

Fishery Management Report No. 16-38

Annual Management Report Kuskokwim Area, 2015

by

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Alaska Department of Fish and Game

Divisions of Sport Fish and Commercial Fisheries



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| | | | | | |
|---|--------------------|--|---|---|-------------------------|
| Weights and measures (metric) | | General | | Mathematics, statistics | |
| centimeter | cm | Alaska Administrative Code | AAC | <i>all standard mathematical signs, symbols and abbreviations</i> | |
| deciliter | dL | all commonly accepted abbreviations | e.g., Mr., Mrs., AM, PM, etc. | alternate hypothesis | H_A |
| gram | g | all commonly accepted professional titles | e.g., Dr., Ph.D., R.N., etc. | base of natural logarithm | e |
| hectare | ha | at | @ | catch per unit effort | CPUE |
| kilogram | kg | compass directions: | | coefficient of variation | CV |
| kilometer | km | east | E | common test statistics | (F, t, χ^2 , etc.) |
| liter | L | north | N | confidence interval | CI |
| meter | m | south | S | correlation coefficient (multiple) | R |
| milliliter | mL | west | W | correlation coefficient (simple) | r |
| millimeter | mm | copyright | © | covariance | cov |
| | | corporate suffixes: | | degree (angular) | $^\circ$ |
| Weights and measures (English) | | Company | Co. | degrees of freedom | df |
| cubic feet per second | ft ³ /s | Corporation | Corp. | expected value | E |
| foot | ft | Incorporated | Inc. | greater than | > |
| gallon | gal | Limited | Ltd. | greater than or equal to | \geq |
| inch | in | District of Columbia | D.C. | harvest per unit effort | HPUE |
| mile | mi | et alii (and others) | et al. | less than | < |
| nautical mile | nmi | et cetera (and so forth) | etc. | less than or equal to | \leq |
| ounce | oz | exempli gratia (for example) | e.g. | logarithm (natural) | ln |
| pound | lb | Federal Information Code | FIC | logarithm (base 10) | log |
| quart | qt | id est (that is) | i.e. | logarithm (specify base) | log ₂ , etc. |
| yard | yd | latitude or longitude | lat or long | minute (angular) | ' |
| | | monetary symbols (U.S.) | \$, ¢ | not significant | NS |
| Time and temperature | | months (tables and figures): first three letters | Jan, ..., Dec | null hypothesis | H_0 |
| day | d | registered trademark | ® | percent | % |
| degrees Celsius | °C | trademark | ™ | probability | P |
| degrees Fahrenheit | °F | United States (adjective) | U.S. | probability of a type I error (rejection of the null hypothesis when true) | α |
| degrees kelvin | K | United States of America (noun) | USA | probability of a type II error (acceptance of the null hypothesis when false) | β |
| hour | h | U.S.C. | United States Code | second (angular) | " |
| minute | min | U.S. state | use two-letter abbreviations (e.g., AK, WA) | standard deviation | SD |
| second | s | | | standard error | SE |
| Physics and chemistry | | | | variance | |
| all atomic symbols | | | | population | Var |
| alternating current | AC | | | sample | var |
| 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 | | | | |

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Aaron D. Poetter, Aaron Tiernan, and Colton Lipka

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ABSTRACT

This report summarizes the 2015 season and historical information regarding commercial salmon and herring fisheries, as well as subsistence salmon fisheries within the Kuskokwim Management Area (KMA). These fisheries mainly target 4 species of Pacific salmon (Chinook *Oncorhynchus tshawytscha*, sockeye *O. nerka*, coho *O. kisutch*, and chum *O. keta*). The KMA 2015 total commercial salmon harvest included 8,254 Chinook, 56,260 sockeye, 148,349 coho, and 21,068 chum salmon. Harvests of all species were below their recent 10-year averages. Within the subsistence fishery, amounts reasonably necessary for subsistence (ANS) have been consistently achieved through out the Kuskokwim Area, with the exception of Chinook salmon in recent years. There are 24 escapement goals for salmon within the KMA, 17 of which were met or exceeded in 2015. Historically, Pacific herring (*Clupea pallasii*) have been harvested for commercial and subsistence purposes in the KMA. In recent years the market for commercial herring has declined and little to no harvest has occurred

Key words Pacific salmon *Oncorhynchus* spp., Chinook *Oncorhynchus tshawytscha*, chum *O. keta*, sockeye *O. nerka*, coho *O. kisutch*, Pacific herring, *Clupea pallasii*, subsistence, subsistence fisheries, commercial fisheries, Annual Management Report (AMR), Kuskokwim River, Kuskokwim Bay.

INTRODUCTION

MANAGEMENT AREA DESCRIPTION

The Kuskokwim Management Area (KMA) consists of all waters of Alaska between Cape Newenham and the Naskonat Peninsula, including Nunivak and St. Matthew Islands (Appendix A1).

There are 38 communities consisting of approximately 4,800 households within the KMA. Of those households, approximately 75% are situated within the drainage of the Kuskokwim River (Shelden et al. 2014). Much of the salmon fishing effort occurs within the mainstem of the Kuskokwim River; however, fishing also occurs in many of the tributaries that contain salmon. Residents of Quinhagak, Goodnews Bay, and Platinum, located along the south shore of Kuskokwim Bay, harvest salmon stocks primarily from the Kanektok, Arolik, and Goodnews River systems. Residents of Kipnuk, Kwigillingok, and Kongiganak, located on the north Kuskokwim Bay, harvest salmon from within the Kuskokwim River drainage and from local drainages that empty into Kuskokwim Bay. Residents of Toksook Bay, Nightmute, Tununak, Newtok, Cheforak, and Mekoryuk, which are situated near the Bering Sea Coast, harvest salmon from coastal waters and local streams.

There are currently 4 commercial salmon fishing Districts in the KMA (5 AAC 07.200). Districts 1, 2, 3, and 4 were established in 1960, however District 3, Upper Kuskokwim River, was removed from regulation in 1966 due to lack of landings. District 5, Goodnews Bay, was established in 1968 (Appendix A2). District 1, Lower Kuskokwim River, consists of the Kuskokwim River from a line between Apokak Slough and the southernmost tip of Eek Island and Popokamiut upstream to a line between the Alaska Department of Fish and Game (ADF&G; department) regulatory markers located at Bogus Creek, about 9 miles upstream of the Tuluksak River (Appendix B1). District 1 was divided into Subdistricts 1-A and 1-B, in 2000. Subdistrict 1-A consists of that portion of District 1 upstream from a line between regulatory markers located at the downstream end of Steamboat Slough. Subdistrict 1-B consists of that portion of District 1 downstream from regulatory markers at Steamboat Slough. District 2, Middle Kuskokwim River, consists of Kuskokwim River from ADF&G regulatory markers located at the upstream entrance to the second slough on the west bank downstream from Kalskag to the regulatory markers at Chuathbaluk (Appendix B2). The most recent commercial fishing periods in District 2 occurred in 2000. District 4, Quinhagak, consists of Kuskokwim Bay waters from

the northernmost edge of the mouth of Weelung Creek to the southernmost tip of the south mouth of the Arolik River and extending for 3 miles from the coast (Appendix C1). District 5 consists of that portion of Goodnews Bay east of a line from ADF&G regulatory markers located approximately 2 miles south and 2 miles north on the seaward side of the entrance of Goodnews Bay, and west of a line between mouth of Ukfigag Creek to the mouth of the Tunulik River (Appendix D1).

MANAGEMENT

Background

The large size of the Kuskokwim River drainage and the distances between the fisheries and escapement monitoring projects throughout the drainage adds complexity to the management of Kuskokwim River. Chinook salmon begin entry into the Kuskokwim River in late May, and sockeye and chum salmon begin their entry in mid-June. Chinook and sockeye salmon runs fall off in early July, and the chum salmon run begins to fall off in late July when the coho salmon run begins. Coho salmon entry to the river falls off in late August to early September. Fishery management information on run size and timing by species is limited until the salmon are distributed throughout the drainage and on the spawning grounds hundreds of miles from and weeks after the lower river fishery has been initiated.

Kuskokwim Bay salmon have similar run timing into the Kanektok, Goodnews, and Arolik rivers. These are small drainages in comparison to Kuskokwim River and although evaluation of run size and timing in Kuskokwim Bay rivers is not immediate, it is much timelier than that of the Kuskokwim River. Many of the factors that make Kuskokwim River fisheries management difficult are not present in Kuskokwim Bay fisheries.

Small numbers of Chinook salmon are harvested in salmon directed commercial fisheries during late June and July under a guideline harvest range of 0–50,000 fish. Directed Chinook salmon fisheries do occur in Districts 4 and 5 when abundance is adequate to allow for a commercial fishery. The harvest of sockeye salmon was considered incidental to chum salmon harvest in Kuskokwim River from 1987 to 2003, however in 2004, a guideline harvest level of 0–50,000 sockeye salmon was established. Districts 4 and 5 commercial fisheries target sockeye and chum salmon. Coho salmon are targeted in all 3 commercial fishing districts and those fisheries occur late July through August.

The KMA commercial fishery was relatively stable from 1987 to 1996 and harvest ranged between 975,000 to 2.3 million fish (Appendix A3); effort ranged between 714 and 824 permits fished; and exvessel value ranged between \$2.8 million and \$12.7 million (Appendix A4). Beginning in 1997, the value of salmon (Appendix A5), particularly chum salmon, began to decline which led to a decrease in fishing effort, number of fish harvested, and the exvessel value of the fishery. From 1997 to 2002 commercial salmon harvests in the area ranged from approximately 755,000 fish in 1998 to 185,000 fish in 2002 (Appendix A3). Effort ranged from 707 permits in 1998 to 407 permits in 2002, and the exvessel value of the fishery ranged from approximately \$1.6 million in 1998 to \$324,000 in 2002. Poor Chinook and chum salmon returns during 1999 through 2001 resulted in the Kuskokwim River having limited commercial salmon fishing opportunity in June and July.

As Kuskokwim River Chinook and chum salmon abundances rebounded in the mid-2000s, poor market conditions for chum salmon, and limited processing capacity, continued to limit

commercial salmon fishing opportunity in District 1. These same factors limited commercial fishing opportunity during July in both Districts 4 and 5, and led to registered buyers imposing harvest limits on fishermen. Since 2004, commercial salmon harvests in the area have ranged from approximately 394,000 fish to 688,000 fish (Appendix A3). Effort ranged from 434 permit holders to 530 permit holders, and the salmon exvessel value ranging from approximately \$1.2 million to \$2.9 million (Appendix A4). A fish processing plant located in Platinum began operation in 2009 and has improved processing capacity in the area. Recent improvements in the chum salmon market and the improved processing capacity led to increased fishing opportunity since 2009. The Bethel based fish processor Kuskokwim Seafoods permanently closed operations in 2013 which limits fish processing in the area to the Platinum facility for the foreseeable future.

Kuskokwim River Chinook salmon are harvested primarily for subsistence and some incidentally harvested in the commercial fishery (Appendix B3). Since 1996, Chinook salmon harvests in the commercial fishery have been below average (Appendix B4). Since 2000, Chinook salmon harvests have contributed between 0 and 13% of the exvessel value of the total District 1 commercial salmon fishery (Appendix B5). Chinook salmon run reconstruction information indicates an exploitation rate of Chinook salmon of approximately 40% since 2000, and the majority of the harvest (96%) attributed to the subsistence fishery (Bue et al. 2012).

Kuskokwim River sockeye salmon are primarily harvested in the subsistence fishery, but they are also harvested in District 1 commercial fisheries (Appendix B6). Kuskokwim River commercial sockeye salmon harvests make up approximately 15% of the District 1 total exvessel value (Appendix B5).

Kuskokwim River coho salmon are harvested primarily in the commercial fishery (Appendix B7). Kuskokwim River coho salmon commercial fishing in recent years has accounted for the largest number of salmon harvested and the greatest value, accounting for over half of the District 1 exvessel value (Appendix B5).

Kuskokwim River chum salmon, though an important subsistence species, have historically been primarily targeted for commercial use (Appendix B8). From 1996 to 2010, commercial chum salmon harvests contributed less than 20% of the total exvessel value of the District 1 commercial salmon fishery. Beginning in 2011, chum salmon harvests have contributed over 40% of the total exvessel value in District 1 (Appendix B5).

In Kuskokwim Bay commercial fisheries, the greatest harvest has been sockeye salmon followed by coho, chum, and Chinook salmon (Appendices C2 and D2). Sockeye salmon have historically had the greatest exvessel value in District 4. However, chum salmon exceeded the exvessel value of sockeye salmon 2011–2013 (Appendix C3). Sockeye salmon have the highest exvessel value in District 5 (Appendix D3).

Salmon Stock Status

Salmon returns to the majority of Western Alaska rivers (including Kuskokwim River) were generally below average from 1997 to 2001. However, these declines were not as evident in Kuskokwim Bay rivers. The KMA was declared an economic disaster area by the State of Alaska in 1997, 1998, 2000, and 2001 because of the extremely low chum and Chinook salmon commercial harvests and exvessel values (Appendices A3 and A4). In 2001, Kuskokwim River

Chinook and chum salmon were both designated stocks of yield concern by the Alaska Board of Fisheries (BOF; Burkey et al. 2000).

In 2002, Chinook and chum salmon returns to the Kuskokwim River began to rebound and reached near record abundances from 2004 through 2007 (Linderman and Bergstrom 2006 and Estensen et al. 2009). The BOF discontinued stock of concern status for both species in winter 2007. Since 2007, Chinook salmon abundance has decreased and 2 of the lowest total runs occurred in 2012 (Tiernan and Poetter 2015). The Kuskokwim River was declared a fisheries disaster by the State of Alaska for low Chinook salmon runs in 2011 and 2012.

The 2015 Chinook return was similar to the 2014 return, below the historical average. Chum salmon have returned to near average levels up through 2014 but the 2015 return was estimated to be below average, and sockeye salmon abundance has varied from average to above average. Coho salmon abundance had been below average in recent years but 2014 and 2015 produced above average returns across the drainage.

Run Reconstruction

During the BOF meeting in January of 2013, a Kuskokwim River drainagewide Chinook salmon escapement goal was established. The total run of Chinook salmon to the Kuskokwim River from 1976 to 2011 was estimated using a model developed for data-limited situations (Bue et al. 2012). Subsistence harvest, commercial harvest and effort (CPUE), sport fish harvest, mark-recapture estimates of inriver abundance, counts of salmon at 6 weirs, and peak aerial survey counts from 14 drainages throughout the Kuskokwim River drainage were simultaneously combined to inform the model. The estimates that were generated were then combined with available age structure of the stock information, to reconstruct the total return by age and ultimately develop a brood table. The run reconstruction and brood table were used to conduct a spawner-recruit analysis and develop escapement goal recommendations for Kuskokwim River Chinook salmon (Hamazaki et al. 2012). Subsequently, in 2013 ADF&G established a new Kuskokwim River drainagewide sustainable escapement goal (SEG) of 65,000–120,000 Chinook salmon and revised SEGs for 3 individual rivers with weir assessment projects as follows: Kwethluk River 4,100–7,500, Kogrukuk River 4,800–8,800, and George River 1,800–3,300.

Subsistence

The subsistence salmon fishery in the Kuskokwim Area is one of the largest in the state and in North America. Many households throughout the region are involved in harvesting, processing, and preserving salmon for subsistence use. Approximately 2,400 households in the Kuskokwim Area annually harvest salmon for subsistence use (Shelden et al. 2014). Many other households, which are not directly involved in catching salmon, participate by assisting family and friends with cutting, drying, smoking, and associated preservation activities (salting, canning, and freezing). Studies conducted by the Division of Subsistence indicate that fish contribute as much as 85% of the total pounds of fish and wildlife harvested in a community annually, and salmon as much as 53% of the total annual harvest (Coffing 1991).

Alaska Statute Title 16.05.258, *Subsistence Use and Allocation of Fish and Game*, establishes the subsistence use priority for reasonable harvest opportunity consistent with sustained yield, when resources are not abundant enough to provide for all consumptive uses. In 1993, the BOF made a positive finding for customary and traditional use for all salmon in the entire Kuskokwim Area (Appendix A2). In 2001, ADF&G recommended that the BOF amend 5 AAC 01.286 to

include a finding of the amounts reasonably necessary for subsistence (ANS) for the Kuskokwim Area using subsistence harvest data through 1999. During the 2013 BOF meeting the ANS ranges for the Kuskokwim Area were revised to 67,200–109,800 Chinook salmon; 41,200–116,400 chum salmon; 32,200–58,700 sockeye salmon; 27,400–57,600 coho; and 500–2,000 pink salmon, based on data from 1990 to 2011. The ANS range for District 4 (Quinhagak) and District 5 (Goodnews Bay) is 6,900–17,000 salmon, and the remainder of the Kuskokwim Area is 12,500–14,400 salmon.

FEDERAL SUBSISTENCE PROGRAM

The Alaska National Interest Lands Conservation Act (ANILCA) of 1980 provides a priority for rural Alaska residents for taking fish and wildlife on federal public lands and called for creation of regional advisory councils (RACs) to provide rural resident's input into the Federal Subsistence Program. On October 1, 1999, the Secretaries of Interior and Agriculture published regulations to expand federal involvement in subsistence fisheries to waters in which the Federal government claims a federal reserved water right (applicable waters). The Secretary of Interior and the Secretary of Agriculture delegated their authority in Alaska to the Federal Subsistence Board (FSB) to ensure rural residents receive a priority for subsistence taking on federal public lands and applicable waters. Federal subsistence fishing regulations are adopted by the FSB. RACs provide recommendations and information to the FSB, review policies and management plans, provide a public forum and deal with other matters relating to subsistence uses. The FSB may close fishing for other uses on federal public lands and applicable waters if necessary to ensure a priority for federally qualified rural subsistence users by issuing a Special Action.

Federal subsistence fishing schedules, openings, closings, and fishing methods are established in regulation (Department of Interior 36 CFR Part 242 and 50 CFR Part 100). In general, these regulations are the same as those issued for the subsistence taking of fish under Alaska Administrative Code; however differences in regulations exist in some cases.

Cooperative Management Process

The Kuskokwim River Salmon Management Working Group (Working Group) was formed in 1988 by the BOF in response to requests from stakeholders in the Kuskokwim River that sought a more active role in the management of salmon fishery resources (Francisco et al. 1989). The Working Group is the forum through which inseason management decisions regarding Kuskokwim River subsistence, commercial, and sport salmon fisheries are discussed. Working Group representative participation in meetings in Bethel and outside the Kuskokwim River drainage allows for an exchange of information between members and fishery managers. Representatives are also able to testify at regulatory meetings in support of Working Group positions.

The Working Group met 18 times in 2015. During these meetings, fishery management information was presented by state, and federal staff, Working Group members, Tribal organizations, fishery partners, and the public. The Working Group discussed subsistence and commercial fishing reports from members and the public, the lower Kuskokwim River inseason subsistence harvest report, test fishery project summaries, and reports from weir, tagging, sonar, and aerial survey programs.

RUN STRENGTH INDICATORS

Bethel Test Fishery

Daily inseason assessment of Kuskokwim River salmon run strength and timing is available from a drift gillnet test fishery operated near Bethel. The project began in 1984 and the methodology has remained largely unchanged (Bue et al. 2012). The test fishery catch from each tide is tallied by species and those fish not released alive during sampling are distributed to charities. Catch statistics for Chinook, sockeye, chum, and coho salmon are presented as daily CPUE indices and season cumulative CPUE indices by species. Comparisons are made to test fishery results from previous years; though these comparisons are subjective in consideration of variables such as water level, fishing patterns, and changing river morphology.

Historically, other test fisheries have been attempted in the Kuskokwim River: Kwegooyuk test fishery, 1966–1983 (Huttunen 1984); Eek test fishery, 1988–1994; Kuskokwim River subsistence test fishery, 1988–1990 (Kuskokwim Fishermen’s Cooperative 1991); Aniak test fishery, 1992–1995, 2015; Chuathbaluk test fishery, 1992–1993; and the Lower Kuskokwim River test fishery, 1995. Most of these projects were initiated at the prompting of groups other than ADF&G. They were all eventually discontinued for a variety of reasons including ambiguous results, consistency problems, difficulties with catch disposition, and lack of funding.

Escapement Projects

Salmon managers require timely inseason assessment of salmon run abundance. In the Kuskokwim River, escapement projects provide limited utility in this regard because of the great distances between the areas of harvest and the project locations. Consequently, managers rely on the Bethel test fishery, commercial catch statistics, and informal reports from subsistence and sport fishermen to augment escapement data.

In the Kuskokwim Bay, escapement monitoring projects are much closer to the commercial fishing districts, so escapement data can be more effectively used for inseason management of the subsistence and commercial fisheries. Managers also make use of commercial catch statistics and information from subsistence and sport fishermen. Catch statistics are especially important in District 4 where reliable escapement monitoring has been historically lacking.

Inseason Subsistence Catch Monitoring

Inseason interviews of subsistence fishermen have been conducted in the Bethel area by Orutsararmiut Native Council (ONC) technicians, in cooperation with ADF&G since 2001. The Fisheries Information Services (FIS) Division of the U.S. Fish and Wildlife Service (USFWS) Office of Subsistence Management (OSM) provides funding for this cooperative program. Information from the interviews, in combination with other fisheries information, is used to assess salmon run timing and relative abundance. This program can provide timely insight into the subsistence fishery, a relative index of catches based on those interviewed, and an avenue for local user input into the management process. Summaries of interview responses are presented during Working Group meetings throughout the season (Peeks and Sheldon 2015).

Postseason Subsistence Survey

Annual household surveys are conducted by ADF&G to collect information about the harvest and use of salmon in the Kuskokwim Area. Methods to estimate total annual subsistence harvest have been developed by ADF&G who also collaborates with local tribal organizations to

complete the annual postseason harvest surveys (Shelden et al. 2014). Subsistence surveys have been aimed at primarily gathering data on the harvest and use of Chinook, chum, sockeye, and coho salmon. Pink salmon are harvested in the Kuskokwim Area; they are generally available only during even numbered years. Data for subsistence pink salmon harvests have not been consistently collected during the annual fall survey efforts.

2015 MANAGEMENT PLAN

In January of 2013, after thorough public input, the BOF adopted a new *Kuskokwim River Salmon Management Plan* (5 AAC 07.365) which provides guidelines for managing the Kuskokwim River salmon fishery to meet escapement goals and subsistence use priority.

The BOF met in March 2015 during which 3 proposals for Kuskokwim Area subsistence salmon fishing were adopted. The first adopted proposal addressed the use of 4.0 inch mesh gillnets during times of Chinook salmon conservation. ADF&G may now specify that 4.0 inch mesh gillnets be operated as set gillnets only; no part of which may be operated more than 100 feet of the ordinary high water mark. The intent is to keep these gillnets close to the bank and out of the channel.

The BOF adopted a second proposal that gives ADF&G authority to specify the length of gillnets used during subsistence salmon fishing periods. The intent of this proposal was to give ADF&G a mechanism to provide very limited directed Chinook salmon subsistence harvest opportunity when a small surplus is available and still ensuring Chinook salmon conservation.

Lastly, the BOF adopted a proposal allowing fish wheels to be operated with chutes during times of Chinook salmon conservation. Prior regulations only allowed the use of live boxes on fish wheels requiring live release of all Chinook salmon taken, and this option is still available.

The Kuskokwim Bay fisheries are managed according to the *District 4 Management Plan* (5 AAC 07.367). These regulations provide ADF&G guidance for establishing commercial fishing periods.

There is no specific management plan for the Goodnews Bay fishery (District 5), however the fishery is managed similar to District 4 except that commercial fishing is delayed until late June to provide for Chinook salmon escapement.

2015 COMMERCIAL SALMON FISHERY

A total of 233,931 salmon were commercially harvested in the Kuskokwim Area (Appendices A3 and A6). A total of 396 individual permit holders participated in area fisheries, which generated an estimated exvessel value of \$876,196. The exvessel value was significantly below the recent 10-year average value of approximately \$1.8 million (Appendix A4).

KUSKOKWIM RIVER

The District W-1 commercial fishing season began on August 10 and ended on August 21 with a total of 3 commercial fishing periods (Appendices A7 and B9). The initiation of the commercial fishery was delayed until the majority of the Chinook salmon had passed through the district to ensure ongoing Chinook salmon conservation. As a result, commercial fishing occurred after the peak of the sockeye and chum salmon runs had passed through District W-1, resulting in well below average harvest. Only Subdistrict 1-B was open to commercial salmon fishing.

The District 1 commercial harvest was 2 Chinook, 130 sockeye, 65,034 coho, and 507 chum salmon (Appendices A6 and B9). An additional 6 Chinook salmon were harvested during the commercial fishery and reported on fish tickets as retained for personal use because buyers agreed not to purchase Chinook salmon during the first 2 periods. These fish are included as part of the postseason subsistence harvest survey. Chum and sockeye salmon harvest were well below the recent 10-year average and the chum salmon harvest was the lowest since 1968 (Appendix B4). The below average chum salmon harvest which can be attributed to the late timing of the commercial fishing periods. Coho salmon harvest was below the recent 10-year average. Total exvessel value of the fishery was \$246,016; which is below the recent 10-year average (Appendices A6 and B4). A total of 283 individual permit holders recorded landings in District 1 during the 2015 season (Appendix B9), which was also below the recent 10-year average of 382 permit holders (Appendix A4).

KUSKOKWIM BAY

The District 4 (Appendix C1) commercial fishing season was delayed from the normal start of June 15 due to concerns for Chinook salmon abundance. The first commercial salmon fishing period opened July 3 and the last occurred on August 24 (Appendix A7). There were 17 commercial fishing periods within that time frame (Appendix C4). On July 17, sockeye salmon abundance greatly exceeded Chinook salmon and by regulation management was directed towards sockeye salmon, which allows for 3 commercial fishing periods per week. Subsistence fishing was closed 16 hours before, during, and 6 hours after commercial fishing periods.

A total of 7,547 Chinook, 30,269 sockeye, 76,285 coho, and 16,051 chum salmon were commercially harvested in District 4 (Appendix C4). Chinook, sockeye, and chum salmon harvest were below their respective recent 10-year averages, whereas the coho salmon harvest was above the recent 10-year average (Appendix C2). The Chinook salmon harvest was the fourth lowest since 1976 and similar to the 2012 harvest (Appendix C2). Fishermen were paid \$0.50 per pound for Chinook salmon and \$0.49 per pound for all other species of salmon. Total exvessel value of the fishery was \$489,564; which is below the recent 10-year average value of approximately \$856,000 (Appendices A4 and C3). A total of 189 individual permit holders recorded landings in the District 4 commercial fishery.

The District 5 commercial fishing season was delayed until July 3, due to concerns for Chinook salmon abundance, and the last commercial fishing period occurred on August 14 (Appendix A7). There were 13 commercial fishing periods (Appendix D4). In early July, sockeye and chum salmon exceeded that of Chinook salmon as the prevalent species available for harvest. Subsequently District 5 was opened to 3 commercial periods a week until August 14, after which commercial fishing was suspended due to low passage of coho salmon at the Goodnews River weir. Subsistence fishing was closed 16 hours before, during, and 6 hours after commercial fishing periods.

A total of 705 Chinook, 25,861 sockeye, 7,030 coho, and 4,510 chum salmon were commercially harvested in District 5 (Appendix D2). Harvests of all species of salmon were below their respective 10-year averages (Appendix D2). The Chinook salmon harvest was the third lowest since 1972. On average fishermen were paid \$0.50 per pound for all salmon species. Ex-vessel value of all species of salmon was \$131,616 which is below the recent 10-year average value of approximately \$336,000 (Appendices A4 and D3). A total of 61 individual permit holders recorded landings in District 5.

2015 SUBSISTENCE SALMON FISHERY

The 2015 preseason Chinook salmon forecast was 96,000–163,000 fish, which is below the average total run of 260,000 fish. The drainagewide SEG is 65,000–120,000 Chinook salmon. Average subsistence harvest is approximately 84,000 Chinook salmon. If the run came back as forecast, then there would not have been enough Chinook salmon to provide for escapement and subsistence uses. Therefore, subsistence fishing in the mainstem of the Kuskokwim River was restricted at the start of the season.

In 2015, the Chinook salmon fishery, within the boundaries of the Yukon Delta National Wildlife Refuge, was managed by USFW under special actions. On May 21, USFWS enacted a special action to close the Kuskokwim River Chinook salmon fishery to non-federally qualified users within the boundary of the Yukon Delta National Wildlife Refuge. Subsistence fishing was restricted to 3 days per week with the use of set gillnets with 4.0 inch or less mesh size not to exceed 60 feet in length within the Yukon Delta National Wildlife Refuge boundaries beginning May 21 downstream of Tuluksak, and on May 28 between Tuluksak and Aniak. This restriction was also implemented by ADF&G from Aniak to the Holitna River mouth beginning June 4. On June 11, these same restrictions were enacted from the Holitna River mouth to the headwaters of the Kuskokwim River. Fishing for Chinook salmon with hook and line gear was closed drainagewide beginning June 11. An area at the mouth of the Kuskokwim River (east of the Ishkowiik River to the northern boundary of District W-4) was also closed to subsistence fishing on May 28, by ADF&G, in order to provide additional protection to Chinook salmon entering the Kuskokwim River. USFWS instituted a community harvest permit program from June 10 to June 30 that allowed the harvest of up to 7,000 Chinook salmon within the Yukon Delta NWR boundaries.

Under State of Alaska regulations, during subsistence salmon fishing closures, 4.0 inch or less mesh size gillnets not to exceed 60 feet in length were allowed to harvest non-salmon species such as whitefish, northern pike, and burbot with the stipulation that the gillnet has to be set within 100 feet of the ordinary high water mark. Through emergency petitions to BOF in an effort to provide opportunity for other salmon species besides Chinook salmon, the BOF approved the use of chutes with fish wheels, with the fisherman closely attending the fish wheel during operation. The BOF also authorized ADF&G to specify the length of subsistence gillnets during times of Chinook salmon conservation.

Beginning on June 4, the use of fish wheels and dip nets was allowed until further notice. Fish wheels were required to be equipped with either a chute and closely attend while in operation or a live box with no less than 45 cubic feet of water, be checked at least every 6 hours, and all Chinook salmon were required to be returned to the water alive. All Chinook salmon caught in a dip net were required to be returned to the water immediately and unharmed. The first 6.0 inch mesh gillnet opportunity, below the Johnson River, was on June 22 for 4 hours to harvest sockeye and chum salmon. The first 6.0 inch mesh fishing period on June 20, upstream of the refuge boundary at Aniak, was restricted to Alaska residents 60 years of age or older and gillnets no longer than 10 fathoms in length. This was the first time ADF&G had provided an “Elder fishery”. On July 2, ADF&G resumed management of the entirety of the Kuskokwim River and implemented restrictions in conjunction with those in place upstream of the Yukon Delta NWR boundary to conserve Chinook salmon. Additional limited fishing opportunities on chum and sockeye salmon were allowed as those runs progressed. The chum salmon run however, was

assessed to be poor based on low BTF CPUEs. Restrictions continued until August 4 when all restrictions were rescinded.

Subsistence fishing was restricted a total of 74 days from May 21 through August 3. Subsistence salmon fishing was closed by emergency order 6 hours before, during, and 3 hours after commercial fishing periods.

SUBSISTENCE HARVEST

Subsistence harvests of salmon remained relatively stable from 1990 to 2011; the 2012 to 2015 Chinook salmon harvest declined as a result of a poor run and subsistence salmon fishing restrictions (Appendix A8–A12). The 2015 total subsistence salmon preliminary harvest estimates for the Kuskokwim Area were 19,437 Chinook, 38,791 sockeye, 36,816 coho, and 41,776 chum salmon (Appendices A8–A12). The subsistence harvests for all species were below the 10-year averages (2005–2014). Residents of communities in the lower Kuskokwim River (from Tuluksak to Eek), took 75% of the subsistence salmon harvest. The lower river communities are relatively densely populated and include approximately 76% of the total number of households in the Kuskokwim Area.

BETHEL TEST FISHERY ASSESSMENT

During the 2015 season, BTF operated from June 1 through the last tide on August 24 (Appendix B10). From May 25 to June 1 the BTF project undertook a preseason evaluation in response to an early spring and verbal reports from the public that salmon were being caught. This was an observational period only, any salmon caught were not integrated into the standard operational period indices and the catch data will not be published. BTF data used for comparison and management decision making began June 1. During the 85 day period there were 164 high tides in which 579 drifts were conducted resulting in cumulative CPUE of 625 Chinook, 2,158 sockeye, 2,736 coho, and 2,943 chum salmon (Appendices B10 and B11). Chinook, sockeye, and chum salmon migrations have primarily all passed the BTF site before the project was concluded, but catches of coho salmon persisted through the final drift session. Six of the days during the project's operational period had only 1 high tide occurring during that day. No tides were missed during the 2015 season.

CHINOOK SALMON

The first Chinook salmon in 2015 was caught in BTF on May 25. The peak daily CPUE index of 28 occurred on June 16 and the cumulative daily CPUE index through August 24 was 625. Based on the cumulative index, the central 50% of the run passed the BTF site between June 15 and July 3 and the midpoint occurred on June 22, matching the historical midpoint (Appendix B10). Daily indices tracked above the 5-year average throughout the majority of the return. The season total cumulative index was the third highest for the time period of 2008–2014 (Appendix B11).

Due to the early season subsistence fishery closures, BTF was not a good indicator of Chinook salmon run timing in season. The BTF cumulative CPUE was above the 2008–2014 average but due to the significant reduction in early season subsistence harvest the CPUE was probably inflated when compared to historical data (Appendix B11). With this uncertainty in run timing and strength, managers used a cautious and conservative approach to the 2015 fishing season. Postseason run reconstruction of escapement and harvest data estimated the 2015 run to be below average but improved over the previous 3 years.

SOCKEYE SALMON

The first sockeye salmon in 2015 was caught in BTF on June 7. The peak daily CPUE index of 214 occurred on June 30 and the cumulative CPUE index through August 24 was 2,158. Based on the cumulative CPUE index, the central 50% of the sockeye salmon run passed the BTF site between June 29 and July 8, and the midpoint of passage occurred on July 3 (Appendix B10). The season total cumulative index was below the 2008–2014 average of 1,400 (Appendix B11).

CHUM SALMON

The first chum salmon in 2015 was caught in BTF on June 6. The peak daily CPUE index of 220 occurred on July 7 and the cumulative CPUE index through August 24 was 2,943. Based on the cumulative CPUE index, the central 50% of the chum salmon run passed the BTF site between July 1 and July 20, and the midpoint of passage occurred on July 12 (Appendix B10). The total cumulative CPUE index was below the 2008–2014 average of 7,370 and the lowest cumulative CPUE index since 2000 (Appendix B11).

COHO SALMON

The first coho salmon in 2015 was caught in BTF on July 6 and catches continued through the last drift session of the season on August 24. The peak daily CPUE index of 217 occurred on August 16 and the cumulative CPUE index on August 24 was 2,736. Based on the cumulative CPUE index the central 50% of the run passed the BTF site between August 4 and August 16, and the midpoint of passage occurred on August 11 (Appendix B10). Daily indices generally tracked below the recent 10-year averages. The cumulative CPUE index was below the 2008–2014 average of 3,598 and the third lowest cumulative index for the same time period (Appendix B11).

ESCAPEMENT

The large size, remoteness, and geomorphic diversity of the Kuskokwim Area present challenges to monitoring salmon escapements and assessing salmon run abundance. For the past 2 decades, efforts have been taken to expand coverage and apply new technologies toward the goal of improving estimation of salmon run timing and run strength monitoring by comparison of current year to historic information. Aerial spawning ground surveys have been the most cost-effective means of monitoring salmon escapements. The more thorough projects such as weirs, counting towers, and sonar have been operated in only a few locations because of costs and limited utility. Since 2000, the number of escapement projects in the Kuskokwim Area has increased through cooperative partnerships with federal agencies and local organizations. These cooperative efforts have added substantially to our ability to monitor salmon escapements and to evaluate the effectiveness of management actions postseason.

There are currently 20 established escapement goals on tributaries of the Kuskokwim River; 10 Chinook, 3 chum, 3 coho, and 4 sockeye salmon goals (Appendices B12–B16; C5–C6; and D5–D6). Comprehensive reviews of escapement data for most Kuskokwim Area goals are conducted in unison with the Kuskokwim Area BOF cycle. The most recent review was done in the later part of 2012 for the 2013 BOF meeting (Conitz et al. 2012). A new drainagewide SEG for Kuskokwim River Chinook salmon of 65,000–120,000 fish was established. There were 3 revisions to existing weir based Chinook salmon escapement goals. The George River SEG was revised from 3,100–7,900 fish to 1,800–3,300 fish. The Kogruklu River SEG was revised from

5,300–14,000 fish to 4,800–8,800 fish. The Kwethluk River SEG was revised from 6,000–11,000 fish to 4,100–7,500 fish. These revisions were constructed in concert with the spawner-recruit analysis used to establish the drainagewide SEG for Chinook salmon. In addition, the Tuluksak River weir Chinook salmon SEG and the Kanektok River aerial survey chum salmon SEG were discontinued.

2015 ESCAPEMENT ASSESSMENT

Numerous escapement assessment projects exist throughout the Kuskokwim River drainage and Kuskokwim Bay drainages (Appendix A13). Methods, daily passage counts, climate and hydrological information, and escapement age, sex, and length (ASL) information can be found in Blain et al. 2016. The *AYK Database Management System* contains historical as well as current ASL information from the various escapement monitoring projects (past and present), as well information from the area commercial and subsistence harvests:

(<http://www.adfg.alaska.gov/CommFishR3/WebSite/AYKDBMSWebsite/Default.aspx>).

Kuskokwim River

Kwethluk River Weir

Kwethluk River weir escapements included 8,162 Chinook, 8,975 sockeye, 24,443 coho, and 23,039 chum salmon during the June 10–September 7 operational period (Appendices B12–B15). The Chinook salmon escapement was within the SEG range of 4,100–7,500 and the coho salmon escapement exceeded the SEG threshold of 19,000 fish (Appendices B12 and B14).

Tuluksak River Weir

Tuluksak River weir escapements included 709 Chinook, 824 sockeye, 6,611 coho, and 6,337 chum salmon during the June 17–September 7 operational period (Appendices B12–B15). The coho and chum salmon escapements were below average whereas the Chinook and sockeye salmon escapements were above average.

Salmon River (Aniak) Weir

Salmon River weir escapements included 2,404 Chinook, 1,669 sockeye, and 5,657 chum salmon however coho salmon escapement was not observed because of a shorter operational period from June 20 to August 15 (Appendices B12–B15). The Chinook, sockeye, and chum salmon escapements were all below average.

George River Weir

George River weir escapements included 2,282 Chinook, 159 sockeye, 35,812 coho, and 17,551 chum salmon during the June 15–September 20 operational period (Appendices B12–B15). The Chinook salmon escapement was within the SEG range of 1,800–3,300 fish (Appendix B12). The sockeye and coho salmon escapements were above average and the chum salmon escapement was below average.

Kogrukluk River Weir

Kogrukluk River weir escapements included 8,081 Chinook, 6,411 sockeye, 32,493 coho, and 33,201 chum salmon during the June 22–September 22 operational period (Appendices B12–B15). The Chinook salmon escapement was within the SEG range of 4,800–8,800 (Appendix B12). The escapement goal for sockeye salmon of 4,400–17,000 fish and the

chum salmon escapement goal of 15,000–49,000 fish were achieved, and the escapement goal for coho salmon of 13,000–28,000 fish was exceeded (Appendices B13–B15).

Tatlawiksuk River Weir

Tatlawiksuk River weir escapements included 2,104 Chinook, 17,701 coho, and 10,379 chum salmon during the June 13–September 12 operational period (Appendices B12 and B14–B15). The Chinook and coho salmon escapements were above average; however chum salmon escapement was well below average and the third lowest escapement since 1998.

Telaquana River Weir

Telaquana River sockeye salmon escapement was 95,516 sockeye during the July 11–August 11 operational period (Appendix B13). This was the sixth year of operation for this project and the highest observed escapement on record.

Salmon River (Pitka Fork) Weir

Salmon River of the Pitka Fork Chinook salmon escapement was 6,736 fish during the June 1–August 15 operational period (Appendix B12). This was the first year of operation for this project.

Kuskokwim Bay

Kanektok River Weir

The Kanektok River weir escapements included 10,416 Chinook, 106,751 sockeye, 2,493 coho, and 15,048 chum salmon during the June 25–August 15 operational period (Appendix C5). Escapement estimates for coho and pink salmon are incomplete because the project does not operate through the entire coho run and weir picket spacing allows pink salmon to pass unmonitored. No formal escapement goals for any species have been established at the weir. The escapements for Chinook salmon were above average whereas sockeye and chum salmon escapements were below average.

Middle Fork Goodnews River Weir

The Middle Fork Goodnews River weir escapements included 1,494 Chinook, 57,809 sockeye, 15,084 coho and 11,517 chum salmon during the June 25–August 31 operational period (Appendix D5). The Middle Fork Goodnews River weir has historically had many operational difficulties during September, monitoring coho salmon. Due to these annual difficulties, the operational period was adjusted to cease operations annually on August 31. Chinook salmon escapement was 6 fish below the biological escapement goal (BEG) range of 1,500–2,900 fish. Escapement of chum did not meet the goal and coho salmon exceeded their respective SEG thresholds of 12,000 fish. Sockeye salmon exceeded the SEG range of 18,000–40,000 fish.

AERIAL SURVEYS

Aerial survey based escapement goals do not represent the entire spawning populations in the respective streams. The surveys are conducted 1 time each season during a window of time when the maximum numbers of fish are expected to be on the spawning grounds. The estimates of salmon observed during aerial surveys represent minimum escapements. The escapement goals developed from these surveys are based on the raw, unexpanded counts; therefore, each count serves as an index of abundance rather than a complete census.

Aerial surveys are generally conducted on clear water streams, lakes, and coastal streams throughout the KMA. Tributaries in the middle and upper Kuskokwim River are often stained from organics or clouded by glacier runoff, both of which markedly reduce the visibility of fish. Aerial surveys are best directed at indexing spawning populations of Chinook and sockeye salmon because these fish are typically more visible than chum and coho salmon.

KUSKOKWIM RIVER

Lower Kuskokwim River

Aerial surveys for Chinook salmon were conducted on lower river tributaries (Appendix A14) in 2015. Weather and stream conditions in the lower river were generally fair and 2 of 4 tributaries had quality survey data. An SEG range of 400–1,200 Chinook salmon has been established for the Kisaralik River and the 2015 survey was within the range observing 709 fish (Appendix B16).

Upper Kuskokwim River

Aerial surveys for Chinook salmon were conducted on the Aniak, Kipchuk, Salmon, Holokuk, Holitna, Gagarayah, Cheenetnuk, Oskawaluk, and Salmon (Pitka Fork) rivers in 2015 (Appendix A14 and B16). Escapement goals have been established for Aniak, Salmon, Gagarayah, Cheenetnuk, Holitna, and Salmon (Pitka Fork) rivers. Marginal survey conditions allowed staff to fly all of the systems in this section of the drainage but did not allow for estimates on all systems. Index estimates from the upper Kuskokwim River tributaries were below average yet the established SEG ranges were achieved or exceeded at the Salmon (Aniak) River (810 fish; 330–1,200 range) and Salmon (Pitka Fork) River (2,016 fish; 470–1,600 range). Surveys on the Aniak and Cheeneetnuk rivers did not meet acceptable criteria to make an estimate (Appendix B16).

KUSKOKWIM BAY

Kuskokwim Bay

The Kanektok River aerial Chinook salmon SEG range of 3,500–8,000 fish was achieved with an estimated 4,919 fish observed. The sockeye salmon aerial survey SEG range of 14,000–34,000 was exceeded with 39,970 fish observed (Appendix C6). The North Fork Goodnews River aerial Chinook salmon SEG range of 640–3,300 was achieved with 991 fish observed, whereas the sockeye salmon SEG range of 5,500–19,500 was exceeded with 38,390 fish observed (Appendix D6).

KUSKOKWIM HERRING FISHERY

MANAGEMENT AREA

The Kuskokwim Management Area includes all waters of Alaska that flow into the Bering Sea between Cape Newenham and the Naskonat Peninsula (lat 60°58.17'N, long 165°11'W) to 3 miles seaward as well as the waters surrounding Nunivak and St. Matthew Islands to 3 miles seaward (5 AAC 27.870) (Appendix E1). This area supports a significant subsistence Pacific herring *Clupea pallasii* fishery and 5 commercial herring sac roe districts.

The Security Cove District includes all waters between the latitude of Cape Newenham and the latitude of the Salmon River (lat 58°51.83'N).

The Goodnews Bay District includes the waters of Goodnews Bay east of a line between the north spit (lat 59°03.58'N, long 161°49.17'W.) and south spit (lat 59°02.92'N, long 161°49.08'W) at the mouth and west of a line between Ukfigag Creek (lat 59°04.17'N, long 161°36'W) and Tunulik River (lat 59°00.08'N, long 161°00.37'W).

The Cape Avinof District consists of all waters landward of Kikegtek, Pingurbek and Kwigluk Islands from the longitude of Ishkowik River (long 162°44'W) to the latitude of the Tern Mountain (lat 60°42'N).

The Nelson Island District consists of all waters north of Chinigyak Cape (lat 60°27'N) and east of Atrnak Point (long 165°15'W), and all waters north of Talurarevuk Point (lat 60°35'N) and south of the southernmost tip of Chinit Point (lat 60°36'N) and east of long 165°30'W and all waters north of the northernmost tip of Chinit Point (lat 60°37'N) and south of Kigigak Island (lat 60°49'N) and east of long 165°30'W.

The Nunivak Island District includes all waters extending 3 miles seaward of mean low water along the northern, eastern, and southern sides of Nunivak Island from Kikoojit Rocks (lat 60°20'N, long 166°40'W) to Cape Mendenhall (lat 59°45.17'N, long 166°07'W) (5 AAC 27.875).

FISHERY MANAGEMENT

The *Bering Sea Herring Fishery Management Plan* (5 AAC 27.060) requires minimum spawning biomass thresholds for each district before commercial fishing. The thresholds are: Security Cove, 1,200 short tons (st); Goodnews Bay, 1,200 st; Cape Avinof, 500 st; Nelson Island, 3,000 st; and Nunivak Island, 1,500 st. This plan sets the maximum exploitation rate at 20% of the estimated spawning biomass for Security Cove, Goodnews Bay, Nunivak Island, and Nelson Island. Other regulations further reduce the maximum allowable exploitation rate in the Cape Avinof District to 15% of the estimated available biomass and directs management in the Nelson Island District to include 200 st of the 20% exploitation rate for subsistence (5 AAC 27.895).

ADF&G attempts to harvest stocks in good condition (large volume, increasing abundance, good recruitment) at the upper end of the exploitation range (15–20%). Stocks in poor condition (small volume, decreasing abundance, poor recruitment) are exploited at lower than maximum rates (0–15%).

COMMERCIAL FISHERY OVERVIEW

Security Cove and Goodnews Bay Districts

The Kuskokwim Area commercial herring fishery was initiated in 1977 in Security Cove and Goodnews Bay districts with the first documented deliveries in 1978 (Security Cove District) and 1979 (Goodnews Bay District). In 1978, purse seines were allowed in the Security Cove District, however, since that time the fishery has been limited to gillnets. Spawn-on-kelp fisheries were prohibited in 1978 before fisheries were established. Initially these fisheries were managed through open seasons and guideline harvest levels. In 1981, emergency order authority was established to provide for an orderly fishery and periodic assessments of herring biomass. In addition a minimum herring abundance threshold of 800–1,000 spawning activity was established before implementation of the fishery and the guideline harvest levels were established not to exceed 20% of estimated herring biomass. The length of gillnet was established at 100 fathoms. In 1986, the northern boundary of Security Cove was moved from

Carter Spit south to the latitude of Salmon River (lat 58°52'N) to provide spatial separation between Security Cove and Goodnews Bay districts. By 1987 the minimum inseason biomass threshold was set at 1,200 st and the Goodnews Bay District was designated a superexclusive use area by BOF limiting permit holder and vessel participation in the commercial fishery. In 1997, a moratorium on entry into the Goodnews Bay fishery was initiated limiting participation in the fishery to 182 permits. The Goodnews Bay superexclusive use area designation was later repealed by the BOF in 2004.

Nelson and Nunivak Islands Districts

In 1985, commercial herring fishing was initiated in Nelson and Nunivak Island districts. Emergency order authority was established to open and close these fisheries to provide for an adequate subsistence harvest, and orderly commercial fishery, and to allow for periodic re-assessments of herring biomass. A minimum threshold herring abundance of 1,100–1,700 st or spawning activity was established before implementation of the fishery with a guideline harvest level set at 10% of estimated returning biomass to provide protection for the subsistence fisheries. Gillnet length was limited to 100 fathoms. In 1986, the waters within Nelson Island District from Atrnak Point and Talurarevuk Point, and the waters between the southern and northern edges of Chinit Point were closed by emergency order at the request of local governing groups to prevent interference with the subsistence fishery. By 1988, these waters were closed to commercial herring fishing by regulation. Beginning in 1987, mechanical shakers were eliminated in Nelson and Nunivak Island fisheries and vessel length was limited to 30 feet. Both districts were designated as combined superexclusive use areas. Implementation of the superexclusive use designation with vessel length restrictions and prohibition of mechanical shakers was in response to requests from fishermen living in communities adjacent to the fisheries. These fishermen believed it would be in the best interest of the fisheries to standardize equipment to help prevent over investment and to limit participation by allowing fishermen to only participate in 1 herring fishery (Whitmore et al. 2005).

The combined superexclusive use designation allows for fishermen holding permits for both Nunivak and Nelson Island fisheries to participate in commercial herring fisheries in both districts during the same season. In 1987, the minimum inseason biomass threshold was increased to 2,500 st, and the commercial guideline harvest level was increased from 10% to a maximum of 15% of estimated biomass in both districts. In December 1997, the BOF adopted a proposal that raised the Nelson Island District harvest level to 20% of the available biomass minus 200 st allocated for subsistence use and increased the commercial guideline harvest level to 20% of the estimated biomass for the Nunivak Island District. In 1987, the Commercial Fisheries Entry Commission (CFEC) initiated the first steps toward limited entry status in the Nelson Island and Nunivak Island districts and both districts were given limited entry status in 1990. In the winter of 2000, the BOF adopted regulations to allow for development of a cooperative herring purse seine fishery in Nunivak Island District and made the regulation permanent in 2001. In 2006, the Alaska Supreme Court determined that authorizing cooperative fisheries of any sort was beyond the BOF authority. Consequently, the management plan for gillnet and cooperative purse seine fishery in the Nunivak Island District was repealed by the BOF in 2006 (5 AAC 27.894).

Cape Avinof District

In 1988, commercial herring fishing was initiated in the Cape Avinof District. A minimum threshold herring abundance of 500 st or spawning activity was established before implementation of the fishery and a guideline harvest level was established not to exceed 15% of the estimated biomass. The commercial herring fishery established the use of gillnets up to 100 fathoms in length, mechanical shakers were prohibited, vessel length was limited to 30 feet, and a superexclusive use designation was established.

Kuskokwim Area herring fisheries developed rapidly in response to the relative strong market for herring sac roe. During 1981–1984, an average of 206 fishermen harvested 1,400 st of herring and an average value of \$477,000 in Security Cove and Goodnews Bay districts. Addition of Nelson and Nunivak Island fisheries in 1985 and the Cape Avinof fishery in 1988 resulted in an average of 442 fishermen harvesting an average of 2,200 st of herring and an average value of \$1.33 million during 1985–1989. During the 1990 and 1991 seasons, fishermen participation, harvest levels and values decreased in response to a decline in herring abundance caused by a lack of recruitment of younger age herring into the fishery. Additional year classes of herring began recruiting to the fishery in 1992. The fishery peaked in 1996 when 802 fishermen harvested over 5,000 st of herring valued at \$3.5 million. Although harvest levels remained high during 1997–1999 seasons, value declined. The trend in declining markets was followed by an annual reduction in effort and harvest levels which continued through the 2006 season, during which 32 fishermen harvested 390 st of herring valued at \$70,000. The decline in markets for herring sac roe continued and no commercial fishing occurring from 2007 through 2012. The 2013 season saw a small commercial effort and 28 permit holders harvested 646 st of herring (Appendix E2).

2015 COMMERCIAL HERRING FISHERY

There was no commercial herring fishery within Kuskokwim Area in 2015. With a flooded market and large quantities of unsold fish, the price for herring when the Kuskokwim Area fishery would have occurred was well below profitable margins for fishermen and processors. With no secure market for sale, local Kuskokwim Area processors elected to not participate in the fishery; subsequently, ADF&G did not persecute the fishery.

SUBSISTENCE FISHERY

Subsistence fishing for Pacific herring in the northeastern Bering Sea is very important in villages of the Yukon-Kuskokwim River delta. Primarily residents of the coastal villages of Kwigillingok, Kongiganak, Kipnuk, Chefnak, Toksook Bay, Nightmute, Tununak, and Newtok participate in the subsistence fishery. Herring stocks utilized by the subsistence fishery are the same stocks targeted by the commercial fishery.

Subsistence harvest surveys occurred sporadically in Kuskokwim delta villages during 1975–1996 with surveys conducted annually in Nelson Island villages from 1985 to 1996. Subsistence survey results reflect harvest trends and reported catches represent minimum figures because not all area villages were surveyed and not all fishermen were contacted in those communities. No subsistence herring surveys have been conducted in the Nelson Island District since 1996 or in the Nunivak Island District since 1993. Available data suggests that Nelson Island villages harvest approximately 110 st of herring annually (Burkey et al. 1998).

STOCK ASSESSMENT

The remoteness of the Kuskokwim Area herring fishing districts present challenges in assessing abundance, implementing and monitoring fisheries. Although the fisheries typically occur in a northward progression, herring fisheries and spawn timing are quite similar.

When the market conditions were strong and the Kuskokwim Area herring fisheries were active, there was an intensive aerial survey program that included contracting a survey aircraft for the duration of the season. The pilot and observer would station out of field camps at the herring districts. Starting around 2004, this effort was reduced to flying opportunistic surveys with chartered aircraft from Bethel. Due to a lack of market interests in recent years, funding for herring assessment and management was reallocated to other programs. As a result surveys were not flown during the 2011 and 2012 seasons in any of the herring districts. In 2013 and 2014, Coastal Villages Seafood's provided the necessary funding needed to conduct aerial surveys and test fishing within the Kuskokwim Management Area.

As a result of the declining interest in the commercial sac roe herring market, the ADF&G test fishing program has been reduced from as many as six field camp projects in the 1990s, to only two test fishing projects in 2010 and 2013, one test fishing project in 2014, and no test fishing projects were operated in 2011, 2012, and 2015.

Test fishing with variable mesh gillnets (VMG) is used to collect samples of herring to determine age, sex, size, and sexual maturity (ASL) of the run, and to note occurrence of other schooling fishes. This sampling program was important for determining herring stock status and for making biomass projections. The last year of data collection from the Goodnews Bay and Nelson Island Districts occurred in 2010. The last year of data collection from Security Cove District was in 2003, from the Cape Avinof District in 2001, and from the Nunivak Island District in 1999. If the catch sampling program is reinstated in the future, in the absence of data from the Security Cove District, VMG data from Goodnews Bay is used to estimate the metrics for the Security Cove District. VMG data from Nelson Island has been used to estimate the metrics for the Nunivak Island and Cape Avinof districts.

2015 STOCK ASSESSMENT

There was no aerial survey assessment of the herring biomass in the Kuskokwim Management Area during the 2015 season.

ACKNOWLEDGEMENTS

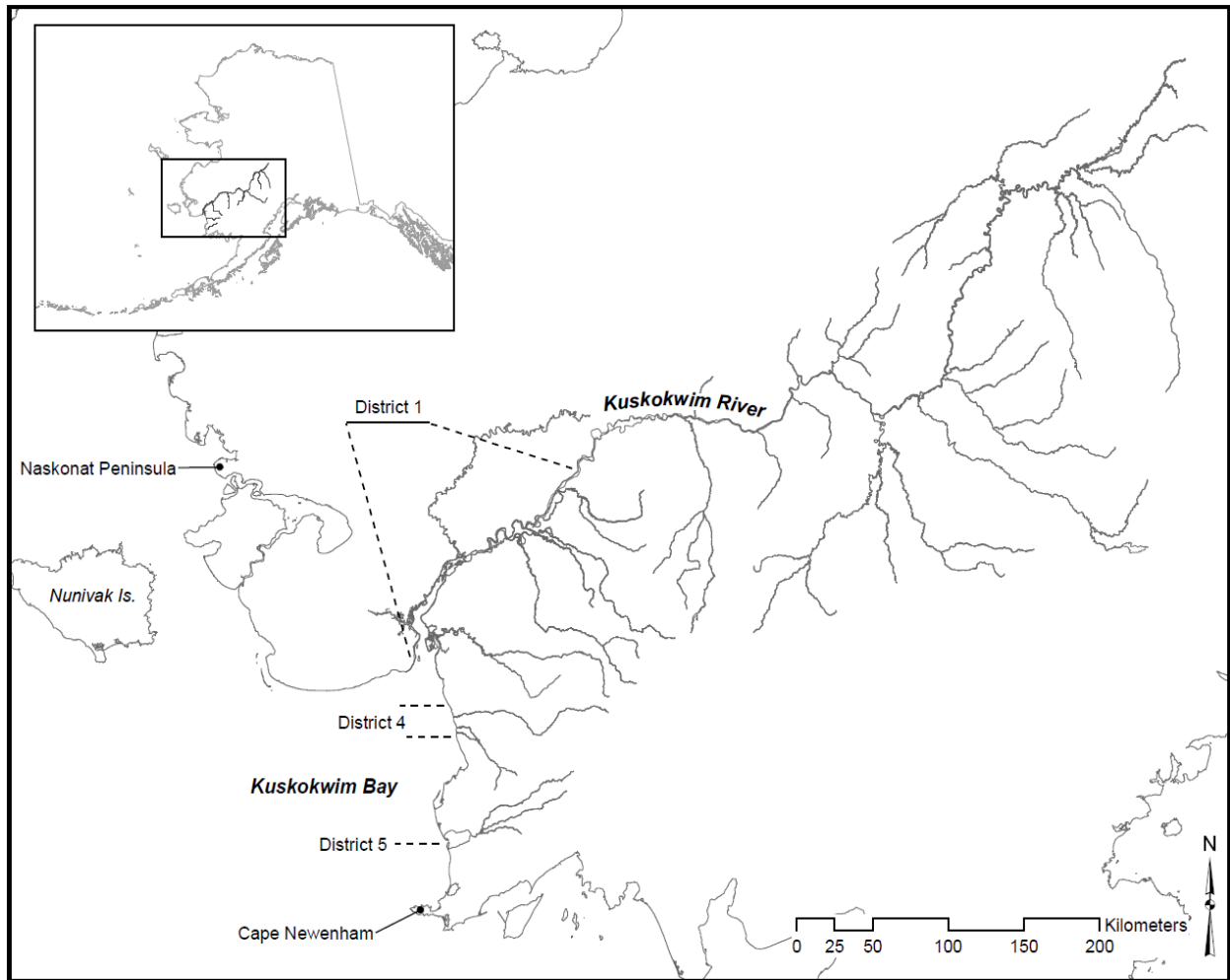
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APPENDIX A



Appendix A1.—The Kuskokwim Management Area and commercial fishing districts.

Appendix A2.–Historical events in the Kuskokwim Management Area, 1913–2015.

| Year | Event |
|------|--|
| 1913 | Commercial sale of salmon export first documented in the Kuskokwim Area. |
| 1954 | Commercial Chinook salmon quota established. |
| 1959 | First Chinook landing since quota established. |
| 1960 | Kanektok counting tower (1960–1962) Quinhagak District (W-4) commercial salmon fishery established. Kuskokwim Area divided into 4 subdistricts: Lower Kuskokwim River (Subdistrict 1), Middle Kuskokwim River (Subdistrict 2), Upper Kuskokwim River (Subdistrict 3), Quinhagak (Subdistrict 4). District boundaries are not well recorded; in the Aniak area, some commonly used drift sites overlap between District 2 and 3, which confused catch reporting. Kuskokwim River drainage surveys, 1960. |
| 1961 | ADF&G Kuskokwim River tagging study. |
| 1962 | ADF&G Kuskokwim River tagging study. Boundary between Subdistricts 2 and 3 changed; the new location was not recorded but the most likely location was Kolmakof River. The reason for the change was to move the boundary to a point which was between commonly used gillnet locations and thereby avoid confusion in catch reporting. As a result, there were no landings in Subdistrict 3. |
| 1963 | ADF&G Kuskokwim River tagging study. Boundaries of subdistrict documented; Subdistrict 1 extended from Kuskokuak to Mishevik Slough, Subdistrict 2 was from Mishevik Slough to Kolmakof River, and Subdistrict 3 was upstream of Kolmakof River. |
| 1965 | Kwegooyuk test fishery (1965–1984; no records available for 1965). |
| 1966 | ADF&G Kuskokwim River tagging study. Subdistrict 3 was deleted from the regulations due to a lack of landings. |
| 1968 | Goodnews Bay District (W-5) commercial salmon fishery established. |
| 1969 | District 4 tagging study (1969–1970) on Chinook and chum salmon. Kogruklu River (a.k.a. Holitna River, Ignatti) tower/weir (1969–present). |
| 1970 | Effect of explosive detonation in ice on northern pike. |
| 1971 | Commercial fishing time in the Kuskokwim River reduced from two 24-hour periods per week to two 12-hour periods per week. Chum salmon fishery begins in the Kuskokwim River; season was from 25 June to 31 July, location limited to waters downstream of Napakiak, mesh size restricted to 6 in or smaller. Fishing periods established by Emergency Order in August. Gillnet mesh size in Districts 4 and 5 restricted to 6 in or smaller. |
| 1974 | Commercial sale of salmon roe from subsistence caught fish (1974–1977). |

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| Year | Event |
|------|---|
| 1976 | Commercial fishing time in the Kuskokwim River was reduced from two 12-hour periods per week to two 6-hour periods per week. Eek River reconnaissance survey. Study on genetic variants in chum and Chinook salmon. |
| 1977 | Fishing periods to be established by Emergency Order before 26 June and after 31 July. Limited entry permits issued. Subsistence fishing closed 24 hours before, during, and 6 hours after each commercial fishing period. Hoholitna River reconnaissance survey. |
| 1978 | Kasigluk River reconnaissance survey. Kwethluk River sonar project. |
| 1979 | The portion of District 1 used during the chum salmon season was extended from Napakiak upstream to Bethel. Kasigluk River sonar project. High seas salmon fleet moved from west of 160° W longitude to west of 180° W longitude. |
| 1980 | Subsistence fishing closed 24 hours before, during, and 6 hours after each commercial fishing period. Aniak River sonar project. |
| 1981 | Pilot test fish and FanScan projects at Bethel. Inventory of Kisaralik River and Lake. Goodnews River counting tower (1981–1990). Salmon River (Pitka Fork drainage) weir project (1981–1984). Species identification program results in better differentiation of sockeye and chum salmon. |
| 1982 | Kanektok River sonar project (1982–1986). |
| 1983 | Pilot test fish project at Bethel using drift gillnets. Provisional escapement goals established for many of the major spawning tributaries in the area. Management strategy shifts from guideline harvest based to obtaining escapement objective. |
| 1984 | Kwegooyuk test fishery replaced by the Bethel drift test fishery. |
| 1985 | Commercial fishing restricted to mesh sizes less than or equal to 6 in. Chum salmon season utilizes entire length of District 1. |
| 1986 | Migratory timing of coho salmon in the Kuskokwim Area, 1979–1984. Kuskokwim River salmon abundance estimate based on calibrated test fish CPUE. Downstream boundary of District 1 extended to a line from Apokak Slough to Popokamiut. |
| 1987 | Discontinued the directed commercial Chinook salmon fishery in the Kuskokwim River. Sale of Chinook salmon limited to 14,000 in the Kuskokwim River June commercial fishery. |

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| Year | Event |
|--------------|--|
| 1987 (cont.) | <p>First fishing period restricted to that portion of District 1, which is downstream of Bethel, due to Chinook conservation concerns.</p> <p>Subsistence fishing in all of District 2 and its tributary streams is closed before, during, and after commercial periods.</p> <p>South Peninsula sockeye and chum salmon tagging study.</p> |
| 1988 | <p>Review of the estimation of Kuskokwim River annual salmon passage through expansion of the Bethel test fish CPUE.</p> <p>Kuskokwim River sonar project (1988–1995).</p> <p>Kuskokwim River subsistence test fisheries (1988–1990).</p> <p>District 1 upstream boundary extended to Bogus Creek.</p> <p>District 2 reduced in size; downstream boundary moved upstream to High Bluffs and upstream boundary moved downstream to Chuathbaluk.</p> <p>Portion of Kuskokwim River between Districts 1 and 2 closed to subsistence fishing when District 1 subsistence fishing is closed.</p> <p>Reorganization of District 1 Statistical Areas.</p> <p>District 4 Salmon Management Plan adopted.</p> <p>Establishment of the Kuskokwim River Salmon Management Working Group (1988–present).</p> <p>Eek Test Fishery (1988–1990, 1992–1995).</p> |
| 1989 | <p>USFWS conducted genetic sampling throughout the Kuskokwim Area.</p> <p>USFWS conducted Chinook tagging study in the lower Kuskokwim River.</p> <p>Record low temperatures recorded in interior Alaska coupled with shallow snowpack threaten survival of salmon eggs/fry from 1988 spawning.</p> |
| 1990 | <p>ADF&G genetic sampling (1990–1996).</p> <p>Reorganization of District 1 statistical areas.</p> <p>Upstream boundary of District 1 moved downstream from Bogus Creek to Big (Nelson) Island.</p> <p>Downstream boundary of District 2 moved upstream to second slough below Kalskag.</p> <p>District 4 northern boundary is extended north to Weelung Creek.</p> |
| 1991 | <p>USFWS operates Tuluksak River weir (1991–1994).</p> <p>Weir replaces counting tower on Goodnews River (1991–present).</p> |
| 1992 | <p>Aniak and Chuathbaluk test fisheries (1992–1995).</p> <p>Eek test fishery is reestablished for the coho season.</p> <p>USFWS operates Kwethluk River weir (1992).</p> <p>Ban on high-seas drift gillnet fishing imposed.</p> <p>Unusual proportion of returning 5-year-old chum salmon had reduced growth between the second third annuli.</p> |

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| Year | Event |
|--------------|---|
| 1992 (cont.) | Failure of age-4 chum salmon in the Kuskokwim River; Aniak drainage especially hard hit; attributed to cold winter of 1988–1989. |
| 1993 | <p>Failure of age-4 and age-5 chum salmon in the Kuskokwim River, Yukon River, and the Norton Sound/Kotzebue Area; cause unknown; especially hard hit were the Aniak drainage and the Yukon fall chum; commercial fishing severely restricted, chum sport fishery was closed, and the subsistence salmon fishery was restricted and closed for a period of time (first time ever).</p> <p>The BOF made a positive finding for customary and traditional use for all salmon in the entire Kuskokwim Area.</p> |
| 1994 | <p>Working Group commissioned and Dr. Mundy started “Recommendations for Strengthening the Cooperative Management Process of the Kuskokwim River Salmon Management Working Group.”</p> <p>Upstream boundary of District 1 moved upstream to Bogus Creek.</p> |
| 1995 | <p>BSFA operates a chum salmon radiotelemetry project on the Kuskokwim River.</p> <p>Takotna Community School and ADF&G operate a salmon counting tower on the Takotna River (1995–1998).</p> <p>AVCP and BSFA operate the Lower Kuskokwim test fishery in cooperation with ADF&G; the project is a modification of the Eek test fishery.</p> |
| 1996 | <p>ADF&G genetic sampling for late spawning chum salmon and one mixed-stock sample from District 1.</p> <p>Near record low water levels during June and early August coupled with record high water temperatures.</p> <p>Irregular fishing schedule in District 1 during June and July due to limited market interest for chum salmon.</p> <p>Record early coho run coupled with record high harvest and escapement at Kogruklu River.</p> <p>AVCP and ADF&G operate a salmon counting tower on the Kwethluk River (1996–1999).</p> <p>KNA and ADF&G operate a salmon weir on the George River (1996–present).</p> <p>Aniak River sonar is relocated to allow for full channel ensonification and configurable sonar technology is employed (1996–present).</p> <p>Native Village of Kwinhagak (NVK) begins development of a salmon counting tower on the Kanektok River.</p> |
| 1997 | <p>Kuskokwim River declared an economic disaster area due to very low chum and coho salmon returns, harvests and exvessel prices. Northern boundary of District 4 moved 3 miles south from July 14 to July 28. Record low chum salmon escapement at Kogruklu River weir.</p> <p>Second summer of record low water levels in the Kuskokwim River basin during the summer and fall coupled with record high water temperatures.</p> <p>Anomalous Bering Sea conditions: warm water, odd plankton blooms, sea bird die-offs, etc.</p> <p>Aniak chum salmon return vastly exceeded expectations based on 1992–1993 spawning abundance estimates.</p> <p>Due to an extremely low return of chum salmon, ADF&G, AVCP, KNA, KRSMWG, ONC, TCC, and McGrath Native Village Council issue a joint appeal for subsistence users to conserve chum salmon. Record low subsistence harvest of chum salmon in the Kuskokwim Area.</p> <p>Aniak processor does not operate due to depressed salmon market (1997–present).</p> |

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| Year | Event |
|--------------|---|
| 1997 (cont.) | <p>Sale of salmon roe is prohibited in Districts 1 and 2 (effective beginning December 1997).</p> <p>Middle Fork Goodnews River weir converted from fixed-panel to a resistance board “floating weir” and operated through majority of coho run for first time (1997-present).</p> <p>NVK and ADF&G operate a salmon counting tower on the Kanektok River (1997–1998).</p> |
| 1998 | <p>Kuskokwim River declared an economic disaster area for second straight year due to low chum and coho salmon returns, harvests, and exvessel prices.</p> <p>KNA and ADF&G operate a salmon weir on the Tatlawiksuk River (1998–present).</p> <p>Second year of anomalous Bering Sea conditions: warm water, odd plankton blooms, sea bird die-offs, etc.</p> <p>High water levels severely restrict operational period of many Kuskokwim Area escapement projects.</p> <p>Record low average water temperature measured at the Bethel test fish site.</p> |
| 1999 | <p>Kuskokwim River experiences extremely low returns, harvests, and exvessel prices of Chinook, chum, and coho salmon for third consecutive year. All species have very late run timing. Kuskokwim Bay coho returns and harvests extremely low.</p> <p>Federal government assumes control of subsistence fishery management in federal waters on October 1.</p> <p>KNA-operated salmon weirs on the Tatlawiksuk and George rivers converted to resistance board (floating) weirs and operations extended through coho run.</p> <p>Kuskokwim River sonar project begins redevelopment using split-beam sonar and is relocated to a new site one mile above upstream end of Church Slough.</p> |
| 2000 | <p>Kuskokwim River declared an economic disaster area due to extremely low chum salmon return, harvest, and exvessel price. Chinook salmon returns are very low for second consecutive year. Many subsistence fishermen report that they were unable to meet their Chinook and chum salmon harvest goals.</p> <p>Due to an extremely low return of Chinook salmon, ADF&G, AVCP, KNA, KRSMWG, Kwethluk IRA, TCC, McGrath Native Village Council, and USFWS issue a joint appeal for subsistence users to conserve Chinook salmon.</p> <p>ADF&G and Federal Office of Subsistence Management (FOSM) restrict subsistence Chinook salmon fishery.</p> <p>Takotna Community Schools and ADF&G operate a resistance board weir on the Takotna River (2000-present).</p> <p>Kwethluk IRA and USFWS operate a resistance board weir on the Kwethluk River (2000 to present).</p> <p>District W-1 divided into Subdistricts W-1A (above Bethel) and W-1B (below Bethel) and fishermen are required to register to fish in only one subdistrict. Due to limited processing capacity, only one subdistrict is opened at a time to reduce harvest.</p> <p>Commercial fishermen required to identify vessels with either ADF&G or CFEC permit number.</p> |

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| Year | Event |
|--------------|--|
| 2000 (cont.) | <p>ADF&G Division of Sport Fish creates Lower Yukon–Kuskokwim Management Area and stations Area Management Biologist in Bethel.</p> <p>Line attached to a pole (rod and reel) added to legal gear for subsistence fishing in AVCP area (prior to 2000 fishing season).</p> <p>Use of rod and reel for subsistence extended throughout the Kuskokwim Area (2000–2001 BOF meeting).</p> |
| 2001 | <p>Alaska Board of Fisheries designates Kuskokwim River Chinook and chum salmon to be stocks of yield concern based on the Sustainable Fisheries Policy because of poor runs since 1997.</p> <p>Subsistence fishing schedule implemented in the Kuskokwim River during June and July to conserve Chinook and chum salmon and provide for adequate fishing opportunity throughout the drainage.</p> <p>Kuskokwim River declared an economic disaster area due to low chum salmon return, harvest and exvessel price. No commercial fishing periods in Kuskokwim River in June and July. Chinook salmon returns are below average in size.</p> <p>Due to an extremely low return of Chinook salmon, ADF&G, AVCP, KNA, KRSMWG, Kwethluk IRA, McGrath Native Village Council, ONC, and USFWS issue a joint appeal for subsistence users to conserve Chinook and chum salmon.</p> <p>Native Community of Tuluksak and USFWS operate a resistance board weir on the Tuluksak River.</p> <p>NVK and ADF&G operate a salmon counting weir on the Kanektok River.</p> <p>ADF&G/CF and KNA operate fish wheels at Kalskag and Birch Tree Crossing to tag salmon and then make salmon population estimates.</p> |
| 2002 | <p>The State of Alaska declared the Kuskokwim region a disaster area for the fifth year in 6 because of low salmon prices in the bay and river and a complete lack of buyers during the chum season on the river.</p> <p>ADF&G did not join USFWS and Native groups in issuing a preseason appeal for subsistence users to conserve Chinook and chum salmon because such a request is allocative in nature and only the BOF makes allocation decisions.</p> <p>In June the Federal Subsistence Board adopted a special regulatory action that tied the time allowed for sport fishing to the time allowed for subsistence net and fish wheel fishing in federal waters in the Kuskokwim River drainage. Upon a request for reconsideration by ADF&G, the Federal Subsistence Board rescinded its decision. The reason for the rescission was that under ANILCA, sport fishing on federal waters is managed by ADF&G unless there are overriding conservation or subsistence concerns. In this instance there were no overriding conservation or subsistence concerns.</p> <p>A subsistence fishing schedule was implemented in the Kuskokwim River during June to conserve Chinook and chum salmon and to provide adequate subsistence fishing opportunity throughout the drainage. However, because an average Chinook run and an above-average chum run developed, the subsistence schedule was lifted on June 28.</p> <p>The Kuskokwim River Fisheries Co-op dissolved. ACR #28 was accepted by BOF so that the formation of a Chignik-style salmon fishing cooperative on the Kuskokwim River could be considered.</p> |

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| Year | Event |
|--------------|---|
| 2002 (cont.) | <p>ADF&G/SF and KNA operated salmon radiotelemetry projects on the Kuskokwim mainstem and on the Holitna River to estimate salmon abundance.</p> |
| | <p>Second consecutive season of no chum salmon (June or July) directed commercial fishery.</p> |
| 2003 | <p>A subsistence fishing schedule was implemented in the Kuskokwim River during June to conserve Chinook and chum salmon and to provide adequate subsistence fishing opportunity throughout the drainage. However, because an average Chinook and chum salmon run developed, the subsistence schedule was lifted on July 3.</p> |
| | <p>Third consecutive season of no chum salmon (June or July) directed commercial fishery.</p> |
| | <p>ADF&G/SF and KNA operated salmon radiotelemetry projects on the Kuskokwim mainstem and on the Holitna River to estimate salmon abundance.</p> |
| | <p>Record high coho salmon escapements throughout the Kuskokwim Area.</p> |
| 2004 | <p>The Alaska Board of Fisheries continued the stock of yield concern designation for Kuskokwim River Chinook and chum salmon based on the Sustainable Fisheries Policy. Chinook and chum salmon returns have been improving since 2000; however, a majority of annual returns in the previous 5 years did not have adequate harvestable surpluses beyond escapement and subsistence needs.</p> |
| | <p>The Alaska Board of Fisheries provided a commercial guideline harvest level of 0–50,000 sockeye salmon for the Kuskokwim River.</p> |
| | <p>The Alaska Board of Fisheries readopted regulations 1) to increase subsistence fishing opportunity prior to and after commercial salmon fishing periods, 2) to provide opportunity for subsistence salmon fishing to occur in a portion of the District 1 subdistrict not open to commercial fishing, and 3) to modify Kuskokwok Slough subsistence fishing regulations to be consistent with District 1 waters.</p> |
| | <p>The northern boundary of District W-4 (Quinhagak) was relocated approximately one mile north from Oyak Creek to the northernmost edge of the mouth of Weelung Creek.</p> |
| | <p>The western boundary of District W-5 (Goodnews Bay) was relocated seaward from a line between the northern and southern most points of the North and South spits at the entrance to Goodnews Bay to a line extending from approximately 2 miles South on the seaward entrance of Goodnews Bay to approximately 2 miles North on the seaward entrance to Goodnews Bay.</p> |
| | <p>Regulations for Districts 4 and 5 were amended to provide emergency order authority to increase gillnet length to 100 fathoms provided run strength was adequate.</p> |
| | <p>The Goodnews Bay District herring superexclusive use regulations were repealed.</p> |
| | <p>Evaluation of AYK Region escapement goals and methodology resulted in revisions of the majority of existing Kuskokwim Area escapement goals to Sustainable Escapement Goal ranges using the Bue-Hasbrouck method (ADF&G 2004; Bue and Hasbrouck 2001).</p> |
| | <p>A subsistence fishing schedule was implemented in the Kuskokwim River during June to conserve Chinook and chum salmon and to provide adequate subsistence fishing opportunity throughout the drainage. However, because an above average Chinook salmon run and an average to above-average chum salmon run developed, the subsistence schedule was lifted on June 18.</p> |
| | <p>A limited chum and sockeye directed commercial fishery was prosecuted in late June and early July for the first time since 2000. Participation and processor capacity was limited compared to previous years.</p> |

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| Year | Event |
|--------------|--|
| 2004 (cont.) | Water levels in rivers throughout the Kuskokwim Area were well below average from mid-July through September. Kuskokwim River water level attained a 50-year low during August as measured at the USGS gauging station at Crooked Creek. |
| 2005 | <p>Chum escapements were at record highs at nearly all monitoring projects with the exception of George River where escapement was near average.</p> <p>Chinook escapements ranged from above average to record highs at nearly all monitored locations with the exception of George River where the escapement was near average.</p> <p>Commercial salmon fishing opportunity in District 1 reduced in July because of poor chum salmon market conditions.</p> <p>Commercial salmon fishing opportunity in the Kuskokwim Bay districts was reduced during July because of limited processing capacity, and in August because of below-average coho salmon abundance.</p> |
| 2006 | <p>Commercial salmon fishing opportunity in District 1 reduced in July because of poor chum salmon market conditions.</p> <p>Chum salmon escapements were at record highs at the Kwethluk, George, and Takotna river monitoring projects.</p> <p>During 4 commercial periods in early July limits were imposed on the number of fish that could be delivered by District 4 and 5 fishermen because of limited capacity to process an above average catch.</p> |
| 2007 | <p>The Alaska Board of Fisheries (BOF) discontinued the stock of concern designation for Kuskokwim River Chinook and chum salmon based on at or above the historical average runs each year since 2002.</p> <p>The BOF passed a proposal giving ADF&G authority to allow up to 8 in mesh gillnets in District 1 by emergency order; otherwise, all commercial openings will continue to be limited to gillnet mesh sizes of 6 in or less. The BOF's intent in allowing for up to 8 in mesh gear was not to establish a large mesh gear Chinook salmon commercial fishery, but to provide a management tool that may or may not be used. Additionally, the commercial Chinook salmon fishery closure was discontinued, and the commercial salmon fishery is to be managed based on run strength and harvestable surpluses of Chinook, sockeye, and chum salmon.</p> <p>The BOF passed a proposal giving ADF&G authority to allow the lower portion of Subdistrict 1-B to open to commercial fishing up to 2 hours earlier than the remainder of Subdistrict 1-B.</p> <p>A lack of processing capacity, commercial interest, and continued poor chum salmon market conditions resulted in no commercial openings in June and July.</p> <p>From late June through mid-July, limits on the number of fish that could be delivered by District 4 and 5 fishermen were imposed because of limited processing capacity.</p> |
| 2008 | <p>Commercial salmon fishing opportunity in District 1 reduced in July because of poor chum salmon market conditions.</p> <p>From late June through mid-July, limits on the number of fish that could be delivered by District 4 and 5 fishermen were imposed because of limited processing capacity.</p> |

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| Year | Event |
|------|--|
| 2010 | <p>Kuskokwim River Chinook salmon spawning escapements were among the lowest on record and only the KogrukluK achieved the lower end of the escapement goal.</p> <p>Kuskokwim River Tributaries, Kwethluk, and Tuluksak were closed to subsistence and sport harvest of Chinook salmon for most of the season by the USFWS.</p> <p>Kuskokwim River chum salmon catch was the largest since 1998.</p> <p>Kuskokwim River sockeye salmon run timing was the latest on record for the Bethel test fishery with 2 distinct pulses and an average commercial harvest.</p> <p>Telaquana Lake weir passed over 70,000 sockeye salmon.</p> <p>High water levels were sustained through most of August on the Kuskokwim River.</p> <p>Coho salmon fishery closed on August 12 due to low abundance and the commercial catch was the lowest since 1999.</p> <p>District W-4 highest exvessel value since 1988, primarily attributed to record sockeye salmon harvest.</p> <p>District W-5 had its highest exvessel value since 1994.</p> |
| 2011 | <p>Kuskokwim River Chinook salmon spawning escapements continued to be below average and only KogrukluK met the escapement goal.</p> <p>Preseason management actions were taken in an effort to achieve escapement goals.</p> <p>Subsistence Chinook salmon fishing with hook and line gear was closed and subsistence fishing was restricted to the use of gillnets with 4 in or less mesh not to exceed 60 ft in the Tuluksak, Kisaralik, KasigluK, and Kwethluk rivers including Kuksokuak Slough.</p> <p>Subsistence fishing was closed in District 1 from June 16 to June 19 and June 23 to June 28.</p> <p>Subsistence fishing was restricted to 6 in or smaller mesh from June 29 to July 7.</p> <p>Federal Special Actions in 3-KS-01-11 and 3-KS-02-11 preempted state management emergency orders from June 30 to July 2, 2011.</p> <p>Kuskokwim River chum salmon catch was the largest since 1998.</p> |
| 2012 | <p>Kuskokwim River Chinook salmon run was smallest on record resulting in 12 days of subsistence salmon fishing closures, additional Chinook salmon subsistence fishing restrictions, and the lowest Chinook salmon subsistence harvest on record.</p> <p>High water plagued escapement projects throughout the season and Chinook salmon escapement goals that were assessed were not achieved.</p> <p>Kuskokwim River declared an economic disaster due to low exvessel value and very small Chinook salmon subsistence harvest.</p> <p>District 4 and Kanektok River had the lowest catch and escapement of Chinook salmon on record.</p> <p>District 5 had highest sockeye salmon catch since 1994.</p> |
| 2013 | <p>In January of 2013, the Alaska Board of Fisheries adopted a new Kuskokwim River Salmon Management Plan (5 AAC 07.365), and a new drainagewide SEG of 65,000–120,000 Chinook salmon was established. Within the management plan it states that ADFG& shall use inseason run projections and test fishing indices to asses run abundance. This information would be evaluated inseason using the Bethel test fishery (BTF) catch per unit effort (CPUE) and subsistence harvest reports.</p> |

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| Year | Event |
|--------------|---|
| (2013 cont.) | <p>ANS ranges were adjusted at the January 2013 BOF meeting:</p> <ul style="list-style-type: none"> 67,200–109,800 Chinook salmon in the Kuskokwim River drainage; 41,200–116,400 chum salmon in the Kuskokwim River drainage; 32,200–58,700 sockeye salmon in the Kuskokwim River drainage; 27,400–57,600 coho salmon in the Kuskokwim River drainage; 500–2,000 pink salmon in the Kuskokwim River drainage; 6,900–17,000 salmon in Districts 4 and 5 combined; 12,500–14,400 salmon for the remainder of the Kuskokwim Area. <p>Kuskokwim River Chinook salmon run was the smallest on record. This resulted in 17 days of restrictions on the mainstem Kuskokwim River.</p> <p>The tributaries of Kwethluk, Kasigluk, Kisarolik, Tuluksak, and Aniak rivers were restricted to the use of gillnets with 4 in or less mesh size and 60 ft in length from June 1 to July 25.</p> <p>Chinook salmon escapements at tributary weirs were the lowest on record with escapements at the George and Kogrugluk river weirs being below their respective SEG range.</p> <p>The BOF removed the regulation allowing up to 8 in mesh size gillnets to be used in the Kuskokwim River commercial fishery by emergency order. This regulatory option had not been used and now only gillnets of 6 in or smaller mesh size may be used in the commercial fishery.</p> |
| 2014 | <p>In March 2014 two emergency petitions to BOF were submitted and adopted into regulation.</p> <p>An emergency petition to add dip nets as legal gear for the taking of salmon other than king salmon during times of king salmon conservation was submitted. The board found that this petition met the criteria for the finding of an emergency and adopted it as an emergency regulation. This allows the department to open subsistence fishing periods with dip net gear and all king salmon caught must be returned immediately to the water alive. This will be used to provide more opportunity to harvest chum and sockeye salmon while conserving king salmon.</p> <p>An emergency petition to provide the department the ability to restrict the length of subsistence gillnets from 50-fathoms to 25-fathoms (150 feet) during times of king salmon conservation was submitted. The board found that this petition met the criteria for the finding of an emergency and adopted it as an emergency regulation. This gives the department more flexibility to open subsistence fishing periods during times of king salmon conservation. Gillnets may be over 25-fathoms in total length, but must be tied and/or bagged in such a way that only 25-fathoms can be used to fish.</p> <p>Kuskokwim river Chinook salmon run was below average and resulted in 31 days of restrictions on the mainstem Kuskokwim River.</p> <p>The tributaries of Kwethluk, Kasigluk, Kisarolik, Tuluksak, and Aniak rivers were closed to subsistence harvest of Chinook with gillnets.</p> <p>Kuskokwim River coho salmon runs were strong and escapements were some of the largest recorded.</p> |

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| Year | Event |
|------|--|
| 2015 | <p>In March 2015 the BOF deliberated and adopted three proposals for Kuskokwim Area subsistence salmon fishing. The first adopted proposal addressed the use of 4.0 inch mesh gillnets during times of Chinook salmon conservation. Four inch or smaller mesh gillnets be operated as set gillnets only, not exceed 60 feet in length, and no part of which may be operated more than 100 feet of the ordinary high water mark. The intent is to keep these gillnets close to the bank and out of the channel.</p> <p>The second proposal that gave the department authority to specify the length of gillnets used during subsistence salmon fishing periods.</p> <p>Fish wheels may also be operated with chutes during times of Chinook salmon conservation.</p> <p>The Chinook salmon fishery, within the boundaries of the Yukon Delta National Wildlife Refuge, was managed by USFW under special actions. On May 21, USFWS enacted a special action to close the Kuskokwim River Chinook salmon fishery to non-Federally qualified users. Subsistence fishing was restricted to three days per week with the use of set gillnets with 4.0 inch or less mesh size not to exceed 60-feet in length beginning May 21 downstream of Tuluksak, and on May 28 between Tuluksak and Aniak. This restriction was also implemented by ADF&G from Aniak to the Holitna River mouth beginning June 4. On June 11, these same restrictions were enacted from the Holitna River mouth to the headwaters of the Kuskokwim River. Fishing for Chinook salmon with hook and line gear was closed drainagewide beginning June 11. An area at the mouth of the Kuskokwim River (east of the Ishkowik River to the northern boundary of District W-4) was also closed to subsistence fishing on May 28, by ADF&G, in order to provide additional protection to Chinook salmon entering the Kuskokwim River. USFWS instituted a community harvest permit program from June 10–June 30 that allowed the harvest of up to 7,000 Chinook salmon within the Yukon Delta NWR boundaries.</p> <p>The first 6.0 inch mesh fishing period on June 20, upstream of the refuge boundary at Aniak, was restricted to Alaska residents 60 years of age or older and gillnets no longer than 10 fathoms in length. This was the first time ADF&G had provided an “Elder fishery”.</p> <p>On July 2, ADF&G resumed management of the entirety of the Kuskokwim River and implemented restrictions in conjunction with those in place upstream of the Yukon Delta NWR boundary to conserve Chinook salmon. Additional limited fishing opportunities on chum and sockeye salmon were allowed as those runs progressed. The chum salmon run however, was assessed to be poor based on low BTF CPUE. Restrictions continued until August 4 when all restrictions were rescinded.</p> <p>Subsistence fishing was restricted a total of 74 days from May 21 through August 3.</p> |

Appendix A3.–Commercial salmon harvest, excluding personal use, Kuskokwim Area, 1960–2015.

| Year | Commercial harvest | | | | | Total |
|-------------------|--------------------|---------|-----------|--------|-----------|-----------|
| | Chinook | Sockeye | Coho | Pink | Chum | |
| 1960 ^a | 5,969 | 5,649 | 5,498 | 0 | 0 | 17,116 |
| 1961 ^a | 23,246 | 2,308 | 5,090 | 90 | 18,864 | 49,598 |
| 1962 ^a | 20,867 | 10,313 | 12,432 | 4,340 | 45,707 | 93,659 |
| 1963 ^a | 18,571 | 0 | 15,660 | 0 | 0 | 34,231 |
| 1964 ^a | 21,230 | 13,422 | 28,992 | 939 | 707 | 65,290 |
| 1965 ^a | 24,965 | 1,886 | 12,191 | 0 | 4,242 | 43,284 |
| 1966 | 25,823 | 1,030 | 22,985 | 268 | 2,610 | 52,716 |
| 1967 | 29,986 | 652 | 58,239 | 0 | 8,235 | 97,112 |
| 1968 | 43,157 | 5,884 | 154,275 | 75,818 | 19,684 | 298,818 |
| 1969 | 64,777 | 10,362 | 110,473 | 1,251 | 50,377 | 237,240 |
| 1970 | 64,722 | 12,654 | 62,245 | 27,422 | 60,566 | 227,609 |
| 1971 | 44,936 | 6,054 | 10,006 | 13 | 99,423 | 160,432 |
| 1972 | 55,598 | 4,312 | 23,880 | 1,952 | 97,197 | 182,939 |
| 1973 | 51,374 | 5,224 | 152,408 | 634 | 184,207 | 393,847 |
| 1974 | 30,670 | 29,003 | 179,588 | 60,099 | 196,127 | 495,487 |
| 1975 | 28,219 | 17,705 | 110,576 | 915 | 225,308 | 382,723 |
| 1976 | 49,262 | 14,636 | 112,130 | 39,998 | 231,877 | 447,903 |
| 1977 | 58,256 | 18,621 | 263,727 | 434 | 298,959 | 639,997 |
| 1978 | 63,194 | 13,734 | 247,271 | 61,968 | 282,044 | 668,211 |
| 1979 | 53,314 | 39,463 | 308,683 | 574 | 297,167 | 699,201 |
| 1980 | 48,599 | 42,213 | 327,878 | 30,306 | 560,943 | 1,009,939 |
| 1981 | 79,377 | 105,940 | 278,551 | 463 | 485,653 | 949,984 |
| 1982 | 79,816 | 97,716 | 567,452 | 18,259 | 326,481 | 1,089,724 |
| 1983 | 93,676 | 90,834 | 248,389 | 379 | 306,554 | 739,832 |
| 1984 | 74,017 | 81,304 | 826,774 | 23,902 | 488,480 | 1,494,477 |
| 1985 | 74,083 | 121,221 | 382,096 | 111 | 224,680 | 802,191 |
| 1986 | 44,972 | 142,029 | 736,910 | 16,561 | 349,269 | 1,289,741 |
| 1987 | 65,558 | 170,849 | 478,594 | 163 | 603,274 | 1,318,438 |
| 1988 | 74,563 | 149,949 | 623,733 | 37,645 | 1,443,953 | 2,329,843 |
| 1989 | 67,003 | 82,628 | 556,312 | 819 | 802,199 | 1,508,961 |
| 1990 | 84,449 | 203,918 | 443,783 | 16,082 | 520,885 | 1,269,117 |
| 1991 | 48,170 | 202,441 | 556,818 | 522 | 502,187 | 1,310,138 |
| 1992 | 67,597 | 192,341 | 772,449 | 85,978 | 436,506 | 1,554,871 |
| 1993 | 26,636 | 167,235 | 686,570 | 71 | 94,937 | 975,449 |
| 1994 | 27,345 | 191,169 | 856,100 | 84,870 | 360,893 | 1,520,377 |
| 1995 | 72,352 | 198,045 | 555,539 | 318 | 707,212 | 1,533,466 |
| 1996 | 22,959 | 122,260 | 1,099,853 | 1,663 | 301,975 | 1,548,710 |
| 1997 | 47,990 | 123,002 | 166,648 | 7 | 67,200 | 404,847 |
| 1998 | 44,192 | 129,449 | 311,910 | 2,720 | 267,059 | 755,330 |
| 1999 | 25,019 | 81,201 | 32,251 | 2 | 72,659 | 211,132 |
| 2000 | 26,115 | 109,939 | 307,439 | 17 | 49,573 | 493,083 |
| 2001 | 14,384 | 59,545 | 220,804 | 0 | 21,893 | 316,626 |

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Appendix A3.–Page 2 of 2.

| Year | Commercial harvest | | | | | |
|----------------------|--------------------|---------|---------|------|---------|---------|
| | Chinook | Sockeye | Coho | Pink | Chum | Total |
| 2002 | 12,531 | 24,190 | 113,199 | 0 | 34,951 | 184,871 |
| 2003 | 16,014 | 63,646 | 346,555 | 0 | 36,225 | 462,440 |
| 2004 | 30,332 | 63,682 | 541,894 | 0 | 51,935 | 687,843 |
| 2005 | 31,014 | 120,379 | 205,762 | 19 | 85,236 | 442,410 |
| 2006 | 24,860 | 148,784 | 224,905 | 1 | 94,981 | 493,531 |
| 2007 | 22,878 | 153,812 | 189,456 | 6 | 79,864 | 446,016 |
| 2008 | 23,958 | 112,581 | 259,681 | 15 | 98,239 | 494,474 |
| 2009 | 22,093 | 170,370 | 161,073 | 18 | 185,099 | 538,653 |
| 2010 | 18,721 | 201,869 | 76,621 | 7 | 227,441 | 524,659 |
| 2011 | 18,226 | 76,613 | 119,938 | 2 | 236,466 | 451,245 |
| 2012 | 8,576 | 91,192 | 143,123 | 0 | 150,822 | 393,713 |
| 2013 | 2,723 | 51,682 | 156,777 | 1 | 122,966 | 334,149 |
| 2014 | 2,470 | 82,114 | 222,063 | 3 | 37,046 | 343,696 |
| 2015 | 8,254 | 56,260 | 148,349 | 0 | 21,068 | 233,931 |
| Average 2005–2014 | 17,552 | 120,940 | 175,940 | 7 | 131,816 | 446,255 |

^a Includes harvests from District 3.

Appendix A4.–Estimated exvessel value of the commercial salmon harvest and permits fished, Kuskokwim Management Area, 1987–2015.

| Year | District 1 | | District 2 | | District 4 | | District 5 | | Total value | Total permits |
|-----------|----------------|-----------------------------|----------------|-----------------------------|----------------|-----------------------------|----------------|-----------------------------|--------------|---------------|
| | Value of catch | Permits fished ^a | Value of catch | Permits fished ^a | Value of catch | Permits fished ^a | Value of catch | Permits fished ^a | | |
| 1987 | \$4,893,016 | 705 | \$139,049 | 29 | \$858,818 | 310 | \$572,293 | 116 | \$6,463,176 | 800 |
| 1988 | \$10,060,427 | 745 | \$246,069 | 29 | \$1,381,661 | 289 | \$1,038,041 | 125 | \$12,726,198 | 813 |
| 1989 | \$3,883,321 | 743 | \$131,168 | 30 | \$746,071 | 227 | \$378,962 | 88 | \$5,139,522 | 824 |
| 1990 | \$3,385,636 | 742 | \$121,329 | 22 | \$1,013,472 | 390 | \$360,664 | 82 | \$4,881,101 | 823 |
| 1991 | \$2,971,767 | 749 | \$111,651 | 23 | \$592,436 | 346 | \$274,919 | 72 | \$3,950,773 | 819 |
| 1992 | \$3,764,804 | 741 | \$147,992 | 22 | \$993,664 | 349 | \$405,447 | 111 | \$5,311,907 | 814 |
| 1993 | \$2,860,795 | 737 | \$90,906 | 20 | \$898,255 | 408 | \$441,135 | 114 | \$4,291,091 | 804 |
| 1994 | \$3,581,992 | 706 | \$129,555 | 17 | \$837,157 | 307 | \$649,747 | 116 | \$5,198,451 | 793 |
| 1995 | \$2,766,882 | 712 | \$107,913 | 21 | \$1,047,188 | 382 | \$286,398 | 87 | \$4,208,381 | 798 |
| 1996 | \$2,117,245 | 620 | \$11,015 | 8 | \$534,726 | 218 | \$222,589 | 54 | \$2,885,575 | 714 |
| 1997 | \$2,288,766 | 604 | \$2,944 | 4 | \$497,071 | 289 | \$122,868 | 53 | \$2,911,649 | 702 |
| 1998 | \$983,633 | 615 | \$617 | 3 | \$467,843 | 203 | \$184,265 | 50 | \$1,636,358 | 707 |
| 1999 | \$169,769 | 509 | \$0 | 0 | \$279,091 | 218 | \$103,662 | 73 | \$552,522 | 604 |
| 2000 | \$514,930 | 532 | \$3,039 | 4 | \$436,561 | 230 | \$213,014 | 46 | \$1,167,544 | 623 |
| 2001 | \$424,199 | 412 | | | \$228,615 | 159 | \$98,849 | 32 | \$751,663 | 514 |
| 2002 | \$126,361 | 318 | | | \$167,749 | 114 | \$24,802 | 30 | \$318,912 | 407 |
| 2003 | \$453,187 | 359 | | | \$304,553 | 114 | \$135,107 | 34 | \$892,847 | 438 |
| 2004 | \$943,766 | 390 | | | \$405,345 | 116 | \$135,246 | 29 | \$1,484,357 | 467 |
| 2005 | \$448,853 | 403 | | | \$571,965 | 145 | \$134,295 | 29 | \$1,155,113 | 484 |
| 2006 | \$451,390 | 373 | | | \$551,182 | 132 | \$141,265 | 24 | \$1,143,837 | 453 |
| 2007 | \$380,840 | 366 | | | \$660,865 | 125 | \$222,330 | 28 | \$1,264,035 | 456 |
| 2008 | \$538,310 | 374 | | | \$750,731 | 146 | \$198,070 | 25 | \$1,487,111 | 462 |
| 2009 | \$502,848 | 342 | | | \$747,325 | 179 | \$192,031 | 39 | \$1,442,204 | 434 |
| 2010 | \$765,606 | 433 | | | \$1,655,321 | 241 | \$470,661 | 48 | \$2,891,588 | 530 |
| 2011 | \$764,358 | 413 | | | \$1,176,436 | 219 | \$346,022 | 48 | \$2,286,816 | 510 |
| 2012 | \$597,998 | 379 | | | \$824,435 | 179 | \$617,765 | 58 | \$2,040,198 | 477 |
| 2013 | \$1,184,847 | 378 | | | \$761,537 | 197 | \$452,651 | 71 | \$2,399,035 | 469 |
| 2014 | \$843,356 | 358 | | | \$858,638 | 194 | \$584,654 | 61 | \$2,286,648 | 457 |
| 2015 | \$246,016 | 283 | | | \$498,564 | 189 | \$131,616 | 61 | \$876,196 | 396 |
| Average | | | | | | | | | | |
| 2005–2014 | \$647,841 | 382 | | | \$855,844 | 176 | \$335,974 | 43 | \$1,839,658 | 473 |

^a Number of permits that made at least one delivery.

Appendix A5.–Commercially harvested salmon average weights and prices paid, Kuskokwim Management Area, 1967–2015.

| Year | Average weight (lb) | | | | | Average price (\$) | | | | |
|-------------------|---------------------|---------|------|------|------|--------------------|---------|------|------|------|
| | Chinook | Sockeye | Coho | Pink | Chum | Chinook | Sockeye | Coho | Pink | Chum |
| 1967 | 27.8 | 7.4 | 5.9 | a | 7.0 | 0.13 | 0.05 | 0.09 | a | 0.04 |
| 1968 | 23.8 | 6.2 | 7.2 | 4.0 | 7.9 | 0.16 | 0.10 | 0.09 | 0.05 | 0.04 |
| 1969 | 19.6 | 6.2 | 7.3 | 3.6 | 5.8 | 0.19 | 0.15 | 0.10 | 0.06 | 0.07 |
| 1970 | 18.9 | 5.4 | 7.3 | 3.3 | 6.1 | 0.20 | 0.21 | 0.14 | 0.08 | 0.08 |
| 1971 ^b | 26.2 | 6.9 | 6.1 | a | 6.4 | 0.17 | 0.10 | 0.13 | a | 0.08 |
| 1972 | 24.7 | a | 6.4 | a | 6.5 | 0.20 | a | 0.16 | a | 0.08 |
| 1973 | 26.7 | a | 5.8 | a | 6.8 | 0.25 | a | 0.26 | a | 0.19 |
| 1974 | 17.1 | 6.3 | 7.5 | 4.1 | 6.8 | 0.46 | 0.34 | 0.27 | 0.23 | 0.25 |
| 1975 | 14.9 | a | 8.2 | a | 6.4 | 0.54 | a | 0.31 | a | 0.26 |
| 1976 ^c | 17.0 | 6.7 | 7.8 | 3.5 | 7.0 | 0.64 | 0.43 | 0.40 | 0.25 | 0.27 |
| 1977 | 22.7 | 8.3 | 7.8 | 3.9 | 7.3 | 1.15 | 0.45 | 0.65 | 0.25 | 0.45 |
| 1978 | 24.2 | 6.5 | 7.1 | 3.9 | 8.9 | 0.50 | 0.49 | 0.40 | 0.12 | 0.32 |
| 1979 | 16.6 | 6.9 | 7.9 | 3.9 | 7.0 | 0.66 | 0.53 | 0.75 | 0.11 | 0.37 |
| 1980 | 14.1 | 6.7 | 6.9 | 3.6 | 6.4 | 0.47 | 0.31 | 0.64 | 0.12 | 0.24 |
| 1981 | 17.8 | 7.2 | 6.4 | 3.5 | 7.5 | 0.84 | 0.61 | 0.63 | 0.11 | 0.23 |
| 1982 | 19.3 | 7.2 | 7.3 | 3.6 | 7.3 | 0.82 | 0.41 | 0.53 | 0.05 | 0.22 |
| 1983 | 18.8 | 6.8 | 6.8 | 3.5 | 7.4 | 0.54 | 0.51 | 0.39 | 0.05 | 0.33 |
| 1984 | 16.4 | 6.6 | 7.7 | 3.2 | 6.7 | 0.89 | 0.52 | 0.55 | 0.07 | 0.28 |
| 1985 | 17.0 | 7.0 | 7.5 | 3.6 | 7.1 | 0.71 | 0.59 | 0.51 | 0.05 | 0.25 |
| 1986 | 17.0 | 7.2 | 6.4 | 3.4 | 6.8 | 0.80 | 0.70 | 0.60 | 0.05 | 0.25 |
| 1987 | 15.2 | 7.5 | 7.2 | 3.7 | 6.8 | 1.10 | 1.30 | 0.73 | 0.10 | 0.27 |
| 1988 | 14.1 | 7.3 | 7.2 | 3.4 | 6.9 | 1.30 | 1.42 | 1.25 | 0.15 | 0.40 |
| 1989 | 16.6 | 7.2 | 7.3 | 3.4 | 6.8 | 0.75 | 1.20 | 0.55 | 0.05 | 0.26 |
| 1990 | 15.1 | 6.7 | 6.5 | 3.2 | 6.9 | 0.56 | 1.05 | 0.62 | 0.12 | 0.26 |
| 1991 | 15.3 | 6.9 | 6.5 | 3.4 | 6.3 | 0.56 | 0.67 | 0.45 | 0.12 | 0.31 |
| 1992 | 13.4 | 7.0 | 7.3 | 3.9 | 6.8 | 0.66 | 0.90 | 0.45 | 0.06 | 0.32 |
| 1993 | 14.3 | 7.1 | 6.6 | 3.4 | 6.5 | 0.62 | 0.70 | 0.58 | 0.25 | 0.40 |
| 1994 | 15.6 | 6.9 | 7.6 | 3.6 | 6.6 | 0.51 | 0.53 | 0.57 | 0.08 | 0.21 |
| 1995 | 17.3 | 6.9 | 7.2 | 3.7 | 6.9 | 0.60 | 0.71 | 0.41 | 0.12 | 0.18 |
| 1996 | 15.7 | 7.2 | 8.0 | 3.8 | 7.2 | 0.26 | 0.40 | 0.25 | 0.12 | 0.11 |
| 1997 | 16.2 | 7.1 | 7.5 | 2.7 | 7.3 | 0.28 | 0.42 | 0.33 | 0.10 | 0.12 |
| 1998 | 14.2 | 6.8 | 7.8 | 3.8 | 6.9 | 0.27 | 0.53 | 0.32 | 0.10 | 0.13 |
| 1999 | 15.5 | 6.5 | 6.6 | 3.0 | 7.3 | 0.32 | 0.58 | 0.32 | 0.05 | 0.10 |
| 2000 | 15.6 | 6.8 | 6.9 | 3.2 | 7.6 | 0.39 | 0.55 | 0.28 | 0.10 | 0.10 |
| 2001 | 20.0 | 7.6 | 7.7 | a | 7.5 | 0.36 | 0.35 | 0.28 | a | 0.10 |

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Appendix A5.–Page 2 of 2.

| Year | Average weight (lb) | | | | | Average price (\$) | | | | |
|----------------------|---------------------|---------|------|------|------|--------------------|---------|------|------|------|
| | Chinook | Sockeye | Coho | Pink | Chum | Chinook | Sockeye | Coho | Pink | Chum |
| 2002 | 13.9 | 6.7 | 7.9 | a | 7.9 | 0.35 | 0.35 | 0.20 | a | 0.10 |
| 2003 | 13.6 | 7.3 | 6.9 | a | 8.0 | 0.35 | 0.44 | 0.10 | a | 0.21 |
| 2004 | 12.1 | 6.6 | 6.9 | a | 6.9 | 0.35 | 0.35 | 0.32 | a | 0.08 |
| 2005 | 14.5 | 6.7 | 7.4 | 3.7 | 6.7 | 0.59 | 0.55 | 0.27 | 0.05 | 0.05 |
| 2006 | 13.9 | 6.4 | 6.3 | 4.0 | 6.9 | 0.54 | 0.48 | 0.33 | 0.25 | 0.05 |
| 2007 | 14.1 | 6.6 | 7.2 | a | 6.8 | 0.59 | 0.53 | 0.38 | a | 0.05 |
| 2008 | 12.9 | 6.7 | 7.1 | 4.2 | 7.1 | 0.73 | 0.58 | 0.43 | 0.06 | 0.05 |
| 2009 | 13.1 | 6.5 | 7.6 | 3.5 | 6.9 | 0.71 | 0.56 | 0.35 | 0.00 | 0.15 |
| 2010 | 13.1 | 6.8 | 7.1 | 2.8 | 6.9 | 1.60 | 1.13 | 1.01 | 0.00 | 0.26 |
| 2011 | 12.5 | 6.5 | 7.1 | 4.0 | 6.4 | 0.85 | 0.86 | 0.75 | 0.00 | 0.68 |
| 2012 | 15.3 | 6.8 | 6.1 | 0.0 | 6.6 | 0.85 | 0.85 | 0.73 | 0.00 | 0.77 |
| 2013 | 17.1 | 6.4 | 7.6 | 0.0 | 6.8 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| 2014 | 10.5 | 5.7 | 7.0 | 4.3 | 6.6 | 1.00 | 1.25 | 0.96 | 0.00 | 0.60 |
| 2015 | 10.1 | 6.1 | 8.0 | 0.0 | 6.4 | 0.50 | 0.50 | 0.49 | 0.00 | 0.50 |
| Average 2005–2014 | 13.7 | 6.5 | 7.0 | 2.9 | 6.8 | 0.85 | 0.78 | 0.62 | 0.04 | 0.37 |

^a Information unavailable

^b Information on price per pound was not available for District 5.

^c Information was not available for District 4.

Appendix A6.–Commercial salmon harvest and exvessel value by District, Kuskokwim Management Area, 2015.

| | Chinook | Sockeye | Coho | Pink | Chum | Total |
|--|-----------|-----------|-----------|--------|-----------|-------------|
| Lower Kuskokwim River, District 1 | | | | | | |
| Fish | 2 | 130 | 65,034 | 0 | 507 | 65,673 |
| Pounds | 18 | 790 | 488,089 | 0 | 3,134 | 492,031 |
| Price | \$0.50 | \$0.50 | \$0.50 | \$0.00 | \$0.50 | |
| Value | \$9 | \$395 | \$244,045 | \$0 | \$1,567 | \$246,016 |
| Recent 10-yr average 2005–2014 | | | | | | |
| Fish | 2,606 | 12,450 | 116,656 | 3 | 57,917 | 189,631 |
| Value | \$23,306 | \$60,286 | \$432,530 | \$0 | \$131,719 | \$647,841 |
| Quinhagak, District 4 | | | | | | |
| Fish | 7,547 | 30,269 | 76,285 | 0 | 16,051 | 130,152 |
| Pounds | 75,368 | 180,445 | 641,955 | 0 | 101,673 | 999,441 |
| Price | \$0.50 | \$0.49 | \$0.49 | \$0.49 | \$0.49 | |
| Value | \$37,565 | \$89,262 | \$312,472 | \$0 | \$50,265 | \$489,564 |
| Recent 10-yr average 2005–2014 | | | | | | |
| Fish | 13,130 | 76,621 | 40,450 | 2 | 60,745 | 190,947 |
| Value | \$140,881 | \$362,724 | \$174,367 | \$0 | \$177,871 | \$855,844 |
| Goodnews Bay, District 5 | | | | | | |
| Fish | 705 | 25,861 | 7,030 | 0 | 4,510 | 38,106 |
| Pounds | 7,645 | 163,702 | 61,474 | 0 | 30,410 | 263,231 |
| Price | \$0.50 | \$0.50 | \$0.50 | \$0.50 | \$0.50 | |
| Value | \$3,823 | \$81,851 | \$30,737 | \$0 | \$15,205 | \$131,616 |
| Recent 10-yr average 2005–2014 | | | | | | |
| Fish | 1,692 | 31,865 | 18,833 | 0 | 13,003 | 65,393 |
| Value | \$18,473 | \$167,114 | \$109,572 | \$0 | \$40,816 | \$335,974 |
| Kuskokwim Area total | | | | | | |
| Fish | 8,254 | 56,260 | 148,349 | 0 | 21,068 | 233,931 |
| Pounds | 83,031 | 344,937 | 1,191,518 | 0 | 135,217 | 1,754,703 |
| Price | \$0.50 | \$0.50 | \$0.50 | \$0.50 | \$0.50 | |
| Value | \$41,397 | \$171,508 | \$587,254 | \$0 | \$67,037 | \$867,196 |
| Recent 10-yr average 2005–2014 | | | | | | |
| Fish | 17,428 | 120,936 | 175,932 | 5 | 131,665 | 445,965 |
| Value | \$182,660 | \$590,123 | \$716,468 | \$1 | \$350,407 | \$1,839,658 |

Appendix A7.–Emergency order summary Kuskokwim Management Area, 2015.

EO Number: 3-S-WR-01-15

Effective Date: June 4–July 25 2015

Yukon Delta NWR boundary near Aniak to Holitna River Mouth, fishing schedule is restricted to four consecutive Thursday to Sunday openings with 4.0 inch mesh size or less not to exceed 60 feet in length within 100 feet of the ordinary high water mark. Dip nets and fish wheels are allowed with Chinook salmon conservation requirements until further notice.

EO Number: 3-S-WR-02-15

Effective Date: June 4 2015 until further notice

Aniak River is closed to use of gillnets until further notice

EO Number: 3-S-WR-03-15

Effective Date: May 28, 2015 until further notice

Mouth of Kuskokwim River to northern boundary of District W-4, Marine waters closed to subsistence fishing.

EO Number: 3-S-WB-01-15

Effective Date: June 7–July 1 2015

Districts W-4 and W-5, Subsistence salmon fishing restricted to use of gillnets with 6.0 inch or less mesh size not to exceed 50 fathoms in length and 45 meshes deep.

EO Number: 3-S-WB-02-15

Effective Date: June 7, 2015 until further notice

Kanektok River and Goodnews River Drainages, Subsistence fishing with gillnets closed.

EO Number: 3-S-WR-04-15

Effective Date: June 11–July 25, 2015

Holitna River Mouth to the headwaters of the Kuskokwim River, fishing schedule is restricted to four consecutive Thursday to Sunday openings with 4.0 inch mesh size or less not to exceed 60 feet in length within 100 feet of the ordinary high water mark. Dip nets and fish wheels are allowed with Chinook conservation requirements until further notice. Hook and line subsistence fishing for Chinook salmon is closed.

EO Number: 3-S-WR-05-15

Effective Date: June 20, 2015; 2:00 PM–6:00 PM

Holitna River Mouth to the headwaters of the Kuskokwim River, Elder fishery opened with 6.0 inch or less mesh size gillnets and not to exceed 10 fathoms in length.

EO Number: 3-S-WR-06-15

Effective Date: June 27–June 27, 2015; 12:00 PM–6:00 PM

Yukon Delta NWR boundary near Aniak to the headwaters of the Kuskokwim River, Fishing opened with 6.0 inch or less mesh size gillnets not to exceed 10 fathoms in length.

EO Number: 3-S-WR-07-15

Effective Date: June 27–June 27, 2015; 12:01 AM–11:59 PM

Holitna River Mouth to the headwaters of the Kuskokwim River, Hook and line fishing for Chinook salmon opened with a 5 fish bag limit.

-continued-

EO Number: 3-S-WR-08-15

Effective Date: July 1–July 1, 2015; 12:00 PM–8:00 PM

Yukon Delta NWR boundary near Aniak to the headwaters of the Kuskokwim River, Fishing opened with 6.0 inch or less mesh size gillnets not to exceed 10 fathoms in length.

EO Number: 3-S-WR-09-15

Effective Date: July 1–July 1, 2015; 12:01 AM–11:59 PM

Holitna River Mouth to the headwaters of the Kuskokwim River, Hook and line fishing for Chinook salmon opened with a 5 fish bag limit.

EO Number: 3-S-WR-10-15

Effective Date: July 1, 2015 until further notice

Stony River drainage upstream of the Stink River, unrestricted salmon fishing allowed.

EO Number: 3-S-WR-11-15

Effective Date: July 2, 2015 until further notice

Yukon Delta NWR boundary at the mouth of the Kuskokwim River to the Yukon Delta NWR boundary near Aniak, fishing with gillnets and hook and line closed. Dip nets and fish wheels are allowed with Chinook salmon conservation requirements until further notice. The Kwethluk, Kasigluk, Kisaralik, Tuluksak, and Aniak rivers are closed to fishing with gillnets.

EO Number: 3-S-WB-03-15

Effective Date: July 3–September 7, 2015

Districts W-4 and W-5, The commercial salmon fishing is open.

EO Number: 3-S-WB-04-15

Effective Date: July 3–July 3, 2015; 9:00 AM–9:00 PM

Districts W-4 and W-5, Commercial salmon fishing is open for 12 hours. This emergency order also reduces the open waters of District 4 for the conservation of king salmon. Under this emergency order the open waters of District 4 are all waters within District 4 except those south of a line at lat 59°45.266'N, north of a line at lat 59°44.7036'N, and east of a line at long 161°57.616'W. This creates a closed waters box around the mouth of the Kanektok River. This emergency order also reduces the open waters of District 5 for the conservation of king salmon. Under this emergency order the open waters of District 5 are from the western boundary of District 5 east to a line from approximately Big Beluga to Little Beluga, marked by buoys.

EO Number: 3-S-WR-12-15

Effective Date: July 4–July 4, 2015; 8:00 AM–8:00 PM

Kuskokwim drainage, Fishing opened with 6.0 inch or less mesh size gillnets not to exceed 50 fathoms in length in Section 1 and not to exceed 25 fathoms in length in Sections 2, 3, and 4.

EO Number: 3-S-WR-13-15

Effective Date: July 4, 2015 until further notice

Holitna River Mouth to the headwaters of the Kuskokwim River, Hook and line fishing for Chinook salmon opened with a 3 fish per a day, 6 fish in possession bag limit.

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EO Number: 3-S-WR-14-15

Effective Date: July 8–July 8, 2015; 9:00 AM–9:00 PM

Kuskokwim drainage, Fishing opened in Sections 1, 3, and 4 for 12 hours with 6.0 inch or less mesh size gillnets not to exceed 50 fathoms in length. Fishing opened in Section 2 for 4 hours with 6.0 inch or less mesh size gillnets not to exceed 50 fathoms in length.

EO Number: 3-S-WR-15-15

Effective Date: July 8, 2015 until further notice

Stony River drainage, subsistence fishing unrestricted.

EO Number: 3-S-WR-16-15

Effective Date: July 8, 2015 until further notice

Holitna River Mouth to the headwaters of the Kuskokwim River (excluding the Holitna, Stony, and Swift rivers), fishing allowed with 6.0 inch or less mesh size not to exceed 50 fathoms in length. Dip nets are no longer legal subsistence gear and live release requirements for fish wheels are rescinded.

EO Number: 3-S-WB-05-15

Effective Date: July 10–July 10, 2015; 9:00 AM–9:00 PM

Districts W-4 and W-5, Commercial salmon fishing is open for 12 hours. This emergency order also reduces the open waters of District 4 for the conservation of king salmon. Under this emergency order the open waters of District 4 are all waters within District 4 except those south of a line at lat 59°45.266'N, north of a line at lat 59°44.7036'N, and east of a line at long 161°57.616'W. This creates a closed waters box around the mouth of the Kanektok River. This emergency order also reduces the open waters of District 5 for the conservation of king salmon. Under this emergency order the open waters of District 5 are from the western boundary of District 5 east to a line from approximately Big Beluga to Little Beluga, marked by buoys.

EO Number: 3-S-WR-17-15

Effective Date: July 11–July 11, 2015; 9:00 AM–9:00 PM

Kuskokwim drainage, Fishing opened in Sections 1, 3, and 4 for 12 hours with 6.0 inch or less mesh size gillnets not to exceed 50 fathoms in length. Fishing opened in Section 2 for 4 hours with 6.0 inch or less mesh size gillnets not to exceed 50 fathoms in length.

EO Number: 3-S-WR-18-15

Effective Date: July 11–July 11, 2015; 9:00 AM–9:00 PM

Waters closed to fishing from Yukon Delta NWR boundary near Aniak to a line between two points at lat 61°35.076'N, long 159°32.527'W and lat 61°35.263'N, long 159°32.088'W.

EO Number: 3-S-WR-19-15

Effective Date: July 11–July 11, 2015; 9:00 AM–9:00 PM

Yukon Delta NWR boundary near Aniak to the mouth of the Holitna River, Dip nets are removed as legal subsistence fishing gear.

EO Number: 3-S-WR-20-15

Effective Date: July 13–July 15, 2015; 9:00 AM–9:00 PM

Kuskokwim drainage, Fishing opened in Sections 1, 3, and 4 for 12 hours with 6.0 inch or less mesh size gillnets not to exceed 50 fathoms in length. Fishing opened in Section 2 for 6 hours with 6.0 inch or less mesh size gillnets not to exceed 50 fathoms in length.

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EO Number: 3-S-WR-21-15

Effective Date: July 13–July 15, 2015; 9:00 AM–9:00 PM

Waters closed to fishing from Yukon Delta NWR boundary near Aniak to a line between 2 points at lat 61°35.076'N, long 159°32.527'W and lat 61°35.263'N, long 159°32.088'W.

EO Number: 3-S-WR-22-15

Effective Date: July 13–July 13, 2015; 9:00 AM–12:00 PM

Coastal Marine waters, Unrestricted fishing opportunity.

EO Number: 3-S-WB-06-15

Effective Date: July 13–July 13, 2015; 3:00 PM–9:00 PM

District W-5, Commercial salmon fishing is open for 6 hours. This emergency order also reduces the open waters of District 5 for the conservation of king salmon. Under this emergency order the open waters of District 5 are from the western boundary of District 5 east to a line from approximately Big Beluga to Little Beluga, marked by buoys.

EO Number: 3-S-WR-23-15

Effective Date: July 15, 2015 until further notice

Yukon Delta NWR boundary at the mouth of the Kuskokwim River to the Holitna River, Fishing allowed with 6.0 inch or less mesh gillnets not to exceed 50 fathoms in length.

EO Number: 3-S-WR-24-15

Effective Date: July 15, 2015 until further notice

Yukon Delta NWR boundary near Aniak to the mouth of the Holitna River, Chinook conservation requirements for fish wheels are rescinded.

EO Number: 3-S-WR-25-15

Effective Date: July 15, 2015 until further notice

Waters closed to fishing from Yukon Delta NWR boundary near Aniak to a line between two points at lat 61°35.076'N, long 159°32.527'W and lat 61°35.263'N, long 159°32.088'W.

EO Number: 3-S-WB-07-15

Effective Date: July 15–July 15, 2015; 9:00 AM–9:00 PM

Districts W-4 and W-5, Commercial salmon fishing is open for 12 hours. This emergency order also reduces the open waters of District 5 for the conservation of king salmon. Under this emergency order the open waters of District 5 are from the western boundary of District 5 east to a line from approximately Big Beluga to Little Beluga, marked by buoys.

EO Number: 3-S-WB-08-15

Effective Date: July 17–July 18, 2015; 9:00 AM–9:00 PM

Districts W-4 and W-5, Commercial salmon fishing is open for 12 hours in district W-4. Commercial salmon fishing open to two 12 hour periods in district W-5. This emergency order also reduces the open waters of District 5 for the conservation of king salmon. Under this emergency order the open waters of District 5 are from the western boundary of District 5 east to a line from approximately Big Beluga to Little Beluga, marked by buoys.

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EO Number: 3-S-WB-09-15

Effective Date: July 20–July 20, 2015; 9:00 AM–9:00 PM

Districts W-4 and W-5, Commercial fishing open for 12 hours.

EO Number: 3-S-WB-10-15

Effective Date: July 22–July 22, 2015; 9:00 AM–9:00 PM

Districts W-4 and W-5, Commercial fishing open for 12 hours.

EO Number: 3-S-WB-11-15

Effective Date: July 24–July 24, 2015; 9:00 AM–9:00 PM

Districts W-4 and W-5, Commercial fishing open for 12 hours.

EO Number: 3-S-WB-12-15

Effective Date: July 27–July 27, 2015; 9:00 AM–9:00 PM

Districts W-4 and W-5, Commercial fishing open for 12 hours.

EO Number: 3-S-WR-26-15

Effective Date: August 4, 2015 until further notice

Yukon Delta NWR boundary near Aniak to the headwaters of the Kuskokwim River, Subsistence fishing restrictions are rescinded.

EO Number: 3-S-WB-13-15

Effective Date: August 5–August 5, 2015; 9:00 AM–9:00 PM

District W-4, Commercial fishing open for 12 hours.

EO Number: 3-S-WB-14-15

Effective Date: August 7–August 7, 2015; 9:00 AM–9:00 PM

Districts W-4 and W-5, Commercial fishing open for 12 hours.

EO Number: 3-S-WR-27-15

Effective Date: August 10–August 10, 2015; 10:00 AM–6:00 PM

Commercial Subdistrict 1-B, Lower section of Subdistrict 1-B opened to commercial fishing for 8 hours, Upper section of Subdistrict of 1-B opened to commercial fishing for 6 hours.

EO Number: 3-S-WB-15-15

Effective Date: August 10–August 10, 2015; 9:00 AM–9:00 PM

Districts W-4 and W-5, Commercial fishing open for 12 hours.

EO Number: 3-S-WB-16-15

Effective Date: August 12–August 12, 2015; 9:00 AM–9:00 PM

District W-4, Commercial fishing open for 12 hours.

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EO Number: 3-S-WB-17-15

Effective Date: August 14–August 14, 2015; 9:00 AM–9:00 PM

Districts W-4 and W-5, Commercial fishing open for 12 hours.

EO Number: 3-S-WR-28-15

Effective Date: August 17–August 17, 2015; 10:00 AM–6:00 PM

Commercial Subdistrict 1-B, Lower section of Subdistrict 1-B opened to commercial fishing for 8 hours, Upper section of Subdistrict of 1-B opened to commercial fishing for 6 hours.

EO Number: 3-S-WB-18-15

Effective Date: August 17–August 17, 2015; 9:00 AM–9:00 PM

District W-4, Commercial fishing open for 12 hours.

EO Number: 3-S-WB-19-15

Effective Date: August 19–August 19, 2015; 9:00 AM–9:00 PM

District W-4, Commercial fishing open for 12 hours.

EO Number: 3-S-WR-29-15

Effective Date: August 21–August 21, 2015; 10:00 AM–6:00 PM

Commercial Subdistrict 1-B, Lower section of Subdistrict 1-B opened to commercial fishing for 8 hours, Upper section of Subdistrict of 1-B opened to commercial fishing for 6 hours.

EO Number: 3-S-WB-20-15

Effective Date: August 21–August 21, 2015; 9:00 AM–9:00 PM

District W-4, Commercial fishing open for 12 hours.

EO Number: 3-S-WB-21-15

Effective Date: August 24–August 24, 2015; 9:00 AM–9:00 PM

District W-4, Commercial fishing open for 12 hours.

Appendix A8.—Subsistence Chinook salmon harvest estimates by community, Kuskokwim Management Area, 1990–2015.

| Community | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 |
|------------------------|---------|--------|--------|--------|---------|---------|--------|--------|--------|--------|
| Kongiganak | 1,559 | 729 | 929 | 680 | 1,281 | 1,095 | 1,108 | 1,376 | 1,128 | 1,153 |
| N. Kuskokwim Bay | 1,559 | 729 | 929 | 680 | 1,281 | 1,095 | 1,108 | 1,376 | 1,128 | 1,153 |
| Tuntutuliak | 4,174 | 4,156 | 3,750 | 3,905 | 5,019 | 3,928 | 4,256 | 3,159 | 3,797 | 3,412 |
| Eek | 4,923 | 2,617 | 2,057 | 2,496 | 2,976 | 3,679 | 2,786 | 2,009 | 2,215 | 1,730 |
| Kasigluk | 3,300 | 2,875 | 3,150 | 3,609 | 3,351 | 3,208 | 3,294 | 3,480 | 2,617 | 5,473 |
| Nunapitchuk | 4,192 | 4,004 | 4,123 | 3,852 | 4,580 | 4,543 | 3,479 | 3,605 | 4,502 | 4,215 |
| Atmautluak | 2,895 | 1,661 | 1,239 | 1,715 | 1,856 | 2,016 | 1,752 | 1,648 | 1,397 | 1,372 |
| Napakiak | 4,427 | 2,573 | 4,147 | 3,822 | 3,355 | 3,515 | 3,842 | 2,908 | 3,436 | 2,265 |
| Napaskiak | 6,586 | 4,008 | 5,299 | 5,566 | 6,521 | 4,862 | 5,261 | 4,756 | 4,901 | 3,633 |
| Oscarville | 1,263 | 1,476 | 1,501 | 1,496 | 1,390 | 1,046 | 995 | 1,056 | 754 | 1,543 |
| Bethel | 34,925 | 18,041 | 22,220 | 19,800 | 31,251 | 32,463 | 32,116 | 20,100 | 24,877 | 22,751 |
| Kwethluk | 10,657 | 7,298 | 6,949 | 9,280 | 9,546 | 9,907 | 9,786 | 6,319 | 7,502 | 6,366 |
| Akiachak | 8,395 | 5,607 | 8,130 | 7,678 | 7,622 | 6,410 | 5,689 | 6,699 | 6,026 | 5,210 |
| Akiak | 5,966 | 3,168 | 3,452 | 4,478 | 4,653 | 4,401 | 4,851 | 3,196 | 2,943 | 2,377 |
| Tuluksak | 2,022 | 3,114 | 2,330 | 3,662 | 4,414 | 4,175 | 3,309 | 5,456 | 3,554 | 2,239 |
| Lower Kuskokwim River | 93,725 | 60,598 | 68,347 | 71,359 | 86,534 | 84,153 | 81,416 | 64,391 | 68,521 | 62,586 |
| Lower Kalskag | 2,946 | 4,022 | 2,338 | 3,603 | 4,087 | 4,541 | 3,513 | 3,103 | 1,954 | 1,726 |
| Upper Kalskag | 1,618 | 1,031 | 1,321 | 1,682 | 1,297 | 1,447 | 1,304 | 941 | 1,394 | 1,670 |
| Aniak | 3,589 | 3,562 | 3,976 | 4,651 | 3,714 | 3,506 | 3,343 | 3,640 | 3,466 | 2,603 |
| Chuathbaluk | 1,718 | 998 | 986 | 1,443 | 1,013 | 2,461 | 914 | 1,204 | 730 | 1,035 |
| Middle Kuskokwim River | 9,871 | 9,613 | 8,621 | 11,379 | 10,111 | 11,955 | 9,074 | 8,888 | 7,544 | 7,034 |
| Crooked Creek | 971 | 916 | 583 | 707 | 1,126 | 874 | 890 | 963 | 768 | 702 |
| Red Devil | 297 | 154 | 400 | 449 | 409 | 412 | 359 | 404 | 243 | 141 |
| Sleetmute | 777 | 887 | 782 | 1,795 | 1,295 | 964 | 1,265 | 1,171 | 978 | 414 |
| Stony River | 574 | 614 | 247 | 445 | 391 | 534 | 596 | 874 | 293 | 46 |
| Lime Village | 399 | 70 | 162 | 40 | 195 | 180 | 141 | 57 | 241 | 145 |
| McGrath | 896 | 902 | 1,586 | 550 | 1,026 | 804 | 1,223 | 995 | 872 | 1,033 |
| Takotna | 74 | 0 | 6 | 0 | 0 | 11 | 7 | 3 | 2 | 0 |
| Nikolai | 635 | 337 | 818 | 426 | 449 | 938 | 398 | 212 | 380 | 284 |
| Telida | – | – | – | – | – | – | – | – | – | – |
| Upper Kuskokwim River | 4,623 | 3,880 | 4,584 | 4,412 | 4,891 | 4,717 | 4,879 | 4,679 | 3,777 | 2,765 |
| Kuskokwim River total | 109,778 | 74,820 | 82,481 | 87,830 | 102,817 | 101,921 | 96,477 | 79,334 | 80,969 | 73,538 |
| Quinhagak | 3,881 | 3,753 | 4,394 | 3,634 | 3,977 | 2,864 | 3,506 | 3,186 | 3,774 | 2,815 |
| Goodnews Bay | 358 | 852 | 548 | 590 | 672 | 789 | 392 | 441 | 735 | 759 |
| Platinum | 202 | 20 | 67 | 75 | 74 | 24 | 41 | 14 | 57 | 69 |
| South Kuskokwim Bay | 4,441 | 4,625 | 5,009 | 4,299 | 4,723 | 3,677 | 3,939 | 3,641 | 4,566 | 3,643 |
| Total estimate | 109,778 | 74,820 | 82,481 | 87,830 | 102,817 | 101,921 | 96,477 | 79,334 | 80,969 | 73,538 |

-continued-

Appendix A8.–Page 2 of 3.

| Community | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|------------------------|--------|--------|--------|--------|---------|--------|--------|---------|--------|--------|
| Kongiganak | 1,285 | 1,612 | 1,349 | 2,003 | 2,663 | 1,536 | 1,729 | 1,865 | 2,233 | 1,243 |
| N. Kuskokwim Bay | 1,285 | 1,612 | 1,349 | 2,003 | 2,663 | 1,536 | 1,729 | 1,865 | 2,233 | 1,243 |
| Tuntutuliak | 2,826 | 2,958 | 3,907 | 2,657 | 3,912 | 4,545 | 4,469 | 4,614 | 4,266 | 3,067 |
| Eek | 2,140 | 2,035 | 2,514 | 2,075 | 2,954 | 3,133 | 2,501 | 2,512 | 2,966 | 1,982 |
| Kasigluk | 3,857 | 5,054 | 4,685 | 4,711 | 7,859 | 5,242 | 4,905 | 5,167 | 2,471 | 2,464 |
| Nunapitchuk | 3,425 | 3,328 | 4,503 | 3,179 | 4,921 | 4,103 | 4,121 | 4,661 | 4,234 | 3,468 |
| Atmautluak | 1,191 | 754 | 1,479 | 547 | 2,153 | 1,927 | 1,758 | 1,890 | 1,298 | 1,567 |
| Napakiak | 2,073 | 2,408 | 2,702 | 2,438 | 2,839 | 3,060 | 5,125 | 3,245 | 1,903 | 2,387 |
| Napaskiak | 4,175 | 4,596 | 3,922 | 3,390 | 4,058 | 4,485 | 5,877 | 6,392 | 4,555 | 5,372 |
| Oscarville | 1,259 | 1,779 | 1,115 | 1,153 | 1,325 | 1,069 | 1,052 | 1,360 | 1,351 | 754 |
| Bethel | 20,629 | 24,684 | 22,892 | 24,584 | 29,443 | 28,293 | 27,805 | 30,422 | 27,800 | 26,170 |
| Kwethluk | 5,174 | 6,460 | 6,880 | 4,206 | 7,157 | 6,089 | 7,258 | 6,466 | 8,451 | 7,130 |
| Akiachak | 6,311 | 6,978 | 6,946 | 2,493 | 7,131 | 5,411 | 5,561 | 7,621 | 9,719 | 7,361 |
| Akiak | 2,335 | 3,528 | 3,390 | 3,905 | 3,775 | 3,860 | 4,423 | 4,297 | 4,090 | 3,247 |
| Tuluksak | 2,464 | 2,520 | 2,860 | 3,286 | 3,766 | 2,655 | 2,372 | 3,266 | 2,937 | 3,212 |
| Lower Kuskokwim River | 57,859 | 67,082 | 67,795 | 58,624 | 81,293 | 73,872 | 77,228 | 81,914 | 76,040 | 68,181 |
| Lower Kalskag | 1,691 | 2,432 | 1,535 | 1,556 | 1,991 | 1,417 | 3,494 | 1,937 | 1,748 | 2,525 |
| Upper Kalskag | 1,234 | 1,149 | 1,545 | 1,328 | 2,498 | 2,533 | 1,569 | 1,383 | 2,435 | 1,696 |
| Aniak | 3,100 | 2,684 | 4,576 | 1,837 | 3,022 | 1,977 | 2,412 | 3,417 | 3,100 | 2,130 |
| Chuathbaluk | 281 | 700 | 505 | 405 | 1,460 | 913 | 887 | 973 | 772 | 877 |
| Middle Kuskokwim River | 6,306 | 6,965 | 8,161 | 5,126 | 8,971 | 6,840 | 8,362 | 7,710 | 8,055 | 7,228 |
| Crooked Creek | 592 | 689 | 859 | 582 | 946 | 948 | 736 | 647 | 488 | 608 |
| Red Devil | 95 | 174 | 293 | 31 | 156 | 181 | 232 | 301 | 148 | 258 |
| Sleetmute | 412 | 505 | 604 | 600 | 906 | 522 | 750 | 861 | 933 | 693 |
| Stony River | 178 | 167 | 415 | 118 | 688 | 311 | 288 | 530 | 514 | 704 |
| Lime Village | 69 | 251 | 178 | 34 | 69 | 171 | 103 | 95 | 29 | 75 |
| McGrath | 656 | 444 | 970 | 395 | 587 | 910 | 689 | 495 | 288 | 600 |
| Takotna | 0 | 5 | 10 | 0 | 16 | 8 | 0 | 10 | 0 | 8 |
| Nikolai | 144 | 280 | 535 | 224 | 493 | 564 | 696 | 471 | 184 | 298 |
| Telida | – | – | – | – | – | – | – | – | – | – |
| Upper Kuskokwim River | 2,146 | 2,515 | 3,864 | 1,984 | 3,861 | 3,615 | 3,494 | 3,409 | 2,584 | 3,244 |
| Kuskokwim River total | 67,596 | 78,174 | 81,169 | 67,737 | 96,788 | 85,863 | 90,812 | 94,898 | 88,912 | 79,896 |
| Quinhagak | 3,053 | 3,177 | 2,649 | 2,563 | 4,563 | 3,505 | 5,163 | 4,686 | 3,125 | 3,312 |
| Goodnews Bay | 564 | 863 | 723 | 807 | 863 | 869 | 713 | 647 | 898 | 569 |
| Platinum | 99 | 57 | 154 | 45 | 122 | 74 | 45 | 66 | 42 | 61 |
| South Kuskokwim Bay | 3,716 | 4,097 | 3,526 | 3,415 | 5,548 | 4,448 | 5,921 | 5,399 | 4,065 | 3,942 |
| Total estimate | 71,312 | 82,271 | 84,695 | 71,152 | 102,336 | 90,311 | 96,733 | 100,297 | 92,977 | 83,838 |

-continued-

Appendix A8.–Page 3 of 3.

| Community | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|------------------------|--------|------------|--------------|------------|------------|--------|
| Kongiganak | 1,456 | 1,208 | 287 | <i>641</i> | <i>964</i> | – |
| N. Kuskokwim Bay | 1,456 | 1,208 | 287 | 641 | 964 | – |
| Tuntutuliak | 3,261 | 3,032 | 1,123 | 2,448 | <i>574</i> | 1,668 |
| Eek | 1,761 | 1,378 | 1,004 | 1,188 | 665 | 850 |
| Kasigluk | 3,014 | 2,823 | 552 | 2,919 | 205 | 438 |
| Nunapitchuk | 2,548 | 3,559 | 845 | 2,563 | 287 | 1,051 |
| Atmautluak | 1,088 | 1,236 | 234 | 1,592 | 108 | 514 |
| Napakiak | 1,674 | 1,963 | 457 | 1,588 | 311 | 917 |
| Napaskiak | 4,333 | 3,360 | 1,108 | 2,939 | 422 | 816 |
| Oscarville | 618 | 694 | 51 | 585 | 68 | 120 |
| Bethel | 26,157 | 25,093 | 7,321 | 17,246 | 3,089 | 4,918 |
| Kwethluk | 4,440 | 2,467 | 1,709 | 3,192 | 959 | 900 |
| Akiachak | 4,470 | 3,852 | 2,862 | 3,585 | 1,033 | 1,103 |
| Akiak | 3,625 | 2,455 | <i>1,218</i> | 1,449 | 530 | 610 |
| Tuluksak | 2,057 | 1,230 | 651 | 732 | 404 | 231 |
| Lower Kuskokwim River | 59,046 | 53,142 | 19,135 | 42,026 | 8,655 | 14,136 |
| Lower Kalskag | 1,030 | 1260 | 459 | 744 | 283 | 351 |
| Upper Kalskag | 1,496 | 1772 | 562 | 1,317 | 258 | 334 |
| Aniak | 2,262 | 2214 | 993 | 1,440 | 344 | 542 |
| Chuathbaluk | 551 | 409 | 103 | 155 | 90 | 90 |
| Middle Kuskokwim River | 5,339 | 5,655 | 2,117 | 3,656 | 975 | 1,317 |
| Crooked Creek | 240 | 402 | 124 | <i>145</i> | 35 | 78 |
| Red Devil | 33 | 186 | 225 | 77 | 83 | 52 |
| Sleetmute | 272 | 242 | 132 | 96 | 58 | 137 |
| Stony River | 189 | 134 | <i>151</i> | 51 | 24 | 25 |
| Lime Village | 47 | <i>118</i> | 29 | <i>43</i> | 32 | – |
| McGrath | 262 | 829 | 68 | 95 | 173 | 75 |
| Takotna | 0 | 0 | 0 | 0 | 0 | 3 |
| Nikolai | 402 | 450 | 276 | 283 | 235 | 301 |
| Telida | – | – | – | – | – | – |
| Upper Kuskokwim River | 1,445 | 2,361 | 1,005 | 790 | 640 | 671 |
| Kuskokwim River total | 67,286 | 62,366 | 22,544 | 47,113 | 11,234 | 16,124 |
| Quinhagak | 2,793 | 2,588 | 2,396 | 3,143 | 3,723 | 3,082 |
| Goodnews Bay | 480 | 834 | 389 | 413 | 431 | 220 |
| Platinum | 17 | 62 | 24 | 39 | 46 | 11 |
| South Kuskokwim Bay | 3,290 | 3,484 | 2,809 | 3,595 | 4,200 | 3,313 |
| Total estimate | 70,576 | 65,850 | 25,353 | 50,708 | 15,434 | 19,437 |

Note: Dashes indicate that harvest was not estimated and italic indicates Bayesian estimates.

Appendix A9.—Subsistence sockeye salmon harvest estimates by community, Kuskokwim Management Area, 1990–2015.

| Community | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 |
|------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Kongiganak | 552 | 498 | 923 | 583 | 743 | 658 | 951 | 976 | 878 | 908 |
| N. Kuskokwim Bay | 552 | 498 | 923 | 583 | 743 | 658 | 951 | 976 | 878 | 908 |
| Tuntutuliak | 2,132 | 1,768 | 1,846 | 1,063 | 3,289 | 1,082 | 1,561 | 1,724 | 1,227 | 2,070 |
| Eek | 1,293 | 479 | 669 | 363 | 452 | 308 | 526 | 503 | 375 | 595 |
| Kasigluk | 843 | 1,376 | 1,690 | 1,608 | 976 | 1,179 | 1,127 | 1,315 | 1,012 | 3,287 |
| Nunapitchuk | 1,520 | 2,193 | 2,329 | 2,743 | 1,633 | 870 | 1,877 | 2,082 | 2,029 | 3,258 |
| Atmautluak | 1,696 | 830 | 1,193 | 1,313 | 837 | 1,173 | 1,408 | 681 | 982 | 1,743 |
| Napakiak | 1,548 | 1,187 | 1,663 | 1,217 | 1,533 | 887 | 1,106 | 1,526 | 1,487 | 2,018 |
| Napaskiak | 1,660 | 2,850 | 3,116 | 3,508 | 1,933 | 1,573 | 3,180 | 2,209 | 1,457 | 1,929 |
| Oscarville | 287 | 726 | 938 | 957 | 398 | 301 | 208 | 442 | 249 | 1,724 |
| Bethel | 11,787 | 11,428 | 9,225 | 9,501 | 11,370 | 8,802 | 10,556 | 10,233 | 8,464 | 12,094 |
| Kwethluk | 4,271 | 3,746 | 1,958 | 3,802 | 3,864 | 2,536 | 3,963 | 3,288 | 3,785 | 3,485 |
| Akiachak | 3,461 | 4,029 | 3,970 | 4,990 | 3,241 | 1,942 | 2,767 | 2,737 | 2,395 | 3,066 |
| Akiak | 1,873 | 1,696 | 1,769 | 3,537 | 1,740 | 809 | 1,544 | 1,327 | 1,640 | 1,151 |
| Tuluksak | 1,225 | 3,427 | 2,063 | 2,452 | 1,390 | 1,270 | 1,108 | 1,514 | 1,413 | 1,412 |
| Lower Kuskokwim River | 33,596 | 35,735 | 32,428 | 37,054 | 32,656 | 22,732 | 30,931 | 29,581 | 26,515 | 37,832 |
| Lower Kalskag | 1,007 | 1,080 | 503 | 2,286 | 989 | 679 | 1,387 | 1,277 | 546 | 583 |
| Upper Kalskag | 284 | 314 | 354 | 346 | 288 | 82 | 284 | 216 | 238 | 586 |
| Aniak | 1,539 | 2,073 | 1,213 | 1,609 | 751 | 955 | 1,295 | 1,078 | 1,132 | 1,302 |
| Chuathbaluk | 1,157 | 1,471 | 497 | 822 | 924 | 465 | 687 | 796 | 223 | 441 |
| Middle Kuskokwim River | 3,987 | 4,938 | 2,567 | 5,063 | 2,952 | 2,181 | 3,653 | 3,367 | 2,139 | 2,912 |
| Crooked Creek | 1,607 | 968 | 738 | 752 | 558 | 177 | 311 | 350 | 717 | 710 |
| Red Devil | 455 | 391 | 355 | 662 | 336 | 576 | 914 | 637 | 692 | 497 |
| Sleetmute | 1,153 | 1,347 | 794 | 1,643 | 1,120 | 1,109 | 1,341 | 1,458 | 1,282 | 879 |
| Stony River | 933 | 1,966 | 1,389 | 1,485 | 758 | 1,281 | 1,267 | 1,626 | 1,023 | 1,018 |
| Lime Village | 2,125 | 1,110 | 1,304 | 2,743 | 1,733 | 857 | 1,225 | 642 | 2,782 | 2,619 |
| McGrath | 1,489 | 416 | 2,494 | 1,465 | 1,501 | 1,652 | 111 | 52 | 146 | 0 |
| Takotna | 0 | 0 | 1 | 0 | 0 | 2 | 1 | 1 | 0 | 0 |
| Nikolai | 0 | 1 | 0 | 5 | 25 | 65 | 23 | 0 | 16 | 43 |
| Telida | – | – | – | – | – | – | – | – | – | – |
| Upper Kuskokwim River | 7,762 | 6,199 | 7,075 | 8,755 | 6,031 | 5,719 | 5,193 | 4,766 | 6,658 | 5,766 |
| Kuskokwim River total | 45,897 | 47,370 | 42,993 | 51,455 | 42,382 | 31,290 | 40,728 | 38,690 | 36,190 | 47,418 |
| Quinhagak | 1,710 | 1,818 | 1,448 | 1,228 | 962 | 597 | 499 | 460 | 1,368 | 1,433 |
| Goodnews Bay | 982 | 1,061 | 1,293 | 733 | 646 | 202 | 387 | 480 | 499 | 715 |
| Platinum | 163 | 134 | 238 | 48 | 90 | 32 | 56 | 143 | 80 | 106 |
| South Kuskokwim Bay | 2,855 | 3,013 | 2,979 | 2,009 | 1,698 | 831 | 942 | 1,083 | 1,947 | 2,254 |
| Total estimate | 48,752 | 50,383 | 45,972 | 53,464 | 44,080 | 32,121 | 41,669 | 39,773 | 38,137 | 49,672 |

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Appendix A9.–Page 2 of 3.

| Community | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Kongiganak | 1,770 | 1,546 | 1,347 | 929 | 1,809 | 1,103 | 1,464 | 960 | 1,502 | 1,018 |
| N. Kuskokwim Bay | 1,770 | 1,546 | 1,347 | 929 | 1,809 | 1,103 | 1,464 | 960 | 1,502 | 1,018 |
| Tuntutuliak | 1,180 | 1,702 | 1,045 | 1,148 | 1,620 | 2,145 | 1,834 | 1,763 | 2,120 | 932 |
| Eek | 883 | 1,085 | 759 | 586 | 567 | 1,033 | 684 | 558 | 834 | 1,019 |
| Kasigluk | 3,805 | 3,213 | 2,111 | 2,429 | 1,668 | 1,634 | 2,248 | 1,786 | 1,041 | 1,215 |
| Nunapitchuk | 2,194 | 2,529 | 1,500 | 1,714 | 1,659 | 1,821 | 1,871 | 2,147 | 2,549 | 1,538 |
| Atmautluak | 1,540 | 988 | 1,150 | 679 | 1,103 | 1,444 | 1,012 | 1,041 | 1,250 | 624 |
| Napakiak | 1,916 | 1,917 | 1,688 | 1,453 | 1,351 | 2,122 | 1,845 | 1,962 | 1,244 | 917 |
| Napaskiak | 2,525 | 3,377 | 1,296 | 1,643 | 1,148 | 1,344 | 1,784 | 1,738 | 2,620 | 1,579 |
| Oscarville | 1,115 | 1,451 | 400 | 806 | 436 | 278 | 778 | 712 | 677 | 332 |
| Bethel | 11,613 | 14,264 | 8,850 | 12,198 | 11,679 | 14,297 | 12,816 | 13,902 | 15,247 | 11,272 |
| Kwethluk | 3,859 | 4,191 | 2,100 | 1,903 | 3,302 | 2,457 | 2,770 | 3,536 | 4,920 | 2,432 |
| Akiachak | 3,687 | 4,680 | 2,507 | 1,607 | 3,109 | 2,372 | 2,661 | 3,269 | 4,354 | 2,407 |
| Akiak | 1,036 | 2,005 | 1,214 | 995 | 1,258 | 1,920 | 2,000 | 3,695 | 2,881 | 1,290 |
| Tuluksak | 2,201 | 1,862 | 1,205 | 875 | 1,670 | 987 | 2,247 | 1,845 | 2,133 | 1,691 |
| Lower Kuskokwim River | 37,554 | 43,264 | 25,825 | 28,036 | 30,570 | 33,854 | 34,550 | 37,955 | 41,869 | 27,248 |
| Lower Kalskag | 824 | 918 | 347 | 515 | 775 | 439 | 1,434 | 780 | 1,583 | 1,044 |
| Upper Kalskag | 588 | 319 | 508 | 431 | 686 | 945 | 563 | 417 | 1,000 | 369 |
| Aniak | 1,136 | 2,167 | 1,059 | 756 | 996 | 1,015 | 692 | 1,261 | 1,585 | 923 |
| Chuathbaluk | 476 | 614 | 313 | 274 | 526 | 369 | 508 | 484 | 363 | 564 |
| Middle Kuskokwim River | 3,024 | 4,018 | 2,227 | 1,976 | 2,983 | 2,768 | 3,197 | 2,942 | 4,531 | 2,900 |
| Crooked Creek | 514 | 640 | 449 | 571 | 732 | 693 | 544 | 523 | 220 | 329 |
| Red Devil | 109 | 360 | 109 | 309 | 88 | 272 | 510 | 318 | 359 | 477 |
| Sleetmute | 725 | 1,008 | 706 | 504 | 980 | 673 | 1,181 | 1,303 | 1,164 | 684 |
| Stony River | 654 | 163 | 602 | 158 | 896 | 688 | 746 | 1,019 | 1,476 | 977 |
| Lime Village | 1,409 | 1,453 | 1,186 | 374 | 874 | 1,368 | 1,216 | 1,406 | 659 | 1,080 |
| McGrath | 43 | 273 | 407 | 112 | 194 | 454 | 149 | 375 | 417 | 965 |
| Takotna | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 3 | 3 |
| Nikolai | 0 | 0 | 22 | 2 | 1 | 10 | 20 | 14 | 13 | 66 |
| Telida | – | – | – | – | – | – | – | – | – | – |
| Upper Kuskokwim River | 3,454 | 3,897 | 3,481 | 2,031 | 3,765 | 4,160 | 4,365 | 4,960 | 4,310 | 4,581 |
| Kuskokwim River total | 45,802 | 52,725 | 32,880 | 32,973 | 39,127 | 41,885 | 43,577 | 46,817 | 52,213 | 35,747 |
| Quinhagak | 1,368 | 1,054 | 909 | 805 | 1,375 | 1,745 | 3,128 | 1,755 | 2,097 | 1,960 |
| Goodnews Bay | 951 | 908 | 855 | 705 | 873 | 1,213 | 995 | 920 | 1,739 | 902 |
| Platinum | 188 | 83 | 257 | 64 | 183 | 90 | 63 | 121 | 156 | 186 |
| South Kuskokwim Bay | 2,507 | 2,045 | 2,021 | 1,574 | 2,431 | 3,048 | 4,186 | 2,796 | 3,992 | 3,048 |
| Total estimate | 48,309 | 54,770 | 34,901 | 34,547 | 41,558 | 44,933 | 47,763 | 49,613 | 56,205 | 38,795 |

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Appendix A9.–Page 3 of 3.

| Community | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|------------------------|--------|--------|--------------|--------------|--------------|--------|
| Kongiganak | 1,869 | 1,266 | <i>1,307</i> | <i>1,031</i> | <i>1,230</i> | – |
| N. Kuskokwim Bay | 1,869 | 1,266 | 1,307 | 1,031 | 1,230 | – |
| Tuntutuliak | 2,068 | 1,274 | 1,516 | 1,183 | <i>1,774</i> | 1,999 |
| Eek | 1,241 | 664 | 1,490 | 1,319 | 1,450 | 1,111 |
| Kasigluk | 1,441 | 1,269 | 1,451 | 1,470 | 1,990 | 1,442 |
| Nunapitchuk | 1,902 | 2,223 | 2,396 | 1,806 | 2,059 | 2,851 |
| Atmautluak | 731 | 827 | 1,623 | 1,316 | 1,531 | 1,173 |
| Napakiak | 1,183 | 1,351 | 1,141 | 1,105 | 1,573 | 1,179 |
| Napaskiak | 1,979 | 1,587 | 2,065 | 2,069 | 2,514 | 2,022 |
| Oscarville | 250 | 228 | 323 | 347 | 679 | 282 |
| Bethel | 11,103 | 16,946 | 18,282 | 12,616 | 14,828 | 11,951 |
| Kwethluk | 2,534 | 2,357 | 2,884 | 2,705 | 5,921 | 1,955 |
| Akiachak | 2,433 | 2,647 | 3,443 | 2,594 | 3,047 | 2,551 |
| Akiak | 1,161 | 2,576 | <i>1,818</i> | 1,731 | 2,418 | 1,855 |
| Tuluksak | 2,483 | 1,699 | 1,380 | 1,541 | 622 | 1,037 |
| Lower Kuskokwim River | 30,509 | 35,648 | 39,812 | 31,802 | 40,406 | 31,408 |
| Lower Kalskag | 507 | 802 | 891 | 977 | 1,040 | 487 |
| Upper Kalskag | 460 | 938 | 770 | 662 | 839 | 718 |
| Aniak | 1,165 | 1,168 | 1,375 | 1,466 | 1,578 | 2,407 |
| Chuathbaluk | 403 | 300 | 297 | 480 | 481 | 382 |
| Middle Kuskokwim River | 2,535 | 3,208 | 3,333 | 3,585 | 3,938 | 3,994 |
| Crooked Creek | 302 | 243 | 234 | <i>514</i> | 391 | 303 |
| Red Devil | 475 | 502 | 511 | 270 | 151 | 88 |
| Sleetsmute | 1,024 | 693 | 715 | 362 | 541 | 497 |
| Stony River | 372 | 303 | <i>469</i> | 447 | 137 | 91 |
| Lime Village | 932 | 739 | 780 | <i>831</i> | 888 | – |
| McGrath | 650 | 630 | 233 | 538 | 451 | 0 |
| Takotna | 2 | 0 | 2 | 2 | 3 | 0 |
| Nikolai | 65 | 13 | 0 | 0 | 236 | 400 |
| Telida | – | – | – | – | – | – |
| Upper Kuskokwim River | 3,822 | 3,123 | 2,945 | 2,964 | 2,798 | 1,379 |
| Kuskokwim River total | 38,735 | 43,245 | 47,396 | 39,382 | 48,372 | 36,781 |
| Quinhagak | 1,719 | 1,582 | 2,015 | 2,158 | 2,939 | 1,065 |
| Goodnews Bay | 1,093 | 1,328 | 1,197 | 1,113 | 1,370 | 797 |
| Platinum | 175 | 135 | 173 | 181 | 349 | 148 |
| South Kuskokwim Bay | 2,987 | 3,045 | 3,385 | 3,452 | 4,658 | 2,010 |
| Total estimate | 41,722 | 46,290 | 50,781 | 42,834 | 53,030 | 38,791 |

Note: Dashes indicate that harvest was not estimated and italic indicates Bayesian estimates.

Appendix A10.—Subsistence coho salmon harvest estimates by community, Kuskokwim area, 1990–2015.

| Community | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 |
|------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Kongiganak | 474 | 490 | 605 | 448 | 569 | 662 | 579 | 514 | 204 | 203 |
| N. Kuskokwim Bay | 474 | 490 | 605 | 448 | 569 | 662 | 579 | 514 | 204 | 203 |
| Tuntutuliak | 1,287 | 733 | 693 | 820 | 364 | 339 | 1,335 | 558 | 858 | 277 |
| Eek | 1,800 | 387 | 502 | 160 | 399 | 387 | 437 | 63 | 314 | 242 |
| Kasigluk | 922 | 1,723 | 1,388 | 372 | 532 | 90 | 519 | 170 | 330 | 3,906 |
| Nunapitchuk | 746 | 1,131 | 2,242 | 318 | 749 | 629 | 1,444 | 732 | 345 | 368 |
| Atmautluak | 398 | 237 | 333 | 380 | 402 | 634 | 534 | 485 | 283 | 190 |
| Napakiak | 1,470 | 599 | 1,570 | 586 | 871 | 344 | 602 | 161 | 739 | 459 |
| Napaskiak | 1,139 | 798 | 1,108 | 780 | 2,016 | 584 | 506 | 592 | 488 | 316 |
| Oscarville | 57 | 147 | 151 | 0 | 48 | 0 | 15 | 0 | 0 | 779 |
| Bethel | 32,988 | 17,677 | 24,908 | 12,310 | 17,082 | 22,007 | 21,982 | 17,077 | 12,058 | 11,565 |
| Kwethluk | 3,928 | 2,311 | 2,419 | 1,809 | 1,880 | 1,690 | 2,995 | 1,104 | 1,583 | 2,883 |
| Akiachak | 1,910 | 2,337 | 3,058 | 1,102 | 1,281 | 628 | 903 | 383 | 409 | 662 |
| Akiak | 1,789 | 2,193 | 1,072 | 1,373 | 1,099 | 481 | 920 | 798 | 521 | 259 |
| Tuluksak | 978 | 1,854 | 1,629 | 408 | 223 | 522 | 1,175 | 418 | 812 | 298 |
| Lower Kuskokwim River | 49,412 | 32,127 | 41,074 | 20,418 | 26,946 | 28,335 | 33,367 | 22,541 | 18,740 | 22,204 |
| Lower Kalskag | 445 | 500 | 526 | 823 | 881 | 715 | 1,246 | 572 | 345 | 285 |
| Upper Kalskag | 346 | 527 | 972 | 353 | 178 | 257 | 348 | 661 | 834 | 155 |
| Aniak | 1,669 | 1,171 | 1,933 | 1,104 | 1,768 | 1,244 | 2,723 | 1,428 | 1,284 | 1,419 |
| Chuathbaluk | 826 | 87 | 368 | 366 | 741 | 79 | 409 | 196 | 50 | 138 |
| Middle Kuskokwim River | 3,286 | 2,285 | 3,799 | 2,646 | 3,568 | 2,295 | 4,726 | 2,857 | 2,513 | 1,997 |
| Crooked Creek | 922 | 279 | 712 | 396 | 646 | 358 | 175 | 261 | 394 | 529 |
| Red Devil | 914 | 1,038 | 1,284 | 1,673 | 1,074 | 1,539 | 1,135 | 1,455 | 504 | 424 |
| Sleetmute | 1,036 | 1,588 | 937 | 912 | 626 | 1,104 | 870 | 419 | 267 | 210 |
| Stony River | 474 | 513 | 727 | 511 | 477 | 1,023 | 529 | 455 | 378 | 423 |
| Lime Village | 486 | 390 | 345 | 606 | 1,467 | 223 | 607 | 270 | 776 | 701 |
| McGrath | 466 | 477 | 2,146 | 563 | 998 | 604 | 824 | 745 | 734 | 338 |
| Takotna | 0 | 0 | 4 | 0 | 0 | 6 | 6 | 2 | 3 | 0 |
| Nikolai | 90 | 65 | 204 | 285 | 94 | 499 | 36 | 130 | 97 | 73 |
| Telida | – | – | – | – | – | – | – | – | – | – |
| Upper Kuskokwim River | 4,388 | 4,350 | 6,358 | 4,946 | 5,382 | 5,356 | 4,182 | 3,737 | 3,153 | 2,698 |
| Kuskokwim River total | 57,560 | 39,252 | 51,836 | 28,458 | 36,465 | 36,648 | 42,854 | 29,649 | 24,611 | 27,102 |
| Quinhagak | 3,799 | 3,230 | 3,291 | 2,029 | 2,544 | 2,480 | 1,734 | 1,105 | 1,537 | 1,781 |
| Goodnews Bay | 1,630 | 1,704 | 1,671 | 1,118 | 428 | 268 | 330 | 348 | 323 | 421 |
| Platinum | 95 | 36 | 290 | 27 | 87 | 11 | 46 | 55 | 75 | 147 |
| South Kuskokwim Bay | 5,524 | 4,970 | 5,252 | 3,174 | 3,059 | 2,759 | 2,110 | 1,508 | 1,935 | 2,349 |
| Total estimate | 63,084 | 44,222 | 57,088 | 31,632 | 39,524 | 39,407 | 44,964 | 31,157 | 26,546 | 29,451 |

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Appendix A10.–Page 2 of 3.

| Community | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Kongiganak | 339 | 919 | 1,138 | 236 | 937 | 740 | 657 | 883 | 557 | 561 |
| N. Kuskokwim Bay | 339 | 919 | 1,138 | 236 | 937 | 740 | 657 | 883 | 557 | 561 |
| Tuntutuliak | 3,264 | 335 | 1,239 | 2,092 | 1,189 | 1,074 | 948 | 703 | 1,620 | 359 |
| Eek | 493 | 241 | 821 | 747 | 1,018 | 378 | 773 | 459 | 661 | 176 |
| Kasigluk | 9,726 | 1,058 | 2,195 | 1,762 | 5,034 | 1,304 | 3,070 | 1,753 | 867 | 629 |
| Nunapitchuk | 355 | 425 | 821 | 627 | 555 | 807 | 692 | 1,752 | 508 | 286 |
| Atmautluak | 227 | 375 | 612 | 283 | 744 | 530 | 254 | 424 | 262 | 67 |
| Napakiak | 453 | 667 | 793 | 992 | 1,648 | 742 | 2,363 | 1,244 | 1,006 | 420 |
| Napaskiak | 836 | 455 | 717 | 983 | 655 | 602 | 1,640 | 639 | 903 | 786 |
| Oscarville | 216 | 90 | 161 | 19 | 304 | 60 | 175 | 180 | 62 | 67 |
| Bethel | 13,478 | 14,108 | 15,489 | 15,062 | 17,040 | 12,994 | 18,810 | 12,972 | 15,839 | 12,895 |
| Kwethluk | 3,435 | 1,773 | 2,706 | 1,787 | 3,430 | 3,048 | 1,245 | 1,624 | 7,262 | 4,333 |
| Akiachak | 2,555 | 1,912 | 1,690 | 1,627 | 2,397 | 1,817 | 1,714 | 2,355 | 4,311 | 1,790 |
| Akiak | 479 | 594 | 1,136 | 1,094 | 1,342 | 1,847 | 379 | 1,325 | 1,358 | 661 |
| Tuluksak | 520 | 1,136 | 1,349 | 921 | 1,007 | 484 | 498 | 1,131 | 635 | 857 |
| Lower Kuskokwim River | 36,037 | 23,169 | 29,729 | 27,996 | 36,363 | 25,687 | 32,561 | 26,561 | 35,293 | 23,326 |
| Lower Kalskag | 403 | 597 | 281 | 314 | 368 | 319 | 1,415 | 515 | 76 | 318 |
| Upper Kalskag | 286 | 536 | 1,069 | 462 | 1,500 | 594 | 1,799 | 381 | 2,350 | 181 |
| Aniak | 1,911 | 2,006 | 3,737 | 1,164 | 2,355 | 2,032 | 1,018 | 3,003 | 2,883 | 2,223 |
| Chuathbaluk | 462 | 733 | 610 | 259 | 284 | 346 | 727 | 419 | 525 | 96 |
| Middle Kuskokwim River | 3,062 | 3,872 | 5,697 | 2,199 | 4,507 | 3,291 | 4,959 | 4,318 | 5,834 | 2,818 |
| Crooked Creek | 137 | 97 | 440 | 375 | 713 | 312 | 401 | 289 | 952 | 283 |
| Red Devil | 161 | 426 | 499 | 351 | 65 | 331 | 171 | 193 | 307 | 126 |
| Sleetsmute | 525 | 428 | 806 | 731 | 505 | 581 | 671 | 360 | 228 | 403 |
| Stony River | 348 | 397 | 662 | 214 | 679 | 468 | 322 | 336 | 552 | 634 |
| Lime Village | 556 | 559 | 680 | 46 | 231 | 372 | 132 | 443 | 695 | 210 |
| McGrath | 881 | 436 | 1,508 | 997 | 1,228 | 799 | 894 | 279 | 247 | 1,175 |
| Takotna | 20 | 31 | 25 | 6 | 51 | 8 | 0 | 8 | 6 | 28 |
| Nikolai | 30 | 131 | 93 | 379 | 171 | 166 | 407 | 95 | 53 | 203 |
| Telida | – | – | – | – | – | – | – | – | – | – |
| Upper Kuskokwim River | 2,658 | 2,505 | 4,713 | 3,099 | 3,643 | 3,037 | 2,998 | 2,005 | 3,040 | 3,062 |
| Kuskokwim River total | 42,096 | 30,465 | 41,277 | 33,531 | 45,450 | 32,755 | 41,175 | 33,766 | 44,724 | 29,767 |
| Quinhagak | 1,042 | 1,719 | 1,133 | 1,868 | 1,435 | 1,558 | 1,315 | 1,550 | 1,869 | 1,824 |
| Goodnews Bay | 380 | 548 | 198 | 1,228 | 1,542 | 634 | 605 | 468 | 769 | 261 |
| Platinum | 100 | 118 | 96 | 144 | 266 | 223 | 116 | 106 | 114 | 81 |
| South Kuskokwim Bay | 1,522 | 2,385 | 1,427 | 3,240 | 3,243 | 2,415 | 2,036 | 2,124 | 2,752 | 2,166 |
| Total estimate | 43,618 | 32,850 | 42,704 | 36,771 | 48,693 | 35,170 | 43,211 | 35,890 | 47,476 | 31,933 |

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Appendix A10.–Page 3 of 3.

| Community | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|------------------------|------------|------------|--------|------------|------------|--------|
| Kongiganak | 483 | 613 | 356 | <i>412</i> | <i>561</i> | – |
| N. Kuskokwim Bay | 483 | 613 | 356 | 412 | 561 | – |
| Tuntutuliak | 698 | 250 | 565 | 450 | <i>794</i> | 362 |
| Eek | 315 | 280 | 612 | 483 | 555 | 629 |
| Kasigluk | 1,043 | 430 | 303 | 418 | 851 | 446 |
| Nunapitchuk | 195 | 407 | 319 | 226 | 1,305 | 1,154 |
| Atmautluak | 36 | 263 | 383 | 203 | 176 | 311 |
| Napakiak | 877 | 927 | 402 | 634 | 740 | 1,117 |
| Napaskiak | 1,029 | 471 | 269 | 772 | 1,153 | 1,353 |
| Oscarville | 12 | 43 | 38 | 37 | 128 | 25 |
| Bethel | 20,426 | 18,141 | 13,280 | 12,662 | 19,364 | 12,277 |
| Kwethluk | 1,495 | 1,097 | 1,013 | 1,555 | 4,422 | 1,677 |
| Akiachak | 1,181 | 1,440 | 714 | 1,106 | 1,845 | 1,924 |
| Akiak | 475 | 505 | 455 | 454 | 1,501 | 1,423 |
| Tuluksak | 330 | 163 | 341 | 473 | 808 | 623 |
| Lower Kuskokwim River | 28,112 | 24,417 | 18,694 | 19,473 | 33,642 | 23,321 |
| Lower Kalskag | 96 | 684 | 1,107 | 529 | 907 | 419 |
| Upper Kalskag | 92 | 998 | 360 | 636 | 938 | 384 |
| Aniak | 2,533 | 2,215 | 3,365 | 3,102 | 9,566 | 7,705 |
| Chuathbaluk | 76 | 109 | 179 | 319 | 291 | 166 |
| Middle Kuskokwim River | 2,797 | 4,006 | 5,011 | 4,586 | 11,702 | 8,674 |
| Crooked Creek | 87 | 297 | 149 | 255 | 198 | 275 |
| Red Devil | 88 | 130 | 238 | 318 | 792 | 214 |
| Sleetsmute | 458 | 426 | 784 | 219 | 993 | 752 |
| Stony River | 201 | 333 | 358 | 120 | 177 | 77 |
| Lime Village | <i>146</i> | <i>596</i> | 117 | <i>384</i> | 226 | – |
| McGrath | 1,053 | 1,331 | 2,257 | 523 | 1,189 | 173 |
| Takotna | 20 | 3 | 22 | 0 | 0 | 53 |
| Nikolai | 135 | 20 | 214 | 119 | 256 | 400 |
| Telida | – | – | – | – | – | – |
| Upper Kuskokwim River | 2,188 | 3,136 | 4,139 | 1,938 | 3,831 | 1,944 |
| Kuskokwim River total | 33,580 | 32,172 | 28,200 | 26,409 | 49,736 | 33,939 |
| Quinhagak | 1,599 | 1,369 | 1,380 | 1,087 | 2,240 | 2,238 |
| Goodnews Bay | 319 | 259 | 382 | 295 | 371 | 552 |
| Platinum | 197 | 143 | 124 | 50 | 240 | 87 |
| South Kuskokwim Bay | 2,115 | 1,771 | 1,886 | 1,432 | 2,851 | 2,877 |
| Total estimate | 35,695 | 33,943 | 30,086 | 27,841 | 52,587 | 36,816 |

Note: Dashes indicate that harvest was not estimated and italic indicates Bayesian estimates.

Appendix A11.—Subsistence chum salmon harvest estimates by community, Kuskokwim area, 1990–2015.

| Community | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 |
|------------------------|---------|--------|---------|--------|--------|--------|---------|--------|--------|--------|
| Kongiganak | 1,009 | 978 | 1,584 | 708 | 1,414 | 1,269 | 1,763 | 753 | 1,579 | 1,049 |
| N. Kuskokwim Bay | 1,009 | 978 | 1,584 | 708 | 1,414 | 1,269 | 1,763 | 753 | 1,579 | 1,049 |
| Tuntutuliak | 6,592 | 4,697 | 6,245 | 3,325 | 5,346 | 3,509 | 6,119 | 2,435 | 3,640 | 1,709 |
| Eek | 3,014 | 790 | 1,324 | 250 | 591 | 899 | 999 | 556 | 795 | 484 |
| Kasigluk | 3,877 | 3,013 | 4,076 | 2,522 | 2,663 | 2,774 | 4,047 | 1,951 | 2,543 | 4,777 |
| Nunapitchuk | 6,448 | 5,840 | 9,195 | 4,895 | 4,560 | 4,264 | 6,255 | 2,465 | 4,885 | 4,428 |
| Atmautluak | 4,676 | 2,241 | 2,614 | 1,300 | 1,420 | 3,768 | 2,660 | 1,395 | 1,875 | 1,552 |
| Napakiak | 9,714 | 2,351 | 5,474 | 2,269 | 3,819 | 2,820 | 4,352 | 1,430 | 3,605 | 1,495 |
| Napaskiak | 11,334 | 6,703 | 7,817 | 3,653 | 5,797 | 4,137 | 6,200 | 2,318 | 3,771 | 2,529 |
| Oscarville | 1,400 | 1,147 | 1,598 | 561 | 676 | 740 | 1,548 | 348 | 378 | 1,530 |
| Bethel | 34,257 | 16,781 | 17,231 | 8,608 | 15,722 | 17,416 | 21,706 | 8,078 | 12,522 | 9,918 |
| Kwethluk | 11,451 | 5,714 | 8,001 | 3,499 | 6,340 | 6,114 | 12,043 | 3,266 | 4,508 | 3,582 |
| Akiachak | 10,565 | 5,921 | 9,532 | 3,308 | 5,998 | 3,992 | 5,019 | 1,615 | 2,218 | 2,696 |
| Akiak | 9,226 | 6,575 | 6,679 | 7,577 | 4,483 | 2,007 | 4,967 | 1,639 | 1,894 | 1,210 |
| Tuluksak | 5,863 | 5,454 | 4,632 | 3,774 | 2,395 | 2,698 | 3,208 | 2,790 | 3,044 | 1,480 |
| Lower Kuskokwim River | 118,417 | 67,227 | 84,418 | 45,541 | 59,810 | 55,138 | 79,123 | 30,286 | 45,678 | 37,390 |
| Lower Kalskag | 4,980 | 2,958 | 2,807 | 2,938 | 2,856 | 1,438 | 4,070 | 1,298 | 968 | 733 |
| Upper Kalskag | 1,406 | 3,139 | 3,040 | 591 | 836 | 1,326 | 1,565 | 349 | 464 | 649 |
| Aniak | 10,160 | 3,511 | 7,687 | 2,926 | 2,538 | 3,454 | 8,569 | 1,678 | 4,964 | 1,753 |
| Chuathbaluk | 4,408 | 2,138 | 2,644 | 2,879 | 1,495 | 1,701 | 2,175 | 1,135 | 925 | 698 |
| Middle Kuskokwim River | 20,954 | 11,746 | 16,178 | 9,334 | 7,725 | 7,919 | 16,379 | 4,460 | 7,321 | 3,833 |
| Crooked Creek | 2,977 | 1,326 | 1,242 | 664 | 757 | 332 | 355 | 313 | 2,527 | 830 |
| Red Devil | 1,613 | 1,133 | 1,500 | 927 | 1,318 | 882 | 727 | 499 | 462 | 169 |
| Sleetmute | 2,006 | 1,880 | 2,961 | 692 | 1,520 | 1,683 | 1,250 | 417 | 870 | 340 |
| Stony River | 1,234 | 638 | 1,165 | 775 | 881 | 1,311 | 443 | 600 | 395 | 296 |
| Lime Village | 2,350 | 830 | 1,299 | 497 | 1,600 | 789 | 306 | 244 | 964 | 1,015 |
| McGrath | 2,326 | 1,083 | 4,472 | 578 | 1,264 | 1,525 | 211 | 138 | 1,510 | 242 |
| Takotna | 64 | 0 | 15 | 0 | 6 | 1 | 0 | 0 | 15 | 0 |
| Nikolai | 875 | 396 | 914 | 334 | 293 | 297 | 229 | 60 | 519 | 87 |
| Telida | – | – | – | – | – | – | – | – | – | – |
| Upper Kuskokwim River | 13,445 | 7,286 | 13,568 | 4,467 | 7,639 | 6,820 | 3,521 | 2,271 | 7,262 | 2,979 |
| Kuskokwim River Total | 153,825 | 87,237 | 115,748 | 60,050 | 76,588 | 71,146 | 100,786 | 37,770 | 61,840 | 45,251 |
| Quinhagak | 3,161 | 1,631 | 2,287 | 1,053 | 1,401 | 669 | 943 | 572 | 1,375 | 1,587 |
| Goodnews Bay | 200 | 136 | 1,311 | 177 | 406 | 140 | 221 | 135 | 295 | 232 |
| Platinum | 149 | 4 | 137 | 0 | 51 | 3 | 26 | 0 | 51 | 33 |
| South Kuskokwim Bay | 3,510 | 1,771 | 3,735 | 1,230 | 1,858 | 812 | 1,190 | 707 | 1,721 | 1,852 |
| Total Estimate | 157,335 | 89,008 | 119,483 | 61,280 | 78,446 | 71,958 | 101,975 | 38,477 | 63,561 | 47,103 |

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Appendix A11.–Page 2 of 3.

| Community | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Kongiganak | 1,839 | 2,399 | 3,247 | 897 | 2,958 | 1,960 | 2,420 | 2,353 | 1,755 | 1,420 |
| N. Kuskokwim Bay | 1,839 | 2,399 | 3,247 | 897 | 2,958 | 1,960 | 2,420 | 2,353 | 1,755 | 1,420 |
| Tuntutuliak | 2,622 | 2,585 | 4,150 | 1,288 | 2,546 | 3,568 | 4,024 | 3,350 | 3,375 | 3,330 |
| Eek | 636 | 402 | 1,228 | 578 | 688 | 877 | 1,075 | 783 | 788 | 782 |
| Kasigluk | 4,689 | 5,158 | 5,513 | 3,581 | 5,064 | 4,194 | 5,461 | 4,309 | 1,502 | 1,857 |
| Nunapitchuk | 4,865 | 4,724 | 8,002 | 2,865 | 5,053 | 4,167 | 5,150 | 6,619 | 4,705 | 3,468 |
| Atmautluak | 1,848 | 1,397 | 2,514 | 849 | 2,271 | 1,940 | 2,337 | 2,193 | 2,177 | 1,665 |
| Napakiak | 2,859 | 1,793 | 3,421 | 1,560 | 2,328 | 3,238 | 8,143 | 3,628 | 1,313 | 1,638 |
| Napaskiak | 2,757 | 2,364 | 4,010 | 2,061 | 2,705 | 2,205 | 4,323 | 3,032 | 2,400 | 1,451 |
| Oscarville | 1,237 | 1,831 | 1,319 | 804 | 828 | 686 | 1,151 | 932 | 847 | 534 |
| Bethel | 10,149 | 10,757 | 17,731 | 11,452 | 13,448 | 14,273 | 20,953 | 16,540 | 15,853 | 10,055 |
| Kwethluk | 5,232 | 4,601 | 8,019 | 2,294 | 4,288 | 4,328 | 6,328 | 6,291 | 5,729 | 4,111 |
| Akiachak | 4,719 | 3,170 | 5,173 | 2,650 | 3,880 | 2,428 | 4,333 | 4,782 | 6,856 | 2,872 |
| Akiak | 2,617 | 2,240 | 2,571 | 2,928 | 3,499 | 3,528 | 3,095 | 4,141 | 3,522 | 1,350 |
| Tuluksak | 2,492 | 2,068 | 3,719 | 894 | 2,433 | 2,183 | 3,094 | 3,202 | 2,920 | 1,570 |
| Lower Kuskokwim River | 46,722 | 43,090 | 67,370 | 33,804 | 49,031 | 47,615 | 69,466 | 59,803 | 51,988 | 34,683 |
| Lower Kalskag | 1,534 | 1,498 | 1,445 | 1,087 | 1,316 | 997 | 4,703 | 1,997 | 1,004 | 930 |
| Upper Kalskag | 1,550 | 1,502 | 2,460 | 516 | 1,656 | 1,201 | 2,469 | 294 | 2,432 | 329 |
| Aniak | 1,933 | 1,934 | 4,367 | 820 | 2,535 | 2,952 | 3,722 | 4,108 | 2,830 | 2,602 |
| Chuathbaluk | 654 | 2,711 | 1,458 | 2,502 | 2,352 | 530 | 1,451 | 1,541 | 593 | 937 |
| Middle Kuskokwim River | 5,671 | 7,645 | 9,730 | 4,925 | 7,859 | 5,680 | 12,345 | 7,940 | 6,859 | 4,798 |
| Crooked Creek | 809 | 1,211 | 1,417 | 750 | 1,583 | 1,064 | 1,513 | 813 | 352 | 519 |
| Red Devil | 54 | 334 | 384 | 63 | 135 | 214 | 41 | 186 | 188 | 244 |
| Sleetsmute | 371 | 379 | 1,293 | 468 | 1,054 | 422 | 1,475 | 818 | 373 | 367 |
| Stony River | 320 | 172 | 696 | 361 | 754 | 324 | 790 | 540 | 1,247 | 771 |
| Lime Village | 451 | 651 | 869 | 110 | 199 | 573 | 316 | 419 | 297 | 405 |
| McGrath | 188 | 247 | 969 | 513 | 290 | 470 | 999 | 464 | 676 | 825 |
| Takotna | 0 | 10 | 1 | 0 | 0 | 4 | 0 | 0 | 0 | 0 |
| Nikolai | 56 | 53 | 187 | 191 | 277 | 230 | 308 | 223 | 54 | 292 |
| Telida | – | – | – | – | – | – | – | – | – | – |
| Upper Kuskokwim River | 2,249 | 3,057 | 5,816 | 2,456 | 4,292 | 3,301 | 5,442 | 3,464 | 3,187 | 3,423 |
| Kuskokwim River total | 56,480 | 56,191 | 86,163 | 42,082 | 64,140 | 58,555 | 89,674 | 73,560 | 63,789 | 44,324 |
| Quinhagak | 895 | 808 | 2,011 | 559 | 1,383 | 994 | 2,754 | 2,249 | 1,794 | 1,557 |
| Goodnews Bay | 251 | 187 | 349 | 200 | 240 | 192 | 555 | 395 | 586 | 138 |
| Platinum | 82 | 60 | 95 | 19 | 42 | 21 | 108 | 77 | 106 | 28 |
| South Kuskokwim Bay | 1,228 | 1,055 | 2,455 | 778 | 1,665 | 1,207 | 3,417 | 2,720 | 2,486 | 1,723 |
| Total estimate | 57,708 | 57,246 | 88,618 | 42,860 | 65,805 | 59,762 | 93,091 | 76,281 | 66,275 | 46,047 |

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Appendix A11.–Page 3 of 3.

| Community | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|------------------------|------------|--------|--------------|--------------|--------------|----------|
| Kongiganak | 2,522 | 2,809 | <i>1,638</i> | <i>1,397</i> | <i>1,915</i> | – |
| N. Kuskokwim Bay | 2,522 | 2,809 | 1,638 | 1,397 | 1,915 | – |
| Tuntutuliak | 2,439 | 1,865 | 2,614 | 2,180 | 2,967 | 2,143 |
| Eek | 721 | 486 | 1,552 | 1,232 | 1,182 | 1,023 |
| Kasigluk | 2,338 | 2,029 | 3,261 | 2,197 | 3,612 | 2,080 |
| Nunapitchuk | 3,223 | 4,257 | 5,312 | 2,977 | 5,213 | 3,631 |
| Atmautluak | 1,386 | 1,864 | 2,701 | 2,409 | 3,327 | 2,165 |
| Napakiak | 1,759 | 1,546 | 1,711 | 1,185 | 2,392 | 1,508 |
| Napaskiak | 3,110 | 1,783 | 3,216 | 2,589 | 3,171 | 2,173 |
| Oscarville | 352 | 402 | 599 | 490 | 599 | 350 |
| Bethel | 9,575 | 15,324 | 26,872 | 12,506 | 18,017 | 10,958 |
| Kwethluk | 3,112 | 3,484 | 3,849 | 3,825 | 4,318 | 2,230 |
| Akiachak | 2,856 | 3,205 | 4,150 | 3,417 | 4,744 | 2,085 |
| Akiak | 1,163 | 2,421 | 2,925 | 2,212 | 2,982 | 2,348 |
| Tuluksak | 3,180 | 2,697 | 2,585 | 3,062 | 2,274 | 1,747 |
| Lower Kuskokwim River | 35,214 | 41,363 | 61,347 | 40,281 | 54,798 | 34,441 |
| Lower Kalskag | 691 | 1,643 | 3,284 | 1,214 | 1,458 | 1,233 |
| Upper Kalskag | 391 | 1,599 | 1,930 | 1,534 | 1,038 | 642 |
| Aniak | 2,515 | 2,391 | 5,667 | 2,880 | 4,695 | 1,395 |
| Chuathbaluk | 535 | 686 | 796 | 935 | 805 | 342 |
| Middle Kuskokwim River | 4,132 | 6,319 | 11,677 | 6,563 | 7,996 | 3,612 |
| Crooked Creek | 539 | 862 | 610 | <i>1,803</i> | 391 | 383 |
| Red Devil | 122 | 434 | 516 | 981 | 284 | 48 |
| Sleetmute | 524 | 689 | 1,004 | 542 | 633 | 337 |
| Stony River | 338 | 516 | <i>491</i> | 27 | 89 | 44 |
| Lime Village | <i>314</i> | 499 | 419 | <i>909</i> | 295 | – |
| McGrath | 944 | 476 | 885 | 598 | 642 | 7 |
| Takotna | 0 | 0 | 0 | <i>12</i> | 0 | 0 |
| Nikolai | 440 | 349 | 1,044 | 513 | 1,356 | 2,000 |
| Telida | – | – | – | – | – | – |
| Upper Kuskokwim River | 3,221 | 3,825 | 4,970 | 5,386 | 3,690 | 2,819 |
| Kuskokwim River total | 45,089 | 54,316 | 79,631 | 53,627 | 68,398 | 40,872 |
| Quinhagak | 1,347 | 1,255 | 2,001 | 1,958 | 1,959 | 691 |
| Goodnews Bay | 324 | 349 | 322 | 153 | 268 | 197 |
| Platinum | 37 | 70 | 76 | 90 | 62 | 16 |
| South Kuskokwim Bay | 1,708 | 1,674 | 2,399 | 2,201 | 2,289 | 904 |
| Total estimate | 46,797 | 55,990 | 82,030 | 55,828 | 70,687 | 41,776 |

Note: Dashes indicate that harvest was not estimated and italic indicates Bayesian estimates.

Appendix A12.–Estimated subsistence salmon harvest by species and community, Kuskokwim Management Area, 2015.

| Community | Households (HH) | | | Avg harvest/HH | Chinook | | | Chum | | |
|---------------------------|-----------------|---------|----------|----------------|--------------------|----------|----------------|--------------------|----------|--|
| | Total N | total N | % survey | | Est. total harvest | CI (95%) | Avg harvest/HH | Est. total harvest | CI (95%) | |
| Kongiganak | 90 | 0 | 0% | – | – | – | – | – | – | |
| N. Kuskokwim Bay | 90 | 0 | 0% | – | – | – | – | – | – | |
| Tuntutuliak | 92 | 58 | 63% | 18 | 1,668 | 251 | 23 | 2,143 | 379 | |
| Eek | 92 | 47 | 51% | 9 | 850 | 411 | 11 | 1,023 | 595 | |
| Kasigluk | 107 | 63 | 59% | 4 | 438 | 128 | 19 | 2,080 | 659 | |
| Nunapitchuk | 121 | 76 | 63% | 9 | 1,051 | 156 | 30 | 3,631 | 814 | |
| Atmautluak | 68 | 44 | 65% | 8 | 514 | 129 | 32 | 2,165 | 389 | |
| Napakiak | 99 | 48 | 48% | 9 | 917 | 267 | 15 | 1,508 | 468 | |
| Napaskiak | 104 | 62 | 60% | 8 | 816 | 115 | 21 | 2,173 | 583 | |
| Oscarville | 15 | 12 | 80% | 8 | 120 | 4 | 23 | 350 | 21 | |
| Bethel | 2,076 | 388 | 19% | 2 | 4,918 | 1,226 | 5 | 10,958 | 3,328 | |
| Kwethluk | 173 | 99 | 57% | 5 | 900 | 95 | 13 | 2,230 | 492 | |
| Akiachak | 157 | 104 | 66% | 7 | 1,103 | 108 | 13 | 2,085 | 287 | |
| Akiak | 87 | 45 | 52% | 7 | 610 | 112 | 27 | 2,348 | 1,150 | |
| Tuluksak | 95 | 63 | 66% | 2 | 231 | 58 | 18 | 1,747 | 307 | |
| Lower Kuskokwim | 3,286 | 1,109 | 34% | 4 | 14,136 | 1,374 | 10 | 34,441 | 3,860 | |
| Lower Kalskag | 74 | 42 | 57% | 5 | 351 | 114 | 17 | 1,233 | 434 | |
| Upper Kalskag | 62 | 36 | 58% | 5 | 334 | 90 | 10 | 642 | 150 | |
| Aniak | 180 | 92 | 51% | 3 | 542 | 160 | 8 | 1,395 | 658 | |
| Chuathbaluk | 29 | 25 | 86% | 3 | 90 | 23 | 12 | 342 | 36 | |
| Middle Kuskokwim | 345 | 195 | 57% | 4 | 1,317 | 213 | 10 | 3,612 | 793 | |
| Crooked Creek | 31 | 24 | 77% | 3 | 78 | 52 | 12 | 383 | 81 | |
| Red Devil | 9 | 4 | 44% | 6 | 52 | 0 | 5 | 48 | 0 | |
| Sleetmute | 36 | 23 | 64% | 4 | 137 | 42 | 9 | 337 | 38 | |
| Stony River | 13 | 11 | 85% | 2 | 25 | 7 | 3 | 44 | 30 | |
| Lime Village ^a | 14 | – | 0% | – | – | – | – | – | – | |
| McGrath | 112 | 55 | 49% | 1 | 75 | 23 | 0 | 7 | 9 | |
| Takotna ^b | 21 | 16 | 76% | 0 | 3 | 3 | 0 | 0 | 0 | |
| Nikolai | 36 | 31 | 86% | 8 | 301 | 23 | 56 | 2,000 | 0 | |
| Telida | 2 | – | 0% | – | – | – | – | – | – | |
| Upper Kuskokwim | 274 | 164 | 60% | 2 | 671 | 72 | 10 | 2,819 | 90 | |
| Kuskokwim River Total | 3,995 | 1,468 | 37% | 4 | 16,124 | 1,392 | 10 | 40,872 | 3,940 | |
| Quinhagak | 73 | 96 | 132% | 42 | 3,082 | 767 | 9 | 691 | 208 | |
| Goodnews Bay | 19 | 36 | 189% | 12 | 220 | 93 | 10 | 197 | 82 | |
| Platinum | 262 | 15 | 6% | 0 | 11 | 8 | 0 | 16 | 9 | |
| S. Kuskokwim Bay | 354 | 147 | 42% | 9 | 3,313 | 769 | 3 | 904 | 222 | |
| Total | 4,349 | 1,615 | 37% | 4 | 19,437 | 1,587 | 10 | 41,776 | 3,946 | |

-continued-

Appendix A12.–Page 2 of 3.

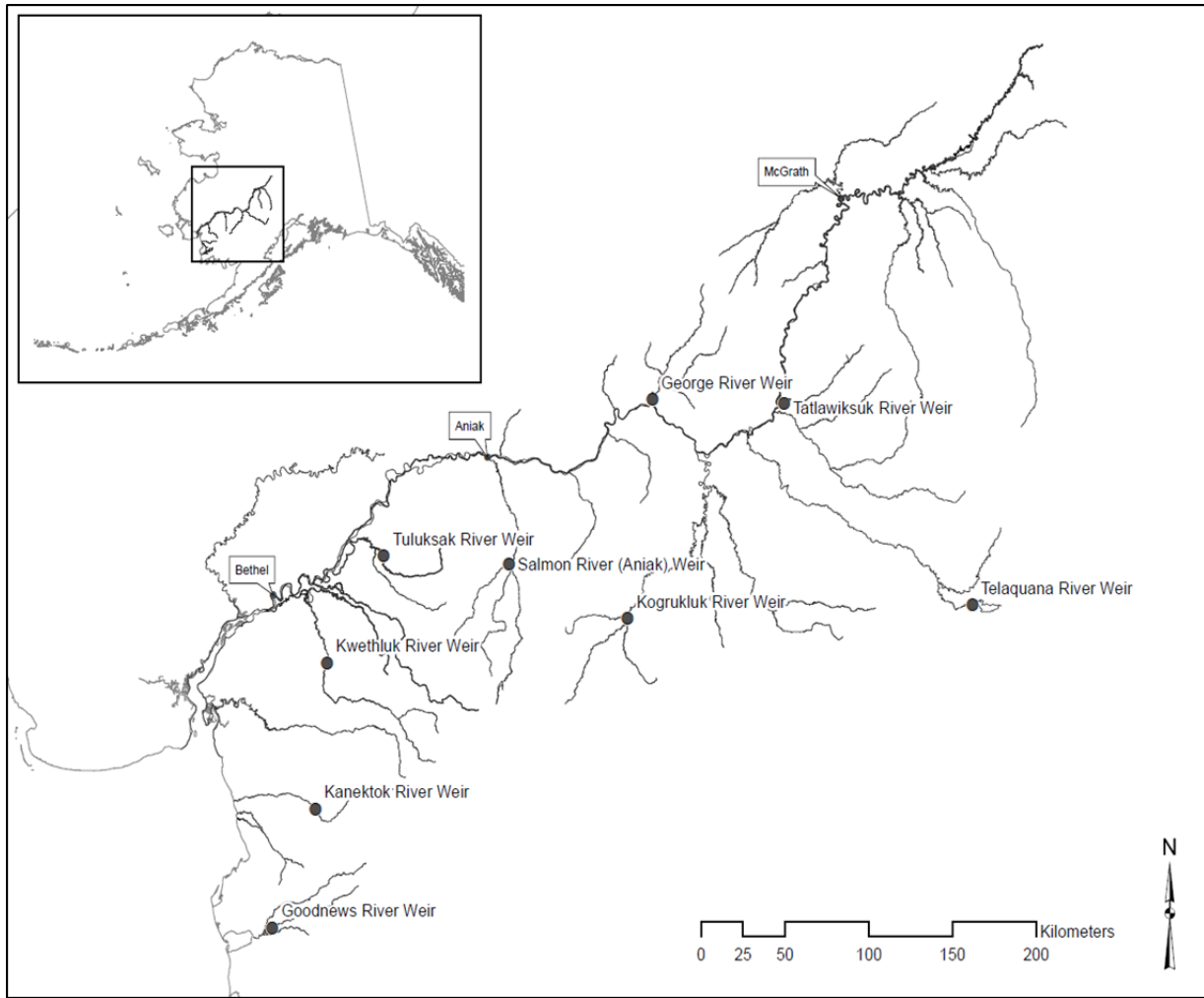
| Community | Sockeye | | | Coho | | | Pink | | |
|---------------------------|----------------|--------------------|----------|----------------|--------------------|----------|----------------|--------------------|----------|
| | Avg harvest/HH | Est. total harvest | CI (95%) | Avg harvest/HH | Est. total harvest | CI (95%) | Avg harvest/HH | Est. total harvest | CI (95%) |
| Kongiganak | – | – | – | – | – | – | – | – | – |
| N. Kuskokwim Bay | – | – | – | – | – | – | – | – | – |
| Tuntutuliak | 22 | 1,999 | 313 | 4 | 362 | 91 | 0 | 23 | 14 |
| Eek | 12 | 1,111 | 452 | 7 | 629 | 356 | 0 | 21 | 13 |
| Kasigluk | 13 | 1,442 | 287 | 4 | 446 | 197 | 0 | 5 | 2 |
| Nunapitchuk | 24 | 2,851 | 922 | 10 | 1,154 | 458 | 1 | 96 | 53 |
| Atmautluak | 17 | 1,173 | 261 | 5 | 311 | 57 | 0 | 31 | 0 |
| Napakiak | 12 | 1,179 | 409 | 11 | 1,117 | 465 | 0 | 47 | 43 |
| Napaskiak | 19 | 2,022 | 463 | 13 | 1,353 | 440 | 0 | 32 | 25 |
| Oscarville | 19 | 282 | 42 | 2 | 25 | 21 | 0 | 7 | 4 |
| Bethel | 6 | 11,951 | 3,301 | 6 | 12,277 | 2,788 | 0 | 172 | 116 |
| Kwethluk | 11 | 1,955 | 464 | 10 | 1,677 | 379 | 0 | 81 | 33 |
| Akiachak | 16 | 2,551 | 350 | 12 | 1,924 | 376 | 0 | 58 | 40 |
| Akiak | 21 | 1,855 | 570 | 16 | 1,423 | 554 | 2 | 189 | 130 |
| Tuluksak | 11 | 1,037 | 281 | 7 | 623 | 154 | 0 | 27 | 11 |
| Lower Kuskokwim | 10 | 31,408 | 3,631 | 7 | 23,321 | 3,017 | 0 | 790 | 194 |
| Lower Kalskag | 7 | 487 | 172 | 6 | 419 | 153 | 0 | 31 | 43 |
| Upper Kalskag | 12 | 718 | 201 | 6 | 384 | 81 | 0 | 28 | 11 |
| Aniak | 13 | 2,407 | 866 | 43 | 7,705 | 5,159 | 2 | 305 | 303 |
| Chuathbaluk | 13 | 382 | 51 | 6 | 166 | 36 | 0 | 5 | 1 |
| Middle Kuskokwim | 12 | 3,994 | 899 | 25 | 8,674 | 5,126 | 1 | 369 | 303 |
| Crooked Creek | 10 | 303 | 67 | 9 | 275 | 98 | 0 | 2 | 2 |
| Red Devil | 10 | 88 | 59 | 24 | 214 | 323 | 0 | 0 | 0 |
| Sleetmute | 14 | 497 | 107 | 21 | 752 | 50 | 0 | 4 | 0 |
| Stony River | 7 | 91 | 41 | 6 | 77 | 64 | 0 | 0 | 0 |
| Lime Village ^a | – | – | – | – | – | – | – | – | – |
| McGrath | 0 | 0 | 0 | 2 | 173 | 94 | 0 | 0 | 0 |
| Takotna ^b | 0 | 0 | 0 | 0 | 53 | 57 | – | 0 | 0 |
| Nikolai | 11 | 400 | 0 | 11 | 400 | 0 | 0 | 4 | 0 |
| Telida | – | – | – | – | – | – | – | – | – |
| Upper Kuskokwim | 5 | 1,379 | 133 | 7 | 1,944 | 280 | 0 | 10 | 2 |
| Kuskokwim River Total | 9 | 36,781 | 3,741 | 8 | 33,939 | 5,930 | 0 | 1,169 | 359 |
| Quinhagak | 15 | 1,065 | 244 | 31 | 2,238 | 501 | 1 | 46 | 29 |
| Goodnews Bay | 42 | 797 | 263 | 29 | 552 | 230 | 0 | 13 | 14 |
| Platinum | 1 | 148 | 86 | 0 | 87 | 21 | 0 | 5 | 4 |
| S. Kuskokwim Bay | 6 | 2,010 | 362 | 8 | 2,877 | 546 | 0 | 64 | 32 |
| Total | 9 | 38,791 | 3,758 | 8 | 36,816 | 5,954 | 0 | 1,233 | 360 |

-continued-

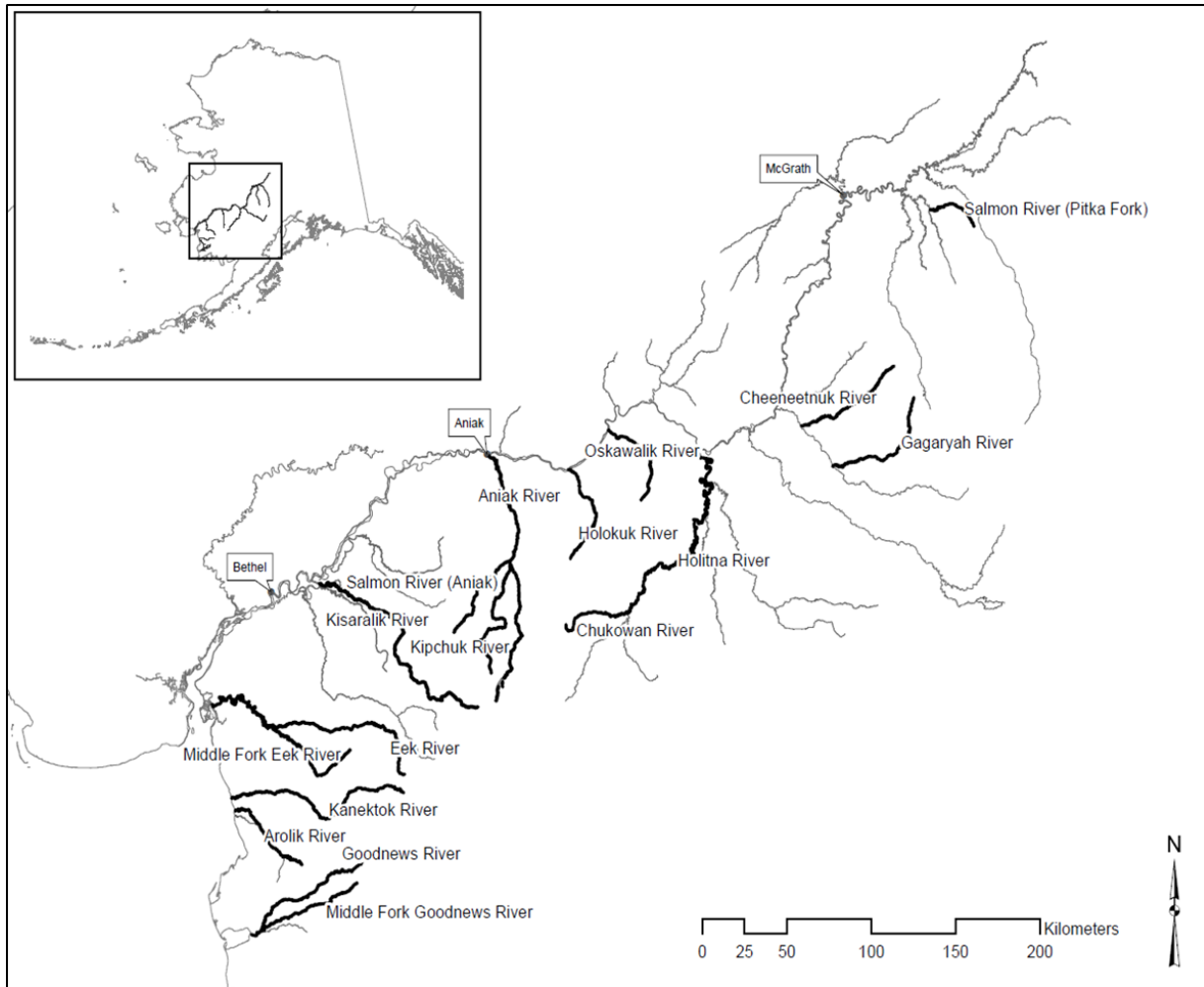
Note: N is the total number of households, n is the number of households surveyed; Kuskokwim River total includes Lower, Middle and Upper Kuskokwim areas and North Kuskokwim Bay. Data are unavailable for cells with a dash. Bayesian estimation method are not possible for these communities or pink salmon because there is little or no historical data.

^a These villages were not surveyed, therefore the total harvest is estimated using historical average household harvest expanded by the number of households.

^b Takotna is not surveyed, but harvest is estimated to be zero based on harvest practices.

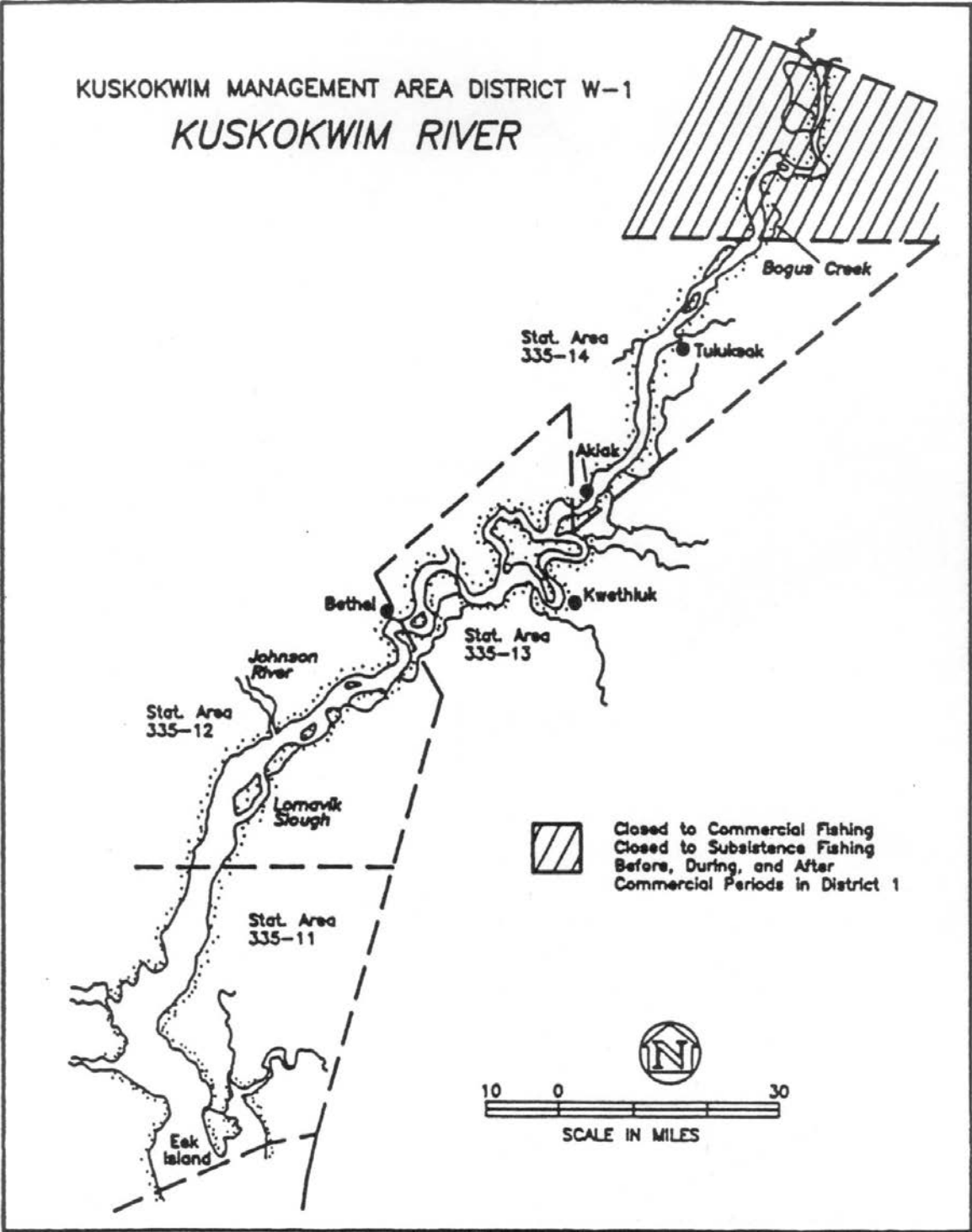


Appendix A13.—Weir project location within the Kuskokwim Management Area.

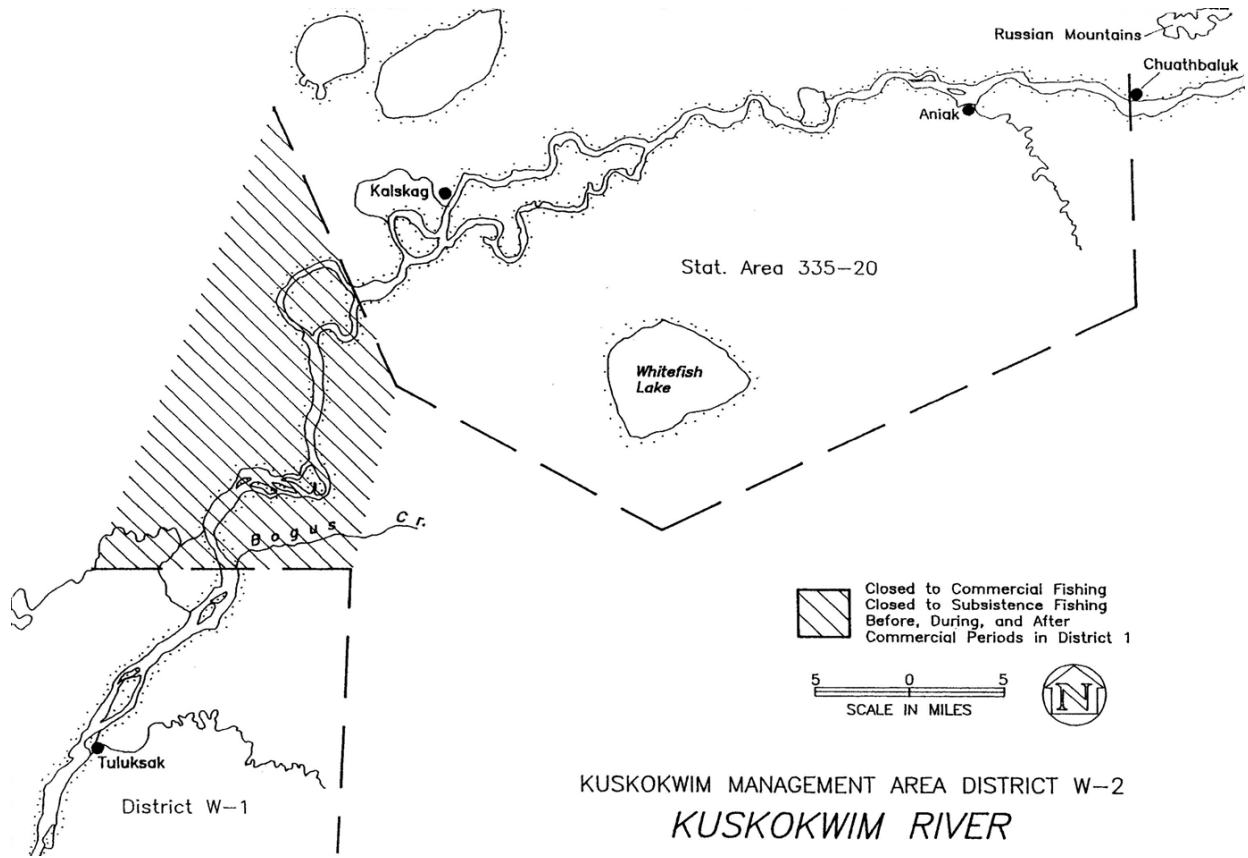


Appendix A14.—Map of aerial survey streams, Kuskokwim Management Area with survey rivers in bold.

APPENDIX B



Appendix B1.-Map of commercial fishing District W-1, Kuskokwim Management Area.



Appendix B2.—Map of Commercial Fishing District W-2, Kuskokwim Management Area.

Appendix B3.–Chinook salmon utilization, Kuskokwim River, 1990–2015.

| Year | Harvest | | | | Total |
|-------------------|-------------------------|--------------|------------------------|--------------|---------|
| | Commercial ^a | Subsistence | Test fish ^b | Sport | |
| 1990 | 53,504 ^c | 109,778 | 257 | 394 | 163,933 |
| 1991 | 37,778 ^c | 74,820 | 149 | 401 | 113,148 |
| 1992 | 46,872 ^c | 82,654 | 518 | 367 | 130,411 |
| 1993 | 8,735 ^c | 87,674 | 2,515 | 587 | 99,511 |
| 1994 | 16,211 ^c | 103,343 | 1,850 | 1,139 | 122,543 |
| 1995 | 30,846 ^c | 102,110 | 1,001 | 541 | 134,498 |
| 1996 | 7,419 ^c | 96,413 | 247 | 1,432 | 105,511 |
| 1997 | 10,441 ^c | 79,381 | 332 | 1,227 | 91,381 |
| 1998 | 17,359 ^c | 81,213 | 210 | 1,434 | 100,216 |
| 1999 | 4,705 | 72,775 | 98 | 252 | 77,830 |
| 2000 | 444 | 67,620 | 60 | 105 | 68,229 |
| 2001 | 90 | 78,009 | 0 | 290 | 78,389 |
| 2002 | 72 | 80,982 | 0 | 319 | 81,373 |
| 2003 | 158 | 67,134 | 0 | 401 | 67,693 |
| 2004 | 2,305 ^c | 96,788 | 19 | 857 | 99,969 |
| 2005 | 4,784 ^c | 85,863 | 2 | 572 | 91,221 |
| 2006 | 2,777 ^c | 90,812 | 0 | 444 | 94,033 |
| 2007 | 179 ^c | 94,898 | 0 | 1,478 | 96,555 |
| 2008 | 8,865 ^c | 88,912 | 0 | 708 | 98,485 |
| 2009 | 6,664 ^c | 79,896 | 0 | 904 | 87,464 |
| 2010 | 2,732 ^c | 67,286 | 0 | 354 | 70,372 |
| 2011 | 747 ^c | 62,366 | 0 | 579 | 63,692 |
| 2012 | 627 ^c | 22,544 | 0 | 0 | 23,171 |
| 2013 | 174 ^c | 47,113 | 0 | 0 | 47,287 |
| 2014 | 0 ^c | 11,234 | 0 | 0 | 11,234 |
| 2015 | 8 | ^d | 0 | ^d | |
| Average 2005–2014 | 2,755 | 65,092 | 0 | 504 | 68,351 |

^a Not including personal use.

^b Test fishery sales only, does not include donations.

^c Districts 1 and 2.

^d Estimate not available at time of publication.

Appendix B4.—Commercial salmon harvest in Districts 1 and 2 combined including personal use, 1960–2015.

| Year | Chinook | Sockeye | Coho | Pink | Chum | Total |
|-------------------|---------|---------|---------|--------|-----------|-----------|
| 1960 ^a | 5,969 | 0 | 2,498 | 0 | 0 | 8,467 |
| 1961 ^a | 18,918 | 0 | 5,044 | 0 | 0 | 23,962 |
| 1962 ^a | 15,341 | 0 | 12,432 | 0 | 0 | 27,773 |
| 1963 ^a | 12,016 | 0 | 15,660 | 0 | 0 | 27,676 |
| 1964 ^a | 17,149 | 0 | 28,613 | 0 | 0 | 45,762 |
| 1965 ^a | 21,989 | 0 | 12,191 | 0 | 0 | 34,180 |
| 1966 | 25,545 | 0 | 22,985 | 0 | 0 | 48,530 |
| 1967 | 29,986 | 0 | 56,313 | 0 | 148 | 86,447 |
| 1968 | 34,278 | 0 | 127,306 | 0 | 187 | 161,771 |
| 1969 | 43,997 | 322 | 83,765 | 0 | 7,165 | 135,249 |
| 1970 | 39,290 | 117 | 38,601 | 44 | 1,664 | 79,716 |
| 1971 | 40,274 | 2,606 | 5,253 | 0 | 68,914 | 117,047 |
| 1972 | 39,454 | 102 | 22,579 | 8 | 78,619 | 140,762 |
| 1973 | 32,838 | 369 | 130,876 | 33 | 148,746 | 312,862 |
| 1974 | 18,664 | 136 | 147,269 | 84 | 171,887 | 338,040 |
| 1975 | 22,135 | 23 | 81,945 | 10 | 184,171 | 288,284 |
| 1976 | 30,735 | 2,971 | 88,501 | 133 | 177,864 | 300,204 |
| 1977 | 35,830 | 9,379 | 241,364 | 203 | 248,721 | 535,497 |
| 1978 | 45,641 | 733 | 213,393 | 5,832 | 248,656 | 514,255 |
| 1979 | 38,966 | 1,054 | 219,060 | 78 | 261,874 | 521,032 |
| 1980 | 35,881 | 360 | 222,012 | 803 | 483,211 | 742,267 |
| 1981 | 47,663 | 48,375 | 211,251 | 292 | 418,677 | 726,258 |
| 1982 | 48,234 | 33,154 | 447,117 | 1,748 | 278,306 | 808,559 |
| 1983 | 33,174 | 68,855 | 196,287 | 211 | 276,698 | 575,225 |
| 1984 | 31,742 | 48,575 | 623,447 | 2,942 | 423,718 | 1,130,424 |
| 1985 | 37,889 | 106,647 | 335,606 | 75 | 199,478 | 679,695 |
| 1986 | 19,414 | 95,433 | 659,988 | 3,422 | 309,213 | 1,087,470 |
| 1987 | 36,179 | 136,602 | 399,467 | 43 | 574,336 | 1,146,627 |
| 1988 | 55,716 | 92,025 | 524,296 | 10,825 | 1,381,674 | 2,064,536 |
| 1989 | 43,217 | 42,747 | 479,856 | 464 | 749,182 | 1,315,466 |
| 1990 | 53,502 | 84,414 | 409,053 | 3,397 | 459,974 | 1,010,340 |
| 1991 | 37,778 | 108,946 | 500,935 | 378 | 431,802 | 1,079,839 |
| 1992 | 46,872 | 92,218 | 666,170 | 7,451 | 344,603 | 1,157,314 |
| 1993 | 8,735 | 27,008 | 610,739 | 64 | 43,337 | 689,883 |
| 1994 | 16,211 | 49,365 | 724,689 | 30,949 | 271,115 | 1,092,329 |
| 1995 | 30,846 | 92,500 | 471,461 | 93 | 605,918 | 1,200,818 |
| 1996 | 7,419 | 33,878 | 937,299 | 1,621 | 207,877 | 1,188,094 |
| 1997 | 10,441 | 21,989 | 130,803 | 2 | 17,026 | 180,261 |
| 1998 | 17,359 | 60,906 | 210,481 | 92 | 207,809 | 496,647 |
| 1999 | 4,705 | 16,976 | 23,593 | 2 | 23,006 | 68,282 |
| 2000 | 444 | 4,130 | 261,379 | 7 | 11,570 | 277,530 |
| 2001 | 90 | 84 | 192,998 | 0 | 1,272 | 194,444 |
| 2002 | 72 | 84 | 83,463 | 0 | 1,900 | 85,519 |
| 2003 | 158 | 282 | 284,064 | 0 | 2,764 | 287,268 |
| 2004 | 2,305 | 8,532 | 435,407 | 0 | 20,150 | 466,394 |

-continued-

Appendix B4.–Page 2 of 2.

| Year | Chinook | Sockeye | Coho | Pink | Chum | Total |
|-------------------|---------|---------|---------|------|---------|---------|
| 2005 | 4,784 | 27,645 | 142,319 | 0 | 69,139 | 243,887 |
| 2006 | 2,777 | 12,618 | 185,636 | 1 | 44,152 | 245,184 |
| 2007 | 179 | 703 | 141,049 | 0 | 10,783 | 152,714 |
| 2008 | 8,865 | 15,601 | 142,877 | 15 | 30,798 | 198,156 |
| 2009 | 6,664 | 25,673 | 104,552 | 18 | 76,956 | 213,863 |
| 2010 | 2,732 | 22,433 | 58,031 | 7 | 93,917 | 177,120 |
| 2011 | 747 | 13,497 | 74,123 | 2 | 118,316 | 206,685 |
| 2012 | 627 | 2,857 | 86,394 | 0 | 65,195 | 155,073 |
| 2013 | 174 | 768 | 114,069 | 1 | 52,236 | 167,248 |
| 2014 | 35 | 2,720 | 117,588 | 3 | 19,080 | 139,426 |
| 2015 | 8 | 130 | 65,034 | 0 | 507 | 65,679 |
| Average 2005–2014 | 2,758 | 12,452 | 116,664 | 5 | 58,057 | 189,936 |

^a Includes harvests from District 3.

Appendix B5.—District 1 commercial salmon harvest and exvessel value, 1993–2015.

| Year | Chinook | | Sockeye | | Coho | | Pink | | Chum | | Total | |
|-------------------|---------|-----------|---------|-----------|---------|-------------|--------|---------|---------|-----------|-----------|-------------|
| | Number | Value | Number | Value | Number | Value | Number | Value | Number | Value | Number | Value |
| 1993 | 8,735 | \$72,659 | 27,008 | \$140,000 | 610,739 | \$2,535,321 | 64 | \$59 | 43,337 | \$112,756 | 689,883 | \$2,860,795 |
| 1994 | 16,211 | \$126,892 | 49,365 | \$188,691 | 724,689 | \$2,875,803 | 30,930 | \$8,967 | 271,115 | \$381,639 | 1,092,310 | \$3,581,992 |
| 1995 | 30,846 | \$280,287 | 92,500 | \$448,530 | 471,461 | \$1,313,742 | 335 | \$50 | 605,918 | \$724,273 | 1,201,060 | \$2,766,882 |
| 1996 | 7,419 | \$23,665 | 33,878 | \$97,176 | 937,299 | \$1,824,683 | 1,621 | \$744 | 207,877 | \$170,977 | 1,188,094 | \$2,117,245 |
| 1997 | 10,441 | \$36,843 | 21,989 | \$64,922 | 130,803 | \$2,167,491 | 2 | \$1 | 17,026 | \$19,509 | 180,261 | \$2,288,766 |
| 1998 | 17,359 | \$74,387 | 60,906 | \$209,860 | 210,481 | \$516,024 | 92 | \$55 | 207,809 | \$183,307 | 496,647 | \$983,633 |
| 1999 | 4,705 | \$22,266 | 16,976 | \$86,442 | 23,593 | \$44,633 | 2 | \$- | 23,006 | \$16,428 | 68,282 | \$169,769 |
| 2000 | 444 | \$3,044 | 4,130 | \$14,272 | 261,379 | \$489,644 | 7 | \$3 | 11,570 | \$7,967 | 277,530 | \$514,930 |
| 2001 | 90 | \$534 | 84 | \$265 | 192,998 | \$422,573 | | | 1,272 | \$827 | 194,444 | \$424,199 |
| 2002 | 72 | \$212 | 84 | \$196 | 83,463 | \$124,763 | | | 1,900 | \$1,190 | 85,519 | \$126,361 |
| 2003 | 158 | \$846 | 282 | \$803 | 284,064 | \$450,451 | | | 2,764 | \$1,087 | 287,268 | \$453,187 |
| 2004 | 2,305 | \$9,815 | 8,532 | \$19,549 | 435,407 | \$907,791 | | | 20,150 | \$6,611 | 466,394 | \$943,766 |
| 2005 | 4,784 | \$29,040 | 27,645 | \$109,063 | 142,319 | \$287,635 | | | 69,139 | \$23,115 | 243,887 | \$448,853 |
| 2006 | 2,777 | \$16,192 | 12,618 | \$41,891 | 185,598 | \$378,318 | 1 | \$1 | 44,070 | \$14,988 | 245,064 | \$451,390 |
| 2007 | 179 | \$1,607 | 703 | \$2,411 | 141,049 | \$373,789 | | | 10,763 | \$3,033 | 152,694 | \$380,840 |
| 2008 | 8,865 | \$70,988 | 15,601 | \$59,777 | 142,862 | \$396,329 | 15 | \$4 | 30,516 | \$11,212 | 197,859 | \$538,310 |
| 2009 | 6,664 | \$61,452 | 25,673 | \$101,445 | 104,546 | \$263,457 | 2 | \$- | 76,790 | \$76,494 | 213,675 | \$502,848 |
| 2010 | 2,731 | \$53,134 | 22,428 | \$167,575 | 58,031 | \$382,452 | | | 93,148 | \$162,445 | 176,338 | \$765,606 |
| 2011 | 49 | \$411 | 13,482 | \$79,370 | 74,108 | \$334,452 | 1 | \$- | 118,256 | \$350,124 | 205,896 | \$764,357 |
| 2012 | 14 | \$225 | 2,857 | \$16,154 | 86,389 | \$323,687 | | | 65,171 | \$257,932 | 154,431 | \$597,998 |
| 2013 | 1 | \$6 | 768 | \$5,226 | 114,069 | \$833,327 | | | 52,236 | \$346,288 | 167,074 | \$1,184,847 |
| 2014 | | | 2,720 | \$19,943 | 117,588 | \$751,850 | 3 | \$- | 19,080 | \$71,563 | 139,391 | \$843,356 |
| 2015 | 2 | \$9 | 130 | \$395 | 65,034 | \$244,045 | | | 507 | \$1,567 | 65,673 | \$246,016 |
| Average 2005–2014 | 2,896 | 25,895 | 12,450 | 60,286 | 116,656 | 432,530 | 4 | 1 | 57,917 | 131,719 | 189,631 | 647,840 |

Appendix B6.—Sockeye salmon utilization, Kuskokwim River, 1990–2015.

| Year | Harvest | | | | Total |
|-------------------|-------------------------|--------------|------------------------|--------------|---------|
| | Commercial ^a | Subsistence | Test fish ^b | Sport fish | |
| 1990 | 84,414 ^c | 45,897 | 456 | 61 | 130,828 |
| 1991 | 108,946 ^c | 47,370 | 383 | 38 | 156,737 |
| 1992 | 92,218 ^c | 43,514 | 1,264 | 131 | 137,127 |
| 1993 | 27,008 ^c | 51,616 | 4,706 | 348 | 83,678 |
| 1994 | 49,365 ^c | 42,362 | 2,561 | 359 | 94,647 |
| 1995 | 92,500 ^c | 30,905 | 1,992 | 95 | 125,492 |
| 1996 | 33,878 ^c | 40,591 | 623 | 315 | 75,407 |
| 1997 | 21,989 ^c | 38,744 | 584 | 423 | 61,740 |
| 1998 | 60,906 | 36,103 | 625 | 178 | 97,812 |
| 1999 | 16,976 | 47,360 | 562 | 54 | 64,952 |
| 2000 | 4,130 | 45,942 | 410 | 46 | 50,528 |
| 2001 | 84 | 53,245 | 510 | 231 | 54,070 |
| 2002 | 84 | 32,296 | 0 | 42 | 32,422 |
| 2003 | 282 | 32,241 | 0 | 140 | 32,663 |
| 2004 | 8,532 ^c | 39,127 | 44 | 400 | 48,103 |
| 2005 | 27,645 ^c | 41,885 | 7 | 636 | 70,173 |
| 2006 | 12,618 ^c | 43,577 | 0 | 231 | 56,426 |
| 2007 | 703 ^c | 46,817 | 4 | 322 | 47,846 |
| 2008 | 15,601 ^c | 52,213 | 0 | 273 | 68,087 |
| 2009 | 25,673 ^c | 35,747 | 0 | 162 | 61,582 |
| 2010 | 22,428 ^c | 38,735 | 0 | 419 | 61,582 |
| 2011 | 13,482 ^c | 43,245 | 0 | 98 | 56,825 |
| 2012 | 2,857 ^c | 47,396 | 1 | 132 | 50,386 |
| 2013 | 768 ^c | 39,382 | 0 | 85 | 40,235 |
| 2014 | 2,720 ^c | 48,372 | 0 | 270 | 51,362 |
| 2015 | 130 ^c | ^d | 0 | ^d | |
| Average 2005–2014 | 13,031 | 42,812 | 6 | 276 | 56,125 |

^a Not including personal use.

^b Test fishery sales only, does not include donations.

^c Districts 1 and 2.

^d Estimate not available at time of publication.

Appendix B7.–Coho salmon utilization, Kuskokwim River, 1990–2015.

| Year | Harvest | | | | Total |
|-------------------|-------------------------|--------------|------------------------|--------------|---------|
| | Commercial ^a | Subsistence | Test fish ^b | Sport fish | |
| 1990 | 409,053 ^c | 57,560 | 1,279 | 581 | 468,473 |
| 1991 | 500,935 ^c | 39,252 | 1,188 | 1,003 | 542,378 |
| 1992 | 666,170 ^c | 52,299 | 10,109 | 1,692 | 730,270 |
| 1993 | 610,739 ^c | 28,485 | 8,084 | 980 | 648,288 |
| 1994 | 724,689 ^c | 36,609 | 7,854 | 1,925 | 771,077 |
| 1995 | 471,461 ^c | 36,823 | 6,620 | 1,497 | 516,401 |
| 1996 | 937,299 ^c | 43,173 | 3,013 | 3,423 | 986,908 |
| 1997 | 130,803 ^c | 29,816 | 1,103 | 2,408 | 164,130 |
| 1998 | 210,481 ^c | 24,667 | 607 | 2,419 | 238,174 |
| 1999 | 23,593 | 27,409 | 343 | 1,998 | 53,343 |
| 2000 | 261,379 ^c | 42,341 | 2,818 | 1,689 | 308,227 |
| 2001 | 192,998 | 31,089 | 1,530 | 1,204 | 226,821 |
| 2002 | 83,463 | 42,602 | 680 | 2,030 | 128,775 |
| 2003 | 284,064 | 33,259 | 570 | 3,244 | 321,137 |
| 2004 | 435,407 ^c | 45,450 | 464 | 4,996 | 486,317 |
| 2005 | 142,319 ^c | 32,755 | 454 | 3,539 | 179,067 |
| 2006 | 185,598 ^c | 41,175 | 169 | 1,474 | 228,416 |
| 2007 | 141,049 ^c | 33,766 | 446 | 2,355 | 177,616 |
| 2008 | 142,862 ^c | 44,724 | 0 | 3,755 | 191,341 |
| 2009 | 104,546 ^c | 29,767 | 0 | 3,257 | 137,570 |
| 2010 | 58,031 ^c | 33,580 | 0 | 1,482 | 93,093 |
| 2011 | 74,108 ^c | 32,172 | 0 | 896 | 107,176 |
| 2012 | 86,389 ^c | 28,200 | 151 | 974 | 115,714 |
| 2013 | 114,069 ^c | 26,409 | 0 | 1,147 | 141,625 |
| 2014 | 117,588 ^c | 49,736 | 0 | 1,059 | 168,383 |
| 2015 | 65,034 ^c | ^d | 0 | ^d | |
| Average 2005–2014 | 116,656 | 35,228 | 122 | 1,994 | 154,000 |

^a Not including personal use.

^b Test fishery sales only, does not include donations.

^c Districts 1 and 2.

^d Estimate not available at time of publication.

Appendix B8.–Chum salmon utilization, Kuskokwim River, 1990–2015.

| Year | Harvest | | | | Total |
|-------------------|-------------------------|--------------|------------------------|--------------|---------|
| | Commercial ^a | Subsistence | Test fish ^b | Sport fish | |
| 1990 | 459,974 ^c | 153,825 | 1,650 | 533 | 615,982 |
| 1991 | 431,802 ^c | 87,237 | 1,014 | 378 | 520,431 |
| 1992 | 344,603 ^c | 116,391 | 12,409 | 608 | 474,011 |
| 1993 | 43,337 ^c | 59,797 | 8,365 | 359 | 111,858 |
| 1994 | 271,115 ^c | 76,937 | 11,637 | 1,280 | 360,969 |
| 1995 | 605,918 ^c | 70,977 | 16,241 | 226 | 693,362 |
| 1996 | 207,877 ^c | 100,913 | 2,864 | 280 | 311,934 |
| 1997 | 17,026 ^c | 37,366 | 790 | 86 | 55,268 |
| 1998 | 207,809 ^c | 61,732 | 1,140 | 291 | 270,972 |
| 1999 | 23,006 | 44,242 | 363 | 180 | 67,791 |
| 2000 | 11,570 | 56,499 | 1,033 | 26 | 69,128 |
| 2001 | 1,272 | 56,005 | 19 | 112 | 57,408 |
| 2002 | 1,900 | 86,381 | 7 | 53 | 88,341 |
| 2003 | 2,764 | 41,167 | 0 | 53 | 43,984 |
| 2004 | 20,150 ^c | 64,140 | 113 | 84 | 84,487 |
| 2005 | 69,139 ^c | 58,555 | 96 | 500 | 128,290 |
| 2006 | 44,152 ^c | 89,674 | 0 | 13 | 133,839 |
| 2007 | 10,783 ^c | 73,560 | 53 | 391 | 84,787 |
| 2008 | 30,798 ^c | 63,789 | 0 | 121 | 94,708 |
| 2009 | 76,956 ^c | 44,324 | 0 | 285 | 121,565 |
| 2010 | 93,917 ^c | 45,089 | 0 | 85 | 139,091 |
| 2011 | 118,316 ^c | 54,316 | 0 | 83 | 172,715 |
| 2012 | 65,195 ^c | 79,631 | 93 | 80 | 144,999 |
| 2013 | 52,236 ^c | 53,627 | 0 | 31 | 105,894 |
| 2014 | 19,080 ^c | 68,398 | 0 | 36 | 87,514 |
| 2015 | 507 ^c | ^d | 0 | ^d | |
| Average 2005–2014 | 58,057 | 63,096 | 24 | 163 | 121,340 |

^a Not including personal use.

^b Test fishery sales only, does not include donations.

^c Districts 1 and 2.

^d Estimate not available at time of publication.

Appendix B9.–District W-1 commercial salmon harvest by period, 2015.

| Date | Permits | Landings | Subdistrict | Number of salmon | | | | Total |
|--------|---------|------------------|-------------|----------------------|---------|--------|------|--------|
| | | | | Chinook ^a | Sockeye | Coho | Chum | |
| Aug 10 | 186 | 198 ^b | 1-B | 0 | 99 | 22,966 | 357 | 23,422 |
| Aug 17 | 221 | 245 ^b | 1-B | 0 | 6 | 28,013 | 102 | 28,121 |
| Aug 21 | 205 | 207 ^b | 1-B | 2 | 25 | 14,055 | 48 | 14,130 |
| Total | 283 | 650 | | 2 | 130 | 65,034 | 507 | 65,673 |

^a Coastal Villages Seafoods did not purchase Chinook salmon during the first 2 periods in 2015 but 6 Chinook salmon were harvested during commercial openings and were retained for personal use.

^b Two hours of additional fishing time was allowed in Lower Section of W1-B.

Appendix B10.--Daily mean tidal CPUE, cumulative mean tidal CPUE, and percent passage for the Bethel test fishery, 2015.

| Date | Chinook | | | Sockeye | | | Coho | | | Chum | | |
|------|-----------------------|----------------------------|-----------------|-----------------------|----------------------------|-----------------|-----------------------|----------------------------|-----------------|-----------------------|----------------------------|-----------------|
| | Daily mean tidal CPUE | Cumulative mean tidal CPUE | Percent passage | Daily mean tidal CPUE | Cumulative mean tidal CPUE | Percent passage | Daily mean tidal CPUE | Cumulative mean tidal CPUE | Percent passage | Daily mean tidal CPUE | Cumulative mean tidal CPUE | Percent passage |
| 6/1 | 5 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6/2 | 9 | 14 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6/3 | 0 | 14 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6/4 | 5 | 20 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6/5 | 4 | 24 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6/6 | 11 | 35 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 |
| 6/7 | 18 | 53 | 8 | 3 | 3 | 3 | 0 | 0 | 0 | 13 | 15 | 1 |
| 6/8 | 7 | 60 | 10 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 15 | 1 |
| 6/9 | 17 | 76 | 12 | 0 | 3 | 0 | 0 | 0 | 0 | 3 | 18 | 1 |
| 6/10 | 13 | 89 | 14 | 3 | 6 | 0 | 0 | 0 | 0 | 0 | 18 | 1 |
| 6/11 | 15 | 104 | 17 | 3 | 9 | 0 | 0 | 0 | 0 | 0 | 18 | 1 |
| 6/12 | 12 | 117 | 19 | 3 | 12 | 1 | 0 | 0 | 0 | 3 | 21 | 1 |
| 6/13 | 15 | 132 | 21 | 0 | 12 | 1 | 0 | 0 | 0 | 3 | 24 | 1 |
| 6/14 | 12 | 144 | 23 | 0 | 12 | 1 | 0 | 0 | 0 | 3 | 27 | 1 |
| 6/15 | 21 | 164 | 26 | 8 | 20 | 1 | 0 | 0 | 0 | 8 | 35 | 1 |
| 6/16 | 28 | 192 | 31 | 8 | 28 | 1 | 0 | 0 | 0 | 10 | 46 | 2 |
| 6/17 | 23 | 216 | 35 | 10 | 38 | 2 | 0 | 0 | 0 | 16 | 62 | 2 |
| 6/18 | 22 | 238 | 38 | 20 | 58 | 3 | 0 | 0 | 0 | 25 | 87 | 3 |
| 6/19 | 21 | 259 | 41 | 20 | 78 | 4 | 0 | 0 | 0 | 52 | 140 | 5 |
| 6/20 | 12 | 271 | 43 | 23 | 101 | 5 | 0 | 0 | 0 | 138 | 277 | 9 |
| 6/21 | 25 | 296 | 47 | 8 | 109 | 5 | 0 | 0 | 0 | 15 | 293 | 10 |
| 6/22 | 25 | 321 | 51 | 81 | 189 | 9 | 0 | 0 | 0 | 88 | 381 | 13 |
| 6/23 | 15 | 336 | 54 | 31 | 220 | 10 | 0 | 0 | 0 | 50 | 431 | 15 |
| 6/24 | 9 | 345 | 55 | 5 | 226 | 10 | 0 | 0 | 0 | 40 | 471 | 16 |
| 6/25 | 1 | 347 | 55 | 11 | 237 | 11 | 0 | 0 | 0 | 11 | 482 | 16 |
| 6/26 | 20 | 366 | 59 | 56 | 293 | 14 | 0 | 0 | 0 | 58 | 541 | 18 |
| 6/27 | 5 | 372 | 59 | 24 | 317 | 15 | 0 | 0 | 0 | 14 | 554 | 19 |
| 6/28 | 15 | 387 | 62 | 77 | 395 | 18 | 0 | 0 | 0 | 35 | 590 | 20 |
| 6/29 | 18 | 405 | 65 | 106 | 500 | 23 | 0 | 0 | 0 | 38 | 628 | 21 |
| 6/30 | 26 | 431 | 69 | 214 | 714 | 33 | 0 | 0 | 0 | 68 | 695 | 24 |
| 7/1 | 13 | 444 | 71 | 161 | 874 | 41 | 0 | 0 | 0 | 27 | 722 | 25 |
| 7/2 | 12 | 456 | 73 | 82 | 956 | 44 | 0 | 0 | 0 | 39 | 760 | 26 |
| 7/3 | 9 | 465 | 74 | 157 | 1,114 | 52 | 0 | 0 | 0 | 68 | 829 | 28 |
| 7/4 | 19 | 484 | 77 | 136 | 1,249 | 58 | 0 | 0 | 0 | 94 | 923 | 31 |
| 7/5 | 9 | 493 | 79 | 48 | 1,297 | 60 | 0 | 0 | 0 | 21 | 944 | 32 |
| 7/6 | 10 | 504 | 81 | 54 | 1,352 | 63 | 7 | 7 | 0 | 97 | 1,041 | 35 |

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Appendix B10.–Page 2 of 3.

| Date | Chinook | | | Sockeye | | | Coho | | | Chum | | |
|-------------------|-----------------------|----------------------------|-----------------|-----------------------|----------------------------|-----------------|-----------------------|----------------------------|-----------------|-----------------------|----------------------------|-----------------|
| | Daily mean tidal CPUE | Cumulative mean tidal CPUE | Percent passage | Daily mean tidal CPUE | Cumulative mean tidal CPUE | Percent passage | Daily mean tidal CPUE | Cumulative mean tidal CPUE | Percent passage | Daily mean tidal CPUE | Cumulative mean tidal CPUE | Percent passage |
| 7/7 | 9 | 513 | 82 | 155 | 1,506 | 70 | 0 | 0 | 0 | 220 | 1,261 | 43 |
| 7/8 | 5 | 518 | 83 | 59 | 1,566 | 73 | 0 | 0 | 0 | 81 | 1,342 | 46 |
| 7/9 | 5 | 523 | 84 | 87 | 1,653 | 77 | 0 | 0 | 0 | 26 | 1,368 | 46 |
| 7/10 | 4 | 527 | 84 | 36 | 1,689 | 78 | 0 | 0 | 0 | 23 | 1,392 | 47 |
| 7/11 | 8 | 535 | 86 | 52 | 1,740 | 81 | 3 | 3 | 0 | 34 | 1,425 | 48 |
| 7/12 | 3 | 537 | 86 | 41 | 1,782 | 83 | 0 | 3 | 0 | 67 | 1,492 | 51 |
| 7/13 | 5 | 543 | 87 | 21 | 1,803 | 84 | 0 | 3 | 0 | 29 | 1,521 | 52 |
| 7/14 | 9 | 552 | 88 | 24 | 1,827 | 85 | 0 | 3 | 0 | 133 | 1,654 | 56 |
| 7/15 ^a | 4 | 556 | 89 | 66 | 1,893 | 88 | 0 | 3 | 0 | 42 | 1,697 | 58 |
| 7/16 | 6 | 562 | 90 | 49 | 1,942 | 90 | 2 | 4 | 0 | 113 | 1,810 | 61 |
| 7/17 | 2 | 564 | 90 | 43 | 1,985 | 92 | 0 | 4 | 0 | 95 | 1,905 | 65 |
| 7/18 | 7 | 571 | 91 | 21 | 2,006 | 93 | 2 | 6 | 0 | 123 | 2,028 | 69 |
| 7/19 | 8 | 579 | 93 | 26 | 2,032 | 94 | 8 | 14 | 1 | 59 | 2,088 | 71 |
| 7/20 | 4 | 584 | 93 | 26 | 2,059 | 95 | 11 | 25 | 1 | 147 | 2,235 | 76 |
| 7/21 | 5 | 589 | 94 | 15 | 2,074 | 96 | 19 | 44 | 2 | 40 | 2,275 | 77 |
| 7/22 | 8 | 597 | 96 | 18 | 2,092 | 97 | 19 | 63 | 2 | 103 | 2,378 | 81 |
| 7/23 | 3 | 600 | 96 | 7 | 2,099 | 97 | 31 | 94 | 3 | 65 | 2,442 | 83 |
| 7/24 | 3 | 604 | 97 | 5 | 2,104 | 98 | 21 | 115 | 4 | 41 | 2,484 | 84 |
| 7/25 | 0 | 604 | 97 | 4 | 2,108 | 98 | 15 | 130 | 5 | 9 | 2,493 | 85 |
| 7/26 | 2 | 606 | 97 | 9 | 2,117 | 98 | 47 | 177 | 6 | 56 | 2,548 | 87 |
| 7/27 | 4 | 610 | 98 | 4 | 2,121 | 98 | 66 | 244 | 9 | 73 | 2,621 | 89 |
| 7/28 | 0 | 610 | 98 | 7 | 2,128 | 99 | 34 | 277 | 10 | 33 | 2,654 | 90 |
| 7/29 | 0 | 610 | 98 | 3 | 2,131 | 99 | 41 | 319 | 12 | 45 | 2,698 | 92 |
| 7/30 | 0 | 610 | 98 | 5 | 2,137 | 99 | 52 | 371 | 14 | 29 | 2,727 | 93 |
| 7/31 | 0 | 610 | 98 | 0 | 2,137 | 99 | 90 | 461 | 17 | 23 | 2,751 | 93 |
| 8/1 | 8 | 618 | 99 | 4 | 2,140 | 99 | 70 | 531 | 19 | 25 | 2,776 | 94 |
| 8/2 | 2 | 620 | 99 | 4 | 2,144 | 99 | 69 | 601 | 22 | 30 | 2,806 | 95 |
| 8/3 | 4 | 623 | 100 | 2 | 2,146 | 99 | 60 | 661 | 24 | 12 | 2,819 | 96 |
| 8/4 | 0 | 623 | 100 | 0 | 2,146 | 99 | 96 | 756 | 28 | 27 | 2,846 | 97 |
| 8/5 | 0 | 623 | 100 | 0 | 2,146 | 99 | 116 | 872 | 32 | 24 | 2,870 | 97 |
| 8/6 | 2 | 625 | 100 | 0 | 2,146 | 99 | 100 | 972 | 36 | 17 | 2,887 | 98 |
| 8/7 | 0 | 625 | 100 | 0 | 2,146 | 99 | 126 | 1,098 | 40 | 3 | 2,890 | 98 |
| 8/8 | 0 | 625 | 100 | 0 | 2,146 | 99 | 44 | 1,142 | 42 | 2 | 2,892 | 98 |
| 8/9 | 0 | 625 | 100 | 2 | 2,148 | 100 | 103 | 1,245 | 46 | 7 | 2,898 | 98 |
| 8/10 | 0 | 625 | 100 | 0 | 2,148 | 100 | 77 | 1,322 | 48 | 11 | 2,909 | 99 |

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Appendix B10.–Page 3 of 3.

| Date | Chinook | | | Sockeye | | | Coho | | | Chum | | |
|--------|-----------------------|----------------------------|-----------------|-----------------------|----------------------------|-----------------|-----------------------|----------------------------|-----------------|-----------------------|----------------------------|-----------------|
| | Daily mean tidal CPUE | Cumulative mean tidal CPUE | Percent passage | Daily mean tidal CPUE | Cumulative mean tidal CPUE | Percent passage | Daily mean tidal CPUE | Cumulative mean tidal CPUE | Percent passage | Daily mean tidal CPUE | Cumulative mean tidal CPUE | Percent passage |
| 8/11 | 0 | 625 | 100 | 0 | 2,148 | 100 | 74 | 1,396 | 51 | 2 | 2,911 | 99 |
| 8/12 | 0 | 625 | 100 | 2 | 2,150 | 100 | 127 | 1,523 | 56 | 3 | 2,914 | 99 |
| 8/13 | 0 | 625 | 100 | 0 | 2,150 | 100 | 143 | 1,666 | 61 | 7 | 2,921 | 99 |
| 8/14 | 0 | 625 | 100 | 0 | 2,150 | 100 | 66 | 1,732 | 63 | 6 | 2,926 | 99 |
| 8/15 | 0 | 625 | 100 | 0 | 2,150 | 100 | 106 | 1,837 | 67 | 2 | 2,928 | 99 |
| 8/16 | 0 | 625 | 100 | 1 | 2,151 | 100 | 217 | 2,055 | 75 | 1 | 2,930 | 100 |
| 8/17 | 0 | 625 | 100 | 2 | 2,153 | 100 | 159 | 2,214 | 81 | 3 | 2,933 | 100 |
| 8/18 | 0 | 625 | 100 | 0 | 2,153 | 100 | 89 | 2,303 | 84 | 4 | 2,937 | 100 |
| 8/19 | 0 | 625 | 100 | 2 | 2,155 | 100 | 72 | 2,375 | 87 | 0 | 2,937 | 100 |
| 8/20 | 0 | 625 | 100 | 0 | 2,155 | 100 | 78 | 2,453 | 90 | 5 | 2,942 | 100 |
| 8/21 | 0 | 625 | 100 | 4 | 2,158 | 100 | 75 | 2,528 | 92 | 2 | 2,943 | 100 |
| 8/22 | 0 | 625 | 100 | 0 | 2,158 | 100 | 101 | 2,629 | 96 | 0 | 2,943 | 100 |
| 8/23 | 0 | 625 | 100 | 0 | 2,158 | 100 | 59 | 2,688 | 98 | 0 | 2,943 | 100 |
| 8/24 | 0 | 625 | 100 | 0 | 2,158 | 100 | 48 | 2,736 | 100 | 0 | 2,943 | 100 |
| Totals | 625 | | | 2,158 | | | 2,736 | | | 2,943 | | |

Note: The boxes represent the central 50% of the run and the shaded cells represent the median passage date of the run.

^a The use of the 8.0 inch mesh gillnet was discontinued after July 15.

Appendix B11.–Bethel test fishery cumulative CPUE by species, 1984–2015.

| Year | Chinook | Sockeye | Coho | Chum |
|-------------------|---------|---------|-------|--------|
| 1984 | 272 | 579 | 3,126 | 2,387 |
| 1985 | 114 | 1,654 | 1,778 | 1,327 |
| 1986 | 201 | 2,445 | 4,471 | 4,066 |
| 1987 | 582 | 2,762 | 1,960 | 4,900 |
| 1988 | 361 | 1,501 | 3,437 | 5,189 |
| 1989 | 523 | 799 | 2,609 | 2,607 |
| 1990 | 445 | 1,114 | 2,307 | 2,718 |
| 1991 | 172 | 581 | 1,527 | 1,262 |
| 1992 | 349 | 1,109 | 2,707 | 3,058 |
| 1993 | 472 | 1,705 | 2,697 | 2,585 |
| 1994 | 362 | 1,475 | 2,938 | 4,797 |
| 1995 | 443 | 1,367 | 1,911 | 3,985 |
| 1996 | 458 | 1,794 | 5,630 | 8,255 |
| 1997 | 478 | 1,424 | 2,080 | 1,955 |
| 1998 | 344 | 1,455 | 1,326 | 2,332 |
| 1999 | 130 | 1,247 | 416 | 548 |
| 2000 | 95 | 1,048 | 5,236 | 2,592 |
| 2001 | 122 | 1,211 | 2,914 | 3,395 |
| 2002 | 410 | 566 | 4,289 | 6,794 |
| 2003 | 649 | 1,718 | 4,819 | 4,803 |
| 2004 | 1,134 | 2,108 | 6,771 | 5,240 |
| 2005 | 883 | 3,019 | 3,678 | 18,177 |
| 2006 | 664 | 2,136 | 3,164 | 13,925 |
| 2007 | 513 | 1,520 | 3,328 | 10,654 |
| 2008 | 623 | 1,708 | 5,494 | 6,737 |
| 2009 | 706 | 1,521 | 4,495 | 8,245 |
| 2010 | 461 | 1,374 | 2,024 | 7,651 |
| 2011 | 578 | 1,517 | 3,234 | 10,028 |
| 2012 | 419 | 1,171 | 2,376 | 6,890 |
| 2013 | 261 | 1,146 | 2,865 | 5,701 |
| 2014 | 650 | 1,367 | 4,697 | 6,338 |
| 2015 | 625 | 2,158 | 2,736 | 2,942 |
| Average 2008–2014 | 528 | 1,400 | 3,598 | 7,370 |

Appendix B12.—Chinook salmon escapements at Kuskokwim River weir projects, 2003–2015.

| Year | Chinook salmon escapement | | | | | | Salmon (Pitka Fork) |
|-------------------|---------------------------|----------|-------------------|--------------|--------------|--------------|---------------------------|
| | Kwethluk | Tuluksak | Salmon (Aniak) | George | Kogrukruk | Tatlawiksuk | |
| 2003 | 14,474 | 1,064 | ^a | ^b | 12,008 | ^b | |
| 2004 | 28,605 | 1,475 | ^a | 5,488 | 19,819 | 2,833 | |
| 2005 | ^a | 2,653 | ^a | 3,845 | 21,819 | 2,864 | |
| 2006 | 17,619 | 1,043 | 7,075 | 4,355 | 20,205 | 1,700 | |
| 2007 | 12,927 | 374 | 6,255 | 4,011 | ^b | 2,032 | |
| 2008 | 5,276 | 701 | 2,376 | 2,563 | 9,750 | 1,075 | |
| 2009 | 5,744 | 362 | 1,656 | 3,663 | 9,528 | 1,071 | |
| 2010 | 1,668 | 201 | ^a | 1,498 | 5,812 | 546 | |
| 2011 | 4,079 | 284 | ^a | 1,547 | 6,731 | 992 | |
| 2012 | ^a | 560 | ^b | 2,201 | ^b | 1,116 | |
| 2013 | ^a | 193 | 625 | 1,292 | 1,819 | 495 | |
| 2014 | 3,187 | 320 | 1,757 | 2,993 | 3,732 | 1,904 | |
| 2015 | 8,162 | 709 | 2,404 | 2,282 | 8,081 | 2,104 | 6,736 |
| SEG | 4,100–7,500 | | | 1,800–3,300 | 4,800–8,800 | | |
| Average 2005–2014 | 7,214 | 669 | 3,291 | 2,797 | 9,925 | 1,380 | |

^a Weir did not operate or counts were incomplete.

^b Historical run timing indicates that more than 40% of the run was missed; annual escapement was not determined.

Appendix B13.–Sockeye salmon escapements at Kuskokwim River weir projects, 2003–2015.

| Year | Sockeye salmon escapement | | | | | | |
|-------------------|---------------------------|----------|-------------------|--------|--------------|--------------|--------------|
| | Kwethluk | Tuluksak | Salmon (Aniak) | George | Kogrukluk | Tatlawiksuk | Telaquana |
| 2003 | 2,928 | 288 | ^a | 14 | 9,302 | ^a | ^a |
| 2004 | 3,490 | 136 | ^a | 177 | 6,895 | 10 | ^a |
| 2005 | ^a | 642 | ^a | 272 | 37,787 | 74 | ^a |
| 2006 | 6,733 | 985 | 7,086 | 146 | 61,382 | 38 | ^a |
| 2007 | 5,262 | 352 | 2,189 | 65 | 17,211 | 25 | ^a |
| 2008 | 2,451 | 188 | 1,181 | 92 | 19,675 | 39 | ^a |
| 2009 | 4,230 | 686 | 1,366 | 54 | 22,826 | 39 | ^a |
| 2010 | 4,239 | 437 | ^a | 113 | 17,139 | 28 | 72,021 |
| 2011 | 2,031 | 126 | ^a | 43 | 7,974 | 15 | 35,105 |
| 2012 | ^a | 187 | 924 | 79 | ^b | 9 | 22,994 |
| 2013 | ^a | 394 | 966 | 150 | 7,808 | 37 | 27,806 |
| 2014 | 3,778 | 514 | 894 | 156 | 6,413 | 9 | 23,820 |
| 2015 | 8,975 | 824 | 1,669 | 159 | 6,411 | 0 | 95,516 |
| SEG | | | | | 4,400–17,000 | | |
| Average 2005–2014 | 4,103 | 451 | 2,087 | 117 | 22,024 | 31 | 36,349 |

^a Weir did not operate or counts were incomplete.

^b Historical run timing indicates that more than 40% of the run was missed; annual escapement was not determined.

Appendix B14.–Coho salmon escapements at Kuskokwim River weir projects, 2003–2015.

| Year | Coho salmon escapement | | | | | |
|-------------------|------------------------|----------|--------|--------|---------------|-------------|
| | Kwethluk | Tuluksak | Salmon | George | Kogrukuk | Tatlawiksuk |
| 2003 | 109,163 | 41,071 | b | 32,873 | 74,915 | a |
| 2004 | 64,216 | 20,336 | b | 12,499 | 26,078 | 16,446 |
| 2005 | a | 11,324 | b | 8,294 | 25,407 | 7,076 |
| 2006 | 25,664 | 6,111 | a | 12,705 | 16,268 | a |
| 2007 | 20,256 | 2,807 | a | 28,398 | 26,423 | 8,500 |
| 2008 | 49,972 | 7,457 | 10,974 | 21,931 | 29,237 | 11,022 |
| 2009 | 21,911 | 8,137 | 6,351 | 12,490 | 22,289 | 10,148 |
| 2010 | a | 1,216 | b | 12,639 | 14,689 | 3,733 |
| 2011 | a | a | b | 29,120 | 21,800 | 14,184 |
| 2012 | 19,960 | 4,407 | a | 14,478 | 13,421 | 8,015 |
| 2013 | a | 6,490 | 2,797 | 15,308 | 21,207 | 12,764 |
| 2014 | 43,945 | 13,672 | 8,254 | 35,771 | 52,975 | 19,814 |
| 2015 | 24,443 | 6,611 | a | 35,812 | 32,493 | 17,701 |
| SEG | >19,000 | | | | 13,000–28,000 | |
| Average 2005–2014 | 30,285 | 6,847 | 7,094 | 19,113 | 24,372 | 10,584 |

^a Weir did not operate or counts were incomplete.

^b Historical run timing indicates that more than 40% of the run was missed; annual escapement was not determined.

Appendix B15.–Chum salmon escapements at Kuskokwim River weir projects, 2003–2015.

| Year | Chum salmon escapement | | | | | |
|-------------------|------------------------|----------|-------------------|--------|---------------|--------------|
| | Kwethluk | Tuluksak | Salmon (Aniak) | George | Kogrukluk | Tatlawiksuk |
| 2003 | 41,812 | 11,725 | ^a | 33,648 | 23,779 | ^b |
| 2004 | 38,646 | 11,796 | ^a | 15,012 | 24,405 | 21,245 |
| 2005 | ^a | 35,696 | ^a | 14,835 | 194,887 | 55,599 |
| 2006 | 47,491 | 25,652 | 42,825 | 42,318 | 188,003 | 32,776 |
| 2007 | 54,913 | 17,286 | 25,340 | 61,531 | 52,961 | 83,484 |
| 2008 | 20,030 | 12,550 | 9,459 | 29,396 | 44,744 | 30,129 |
| 2009 | 32,191 | 13,671 | 9,392 | 7,944 | 82,483 | 19,975 |
| 2010 | 19,235 | 13,042 | ^a | 26,275 | 69,258 | 37,737 |
| 2011 | 18,329 | 9,828 | ^a | 46,650 | 76,823 | 88,202 |
| 2012 | ^a | 16,981 | ^b | 33,310 | ^b | 44,569 |
| 2013 | ^a | 12,911 | 7,723 | 37,879 | 65,644 | 32,249 |
| 2014 | 17,941 | 8,724 | 2,890 | 17,148 | 30,763 | 12,455 |
| 2015 | 23,039 | 6,337 | 5,657 | 17,551 | 33,201 | 10,379 |
| SEG | | | | | 15,000–49,000 | |
| Average 2005–2014 | 30,019 | 16,634 | 16,272 | 31,729 | 89,507 | 43,718 |

^a Weir did not operate or counts were incomplete.

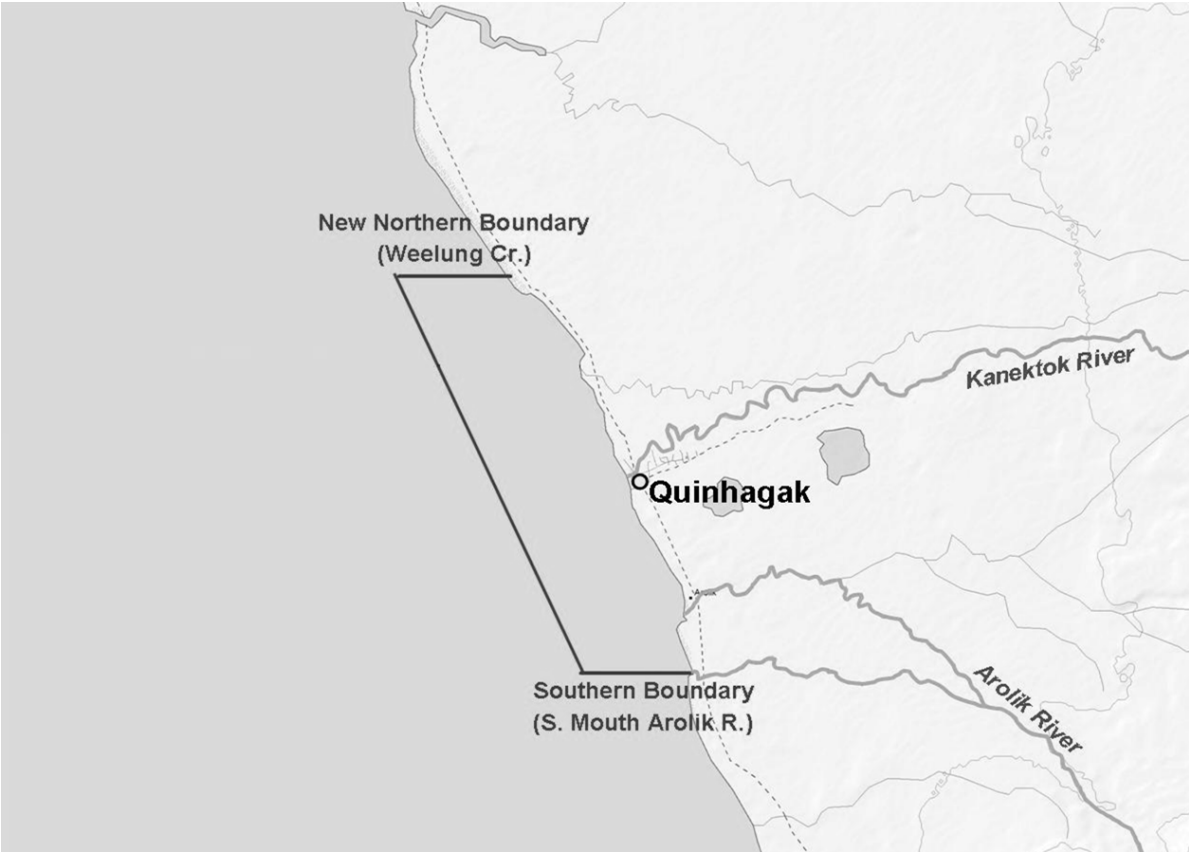
^b Historical run timing indicates that more than 40% of the run was missed; annual escapement was not determined.

Appendix B16.–Kuskokwim River drainage Chinook salmon aerial survey estimates, 2003–2015.

| Year | Kwethluk | | | | | | Salmon | | | | | Cheeneetnu | Bear | Salmon | Upper |
|------------|----------|------------|-----------|----------|--------|---------|---------|--------------|-----------|---------|-----------|------------|---------|---------|------------|
| | Eek | Crooked C. | Kisaralik | Tuluksak | Aniak | Kipchuk | (Aniak) | Holokuk | Oskawalik | Holitna | Gagarayah | | (Pitka) | (Pitka) | Pitka Fork |
| 2003 | 1,525 | 2,661 | 654 | 94 | 3,514 | 1,493 | 1,242 | 1,096 | 844 | | 1,093 | 810 | 176 | | 197 |
| 2004 | 4,653 | 6,801 | 5,157 | 1,196 | 5,362 | 1,868 | 2,177 | 539 | 293 | 4,051 | 670 | 918 | 206 | 1,138 | 290 |
| 2005 | | 5,059 | 2,206 | 672 | | 1,679 | 4,097 | 510 | 582 | 1,760 | | | 367 | 1,801 | 744 |
| 2006 | | | 4,734 | | 5,639 | 1,618 | | 705 | 386 | 1,866 | 531 | 1,015 | 347 | 862 | 170 |
| 2007 | | | 692 | 173 | 3,984 | 2,147 | 1,458 | | | | 1,035 | | 165 | 943 | 131 |
| 2008 | | 487 | 1,074 | | 3,222 | 1,061 | 589 | 418 | 213 | | 177 | 290 | 245 | 1,033 | 248 |
| 2009 | | | | | | | | 565 | 379 | | 303 | 323 | 209 | 632 | 187 |
| 2010 | | | 235 | | | | | 229 | | | 62 | | 75 | 135 | 67 |
| 2011 | 263 | | | | | | 116 | 79 | 61 | 26 | 96 | 249 | 145 | 767 | 85 |
| 2012 | | | 588 | | | | 193 | 49 | 36 | 51 | 178 | 229 | | 670 | |
| 2013 | 240 | 1,165 | 599 | 83 | 754 | 261 | 154 | ^b | 38 | 532 | 74 | 138 | 64 | 469 | |
| 2014 | 189 | | 622 | | 3,201 | 1,220 | 497 | 80 | 200 | | 359 | 340 | | 1,865 | |
| 2015 | | | 709 | | | | 917 | 810 | 77 | | 662 | 19 | | 1,381 | 2,016 |
| Escapement | | | 400- | | 1,200- | | 330- | | | 970- | 300- | 340- | | 470- | |
| Goal | | | 1,200 | | 2,300 | | 1,200 | | | 2,100 | 830 | 1,300 | | 1,600 | |
| 10-yr ave | 231 | 2,237 | 1,344 | 309 | 3,360 | 1,037 | 989 | 326 | 234 | 1,386 | 313 | 369 | 202 | 918 | 233 |

Note: Estimates are from aerial surveys conducted during peak spawning periods under good or fair survey conditions. Blank cells indicate that the survey was either not flown or did not meet acceptable survey criteria.

APPENDIX C



Appendix C1.–Map of Commercial Fishing District W-4, Kuskokwim Management Area.

Appendix C2.–District 4 commercial salmon harvest, including personal use, 1960–2015.

| Year | Chinook | Sockeye | Coho | Pink | Chum | Total |
|-------------------|---------|---------|----------------------|--------|---------|---------|
| 1960 | 0 | 5,649 | 3,000 | 0 | 0 | 8,649 |
| 1961 | 4,328 | 2,308 | 46 | 90 | 18,864 | 25,636 |
| 1962 | 5,526 | 10,313 | 0 | 4,340 | 45,707 | 65,886 |
| 1963 | 6,555 | 0 | 0 | 0 | 0 | 6,555 |
| 1964 | 4,081 | 13,422 | 379 | 939 | 707 | 19,528 |
| 1965 | 2,976 | 1,886 | 0 | 0 | 4,242 | 9,104 |
| 1966 | 278 | 1,030 | 0 | 268 | 2,610 | 4,186 |
| 1967 | 0 | 652 | 1,926 | 0 | 8,087 | 10,665 |
| 1968 | 8,879 | 5,884 | 21,511 | 75,818 | 19,497 | 131,589 |
| 1969 | 16,802 | 3,784 | 15,077 | 953 | 38,206 | 74,822 |
| 1970 | 18,269 | 5,393 | 16,850 | 15,195 | 46,556 | 102,263 |
| 1971 | 4,185 | 3,118 | 2,982 | 13 | 30,208 | 40,506 |
| 1972 | 15,880 | 3,286 | 376 | 1,878 | 17,247 | 38,667 |
| 1973 | 14,993 | 2,783 | 16,515 | 277 | 19,680 | 54,248 |
| 1974 | 8,704 | 19,510 | 10,979 | 43,642 | 15,298 | 98,133 |
| 1975 | 3,928 | 8,584 | 10,742 | 486 | 35,233 | 58,973 |
| 1976 | 14,110 | 6,090 | 13,777 | 31,412 | 43,659 | 109,048 |
| 1977 | 19,090 | 5,519 | 9,028 | 202 | 43,707 | 77,546 |
| 1978 | 12,335 | 7,589 | 20,114 | 47,033 | 24,798 | 111,869 |
| 1979 | 11,144 | 18,828 | 47,525 | 295 | 25,995 | 103,787 |
| 1980 | 10,387 | 13,221 | 62,610 | 21,671 | 65,984 | 173,873 |
| 1981 | 24,524 | 17,292 | 47,551 | 160 | 53,334 | 142,861 |
| 1982 | 22,106 | 25,685 | 73,652 | 11,838 | 34,346 | 167,627 |
| 1983 | 46,385 | 10,263 | 32,442 | 168 | 23,090 | 112,348 |
| 1984 | 33,663 | 17,255 | 132,151 | 16,249 | 50,422 | 249,740 |
| 1985 | 30,401 | 7,876 | 29,992 | 28 | 20,418 | 88,715 |
| 1986 | 22,835 | 21,484 | 57,544 | 8,700 | 29,700 | 140,263 |
| 1987 | 26,022 | 6,489 | 50,070 | 66 | 8,557 | 91,204 |
| 1988 | 13,883 | 21,556 | 68,605 | 21,311 | 29,220 | 154,575 |
| 1989 | 20,820 | 20,582 | 44,607 | 273 | 39,395 | 125,677 |
| 1990 | 27,644 | 83,681 | 26,926 | 12,056 | 47,717 | 198,024 |
| 1991 | 9,480 | 53,657 | 42,571 | 115 | 54,493 | 160,316 |
| 1992 | 17,197 | 60,929 | 86,404 | 64,217 | 73,383 | 302,130 |
| 1993 | 15,784 | 80,934 | 55,817 | 7 | 40,943 | 193,485 |
| 1994 | 8,564 | 72,314 | 83,912 | 35,904 | 61,301 | 261,995 |
| 1995 | 38,584 | 68,194 | 66,203 | 186 | 81,462 | 254,629 |
| 1996 | 14,165 | 57,665 | 118,718 ^a | 20 | 83,005 | 273,573 |
| 1997 | 35,510 | 69,562 | 32,862 | 5 | 38,445 | 176,384 |
| 1998 | 23,158 | 41,382 | 80,183 | 2,217 | 45,095 | 192,035 |
| 1999 | 18,426 | 41,315 | 6,184 | 0 | 38,091 | 104,016 |
| 2000 | 21,229 | 68,557 | 30,529 | 3 | 30,553 | 150,871 |
| 2001 | 12,775 | 33,807 | 18,531 | 0 | 17,209 | 82,322 |
| 2002 | 11,480 | 17,802 | 26,695 | 0 | 29,252 | 85,229 |
| 2003 | 14,444 | 33,941 | 49,833 | 0 | 27,868 | 126,086 |
| 2004 | 25,462 | 34,627 | 82,398 | 0 | 25,820 | 168,307 |
| 2005 | 24,195 | 68,801 | 51,708 | 19 | 13,529 | 158,252 |
| 2006 | 19,184 | 106,308 | 26,831 | 0 | 39,151 | 191,474 |
| 2007 | 19,573 | 109,343 | 34,710 | 0 | 61,228 | 224,854 |
| 2008 | 13,812 | 69,743 | 94,257 | 0 | 57,033 | 234,845 |
| 2009 | 13,920 | 112,153 | 48,115 | 0 | 91,158 | 265,346 |
| 2010 | 14,230 | 138,362 | 13,690 | 0 | 106,610 | 272,892 |
| 2011 | 15,387 | 38,543 | 30,457 | 0 | 104,959 | 189,346 |
| 2012 | 6,675 | 37,688 | 31,214 | 0 | 61,140 | 136,717 |
| 2013 | 2,054 | 26,393 | 21,126 | 0 | 58,079 | 107,652 |
| 2014 | 2,265 | 58,879 | 52,317 | 0 | 14,563 | 128,024 |
| 2015 | 7,547 | 30,269 | 76,621 | 0 | 16,051 | 130,152 |
| Average 2005–2014 | 13,130 | 76,621 | 40,443 | 2 | 60,745 | 190,940 |

^a Estimate of chum salmon roe included.

Appendix C3.–District 4 commercial salmon fishing exvessel value, 1990–2015.

| Year | Chinook | Sockeye | Coho | Pink | Chum | Total |
|-------------------|-----------|-------------|-----------|----------|-----------|-------------|
| 1990 | \$253,562 | \$542,485 | \$123,936 | \$4,146 | \$89,343 | \$1,013,472 |
| 1991 | \$94,950 | \$246,734 | \$144,379 | \$52 | \$106,321 | \$592,436 |
| 1992 | \$166,471 | \$368,310 | \$303,740 | \$15,875 | \$139,268 | \$993,664 |
| 1993 | \$143,506 | \$402,763 | \$246,746 | \$4 | \$105,236 | \$898,255 |
| 1994 | \$67,584 | \$253,922 | \$420,802 | \$10,454 | \$84,395 | \$837,157 |
| 1995 | \$418,067 | \$323,104 | \$201,413 | \$81 | \$104,523 | \$1,047,188 |
| 1996 | \$61,004 | \$165,100 | \$246,930 | \$6 | \$61,686 | \$534,726 |
| 1997 | \$171,688 | \$204,190 | \$91,584 | \$0 | \$29,609 | \$497,071 |
| 1998 | \$82,168 | \$150,631 | \$197,676 | \$871 | \$36,497 | \$467,843 |
| 1999 | \$94,880 | \$140,846 | \$14,997 | \$0 | \$28,368 | \$279,091 |
| 2000 | \$131,351 | \$249,382 | \$31,898 | \$1 | \$23,929 | \$436,561 |
| 2001 | \$93,697 | \$89,334 | \$32,577 | \$0 | \$13,007 | \$228,615 |
| 2002 | \$56,356 | \$40,368 | \$47,651 | \$0 | \$23,374 | \$167,749 |
| 2003 | \$69,201 | \$107,287 | \$108,804 | \$0 | \$19,261 | \$304,553 |
| 2004 | \$107,700 | \$77,394 | \$201,879 | \$0 | \$18,372 | \$405,345 |
| 2005 | \$221,854 | \$241,478 | \$101,776 | \$4 | \$6,853 | \$571,965 |
| 2006 | \$147,802 | \$327,917 | \$61,433 | \$0 | \$14,030 | \$551,182 |
| 2007 | \$163,248 | \$374,004 | \$102,569 | \$0 | \$21,044 | \$660,865 |
| 2008 | \$140,580 | \$272,427 | \$317,143 | \$0 | \$20,581 | \$750,731 |
| 2009 | \$130,561 | \$384,209 | \$136,562 | \$0 | \$95,993 | \$747,325 |
| 2010 | \$294,163 | \$1,049,395 | \$117,658 | \$0 | \$194,105 | \$1,655,321 |
| 2011 | \$166,606 | \$207,642 | \$198,333 | \$0 | \$603,855 | \$1,176,436 |
| 2012 | \$85,934 | \$208,023 | \$167,638 | \$0 | \$362,840 | \$824,435 |
| 2013 | \$35,126 | \$154,135 | \$172,739 | \$0 | \$399,537 | \$761,537 |
| 2014 | \$22,940 | \$408,008 | \$367,817 | \$0 | \$59,873 | \$858,638 |
| 2015 | \$37,565 | \$89,262 | \$312,472 | \$0 | \$50,265 | \$489,564 |
| Average 2005–2014 | \$140,881 | \$362,724 | \$174,367 | \$0 | \$177,871 | \$855,844 |

Appendix C4.—District 4 commercial salmon harvest by period, 2015.

| Date | Permits fished | Landings | Number of salmon | | | | Total |
|--------|-------------------|----------|------------------|---------|--------|--------|---------|
| | | | Chinook | Sockeye | Coho | Chum | |
| Jul 3 | 120 | 175 | 3,152 | 4,816 | 0 | 1,167 | 9,135 |
| Jul 10 | 130 | 150 | 1,611 | 6,139 | 0 | 1,341 | 9,091 |
| Jul 15 | 99 | 151 | 1,015 | 6,113 | 0 | 3,219 | 10,347 |
| Jul 17 | 50 | 67 | 371 | 2,195 | 0 | 1,805 | 4,371 |
| Jul 20 | 64 | 81 | 369 | 3,104 | 0 | 1,569 | 5,042 |
| Jul 22 | 55 | 73 | 414 | 2,680 | 229 | 2,676 | 5,999 |
| Jul 24 | 61 | 63 | 201 | 1,721 | 182 | 1,161 | 3,265 |
| Jul 27 | 43 | 48 | 120 | 1,253 | 364 | 1,121 | 2,858 |
| Aug 5 | 49 | 64 | 73 | 384 | 3,298 | 405 | 4,160 |
| Aug 7 | 67 | 70 | 54 | 490 | 4,082 | 391 | 5,017 |
| Aug 10 | 48 | 78 | 32 | 510 | 8,222 | 278 | 9,042 |
| Aug 12 | 86 | 125 | 45 | 361 | 10,110 | 354 | 10,870 |
| Aug 14 | 79 | 122 | 29 | 151 | 10,813 | 164 | 11,157 |
| Aug 17 | 63 | 116 | 24 | 150 | 11,435 | 156 | 11,765 |
| Aug 19 | 100 | 137 | 22 | 117 | 11,912 | 96 | 12,147 |
| Aug 21 | 60 | 89 | 12 | 56 | 8,368 | 87 | 8,523 |
| Aug 24 | 56 | 83 | 3 | 29 | 7,270 | 61 | 7,363 |
| Total | 189 | 1,692 | 7,547 | 30,269 | 76,285 | 16,051 | 130,152 |

Appendix C5.–Kanektok River salmon escapement, 1996–2015.

| Year | Operating period ^a | Chinook | Sockeye | Coho | Pink ^b | Chum |
|-----------------------|-------------------------------|--------------------|----------------------|---------------------|-------------------|---------------------|
| <u>Kanektok River</u> | | | | | | |
| <i>Counting Tower</i> | | | | | | |
| 1996 | 7/2–7/13; 7/20–7/25 | ^c | ^c | | | ^c |
| 1997 | 6/11–8/21 | 16,731 | 96,348 | ^c | 7,872 | 51,180 |
| 1998 | 7/23–8/17 | ^c | ^c | ^c | ^c | ^c |
| 1999 | | | Not operational | | | |
| 2000 | | | Not operational | | | |
| <i>Weir</i> | | | | | | |
| 2001 | 8/10–10/03 | 2,795 ^c | 9,912 ^c | 32,720 | 14 | 9,021 ^c |
| 2002 | 7/01–9/20 | 5,360 ^d | 60,733 ^d | 24,840 | 85,057 | 41,912 ^d |
| 2003 | 6/24–9/18 | 8,290 | 129,449 | 72,448 | 2,301 | 40,086 |
| 2004 | 6/29–9/20 | 19,745 | 106,409 | 87,827 | 89,138 | 46,008 |
| 2005 | 6/25–9/18 | 14,233 | 270,379 | 13,700 ^e | 3,511 | 55,340 |
| 2006 | | | Not operational | | | |
| 2007 | 6/19–9/18 | 14,120 | 308,351 | 26,452 | 3,032 | 131,055 |
| 2008 | 7/17–8/21 | 9,799 ^d | 86,245 ^e | 24,490 ^d | 140,468 | 53,605 ^d |
| 2009 | 7/05–8/11 | 7,065 | 305,756 ^d | 2,336 ^c | 1,246 | 55,846 ^d |
| 2010 | 6/28–8/05 | 6,537 | 204,954 | 330 ^c | 114,074 | 68,186 |
| 2011 | 6/27–8/15 | 5,170 | 88,177 | 5,779 ^c | 530 | 53,050 |
| 2012 | 7/06–8/15 | 1,561 ^a | 115,021 ^e | 4,248 ^c | 62,141 | 28,726 ^a |
| 2013 | 6/25–8/15 | 3,569 | 128,761 | 3,116 ^c | 532 | 43,040 |
| 2014 | 6/25–8/15 | 3,594 | 259,406 | 4,786 ^c | 25,718 | 18,602 |
| 2015 | 6/25–8/15 | 10,416 | 106,751 | 2,493 ^c | 1,058 | 15,048 |
| Average | | | | | | |
| 2005–2014 | | 8,539 | 187,346 | 17,306 | 44,039 | 55,346 |

^a The operational period is inclusive of days when passage was estimated; unless otherwise noted, less than 20% of the total annual escapement is estimated.

^b Pink salmon numbers represent actual counts. No estimates of missed escapement, due to picket spacing allowing unmonitored for small pink salmon.

^c Field operations were incomplete and total annual escapement was not estimated.

^d Field operations were incomplete; sum of daily counts is an underestimate of total escapement, but considered reasonable. Additional estimates were not made.

^e Field operations were incomplete; more than 20% of the total estimate is based on daily passage estimates.

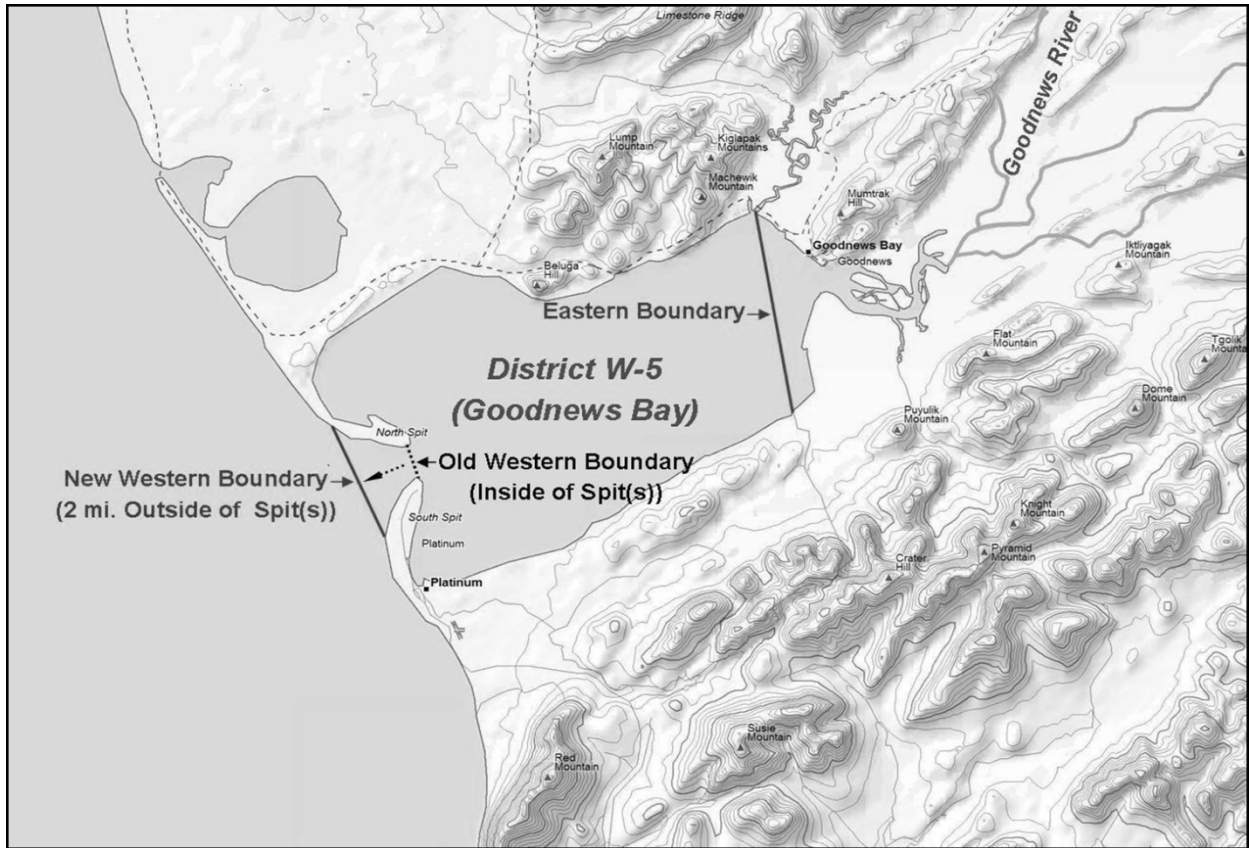
Appendix C6.–Kanektok River salmon aerial survey estimates, 1962–2015.

| Year | Chinook | Sockeye | Coho | Chum |
|------|-------------|---------------|----------------------|--------|
| 1962 | | a | a | a |
| 1963 | a | a | a | a |
| 1964 | a | a | a | a |
| 1965 | a | a | a | a |
| 1966 | 3,718 | a | 28,800 | a |
| 1967 | a | a | a | a |
| 1968 | a | a | 14,000 | a |
| 1969 | a | a | a | a |
| 1970 | 3,112 | a | a | a |
| 1971 | a | a | a | a |
| 1972 | a | a | a | a |
| 1973 | a | a | a | a |
| 1974 | a | a | a | a |
| 1975 | a | a | a | a |
| 1976 | a | a | 8,697 | a |
| 1977 | 5,787 | 6,404 | 32,157 | a |
| 1978 | 19,180 | 42,890 | 229,290 ^b | a |
| 1979 | a | a | a | a |
| 1980 | 6,172 | 112,501 | a | a |
| 1981 | a | a | 25,950 | 69,325 |
| 1982 | a | a | 71,840 | a |
| 1983 | 8,890 | a | a | a |
| 1984 | 12,182 | 30,840 | 9,360 | a |
| 1985 | 13,465 | 15,570 | 53,060 | 46,830 |
| 1986 | 3,643 | 12,090 | 14,385 | a |
| 1987 | 4,213 | 51,753 | 16,790 | a |
| 1988 | 11,180 | 30,440 | 9,420 | 20,056 |
| 1989 | 7,914 | 14,735 | 20,583 | a |
| 1990 | a | a | 6,270 | a |
| 1991 | a | a | 2,475 | a |
| 1992 | a | a | a | 4,330 |
| 1993 | a | a | 25,675 | a |
| 1994 | 7,386 | a | 1,285 | a |
| 1995 | a | a | 10,000 | a |
| 1996 | a | a | a | 23,656 |
| 1997 | a | a | a | a |
| 1998 | a | a | a | a |
| 1999 | a | a | a | a |
| 2000 | a | a | a | a |
| 2001 | a | a | 11,440 | a |
| 2002 | a | a | a | a |
| 2003 | 6,206 | 21,335 | a | a |
| 2004 | 28,375 | 77,780 | a | a |
| 2005 | 14,202 | 11,730 | a | a |
| 2006 | 8,433 | 385,800 | a | a |
| 2007 | a | a | a | a |
| 2008 | 3,659 | 38,900 | a | a |
| 2009 | a | a | a | a |
| 2010 | 1,228 | 16,950 | a | a |
| 2011 | a | a | a | a |
| 2012 | a | a | a | a |
| 2013 | 2,346 | 64,802 | a | a |
| 2014 | 1,871 | 148,800 | a | a |
| 2015 | 4,919 | 39,970 | a | a |
| SEG | 3,500–8,000 | 14,000–34,000 | >5,200 | |

Note: Aerial surveys are those rated as fair to good, obtained between 20 July and 5 August for Chinook and sockeye salmon, 20–31 July for chum salmon, and 20 August and 5 September for coho salmon.

^a Survey either not flown or did not meet acceptable survey criteria.

APPENDIX D



Appendix D1.–Map of Commercial Fishing District W-5, Kuskokwim Management Area.

Appendix D2.–District 5 commercial salmon harvest including personal use, 1968–2015.

| Year | Chinook | Sockeye | Coho | Pink | Chum | Total |
|-------------------|--------------|--------------|--------|--------------|--------------|---------|
| 1968 | ^a | ^a | 5,458 | ^a | ^a | 5,458 |
| 1969 | 3,978 | 6,256 | 11,631 | 298 | 5,006 | 27,169 |
| 1970 | 7,163 | 7,144 | 6,794 | 12,183 | 12,346 | 45,630 |
| 1971 | 477 | 330 | 1,771 | 0 | 301 | 2,879 |
| 1972 | 264 | 924 | 925 | 66 | 1,331 | 3,510 |
| 1973 | 3,543 | 2,072 | 5,017 | 324 | 15,781 | 26,737 |
| 1974 | 3,302 | 9,357 | 21,340 | 16,373 | 8,942 | 59,314 |
| 1975 | 2,156 | 9,098 | 17,889 | 419 | 5,904 | 35,466 |
| 1976 | 4,417 | 5,575 | 9,852 | 8,453 | 10,354 | 38,651 |
| 1977 | 3,336 | 3,723 | 13,335 | 29 | 6,531 | 26,954 |
| 1978 | 5,218 | 5,412 | 13,764 | 9,103 | 8,590 | 42,087 |
| 1979 | 3,204 | 19,581 | 42,098 | 201 | 9,298 | 74,382 |
| 1980 | 2,331 | 28,632 | 43,256 | 7,832 | 11,748 | 93,799 |
| 1981 | 7,190 | 40,273 | 19,749 | 11 | 13,642 | 80,865 |
| 1982 | 9,476 | 38,877 | 46,683 | 4,673 | 13,829 | 113,538 |
| 1983 | 14,117 | 11,716 | 19,660 | 0 | 6,766 | 52,259 |
| 1984 | 8,612 | 15,474 | 71,176 | 4,711 | 14,340 | 114,313 |
| 1985 | 5,793 | 6,698 | 16,498 | 8 | 4,784 | 33,781 |
| 1986 | 2,723 | 25,112 | 19,378 | 4,439 | 10,356 | 62,008 |
| 1987 | 3,357 | 27,758 | 29,057 | 54 | 20,381 | 80,607 |
| 1988 | 4,964 | 36,368 | 30,832 | 5,509 | 33,059 | 110,732 |
| 1989 | 2,966 | 19,299 | 31,849 | 82 | 13,622 | 67,818 |
| 1990 | 3,303 | 35,823 | 7,804 | 629 | 13,194 | 60,753 |
| 1991 | 912 | 39,838 | 13,312 | 29 | 15,892 | 69,983 |
| 1992 | 3,528 | 39,194 | 19,875 | 14,310 | 18,520 | 95,427 |
| 1993 | 2,117 | 59,293 | 20,014 | 0 | 10,657 | 92,081 |
| 1994 | 2,570 | 69,490 | 47,499 | 18,017 | 28,477 | 166,053 |
| 1995 | 2,922 | 37,351 | 17,875 | 39 | 19,832 | 78,019 |
| 1996 | 1,375 | 30,717 | 43,836 | 22 | 11,093 | 87,043 |
| 1997 | 2,039 | 31,451 | 2,983 | 0 | 11,729 | 48,202 |
| 1998 | 3,675 | 27,161 | 21,246 | 411 | 14,155 | 66,648 |
| 1999 | 1,888 | 22,910 | 2,474 | 0 | 11,562 | 38,834 |
| 2000 | 4,442 | 37,252 | 15,531 | 7 | 7,450 | 64,682 |
| 2001 | 1,519 | 25,654 | 9,275 | 0 | 3,412 | 39,860 |
| 2002 | 979 | 6,304 | 3,041 | 0 | 3,799 | 14,123 |
| 2003 | 1,412 | 29,423 | 12,658 | 0 | 5,593 | 49,086 |
| 2004 | 2,565 | 20,523 | 24,089 | 0 | 5,965 | 53,142 |
| 2005 | 2,035 | 23,933 | 11,735 | 0 | 2,568 | 40,271 |
| 2006 | 2,899 | 29,858 | 12,438 | 0 | 11,678 | 56,873 |
| 2007 | 3,126 | 43,766 | 13,697 | 6 | 7,853 | 68,448 |
| 2008 | 1,281 | 27,237 | 22,547 | 0 | 10,408 | 61,473 |
| 2009 | 1,509 | 32,544 | 8,406 | 0 | 16,985 | 59,444 |
| 2010 | 1,759 | 41,074 | 4,900 | 0 | 26,914 | 74,647 |
| 2011 | 2,092 | 24,573 | 15,358 | 0 | 13,191 | 55,214 |
| 2012 | 1,536 | 50,647 | 25,515 | 0 | 24,487 | 102,185 |
| 2013 | 495 | 24,521 | 21,582 | 0 | 12,651 | 59,249 |
| 2014 | 205 | 20,515 | 52,158 | 0 | 3,403 | 76,281 |
| 2015 | 705 | 25,861 | 7,030 | 0 | 4,510 | 38,106 |
| Average 2005–2014 | 1,694 | 31,867 | 18,834 | 1 | 13,014 | 65,409 |

^a No harvest information available.

Appendix D3.–District 5 commercial salmon fishing exvessel value, 1990–2015.

| Year | Chinook | Sockeye | Coho | Pink | Chum | Total |
|-------------------|----------|-----------|-----------|---------|-----------|-----------|
| 1990 | \$32,135 | \$263,598 | \$38,910 | \$254 | \$25,767 | \$360,664 |
| 1991 | \$8,370 | \$187,622 | \$47,519 | \$14 | \$31,394 | \$274,919 |
| 1992 | \$30,688 | \$257,457 | \$75,278 | \$2,913 | \$39,111 | \$405,447 |
| 1993 | \$21,351 | \$296,437 | \$95,043 | \$0 | \$28,304 | \$441,135 |
| 1994 | \$21,732 | \$309,577 | \$271,687 | \$5,442 | \$41,309 | \$649,747 |
| 1995 | \$31,339 | \$175,552 | \$58,061 | \$19 | \$21,427 | \$286,398 |
| 1996 | \$5,952 | \$87,427 | \$120,191 | \$4 | \$9,015 | \$222,589 |
| 1997 | \$10,867 | \$93,146 | \$9,497 | \$0 | \$9,358 | \$122,868 |
| 1998 | \$13,685 | \$100,171 | \$59,102 | \$174 | \$11,133 | \$184,265 |
| 1999 | \$9,020 | \$78,800 | \$7,515 | \$0 | \$8,327 | \$103,662 |
| 2000 | \$25,614 | \$146,708 | \$34,689 | \$2 | \$6,001 | \$213,014 |
| 2001 | \$10,496 | \$68,678 | \$17,089 | \$0 | \$2,586 | \$98,849 |
| 2002 | \$343 | \$15,846 | \$5,634 | \$0 | \$2,979 | \$24,802 |
| 2003 | \$6,461 | \$95,818 | \$28,945 | \$0 | \$3,883 | \$135,107 |
| 2004 | \$10,857 | \$49,741 | \$70,404 | \$0 | \$4,244 | \$135,246 |
| 2005 | \$16,696 | \$91,135 | \$25,010 | \$0 | \$1,454 | \$134,295 |
| 2006 | \$21,314 | \$87,996 | \$27,587 | \$0 | \$4,368 | \$141,265 |
| 2007 | \$23,951 | \$156,802 | \$38,796 | \$0 | \$2,781 | \$222,330 |
| 2008 | \$13,181 | \$104,296 | \$76,683 | \$0 | \$3,910 | \$198,070 |
| 2009 | \$13,333 | \$134,244 | \$25,456 | \$0 | \$18,998 | \$192,031 |
| 2010 | \$44,910 | \$334,366 | \$44,706 | \$0 | \$46,679 | \$470,661 |
| 2011 | \$19,224 | \$141,347 | \$106,471 | \$0 | \$78,980 | \$346,022 |
| 2012 | \$20,509 | \$299,187 | \$150,668 | \$0 | \$147,401 | \$617,765 |
| 2013 | \$8,546 | \$169,318 | \$185,332 | \$0 | \$89,455 | \$452,651 |
| 2014 | \$3,065 | \$152,446 | \$415,009 | \$0 | \$14,134 | \$584,654 |
| 2015 | \$3,823 | \$81,851 | \$30,737 | \$0 | \$15,205 | \$131,616 |
| Average 2005–2014 | \$18,473 | \$167,114 | \$109,572 | \$0 | \$40,816 | \$335,974 |

Appendix D4.–District 5 commercial salmon harvest by period, 2015.

| Date | Permits fished | Landings | Number of salmon | | | | Total |
|--------|-------------------|----------|------------------|---------|-------|-------|--------|
| | | | Chinook | Sockeye | Coho | Chum | |
| Jul 3 | 34 | 36 | 149 | 2,428 | 0 | 316 | 2,893 |
| Jul 10 | 37 | 47 | 164 | 4,012 | 0 | 728 | 4,904 |
| Jul 13 | 44 | 46 | 75 | 2,955 | 0 | 531 | 3,561 |
| Jul 15 | 29 | 38 | 63 | 3,395 | 0 | 790 | 4,248 |
| Jul 17 | 14 | 18 | 36 | 1,499 | 0 | 164 | 1,699 |
| Jul 18 | 26 | 28 | 44 | 2,549 | 1 | 491 | 3,085 |
| Jul 20 | 29 | 33 | 32 | 1,962 | 1 | 433 | 2,428 |
| Jul 22 | 20 | 23 | 31 | 1,935 | 4 | 365 | 2,335 |
| Jul 24 | 20 | 25 | 39 | 1,712 | 40 | 294 | 2,085 |
| Jul 27 | 18 | 19 | 28 | 1,175 | 41 | 177 | 1,421 |
| Aug 7 | 25 | 26 | 12 | 842 | 740 | 78 | 1,672 |
| Aug 10 | 27 | 32 | 15 | 789 | 1,840 | 63 | 2,707 |
| Aug 14 | 31 | 45 | 17 | 608 | 4,363 | 80 | 5,068 |
| Total | 61 | 416 | 705 | 25,861 | 7,030 | 4,510 | 38,106 |

Appendix D5.–Middle Fork Goodnews River salmon escapement, 1981–2015.

| Year | Operating period ^a | Chinook | Sockeye | Coho | Pink ^b | Chum |
|----------------------------|-------------------------------|--------------------|---------------------|---------------------|---------------------|---------------------|
| Middle Fork Goodnews River | | | | | | |
| Escapement Goals: | | 1,500–2,900 | 18,000–40,000 | >12,000 | | >12,000 |
| <i>Counting Tower</i> | | | | | | |
| 1981 | 6/13–8/15 | 3,688 | 49,108 | | ^c 1,327 | 21,827 |
| 1982 | 6/23–8/03 | 1,395 | 56,255 | | ^c 13,855 | 6,767 |
| 1983 | 6/11–7/28 | 6,027 | 25,816 | | ^c 102 | 15,548 |
| 1984 | 6/15–7/31 | 3,260 | 32,053 | | ^c 13,744 | 19,003 |
| 1985 | 6/27–7/31 | 2,831 | 24,131 | | ^c 144 | 10,367 |
| 1986 | 6/16–7/24 | 2,080 | 51,069 | | ^c 8,134 | 14,764 |
| 1987 | 6/22–7/30 | 2,272 | 28,871 | | ^c 71 | 17,517 |
| 1988 | 6/23–7/30 | 2,712 | 15,799 | | ^c 6,781 | 20,799 |
| 1989 | 6/29–7/31 | 1,915 | 21,186 | | ^c 246 | 10,380 |
| 1990 | 6/19–7/24 | 3,636 | 31,679 | | ^c 3,378 | 6,410 |
| <i>Weir</i> | | | | | | |
| 1991 | 6/29–8/24 | 2,080 | 41,656 ^d | 2,410 ^c | 1,428 | 27,632 |
| 1992 | 6/29–8/25 | 1,445 ^d | 28,074 | 151 ^c | 21,523 | 21,096 |
| 1993 | 6/22–8/18 | 2,132 | 24,957 ^e | 1,593 ^c | 318 | 14,581 |
| 1994 | 6/23–8/08 | 3,061 | 56,503 | 256 ^c | 38,710 | 35,652 ^d |
| 1995 | 6/19–8/28 | 4,678 | 37,776 | 11,556 ^c | 312 | 33,559 |
| 1996 | 6/19–8/23 | 3,282 ^d | 64,185 | 17,753 ^c | 14,509 | 46,108 ^d |
| 1997 | 6/11–9/17 | 2,897 | 34,322 | 13,404 | 940 | 17,151 |
| 1998 | 7/04–9/13 | 3,553 | 38,493 ^d | 33,368 | 10,376 | 26,996 |
| 1999 | 6/26–9/26 | 3,703 | 49,323 | 11,500 | 910 | 21,818 |
| 2000 | 7/02–9/22 | 2,670 ^e | 40,828 ^e | 15,880 ^e | 2,528 | 14,405 ^e |
| 2001 | 6/26–9/30 | 5,351 ^e | 21,197 ^e | 18,539 ^e | 1,326 | 26,820 ^e |
| 2002 | 6/22–9/18 | 3,025 | 21,329 | 27,643 | 3,034 | 29,905 |
| 2003 | 6/18–9/18 | 2,248 | 37,933 | 52,504 | 1,864 | 21,778 |
| 2004 | 6/21–9/20 | 4,438 | 54,047 | 47,916 | 21,628 | 32,443 |
| 2005 | 6/26–9/20 | 4,781 | 118,969 | 20,168 | 5,926 | 26,501 |
| 2006 | 6/26–9/18 | 4,572 | 127,245 | 26,909 | 18,432 | 54,689 |
| 2007 | 6/25–9/19 | 3,914 | 73,768 | 19,442 ^d | 4,919 | 50,232 |
| 2008 | 7/02–9/16 | 2,223 | 43,879 ^d | 37,690 | 9,807 | 39,548 ^d |
| 2009 | 6/28–9/22 | 1,669 | 27,495 | 19,699 | 714 | 19,237 |
| 2010 | 6/25–9/18 | 2,176 | 36,574 | 26,287 ^d | 3,444 | 24,789 |
| 2011 | 6/24–9/18 | 2,045 | 19,643 | 24,668 | 1,394 | 19,974 |
| 2012 | 6/29–9/03 | 524 ^d | 29,531 ^a | 11,371 ^a | 6,316 | 9,065 ^d |
| 2013 | 6/25–9/18 | 1,187 | 23,545 | 1,189 ^d | 530 | 27,682 |
| 2014 | 6/25–8/30 | 750 | 41,473 | 7,594 | 0 | 11,518 |
| 2015 | 6/25–8/31 | 1,494 | 57,809 | 15,084 | 1,159 | 11,517 |
| Average 2005–2014 | | 2,384 | 54,212 | 19,502 | 5,148 | 28,324 |

^a The operational period is inclusive of days when passage was estimated; unless otherwise noted, less than 20% of the total annual escapement is estimated.

^b Pink salmon passage is not estimated because they are small enough to pass between weir pickets.

^c Field operations were incomplete and total annual escapement was not estimated.

^d Field operations were incomplete; more than 20% of the total annual escapement is used on daily passage estimates.

^e Field operations were incomplete; sum of daily counts is an underestimate of total escapement, but considered reasonable. Additional estimates were not made.

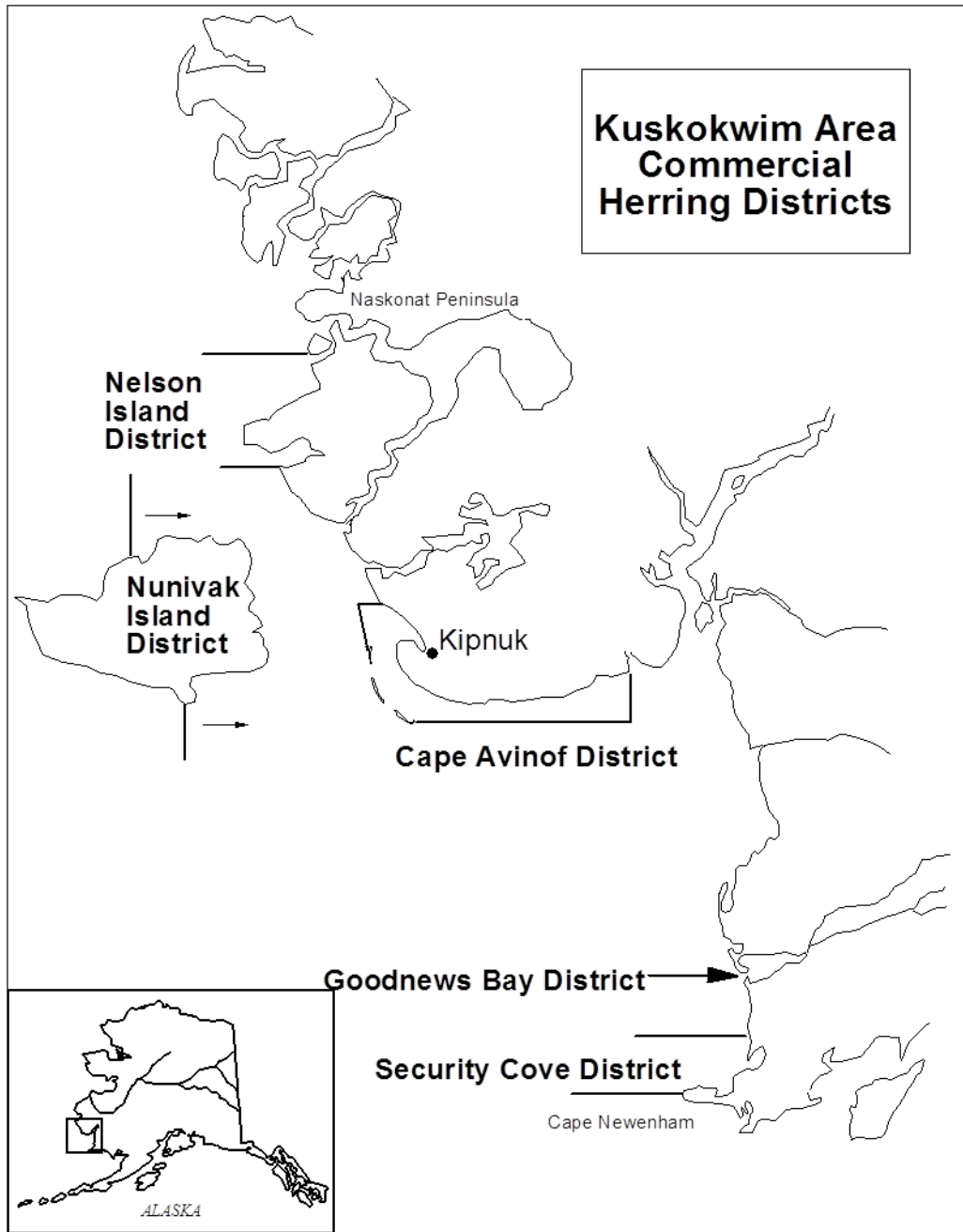
Appendix D6.–Goodnews River drainage salmon aerial survey estimates, 1980–2015.

| Year | Goodnews River and Lakes | | | Middle Fork Goodnews River and Lakes | | |
|------|--------------------------|--------------|--------------|--------------------------------------|--------------|--------------|
| | Chinook | Sockeye | Chum | Chinook | Sockeye | Chum |
| 1980 | 1,228 | 75,639 | 1,975 | 1,164 | ^a | 3,782 |
| 1981 | ^a | ^a | ^a | ^a | ^a | ^a |
| 1982 | ^a | ^a | 9,700 | ^a | ^a | 6,300 |
| 1983 | 2,600 | 9,650 | ^a | ^a | ^a | ^a |
| 1984 | 2,062 | 12,807 | 17,250 | 905 | 8,546 | 9,172 |
| 1985 | 3,535 | 4,620 | 4,415 | 2,050 | 7,401 | 3,593 |
| 1986 | 1,068 | 8,960 | 11,850 | 1,249 | 16,990 | 7,645 |
| 1987 | 2,244 | 19,786 | 12,148 | 2,222 | 25,340 | 9,789 |
| 1988 | ^a | ^a | ^a | ^a | ^a | ^a |
| 1989 | 651 | ^a | ^a | 1,277 | 30,382 | ^a |
| 1990 | 658 | 27,689 | ^a | ^a | ^a | ^a |
| 1991 | ^a | ^a | ^a | ^a | ^a | ^a |
| 1992 | 875 | ^a | 1,950 | ^a | ^a | 3,270 |
| 1993 | ^a | ^a | ^a | ^a | ^a | ^a |
| 1994 | ^a | ^a | ^a | ^a | ^a | ^a |
| 1995 | 3,314 | ^a | ^a | ^a | ^a | ^a |
| 1996 | ^a | ^a | ^a | ^a | ^a | ^a |
| 1997 | ^a | ^a | ^a | ^a | ^a | ^a |
| 1998 | 578 | 3,497 | 2,743 | 731 | 11,393 | 3,619 |
| 1999 | ^a | ^a | ^a | ^a | ^a | ^a |
| 2000 | ^a | ^a | ^a | ^a | ^a | ^a |
| 2001 | ^a | ^a | 7,330 | ^a | ^a | 6,945 |
| 2002 | 1,470 | ^a | 3,075 | 1,195 | 2,627 | 1,208 |
| 2003 | 3,935 | 50,140 | ^a | 2,131 | 29,150 | ^a |
| 2004 | 7,482 | 31,695 | ^a | 2,617 | 33,670 | ^a |
| 2005 | ^a | ^a | ^a | ^a | ^a | ^a |
| 2006 | ^a | ^a | ^a | ^a | ^a | ^a |
| 2007 | ^a | ^a | ^a | ^a | ^a | ^a |
| 2008 | 2,155 | 32,500 | ^a | 2,190 | 13,935 | ^a |
| 2009 | ^a | ^a | ^a | ^a | ^a | ^a |
| 2010 | ^a | ^a | ^a | ^a | ^a | ^a |
| 2011 | 853 | 14,140 | ^a | ^a | ^a | ^a |
| 2012 | 378 | 16,710 | ^a | 355 | ^a | ^a |
| 2013 | ^a | ^a | ^a | ^a | ^a | ^a |
| 2014 | 630 | ^a | ^a | 612 | 12,262 | ^a |
| 2015 | 991 | 38,390 | ^a | 515 | 24,780 | ^a |
| SEG | 640–3,300 | 5,500–19,500 | ^b | ^b | ^b | ^b |

^a Survey was either not flown or not rated as acceptable.

^b Aerial survey escapement goal was discontinued in 2004.

APPENDIX E



Appendix E1.—Commercial herring districts, Kuskokwim Management Area.

Appendix E2.—Estimated biomass, commercial effort, and harvest value of Pacific herring in Kuskokwim Management Area, 1981–2015.

| Year | District | Estimated biomass (st) | Harvest (st) | Number of permits | Hours fished | CPUE (st) | Estimated value ^a | Average income per permit |
|------|---------------|------------------------|--------------|-------------------|--------------|-----------|------------------------------|---------------------------|
| 2015 | Security Cove | 12,876 | 0 | 0 | 0 | | \$0 | \$0 |
| | Goodnews Bay | 18,532 | 0 | 0 | 0 | | \$0 | \$0 |
| | Cape Avinof | 10,423 ^a | 0 | 0 | 0 | | \$0 | \$0 |
| | Nelson Is. | 30,228 | 0 | 0 | 0 | | \$0 | \$0 |
| | Nunivak Is. | 5,657 ^a | 0 | 0 | 0 | | \$0 | \$0 |
| 2014 | Security Cove | 15,874 | 0 | 0 | 0 | | \$0 | \$0 |
| | Goodnews Bay | 14,162 | 0 | 0 | 0 | | \$0 | \$0 |
| | Cape Avinof | 10,423 ^a | 0 | 0 | 0 | | \$0 | \$0 |
| | Nelson Is. | 58,285 | 0 | 0 | 0 | | \$0 | \$0 |
| | Nunivak Is. | 2,280 ^a | 0 | 0 | 0 | | \$0 | \$0 |
| 2013 | Security Cove | 9,313 | 0 | 0 | 0 | | \$0 | \$0 |
| | Goodnews Bay | 7,945 | 255 | 5 | 348 | | \$38,235 | \$7,647 |
| | Cape Avinof | 1,415 ^a | 36 | 11 | 72 | | \$5,430 | \$494 |
| | Nelson Is. | 4,893 | 355 | 12 | 168 | | \$53,190 | \$4,433 |
| | Nunivak Is. | 2,420 ^a | 0 | 0 | 0 | | \$0 | \$0 |
| 2012 | Security Cove | 12,193 ^a | 0 | 0 | 0 | | \$0 | \$0 |
| | Goodnews Bay | 33,008 ^a | 0 | 0 | 0 | | \$0 | \$0 |
| | Cape Avinof | 2,095 ^a | 0 | 0 | 0 | | \$0 | \$0 |
| | Nelson Is. | 4,703 ^a | 0 | 0 | 0 | | \$0 | \$0 |
| | Nunivak Is. | 2,879 ^a | 0 | 0 | 0 | | \$0 | \$0 |
| 2011 | Security Cove | 13,119 ^a | 0 | 0 | 0 | | \$0 | \$0 |
| | Goodnews Bay | 36,810 ^a | 0 | 0 | 0 | | \$0 | \$0 |
| | Cape Avinof | 2,324 ^a | 0 | 0 | 0 | | \$0 | \$0 |
| | Nelson Is. | 5,252 ^a | 0 | 0 | 0 | | \$0 | \$0 |
| | Nunivak Is. | 3,322 ^a | 0 | 0 | 0 | | \$0 | \$0 |
| 2010 | Security Cove | 13,440 | 0 | 0 | 0 | | \$0 | \$0 |
| | Goodnews Bay | 33,490 ^b | 0 | 0 | 0 | | \$0 | \$0 |
| | Cape Avinof | 2,393 ^a | 0 | 0 | 0 | | \$0 | \$0 |
| | Nelson Is. | 5,449 ^a | 0 | 0 | 0 | | \$0 | \$0 |
| | Nunivak Is. | 31,141 ^a | 0 | 0 | 0 | | \$0 | \$0 |
| 2009 | Security Cove | 5,686 ^a | 0 | 0 | 0 | | \$0 | \$0 |
| | Goodnews Bay | 6,143 | 0 | 0 | 0 | | \$0 | \$0 |
| | Cape Avinof | 2,251 ^a | 0 | 0 | 0 | | \$0 | \$0 |
| | Nelson Is. | 5,152 ^a | 0 | 0 | 0 | | \$0 | \$0 |
| | Nunivak Is. | 3,141 ^a | 0 | 0 | 0 | | \$0 | \$0 |
| 2008 | Security Cove | 6,442 | 0 | 0 | 0 | | \$0 | \$0 |
| | Goodnews Bay | 3,259 | 0 | 0 | 0 | | \$0 | \$0 |
| | Cape Avinof | 806 | 0 | 0 | 0 | | \$0 | \$0 |
| | Nelson Is. | 3,424 | 0 | 0 | 0 | | \$0 | \$0 |
| | Nunivak Is. | 3,688 | 0 | 0 | 0 | | \$0 | \$0 |

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Appendix E2–Page 2 of 5.

| Year | District | Estimated biomass (st) | Harvest (st) | Number of permits | Hours fished | CPUE (st) | Estimated value ^a | Average income per permit |
|------|---------------|------------------------|--------------|-------------------|--------------|--------------|------------------------------|---------------------------|
| 2007 | Security Cove | 7,081 | 0 | 0 | 0 | | \$0 | \$0 |
| | Goodnews Bay | 3,683 | 0 | 0 | 0 | | \$0 | \$0 |
| | Cape Avinof | 878 | 0 | 0 | 0 | | \$0 | \$0 |
| | Nelson Is. | 3,614 | 0 | 0 | 0 | | \$0 | \$0 |
| | Nunivak Is. | 4,054 | 0 | 0 | 0 | | \$0 | \$0 |
| 2006 | Security Cove | 7,477 | 64 | 2 | 156 | | \$7,878 | \$3,939 |
| | Goodnews Bay | 4,111 | 64 | 5 | 96 | | \$8,935 | \$1,787 |
| | Cape Avinof | 702 | 0 | 0 | 0 | | \$0 | \$0 |
| | Nelson Is. | 3,809 | 262 | 25 | 169 | | \$53,225 | \$2,129 |
| | Nunivak Is. | 4,260 | 0 | 0 | 0 | | \$0 | \$0 |
| 2005 | Security Cove | 18,192 | 2,031 | 30 | 198 | | \$317,153 | \$10,572 |
| | Goodnews Bay | 13,410 | 49 | 6 | 123 | | \$4,321 | \$720 |
| | Cape Avinof | 3,377 | 149 | 14 | 160 | | \$37,631 | \$2,688 |
| | Nelson Is. | 4,440 | 665 | 27 | 277 | | \$119,193 | \$4,415 |
| | Nunivak Is. | 4,782 | 0 | 0 | 0.0 | | \$0 | \$0 |
| 2004 | Security Cove | 9,698 | 0 | 0 | 0 | | \$0 | \$0 |
| | Goodnews Bay | 7,744 | 34 | 10 | 96.0 | | \$3,600 | \$360 |
| | Cape Avinof | 3,369 | 63 | 23 | 288.5 | | \$10,900 | \$474 |
| | Nelson Is. | 5,085 | 825 | 39 | 194.5 | | \$165,300 | \$4,238 |
| | Nunivak Is. | 4,739 | 0 | 0 | 816.0 | | \$0 | \$0 |
| 2003 | Security Cove | 10,600 | 0 | 0 | 0 | | \$0 | \$0 |
| | Goodnews Bay | 8,300 | 36 | 12 | 50.5 | 0.06 | \$4,600 | \$383 |
| | Cape Avinof | 3,812 | 176 | 22 | 74.5 | 0.11 | \$36,100 | \$1,641 |
| | Nelson Is. | 6,130 | 816 | 44 | 78.0 | 0.24 | \$187,500 | \$4,261 |
| | Nunivak Is. | 5,182 | 229 | 19 | 204.0 | ^b | \$7,200 | \$379 |
| 2002 | Security Cove | 4,748 | 109 | 25 | 17.0 | 0.27 | \$10,000 | \$400 |
| | Goodnews Bay | 5,529 | 13 | 5 | 28.5 | 0.09 | \$1,000 | \$200 |
| | Cape Avinof | 3,491 | 79 | 37 | 97.0 | 0.02 | \$8,000 | \$216 |
| | Nelson Is. | 6,130 | 950 | 54 | 80.5 | 0.22 | \$101,000 | \$1,870 |
| | Nunivak Is. | 5,422 | 175 | 29 | 243.0 | ^b | \$19,000 | \$655 |
| 2001 | Security Cove | 5,206 | 1,024 | 56 | 17.5 | 1.04 | \$110,000 | \$1,964 |
| | Goodnews Bay | 5,755 | 45 | 23 | 16.0 | 0.12 | \$6,000 | \$261 |
| | Cape Avinof | 3,486 | 231 | 45 | 63.0 | 0.08 | \$23,000 | \$511 |
| | Nelson Is. | 6,057 | 678 | 49 | 25.5 | 0.54 | \$66,000 | \$1,347 |
| | Nunivak Is. | 5,657 | 0 | 0 | 0 | | \$0 | \$0 |

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Appendix E2–Page 3 of 5.

| Year | District | Estimated biomass (st) | Harvest (st) | Number of permits | Hours fished | CPUE (st) | Estimated value ^a | Average income per permit |
|------|------------------------|------------------------|--------------|-------------------|--------------|--------------|------------------------------|---------------------------|
| 2000 | Security Cove Goodnews | 5,237 | 284 | 79 | 16.0 | 0.22 | \$54,386 | \$688 |
| | Bay | 6,348 | 20 | 57 | 27.0 | 0.01 | \$3,318 | \$58 |
| | Cape Avinof | 3,210 | 366 | 86 | 59.0 | 0.07 | \$68,532 | \$797 |
| | Nelson Is. | 4,672 | 813 | 86 | 20.0 | 0.47 | \$154,280 | \$1,794 |
| | Nunivak Is. | 3,487 | 40 | 34 | 93.0 | ^b | \$11,880 | \$349 |
| 1999 | Security Cove Goodnews | 5,261 | 1,072 | 97 | 9.0 | 1.23 | \$338,000 | \$3,485 |
| | Bay | 6,896 | 1,366 | 94 | 49.0 | 0.30 | \$301,000 | \$3,202 |
| | Cape Avinof | 3,555 | 533 | 117 | 51.0 | 0.09 | \$185,000 | \$1,581 |
| | Nelson Is. | 6,655 | 1,366 | 94 | 22.0 | 0.66 | \$430,000 | \$4,574 |
| | Nunivak Is. | 3,319 | 0 | 0 | 0 | | \$0 | \$0 |
| 1998 | Security Cove Goodnews | 4,017 | 1,012 | 78 | 28.5 | 0.46 | \$202,340 | \$2,594 |
| | Bay | 4,064 | 831 | 84 | 79.0 | 0.13 | \$166,220 | \$1,979 |
| | Cape Avinof | 4,287 | 656 | 109 | 44.0 | 0.14 | \$131,120 | \$1,203 |
| | Nelson Is. | 7,136 | 1,250 | 86 | 76.0 | 0.19 | \$235,900 | \$2,743 |
| | Nunivak Is. | 3,778 | 202 | 7 | 6.0 | 4.81 | \$440 | \$63 |
| 1997 | Security Cove Goodnews | 4,640 | 892 | 222 | 10.5 | 0.38 | \$221,000 | \$995 |
| | Bay | 4,752 | 805 | 139 | 65.0 | 0.09 | \$228,000 | \$1,640 |
| | Cape Avinof | 4,616 | 687 | 145 | 26.0 | 0.18 | \$157,000 | \$1,083 |
| | Nelson Is. | 7,909 | 778 | 105 | 10.0 | 0.74 | \$198,000 | \$1,886 |
| | Nunivak Is. | 3,801 | 0 | 12 | 70.0 | 0.00 | \$0 | \$0 |
| 1996 | Security Cove Goodnews | 6,867 | 1,859 | 326 | 5.5 | 1.04 | \$1,252,270 | \$3,841 |
| | Bay | 6,315 | 1,204 | 182 | 45.0 | 0.15 | \$893,900 | \$4,912 |
| | Cape Avinof | 4,500 | 820 | 161 | 57.0 | 0.09 | \$659,280 | \$4,095 |
| | Nelson Is. | 6,638 | 1,031 | 109 | 25.0 | 0.38 | \$676,624 | \$6,208 |
| | Nunivak Is. | 4,197 | 101 | 24 | 256.0 | 0.02 | \$38,234 | \$1,593 |
| 1995 | Security Cove Goodnews | 6,702 | 1,292 | 106 | 12.0 | 1.02 | \$956,000 | \$9,019 |
| | Bay | 4,224 | 1,054 | 127 | 56.0 | 0.15 | \$848,000 | \$6,677 |
| | Cape Avinof | 3,627 | 485 | 93 | 48.0 | 0.11 | \$363,000 | \$3,903 |
| | Nelson Is. | 7,754 | 1,113 | 100 | 28.0 | 0.40 | \$710,000 | \$7,100 |
| | Nunivak Is. | 4,579 | 41 | 13 | 387.0 | 0.01 | \$22,000 | \$1,692 |
| 1994 | Security Cove Goodnews | 7,638 | 0 | 0 | 0 | | \$0 | \$0 |
| | Bay | 5,679 | 1,062 | 103 | 38.0 | 0.27 | \$391,000 | \$3,796 |
| | Cape Avinof | 2,827 | 427 | 85 | 62.0 | 0.08 | \$156,000 | \$1,835 |
| | Nelson Is. | 5,564 | 717 | 104 | 26.0 | 0.27 | \$235,000 | \$2,260 |
| | Nunivak Is. | 4,921 | 14 | 12 | 6.0 | 0.19 | \$4,000 | \$333 |

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Appendix E2–Page 4 of 5.

| Year | District | Estimated biomass (st) | Harvest (st) | Number of permits | Hours fished | CPUE (st) | Estimated value ^a | Average income per permit |
|------|---------------|------------------------|--------------|-------------------|--------------|-----------|------------------------------|---------------------------|
| 1993 | Security Cove | 6,995 | 5 | 9 | 24.5 | 0.02 | \$2,000 | \$222 |
| | Goodnews Bay | 6,211 | 954 | 63 | 123.0 | 0.12 | \$293,000 | \$4,651 |
| | Cape Avinof | 2,837 | 215 | 97 | 106.0 | 0.02 | \$75,000 | \$773 |
| | Nelson Is. | 4,944 | 739 | 73 | 63.5 | 0.16 | \$198,000 | \$2,712 |
| | Nunivak Is. | 5,176 | 0 | 0 | 0 | | \$0 | \$0 |
| 1992 | Security Cove | 7,773 | 834 | 58 | 34.0 | 0.42 | \$285,000 | \$4,914 |
| | Goodnews Bay | 5,572 | 740 | 78 | 29.0 | 0.33 | \$286,000 | \$3,667 |
| | Cape Avinof | 3,446 | 452 | 121 | 12.0 | 0.31 | \$178,000 | \$1,471 |
| | Nelson Is. | 5,275 | 246 | 85 | 10.0 | 0.29 | \$78,000 | \$918 |
| | Nunivak Is. | 5,703 | 27 | 14 | 6.0 | 0.32 | \$4,000 | \$286 |
| 1991 | Security Cove | 4,434 | 570 | 52 | 12.0 | 0.91 | \$208,000 | \$4,000 |
| | Goodnews Bay | 4,387 | 263 | 103 | 4.0 | 0.64 | \$93,000 | \$903 |
| | Cape Avinof | 2,083 | 267 | 137 | 28.0 | 0.07 | \$94,000 | \$686 |
| | Nelson Is. | 2,385 | 0 | 0 | 0 | | \$0 | \$0 |
| | Nunivak Is. | 3,903 | 59 | 17 | 12.0 | 0.29 | \$9,000 | \$529 |
| 1990 | Security Cove | 2,650 | 234 | 52 | 7.0 | 0.64 | \$94,000 | \$1,808 |
| | Goodnews Bay | 2,577 | 455 | 126 | 32.0 | 0.11 | \$314,000 | \$2,492 |
| | Cape Avinof | 2,020 | 50 | 101 | 3.0 | 0.17 | \$35,000 | \$347 |
| | Nelson Is. | 2,705 | 0 | 0 | 0 | | \$0 | \$0 |
| | Nunivak Is. | 422 | 0 | 0 | 0 | | \$0 | \$0 |
| 1989 | Security Cove | 2,830 | 554 | 104 | 4.0 | 1.33 | \$256,000 | \$2,462 |
| | Goodnews Bay | 4,044 | 616 | 138 | 50.0 | 0.09 | \$335,000 | \$2,428 |
| | Cape Avinof | 2,777 | 129 | 147 | 194.0 | 0.00 | \$54,000 | \$367 |
| | Nelson Is. | 3,316 | 233 | 162 | 15.0 | 0.10 | \$57,000 | \$352 |
| | Nunivak Is. | 617 | 116 | 45 | 186.0 | 0.01 | \$42,000 | \$933 |
| 1988 | Security Cove | 4,906 | 324 | 31 | 23.5 | 0.44 | \$362,000 | \$11,677 |
| | Goodnews Bay | 4,479 | 483 | 60 | 40.0 | 0.20 | \$463,000 | \$7,717 |
| | Cape Avinof | 4,108 | 348 | 98 | 88.5 | 0.04 | \$264,000 | \$2,694 |
| | Nelson Is. | 7,152 | 775 | 174 | 7.5 | 0.59 | \$713,000 | \$4,098 |
| | Nunivak Is. | 2,800 | 0 | 0 | 0 | | \$0 | \$0 |
| 1987 | Security Cove | 2,300 | 313 | 65 | 13.0 | 0.37 | \$242,000 | \$3,723 |
| | Goodnews Bay | 2,000 | 321 | 117 | 11.0 | 0.25 | \$133,000 | \$1,137 |
| | Nelson Is. | 8,100 | 923 | 235 | 6.0 | 0.65 | \$661,000 | \$2,813 |
| | Nunivak Is. | 4,400 | 414 | 61 | 39.0 | 0.17 | \$231,000 | \$3,787 |
| 1986 | Security Cove | 3,700 | 751 | 88 | 73.0 | 0.12 | \$535,000 | \$6,080 |
| | Goodnews Bay | 3,000 | 557 | 104 | 53.0 | 0.10 | \$325,000 | \$3,125 |
| | Nelson Is. | 7,300 | 886 | 163 | 40.0 | 0.14 | \$428,000 | \$2,626 |
| | Nunivak Is. | 6,000 | 511 | 36 | 156.0 | 0.09 | \$213,000 | \$5,917 |

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Appendix E2–Page 5 of 5.

| Year | District | Estimated biomass (st) | Harvest (st) | Number of permits | Hours fished | CPUE (st) | Estimated value ^a | Average income per permit |
|------|---------------|------------------------|--------------|-------------------|--------------|-----------|------------------------------|---------------------------|
| 1985 | Security Cove | 4,900 | 733 | 107 | 125.0 | 0.05 | \$335,000 | \$3,131 |
| | Goodnews Bay | 4,300 | 724 | 83 | 130.0 | 0.07 | \$309,000 | \$3,723 |
| | Nelson Is. | 9,500 | 977 | 143 | 44.0 | 0.16 | \$527,000 | \$3,685 |
| | Nunivak Is. | 5,700 | 358 | 37 | 228.0 | 0.04 | \$146,000 | \$3,946 |
| 1984 | Security Cove | 5,100 | 335 | 38 | 345.0 | 0.03 | \$110,000 | \$2,895 |
| | Goodnews Bay | 4,100 | 717 | 130 | 139.0 | 0.04 | \$168,000 | \$1,292 |
| 1983 | Security Cove | 6,400 | 1,073 | 94 | 87.0 | 0.13 | \$443,000 | \$4,713 |
| | Goodnews Bay | 3,200 | 435 | 84 | 278.0 | 0.02 | \$185,000 | \$2,202 |
| 1982 | Security Cove | 5,100 | 813 | 107 | 302.0 | 0.03 | \$271,000 | \$2,533 |
| | Goodnews Bay | 2,600 | 486 | 84 | 314.0 | 0.02 | \$188,000 | \$2,238 |
| 1981 | Security Cove | 8,300 | 1,173 | 113 | 90.0 | 0.12 | \$347,000 | \$3,071 |
| | Goodnews Bay | 4,300 | 657 | 175 | 133.0 | 0.03 | \$196,000 | \$1,120 |

^a Estimated biomass is the projection. Aerial surveys were inadequate or not flown.