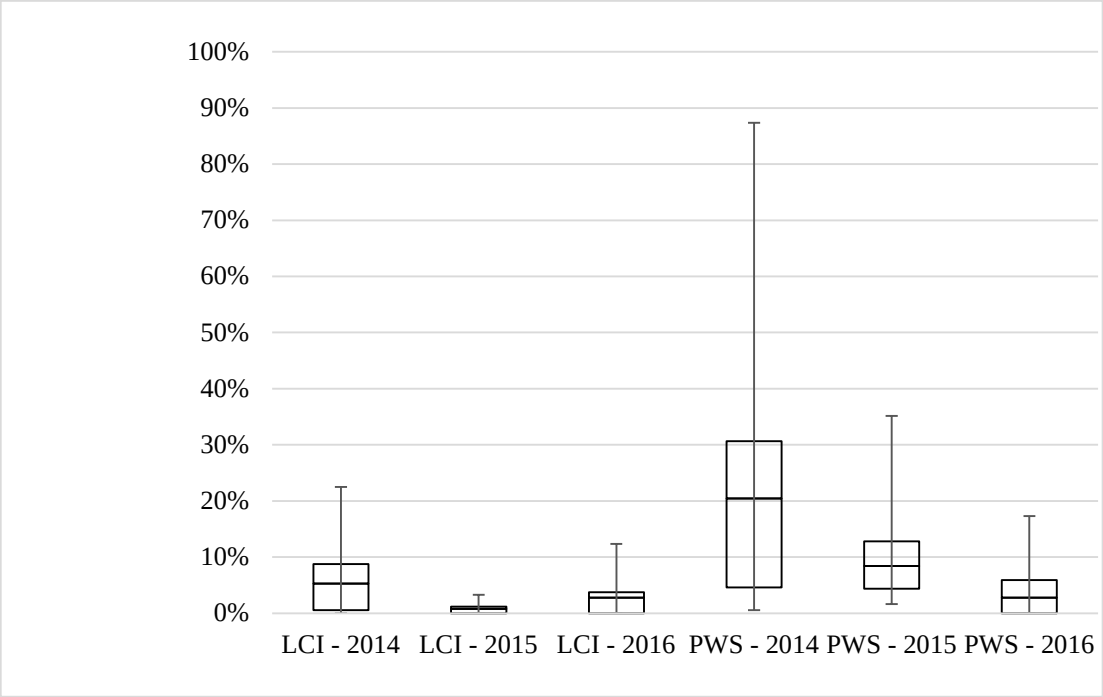
Note: AFK = Armin F. Koernig Hatchery; CCH = Cannery Creek Hatchery; SGH = Solomon Gulch Hatchery; WNH = Wally Noerenberg Hatchery; PGH = Port Graham Hatchery; TBLH = Tutka Bay Lagoon Hatchery.

Appendix F29.–Occurrence of hatchery pink salmon in LCI index streams, 2014. Otoliths were collected from spawned out carcasses.

Location, collection date	AFK	CCH	SGH	WNH	PGH	TBLH	PWS hatcheries combined	LCI hatcheries combined	Hatchery total	no mark	questionable mark	Total, (excluding questionable marks)	Total % hatchery	Total % PWS	Total % LCI	% questionable	% unmarked
Barabara Creek, 8/26/2014	6		2	3	2	1	11	3	14	2		16	87.5%	68.8%	18.8%	0.0%	12.5%
Barabara Creek, 9/8/2014	25	25	1	21	2		72	2	74	5		79	93.7%	91.1%	2.5%	0.0%	6.3%
Barabara Creek - combined	31	25	3	24	4	1	83	5	88	7		95	92.6%	87.4%	5.3%	0.0%	7.4%
China Poot Creek, 8/28/2014				2			2	0	2	49		51	3.9%	3.9%	0.0%	0.0%	96.1%
China Poot Creek, 9/5/2014				1			1	0	1	41		42	2.4%	2.4%	0.0%	0.0%	97.6%
China Poot Creek - combined	0	0	0	3	0	0	3	0	3	90		93	3.2%	3.2%	0.0%	0.0%	96.8%
Humpy Creek, 8/11/2014							0	0	0	94		94	0.0%	0.0%	0.0%	0.0%	100.0%
Humpy Creek, 9/4/2014				1			1	0	1	94		95	1.1%	1.1%	0.0%	0.0%	98.9%
Humpy Creek - combined	0	0	0	1	0	0	1	0	1	188		189	0.5%	0.5%	0.0%	0.0%	99.5%
Port Graham River, 8/25/2014	1	1	1	1	50		4	50	54	41		95	56.8%	4.2%	52.6%	0.0%	43.2%
Port Graham River, 9/11/2014	10	8		8	38		26	38	64	33		97	66.0%	26.8%	39.2%	0.0%	34.0%
Port Graham River - combined	11	9	1	9	88	0	30	88	118	74		192	61.5%	15.6%	45.8%	0.0%	38.5%
Seldovia River, 8/14/2014					5		0	5	5	102		107	4.7%	0.0%	4.7%	0.0%	95.3%
Seldovia River, 8/27/2014	5	3		4	40		12	40	52	41		93	55.9%	12.9%	43.0%	0.0%	44.1%
Seldovia River - combined	5	3	0	4	45	0	12	45	57	143		200	28.5%	6.0%	22.5%	0.0%	71.5%
Tutka Lagoon 8/18/2014			1		2	85	1	87	88	7		95	92.6%	1.1%	91.6%	0.0%	7.4%
Tutka Lagoon, 9/8/2014	2	5		5	4	70	12	74	86	6		92	93.5%	13.0%	80.4%	0.0%	6.5%
Tutka Lagoon - combined	2	5	1	5	6	155	13	161	174	13		187	93.0%	7.0%	86.1%	0.0%	7.0%
Dogfish Lagoon Creeks, 9/9/2014	14	5		10	8	1	29	9	38	55	1	93	40.9%	31.2%	9.7%	1.1%	59.1%
English Bay River, 8/26/2014	14	5	1	8	1		28	1	29	64		93	31.2%	30.1%	1.1%	0.0%	68.8%
Total	77	52	6	64	152	157	199	309	508	634	1	1,142	44.5%	17.4%	27.1%	0.1%	55.5%
Percent of total fish in creeks	6.7%	4.6%	0.5%	5.6%	13.3%	13.7%	17.4%	27.1%	44.5%	55.5%	0.1%	100.0%					
Percent of hatchery fish in creeks	15.2%	10.2%	1.2%	12.6%	29.9%	30.9%	39.2%	60.8%	100.0%								
Percent of PWS hatchery fish by facility	38.7%	26.1%	3.0%	32.2%													
Percent of LCI hatchery fish by facility					49.2%	50.8%											

Note: AFK = Armin F. Koernig Hatchery; CCH = Cannery Creek Hatchery; SGH = Solomon Gulch Hatchery; WNH = Wally Noerenberg Hatchery; PGH = Port Graham Hatchery; TBLH = Tutka Bay Lagoon Hatchery.

Appendix F30.–Box and whisker plots with table showing percent occurrence of Prince William Sound hatchery marked otoliths versus Lower Cook Inlet hatchery marked otoliths from pink salmon carcasses in LCI index streams excluding hatchery special harvest areas, 2014-2016. Bottom and top of the box are the 25th and 75th percentile. The band near the middle is the 50th percentile (the median). Whiskers show minimum and maximum values.



Location	LCI - 2014	LCI - 2015	LCI - 2016	PWS - 2014	PWS - 2015	PWS - 2016
Barabara Creek	5.3%	1.8%	2.8%	87.4%	13.1%	17.3%
China Poot Creek	0.0%	0.8%	0.0%	3.2%	3.9%	0.0%
Dogfish Lagoon Creek	9.7%	1.1%	5.9%	31.2%	4.3%	4.7%
English Bay River	1.1%	3.3%	12.3%	30.1%	35.2%	8.6%
Humpy Creek	0.0%	0.0%	0.5%	0.5%	1.6%	0.0%
Port Dick - Headend Creek		0.0%	0.0%		12.0%	0.0%
Port Dick - Island Creek		0.0%	0.0%		19.1%	0.0%
Seldovia River	22.5%	0.0%	3.7%	6.0%	4.8%	2.8%
South Nuka Bay		1.2%			6.2%	
Marked otolith levels overall	7.9%	0.8%	3.6%	20.4%	10.7%	5.9%

Appendix F31.–Thermal marks on pink salmon otoliths sampled from Lower Cook Inlet streams (including hatchery SHAs), 2014–2016.

Release location	2014		2015		2016	
Port Graham Hatchery	152	(13.3%)	1	(0.1%)	40	(3.6%)
Tutka Bay Lagoon Hatchery	157	(13.7%)	212	(12.1%)	188	(16.8%)
Armin Fritz Koernig Hatchery (PWS)	77	(6.7%)	40	(2.3%)	20	(1.8%)
Cannery Creek Hatchery (PWS)	52	(4.6%)	29	(1.7%)	13	(1.2%)
Solomon Gulch Hatchery (PWS)	6	(0.5%)	57	(3.2%)	16	(1.4%)
Wally Noerenberg Hatchery (PWS)	64	(5.6%)	23	(1.3%)	4	(0.4%)
unmarked[a]	634	(55.5%)	1,395	(79.4%)	835	(74.8%)
LCI total	309	(27.1%)	213	(12.1%)	228	(20.4%)
PWS total	199	(17.4%)	149	(8.5%)	53	(4.7%)
LCI and PWS totals combined [b]	1,142		1,757		1,116	

[a] Unmarked otoliths include wild and possibly unmarked Kitoi Bay Hatchery fish.

[b] Unreadable, unknown and aberrantly marked otoliths excluded.

APPENDIX G: HERRING

Appendix G1.–Total biomass estimates and commercial catch of Pacific herring in short tons by age class, Kamishak Bay District, Lower Cook Inlet, 2015, and 2016 forecast.

Age	2015 Est. Spawning Biomass	Percent by Weight	2015 Commercial Harvest[a]	Percent by Weight	2015 Total Biomass	Percent by Weight	2016 Forecast[b] Biomass	Percent by Weight
1								
2								
3	0	0.0%	0	0	0	0.0%	267	16.7%
4	15	0.8%	0	0	15	0.8%	0	0.0%
5	136	6.7%	0	0	136	6.7%	17	1.1%
6	158	7.8%	0	0	158	7.8%	124	7.7%
7	176	8.8%	0	0	176	8.8%	134	8.4%
8	706	35.1%	0	0	706	35.1%	126	7.9%
9	169	8.4%	0	0	169	8.4%	483	30.1%
10	301	14.9%	0	0	301	14.9%	102	6.4%
11	260	12.9%	0	0	260	12.9%	168	10.5%
12	67	3.3%	0	0	67	3.3%	141	8.8%
13+	27	1.3%	0	0	27	1.3%	40	2.5%
TOTALS	2,015	100.0%	0	0	2,015	100.0%	1,603	100.0%

Note: st = short ton = 2,000 lbs.

[a] The commercial herring fishery in Kamishak Bay did not open in 2015.

[b] Funding was not available for herring stock assessment in 2016 so a 2017 forecast was not produced.

Appendix G2.–Catch of Pacific herring in short tons and effort in number of permits making deliveries by district in the commercial sac roe seine fishery, Lower Cook Inlet, 1961–2016.

	Southern		Kamishak		Eastern		Outer		Total	
Year	Tons	Permits	Tons	Permits	Tons	Permits	Tons	Permits	Tons	Permits
1961										
1962										
1963	1								1	
1964										
1965	2								2	
1966					7				7	
1967										
1968	20								20	
1969	551				758		38		1,347	
1970	2,709				2,100				4,809	
1971	[a]	[a]			831	22			844	24
1972	[a]	[a]			[a]	[a]			[a]	[a]
1973	204	16	243	14	831	25	301	12	1,579	37
1974	110	7	2,114	26	47	5	384	26	2,655	45
1975	24	5	4,119	40		CLOSED		CLOSED	4,143	41
1976			4,842	66		CLOSED		CLOSED	4,842	66
1977	291	13	2,908	57		CLOSED		CLOSED	3,199	58
1978	17	7	402	44		CLOSED		CLOSED	419	44
1979	13	3	415	35		CLOSED		CLOSED	428	36
1980		CLOSED		CLOSED		CLOSED		CLOSED		CLOSED
1981		CLOSED		CLOSED		CLOSED		CLOSED		CLOSED
1982		CLOSED		CLOSED		CLOSED		CLOSED		CLOSED
1983		CLOSED		CLOSED		CLOSED		CLOSED		CLOSED
1984		CLOSED		CLOSED		CLOSED		CLOSED		CLOSED
1985		CLOSED	1,132	23	204	7	[a]	[a]	1,348	29
1986		CLOSED	1,959	54	167	4	28	3	2,154	57
1987		CLOSED	6,132	63	584	4	202	9	6,918	69
1988		CLOSED	5,548	75			[a]	[a]	5,605	76
1989	170	6	4,801	75					4,971	81
1990		CLOSED	2,264	75		CLOSED		CLOSED	2,264	75
1991		CLOSED	1,992	58					1,992	58
1992		CLOSED	2,282	56					2,282	56
1993		CLOSED	3,570	60		CLOSED		CLOSED	3,570	60
1994		CLOSED	2,167	61		CLOSED		CLOSED	2,167	61
1995		CLOSED	3,378	60		CLOSED		CLOSED	3,378	60
1996		CLOSED	2,984	62		CLOSED		CLOSED	2,984	62
1997		CLOSED	1,746[b]	45[b]		CLOSED		CLOSED	1,746	45
1998		CLOSED	331[b]	20[b]		CLOSED		CLOSED	331	20
1999		CLOSED	100[c]	1[c]		CLOSED		CLOSED	100	1
2000-2016		CLOSED		CLOSED		CLOSED		CLOSED		CLOSED
1961-1999 Average [d]	295		2,520	49	556		146		2,205	

Source: ADF&G fish ticket database. Commercial Fisheries Entry Commission License Statistics, 1974–2015, Juneau.

[a] Confidential data. Fewer than 3 permits reporting.

[b] Includes both commercial harvest and ADF&G test fish harvest.

[c] Commercial fishery closed, ADF&G test fish harvest only.

[d] Averages based only on years with reported harvest.

Appendix G3.–Preseason estimates of biomass and projected commercial sac roe seine harvests, versus actual harvests, for Pacific herring in short tons (st), average roe recovery, numbers of permits making landings, and exvessel value in millions of dollars, Kamishak Bay District, Lower Cook Inlet, 1978–2016.

Year	Preseason		Actual commercial harvest (st)[a]	Average roe %	No. of permits w/landings	Exvessel value[b] (in millions)
	Forecasted biomass (st)	Projected harvest (st)[a]				
1978	[c]	[d]	402	33.4	44	[e]
1979	[c]	[d]	415	12.5	[e]	[e]
1980	[c]	[d]	CLOSED			
1981	[c]	[d]	CLOSED			
1982	[c]	[d]	CLOSED			
1983	[c]	[d]	CLOSED			
1984	[c]	[d]	CLOSED			
1985	[c]	[d]	1,132	11.3	23	1
1986	[c]	[d]	1,959	10.4	54	2.2
1987	[c]	3,833	6,132	11.3	63	8.4
1988	[c]	5,190	5,548	11.1	75	9.3
1989	37,785	5,000	4,801	9.5	75	3.5[f]
1990	28,658	2,292	2,264	10.8	75	1.8
1991	17,256	1,554	1,992	11.3	58	1.3
1992	16,431	1,479	2,282	9.7	56	1.4
1993	28,805	2,592	3,570	10.2	60	2.2
1994	25,300	3,421	2,167	10.6	61	1.5
1995	21,998	2,970	3,378	9.8	60	4.0
1996	20,925	2,250	2,984	10.1	62	6.0[f]
1997	25,300	3,420	1,746	9.3	45	0.4
1998	19,800	1,780	331	8.5	20	0.1
1999	[g]		CLOSED[h]			
2000	6,330		CLOSED			
2001	11,352		CLOSED			
2002	9,020		CLOSED			
2003	4,771		CLOSED			
2004	3,554		CLOSED			
2005	3,058		CLOSED			
2006	2,650		CLOSED			
2007	2,286		CLOSED			
2008	2,069		CLOSED			
2009	[i]		CLOSED			
2010	2,963		CLOSED			
2011	3,830		CLOSED			
2012	[i]		CLOSED			
2013	[i]		CLOSED			
2014	6,318		CLOSED			
2015	5,699		CLOSED			
2016	1,603		CLOSED			

[a] Kamishak Bay allocation only; does not include Shelikof Strait food/bait allocation.

[b] Exvessel values exclude any postseason retroactive adjustments (except where noted).

[c] Prior to 1989, preseason forecasts of biomass were not generated.

[d] Prior to 1987, preseason harvest projections were not generated.

[e] Data not available.

[f] Includes retroactive adjustment.

[g] 1999 preseason biomass calculated as a range of 6,000 to 13,000 st.

[h] ADF&G test fishing harvested 100 st.

[i] No forecast of abundance generated for 2009, 2012, and 2013 due to lack of samples in previous year(s).

Appendix G4.–Summary of herring sac roe seine fishery openings and commercial harvests in the Kamishak Bay District of Lower Cook Inlet, 1969–2016.

Year	Dates of openings	Total hours open	Harvest (short tons)	Catch Rate (short tons/ hour open)	Number of permits w/landings
1969–1972	No closed periods				
1973	No closed periods		243		8
1974	1/1–5/20		2,114		26
1975	1/1–6/6	Closed Iniskin Bay, 5/17	4,119		40
1976	1/1-5/21	Closed Iniskin Bay, 5/17. Reopened Kamishak, 6/2.	4,824		66
1977	1/1–5/31	(Closed Kamishak Dist. 5/12; reopened 5/14–5/17; reopened 5/29–5/31)	2,908		57
1978[a]	4/16–5/31	96	402	4	44
1979	5/12–5/24	112	415	4	36
1980–1984	CLOSED				
1985	4/20–6/15	1,350	1,132	1	23
1986	4/20–6/13	1,303	1,959	2	54
1987	4/21–4/23	65	6,132	94	63
1988	4/22–4/29	42	5,548	132	74
1989	4/17–4/30	24.5	4,801	196	74
1990	4/22–4/23	8	2,264	283	75
1991	4/26	1	1,992	1,992	58
1992	4/24	0.5	2,282	4,564	56
1993	4/21	0.75	3,570	4,760	60
1994	4/25	0.5	778	1,556	35
	4/29	1	1,338	1,338	53
1995	4/27	0.5	1,685	3,370	45
	4/28	1	1,693	1,693	44
1996	4/24	0.5	2,984	5,968	62
	4/25[b]	0.5			
	4/29	1.5	1,580	1,053	42
1997	4/30	[c]	[c]	[c]	[c]
	5/1	12	51	4	4
	5/22[d]	[d]	54	[d]	–
1998	4/21	0.5	160	320	12
	4/22	2	136	68	11
	5/14[d]	[d]	10	[d]	–
	5/22[d]	[d]	23	[d]	–
1999–2016	CLOSED		100[e]		

[a] Management by emergency order began (closed until opened).

[b] Despite the open fishing period, the entire fleet collectively agreed not to fish due to ongoing price negotiations with processors.

[c] Confidential data. Fewer than 3 permits reporting.

[d] ADF&G test fish harvest.

[e] ADF&G test fish harvest in 1999.

Appendix G5.–Comparison of preseason biomass forecast/projected harvest and actual commercial herring sac roe seine harvest versus hindcast (age-structured-assessment) estimates of total biomass and exploitation rate in Kamishak Bay District, Lower Cook Inlet, 1990–2016.

	Preseason		Actual	Estimated	ASA Hindcast	Hindcast
Year	Forecasted biomass (st)	Projected harvest (st)[a]	commercial harvest (st)[a]	exploitation rate (%)[b]	total biomass estimate (st)[c,d,e]	exploitation rate (%)[c,f]
1990	28,658	2,292	2,264	7.9	17,102	13.2
1991	17,256	1,554	1,992	11.5	18,108	11.0
1992	16,431	1,479	2,282	13.9	16,583	13.8
1993	28,805	2,592	3,570	12.4	14,777	24.2
1994	25,300	3,421	2,167	8.6	12,183	17.8
1995	21,998	2,970	3,378	15.4	9,805	34.5
1996	20,925	2,250	2,984	14.3	7,559	39.5
1997	25,300	3,420	1,746	6.9	5,710	30.6
1998	19,800	1,780	331	1.7	5,074	6.5
1999	[g]		CLOSED[h]		5,030	
2000	6,330		CLOSED		5,074	
2001	11,352		CLOSED		4,751	
2002	9,020		CLOSED		4,548	
2003	4,771		CLOSED		4,666	
2004	3,554		CLOSED		4,825	
2005	3,058		CLOSED		5,245	
2006	2,650		CLOSED		5,143	
2007	2,286		CLOSED		5,979	
2008	2,069		CLOSED		6,652	
2009	[i]		CLOSED		5,852	
2010	2,963		CLOSED		6,327	
2011	3,830		CLOSED		5,619	
2012	[i]		CLOSED		4,810	
2013	[i]		CLOSED		3,743	
2014	6,318		CLOSED		2,778	
2015	5,699		CLOSED		2,015	
1990–2014 Average [j]	12,508	2,418	2,302	10	7,518	21.2
2016	1,603		CLOSED		[i]	

Note: st = short ton.

Sources: Otis 2004; Otis and Cope 2004; Yuen 1994.

[a] Kamishak Bay allocation only; does not include Shelikof Strait food/bait allocation.

[b] Estimated exploitation rate based on preseason forecasted biomass and actual commercial harvest for each year.

[c] Figures are based on the best available data at the time of publishing and are subject to change as new data is incorporated into the model; therefore, all figures herein supersede those previously reported.

[d] Age-structured-assessment (ASA) model integrates heterogeneous data sources and simultaneously minimizes differences between observed and expected return data to forecast the following year's biomass as well as hindcast previous years' biomass.

[e] ASA estimates based on the most recent available hindcast, run after the 2015 survey season.

[f] Estimated exploitation rate based on ASA hindcast estimates of biomass divided by actual commercial harvest.

[g] 1999 preseason biomass calculated as a range of 6,000 to 13,000 short ton.

[h] ADF&G test fishing harvested 100 short ton.

[i] No ASA forecasted or hindcasted abundance estimate possible due to lack of age composition samples.

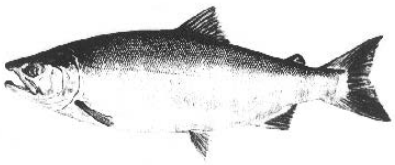
[j] Averages based only on years with data presented.

APPENDIX H: 2016 OUTLOOK

ALASKA DEPARTMENT OF FISH AND GAME
DIVISION OF COMMERCIAL FISHERIES
NEWS RELEASE

Sam Cotten, Commissioner

Scott Kelley, Director



Contact:
Glenn Hollowell, Area Finfish Management Biologist
Ted Otis, Area Finfish Research Biologist
Ethan Ford, Fisheries
Phone: (907) 235-8191

Homer Area Office
3298 Douglas Place
Homer, AK 99603
Date Issued: February 26, 2016,
Time: 2:00 PM

2016 LOWER COOK INLET SALMON FISHERY OUTLOOK

General Information

This outlook is provided to assist the commercial salmon industry in planning for the 2015 season in the Lower Cook Inlet (LCI) Management Area. Preseason forecasts and recent 5 year commercial common property harvest averages are the basis for the information provided. Forecasts for LCI can be found on ADF&G's web site:

http://www.adfg.alaska.gov/index.cfm?adfg=commercialbyarealci.salmon

Cook Inlet Aquaculture Association (CIAA) manages the Trail Lakes Hatchery (TLH), Port Graham Hatchery (PGH), and Tutka Bay Lagoon Hatchery (TBLH). Hatchery forecasts can be found through the CIAA web site:

http://www.ciaanet.org

Inseason modifications to harvest projections, season opening dates, and strategies for weekly fishing periods may occur as fisheries develop.

The forecasts for commercial common property fishery (CCPF) harvests by species are summarized in Table 1. The wild stock pink salmon forecast is derived from a spawner-recruit analysis, whereas run projections for other wild stock species are based on recent 5-year average historical production. Projected runs of hatchery-origin salmon are provided by CIAA. These projections of hatchery and wild stock runs will provide the basis for early-season management in all districts with other management tools such as aerial survey estimates, weir counts, remote video monitoring and anticipated harvest used as the season progresses.

Management of the LCI commercial salmon fisheries is based in the Homer area office. All emergency order (EO) announcements of fishery openings and closures are broadcast on VHF channel 10. As was done last year, fishery announcements from the Homer ADF&G office will

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routinely occur on Fridays at 2:00 PM, or earlier if possible. Announcement recordings will be available for commercial fisheries at 907-235-7307. Emergency order announcement information is also transmitted by email to all registered processors, local radio stations, news media and interested members of the public. Harvest information and fisheries announcements are located on the ADF&G web site: http://www.adfg.alaska.gov/index.cfm?adfg=commercialbyarealci.salmon

In addition, interested individuals may sign up to receive email announcements:

http://www.adfg.alaska.gov/index.cfm?adfg=cfnews.main

The first announcement is anticipated to be released at 2:00 PM, Friday, April 29.

CIAA anticipates a total of 300,700 hatchery produced sockeye and 429,500 pink salmon to return to LCI release sites in 2016, valued at 2.7 million dollars excluding broodstock. CIAA anticipates harvesting 2.2 million dollars of returning hatchery produced salmon with the remainder available to the commercial common property fishery. The overall commercial common property harvest from Lower Cook Inlet is anticipated to be 548,000 salmon. Of which, 9.7% of the salmon are anticipated to be of hatchery origin (Table 1).

Set Gillnet Fishery

The **Southern District** is anticipated to open for the 2016 season on Thursday, June 2 at 6:00 a.m. for a 48-hour period. Following periods will likely be 48-hours in length beginning at 6:00 a.m. on Monday and Thursday, as specified in regulation. Harvests for 2016 are anticipated to be similar to the historic average. The 5-year average harvest for this area and gear are 300 Chinook, 1,400 coho and 4,500 chum salmon. The 5-year commercial harvest average for the wild sockeye salmon is 28,100 fish. The department's preliminary pink salmon forecast estimated a harvestable surplus of 47,000 fish from the Southern District; which is to be shared by commercial set gillnet and purse seine permit holders. Fishing time in the Port Graham Subdistrict will be closely linked to escapement levels to English Bay Lakes. Management priority will be to provide for subsistence needs (4,800–7,200 salmon). The Port Graham Subdistrict is anticipated to remain closed to commercial harvest until English Bay River escapement is tracking to meet the overall sockeye salmon spawning escapement goal (6,000–13,500) and hatchery broodstock goals. Further information regarding previous year's hatchery releases and commercial harvests may be found in Annual Management Reports for this area at:

http://www.adfg.alaska.gov/index.cfm?adfg=commercialbyarealci.salmon#harvest

Purse Seine Fishery

Portions of the **Southern District** are anticipated to open to purse seine harvest in mid-June coinciding with enhanced returns to Leisure and Hazel lakes. Historically this return peaks from July 10–16 (week 29). CIAA anticipates a return of 22,500 sockeye salmon to Leisure and Hazel lakes combined, as well as 82,700 sockeye salmon to Tutka Bay.

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Commercial fishing time after mid-July will be correlated to pink salmon escapement at Humpy Creek, Seldovia Bay, Port Graham and other locations in this district. A total of 414,500 hatchery produced pink salmon are anticipated to return to release sites in the Southern District.

Hatchery sockeye salmon returns to the **Eastern District** are forecasted by CIAA to be 171,100 fish. Of those, 27,000 may be available for commercial common property harvest with the balance required for cost recovery and broodstock purposes. Wild stock harvest opportunity in the Eastern District will be linked to aerial survey observations of wild sockeye and pink salmon escapements to Aialik Lake and other spawning systems in this district. In addition, surveys of chum salmon index systems in Resurrection Bay and Day Harbor will be flown weather and time permitting.

Portions of the **Outer District** may open to commercial harvest in mid-July focusing on sockeye salmon returns to McCarty Fjord lakes. Escapement to these systems is monitored by aerial survey (Delight, Desire, and Delusion lakes). In addition, waters in the western portion of this district may be open by this time focusing on pink and chum salmon returns to Port Dick, as well as Windy and Rocky bays. There are numerous other smaller systems in the Nuka Passage area that are also monitored for returning chum and pink salmon. In the far west end of this district, systems with the latest return timing: Dogfish Bay, Chugach Bay and Port Chatham will be evaluated for chum and pink salmon harvest potential from August to early September. The previous 5-year harvest average for this district is 14,300 sockeye and 56,800 chum salmon. The department has forecast a harvestable surplus of 194,000 pink salmon from this district. The parent year harvest of pink salmon in this district was 164,000 fish.

While portions of the **Kamishak Bay District** typically open by regulation to commercial harvest on June 1, portions of this district may open on Monday, May 30 targeting sockeye salmon returns to Mikfik Lake. This may occur if significant numbers of sockeye salmon are observed in this area at that time. The Mikfik Creek–McNeil Lagoon Salmon Fishery Management Plan directs fishery managers to prosecute the commercial fishery outside of the McNeil/Mikfik Lagoon to the maximum extent possible. Previous 5-year average harvests for this district (excluding the Kirschner Subdistrict) are 36,800 sockeye and 2,700 chum salmon with the majority of the sockeye salmon harvest attributed to Chenik Lake runs and the chum salmon harvest spread throughout the district. Commercial harvest of pink salmon from this district is anticipated to be 83,000 fish with much of the harvestable surplus in the Bruin Bay area. Hatchery released sockeye salmon to the Kirschner Lake outfall remote release site are anticipated to be 18,200 fish all of which will likely be required for hatchery cost recovery. The department tracks salmon escapement in this district using remote video monitoring sites at Chenik and Mikfik lakes, as well as regular aerial survey observations of index streams.

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Table 1.- Projected commercial common property harvests and hatchery returns for Lower Cook Inlet, 2016.

SOCKEYE SALMON			Total anticipated harvest =	**156,605**
Natural stocks, (5-yr average commercial harvest)				
Southern District, (purse seine, excluding hatchery SHAs)				24,500
Southern District, (set gillnet)				28,100
Eastern District, (Aialik Bay)				0
Outer District				14,300
Kamishak Bay District, (excluding Kirschner Lake Subdistrict)				36,800
Sockeye salmon hatchery programs[a]	**Hatchery return**	**Broodstock harvest**	**Cost recovery harvest**	**Commercial common property harvest**
Resurrection Bay	171,081	13,000	131,081	27,000
China Poot and Hazel lakes	22,476	0	22,476	0
Tutka Bay Lagoon	82,695	12,000	50,695	20,000
Kirschner Lake	18,158	0	18,158	0
Port Graham Bay	0	0	0	0
English Bay Lakes	6,305	400	0	5,905
PINK SALMON, ADF&G Preliminary Pink Salmon Forecast[b]			Total anticipated harvest =	**324,000**
Southern District (combined gear)				47,000
Eastern District				0
Outer District				194,000
Kamishak Bay District				83,000
Pink salmon hatchery programs[a]	**Hatchery return**	**Broodstock harvest**	**Cost recovery harvest**	**Commercial common property harvest**
Tutka Bay Lagoon	348,470	161,000	187,470	0
Port Graham Bay	66,000	66,000	0	0
Paint River fish ladder	15,000	0	0	0
CHUM SALMON - 5-year average harvest			Total anticipated harvest =	**65,290**
Southern District (purse seine)				1,100
Southern District (set gillnet)				4,500
Eastern District				190
Outer District				56,800
Kamishak Bay District				2,700
COHO SALMON - 5-year average harvest			Total anticipated harvest =	**2,040**
Southern District (purse seine)				600
Southern District (set gillnet)				1,400
Eastern District				0
Outer District				40
Kamishak Bay District				0
CHINOOK SALMON – 5-year average harvest			Total anticipated harvest =	**357**
Southern District (purse seine)				55
Southern District (set gillnet)				298
Eastern District				0
Outer District				4
Kamishak Bay District				0
Total LCI anticipated commercial common property harvest- all salmon species =				**548,292**

[a] Available online at: http://www.adfg.alaska.gov/index.cfm?adfg=commercialbyarealci.salmon#/forecasts.

[b] Provided by Cook Inlet Aquaculture Association, based on parent year releases and recent ocean survival.