



Izembek

National Wildlife Refuge Land Exchange/Road Corridor

Final Environmental Impact Statement

Chapter 3.3 Affected Environment: Social Environment





U.S. Fish and Wildlife Service Mission Statement

The Mission of the U.S. Fish & Wildlife Service is working with others to conserve, protect and enhance fish, wildlife, plants and their habitats for the continuing benefit of the American people.



Refuge System Mission Statement

The Mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.

—National Wildlife Refuge System Improvement Act of 1997

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3.0 AFFECTED ENVIRONMENT

3.3 Social Environment

3.3.1 Land Ownership and Management

3.3.1.1 Land Ownership

Introduction

Lands identified for exchange are owned by the federal government, the State of Alaska, and the King Cove Corporation. King Cove Corporation is an Alaska Native village corporation established by ANCSA whose land is private land. The Aleut Corporation is the ANCSA regional corporation for the Aleutian Islands region and owner of most of the subsurface estate associated with King Cove Corporation land located outside of the boundary of Izembek National Wildlife Refuge.

The Aleut Corporation is not a party to the proposed land exchange. Current and future land status of The Aleut Corporation lands would be unchanged by any proposed action. More specifically, if the land exchange is completed, The Aleut Corporation would retain subsurface ownership of the Mortensens Lagoon parcel. The Aleut Corporation subsurface interests would become an inholding within the Izembek National Wildlife Refuge, subject to the provisions of ANILCA Section 1110 concerning reasonable access to inholdings.

The King Cove Corporation, as the ANCSA village corporation for the Native Village of King Cove, is entitled by law to over 115,000 acres of federal land in the vicinity of the village. The entitlement is limited to the surface estate of uplands and lands beneath non-navigable waterways.

All King Cove Corporation lands within Izembek National Wildlife Refuge were conveyed subject to the provisions of ANCSA Section 22(g), reserving to the U.S. the right of first refusal if the land is offered for sale and requiring management of these King Cove Corporation lands in a manner that does not impose incompatible effects on the adjacent Izembek National Wildlife Refuge lands. Specifically, under regulations found at 50 CFR 25.21 (b - d) and the Fish and Wildlife Service Manual at 603 FW 2.8 C (Service 2012), the use and development of these King Cove Corporation lands is subject to a compatibility determination by the Izembek National Wildlife Refuge manager, excepting certain differences provided in 50 CFR 25.21, which provides in part that:

- Compatibility determinations will include only evaluations of how the proposed use would affect the ability of the refuge to meet its mandated purposes. The National Wildlife Refuge System mission will not be considered in the evaluation.
- Compatibility determinations for proposed uses of 22(g) lands will only evaluate the effects of the use on the adjacent refuge lands, and the ability of that refuge to achieve its purposes, not on the effects of the proposed use to the 22(g) lands.

The effects of ANCSA 22(g) requirements as a conservation protection in the context of a land exchange were clarified in the 1984 U.S. District ruling that nullified a proposed land exchange

on St. Matthew Island. The current regulations, noted above, have addressed the holdings of the court regarding the application of ANCSA 22(g).

Each of the geographic areas proposed for exchange may also encompass tidelands or submerged lands owned by the State of Alaska. With few exceptions, the State owns the surface and subsurface estate of all tidelands and submerged lands along its coastline, and the beds of navigable waters within its boundaries. The State's title for submerged lands is based on the Equal Footing Doctrine, the *Submerged Lands Act of 1953*, and the *Alaska Statehood Act of 1958*.

The State of Alaska owns all tidelands and submerged lands along the coast, and the beds of all inland navigable waters within and adjoining the parcels proposed for exchange. The *Submerged Lands Act of 1953* held such lands in trust for the State and title was transferred at statehood in 1959. Title had already transferred to the State prior to the creation of the Izembek National Wildlife Range in 1960, the expansion of withdrawn lands by Public Land Order 2887 at Sitkinak Island in 1963, and the passage of ANCSA in 1971.

The next section describes, land ownership, interest in lands, and management in lands that could be changed by actions evaluated in the EIS.

Izembek National Wildlife Refuge System Lands

Lands within the Izembek National Wildlife Refuge and the Alaska Peninsula National Wildlife Refuge would be affected by the proposed action. Lands to be exchanged from the Izembek National Wildlife Refuge to the State of Alaska included in the proposed land exchange are comprised entirely of acreage for a proposed road corridor connecting the communities of King Cove and Cold Bay. The proposed corridor is located within 3 unsurveyed townships north and west of Kinzarof Lagoon and would link existing roads and trails extending northerly from each community. The lands are currently owned by the federal government and are managed by the Service. Approximately 70 percent of the refuge land affected by the proposed road corridor lies within designated wilderness.

Based on available mapping, the general alignment of a proposed road corridor would cross unsurveyed land originally included within the bounds of Public Land Order 2216, which established the Izembek National Wildlife Range in 1960. The Range was redesignated Izembek National Wildlife Refuge in 1980 by the *Alaska National Interest Lands Conservation Act* (ANILCA), Public Law 96-487, and approximately 300,000 acres of the refuge was designated as wilderness.

On the east side of Cold Bay, the proposed corridor would connect with the King Cove Access Road near the Northeast Terminal (under construction). On the west side, the proposed road corridor would include a portion of an existing road that has existed since at least the early 1940s, when a strategic air base was established in the Cold Bay area during World War II. The sections of the existing alignments of Outpost Road, Blinn Lake Loop, Outer Marker Road, and St. Louis Road have been incorporated into the proposed road corridor alternatives. These roads are visible on historic master title plats retained by the Bureau of Land Management. According to the Act, if the proposed land exchange occurs, approximately 206 acres of federal land (surface and subsurface estate) would be conveyed to the State. As detailed in Table 2.4-2, Alternative 2 with the southern road alignment would result in the exchange of an estimated 201

acres, while Alternative 3 with the central road alignment would result in the exchange of an estimated 207 acres.

As detailed below in discussion of the King Cove Corporation and State of Alaska lands, parcels of land from these parties would be added to the Izembek National Wildlife Refuge, and the Alaska Peninsula National Wildlife Refuge. In addition, as discussed in Section 2.4.2, as part of the land exchange, the Service would execute an administrative boundary adjustment in the vicinity of Blinn Lake, in accord with ANILCA Section 103(b). An area that is currently designated as Alaska Peninsula National Wildlife Refuge, but administered by Izembek National Wildlife Refuge, would become part of Izembek National Wildlife Refuge (see Figure 2-6).

On January 19, 1942 Air Navigation Site Withdrawal 176 was established for the use of the Department of Commerce to maintain air navigation facilities at Cold Bay. On August 2, 1961, PLO 2451 reduced the size of the withdrawal to its present configuration for FAA use and management. On December 6, 1961 PLO 2216 created the Izembek National Wildlife Range. Upon the passage of ANILCA, the FAA lands were included within the boundary of the Alaska Peninsula National Wildlife Refuge. Section 305 of ANILCA designated lands within Alaska refuges (refuges established by or redesignated by ANILCA) that were withdrawn for other agency uses prior to ANILCA as refuge lands. Section 305 also provides guidance regarding the respective jurisdiction of the Federal agencies having administration and management responsibilities for the withdrawn lands. The withdrawn lands are to be managed in accordance with applicable laws and regulations that apply to national wildlife refuges, subject to the primary jurisdiction of the agency holding the withdrawal – to use and administer the withdrawn lands for the purposes specified in the order creating the withdrawal.

The lands administered by the FAA are part of the National Wildlife Refuge System, and the Service is prohibited under the terms of the National Wildlife Administration Act from relinquishing an interest in refuge land, including “secondary management authority,” other than through a land exchange. In the event a land exchange is authorized, the Service with FAA concurrence may either grant a right of way for the section of the proposed road or include the land as part of the land exchange.

Sitkinak Island Lands

The Sitkinak Island tract proposed for exchange is federally-owned property currently managed by the Coast Guard and the Service. It consists of 2 non-contiguous parcels connected by an existing road easement. The easterly parcel, comprised primarily of the spit at the entrance to Sitkinak Lagoon, was withdrawn from the public domain by Public Land Order 664 in 1950. A larger parcel located further inland on Sitkinak Lagoon was withdrawn in 1963 by Public Land Order 2887. Located within 3 surveyed townships, the tracts have a combined acreage of approximately 1,619 acres.

The current land status of the Sitkinak Island tract is directly related to the history of land use in the area. Approximately 300 acres were withdrawn “in Aid of Contemplated Legislation” under Public Land Order 664 effective August 28, 1950. In 1955, the Bureau of Land Management issued a special land use permit to the U.S. Air Force for construction of an airbase. The lands covered by the permit included a portion of the lands described in Public Land Order 664. Among other things, the Air Force constructed a 7,700 barrel fuel storage tank on a 19-acre site

near the shoreline. An access road was also constructed to connect the fuel storage tank site to the runway in the middle of the island.

In 1963, approximately 1,706 acres were withdrawn under Public Land Order 2887 for use by the Coast Guard for an Aid to Navigation Facility. The withdrawal was apparently made at the request of the Coast Guard, as the Air Force was relinquishing its interest in the lands and facilities. The lands covered by Public Land Order 2887 included the runway parcel, which was later surveyed and designated “Tract B” on the rectangular survey plat of Township 42 South, Range 31 West, Seward Meridian. Management of the fuel storage tank site and the access road constructed by the Air Force (Parcels 1 and 2, Bureau of Land Management Serial Case File A-057069) was subsequently transferred to the Coast Guard.

In 1968, the state selected the entire island as statehood entitlement lands. All of Sitkinak Island, except for the acreage withdrawn by Public Land Orders 664 and 2887, was conveyed to the State by Tentative Approval in 1975 and patented in 1984. Patent reservations include a 100-foot wide right of way for the access road connecting the 2 exchange parcels.

The state’s selection as to the withdrawn lands was eventually rejected after the 1980 passage of ANILCA. Under that legislation, any withdrawn lands within the Alaska Maritime National Wildlife Refuge, Gulf of Alaska Unit, automatically become part of the refuge upon revocation of the withdrawal.

In 1997, a partial revocation of Public Land Order 664 placed approximately 148 acres of federal land on Sitkinak Island into the Alaska Maritime National Wildlife Refuge, managed by the Service. The remaining federal land withdrawn under Public Land Order 664 and Public Land Order 2887 is under the jurisdiction of the Coast Guard.

In summary, the State of Alaska owns all of Sitkinak Island except for the 1,619 acres of federally-owned lands proposed for exchange, which are legally described as follows:

- Township 41South, Range 31West, Tract B, 83.15 acres: A portion of this tract is still subject to Public Land Order 664 as amended, and under the management of the Coast Guard. It includes the 19-acre fuel tank site. Upon revocation of Public Land Order 664, it would become part of the Alaska Maritime National Wildlife Refuge, Gulf of Alaska Unit, managed by the Service.
- Township 42South, Range 31West, Tract B, 1,444.09 acres: This tract is the entirety of Public Land Order 2887 as surveyed, and is under the management of the Coast Guard. Upon revocation of Public Land Order 2887, it would become part of the Alaska Maritime National Wildlife Refuge, Gulf of Alaska Unit, managed by the Service. This tract includes the freshwater body of water named Mark Lake.
- Township 42South, Range 31West, Tract C, 88.40 acres. This tract is within the Alaska Maritime National Wildlife Refuge, Gulf of Alaska Unit, managed by the Service.
- Township 42South, Range 30West, Tract B, 3.37 acres: This tract is within the Alaska Maritime National Wildlife Refuge, Gulf of Alaska Unit, managed by the Service.

Should the proposed land exchange be executed, the Sitkinak Island parcels (surface and subsurface estate) would be conveyed to the State of Alaska. The federal government retains an interest in the road right of way reserved in the 1984 patent to the State for the remainder of

Sitkinak Island. Jurisdiction over the right of way was transferred to the Service in 1992. The Service would release the road right of way in the event of a land exchange.

State Lands

State lands included in the proposed land exchange consist of 2 surveyed townships bordering the North Creek and Pavlof Units of the Alaska Peninsula National Wildlife Refuge. The townships comprise approximately 41,887 acres of general selection grant lands conveyed to the State by Tentative Approval in 1974. Bureau of Land Management survey plats of each township were officially filed in July 2009 and patents were issued in early 2010 for both the surface and subsurface estate. Each patent contains a standard right of way reservation for ditches and canals constructed by the authority of the U.S. by the Act of August 30, 1890 (43 USC 945).

The surface and subsurface estate of these state owned lands would be conveyed to the federal government if the proposed exchange is approved.

Mortensens Lagoon and Kinzarof Lagoon, King Cove Corporation Lands

The Mortensens Lagoon parcel is located within a single surveyed township along the west side of Cold Bay, in the external boundaries of the Pavlof Unit of the Alaska Peninsula National Wildlife Refuge. King Cove Corporation selected the lands in 1974 and the surface estate was transferred by Interim Conveyance Number 151 in 1979. Patents were issued in 1990 and 1993. The subsurface estate is owned by The Aleut Corporation.

This tract is bounded by the unsurveyed ANCSA Section 17(b) easement and the meandering alignment of Russell Creek (See Figure 3-3.1 for location of the 17(b) easement). The preliminary acreage of the Mortensens Lagoon tract is approximately 8,092 acres. The final area of the tract is unknown, pending refinement of the location of the 17(b) easement and Russell Creek. There is agreement in principle that the road along the northeastern border of the parcel would be retained by the Corporation.

Upon interim conveyance of lands selected by an Alaska Native corporation that are located within the boundary of a national wildlife refuge established prior to ANCSA, such as Izembek National Wildlife Refuge, the provisions of Section 22(g) of ANCSA become applicable. Application of the Section 22(g) provisions are contained in 50 CFR 25.21 (b - d) and the Fish and Wildlife Service Manual (Service 2012) at 603 FW 2.8 C. The Fish and Wildlife Service Manual states that application of the compatibility standard for use and development of corporation land is applicable, excepting certain differences provided in 50 CFR 25.21 (outlined above in the introduction to this section).

The Mortensens Lagoon tract is not subject to ANCSA Section 22(g) provisions because the Alaska Peninsula National Wildlife Refuge was created by ANILCA in 1980, after ANCSA was passed. Therefore, the Mortensens Lagoon tract is private land, which is situated as an inholding within the boundaries of the Alaska Peninsula National Wildlife Refuge. However, this private tract is not part of the Alaska Peninsula National Wildlife Refuge and it is not subject to its management policies.

The Kinzarof Lagoon parcel is patented King Cove Corporation land lying east and west of the mouth of the lagoon within the Izembek National Wildlife Refuge. The parcel includes 13 of the 16 islands arrayed across the lagoon entrance. The remaining 3 islands are owned by the U.S., as

a result of voluntary mitigation compensation for fill in wetland for the authorized King Cove Access project.

The Kinzarof Lagoon tract is comprised of surveyed lands within 2 townships. These lands were also selected in 1974 and the surface estate transferred to King Cove Corporation by Interim Conveyance Number 151. Patent was issued in 1990. This tract is subject to ANCSA Section 22(g) provisions, which reserves to the U.S. a right of first refusal should the land be offered for sale and the lands remain subject to the laws and regulations governing use and development of the refuge.

The subsurface estate of the Kinzarof Lagoon tract was segregated from the public domain by the creation of the Izembek National Wildlife Range in 1960, and therefore was not available for selection under ANCSA. Title to the subsurface estate remains vested in the federal government.

Five islands of the Kinzarof Lagoon tract have been resurveyed and replatted. Plat Number 2006-5, Aleutian Islands Recording District, recorded April 21, 2006, assigned new lot designations and areas to these islands. King Cove Corporation retained 2 of the 5 lots and conveyed 3 to the Aleutians East Borough. The Aleutians East Borough gifted the 3 lots in their ownership to the U.S. by Quitclaim Deed in October 2007. The Kinzarof Lagoon tract proposed for exchange is assumed to include the 2 lots of Plat Number 2006-5 that remain in King Cove Corporation ownership, described as Lots 5A and 5B, Section 5, Township 57 South, Range 88 West. The plat notes that 1 island, designated as Lot 2, Section 4, Township 57 South, Range 88 West, no longer projected above the mean high tide line as of the date of survey.

The total acreage of the Kinzarof Lagoon tract proposed for exchange is approximately 2,604 acres, which excludes a corridor for the southern or central road alignment that would average 100-foot in width east of the Lagoon to be retained by King Cove Corporation for a road corridor.

If the proposed exchange proceeds to completion, King Cove Corporation would convey title to the federal government for the surface estate of the Mortensens Lagoon tract, to be managed as part of the Alaska Peninsula National Wildlife Refuge, and the Kinzarof Lagoon tract, to be managed as part of the Izembek Wilderness. The federal government would then own both the surface and subsurface estate of uplands surrounding Kinzarof Lagoon. Title to the subsurface estate of the Mortensens Lagoon tract would continue to vest in The Aleut Corporation.

King Cove Corporation Selected Lands

East of and adjoining the patented Kinzarof Lagoon tract is a block of lands selected by King Cove Corporation under ANCSA within the same township. The selected lands comprise 9 surveyed sections totaling 5,430 acres within the Izembek National Wildlife Refuge and Izembek Wilderness and is the final tract pending for conveyance as King Cove Corporation's entitlement under Bureau of Land Management Serial Case File No. AA 06675 B. At present, these selected lands continue to be managed as wilderness by the Service until conveyance.

As part of the proposed exchange, King Cove Corporation would relinquish its ANCSA selection of this tract. Title would remain in the federal government with no further obligation to convey the land. King Cove Corporation would be eligible to select equivalent acreage within the Alaska Peninsula National Wildlife Refuge to fulfill its ANCSA selection entitlement. The location of the substitute lands that could be selected are identified on Figure 3.3-1, as King Cove Corporation ANCSA 12(b) Priorities.

Submerged Lands

Each of the geographic areas proposed for exchange may also encompass tidelands or submerged lands owned by the State of Alaska. The State has asserted that certain lakes and streams within the King Cove Corporation parcels to be exchanged to the Service are navigable and thus the State owns the submerged lands beneath these inland waters. However, until a federal navigability determination has been made through either federal administrative or judicial proceedings, title to the submerged lands within King Cove Corporation lands is undetermined.

The Act requires that the tidelands and submerged lands of Kinzarof Lagoon be added to the Izembek State Game Refuge as a pre-condition to the proposed land exchange. At the time the Act was passed, Kinzarof Lagoon was not included in the Izembek State Game Refuge established by Alaska Statute 16.20.030 (a)(14).

On August 19, 2010, Alaska Governor Sean Parnell signed House Bill 210, authorizing a land exchange with the federal government for a proposed road corridor through the Izembek National Wildlife Refuge. The bill also amends Alaska Statute Title 16 to include Kinzarof Lagoon in the Izembek State Game Refuge, pending approval of the land exchange, as required by the Act.

Encumbrances

Private lands owned by King Cove Corporation were conveyed subject to ANCSA Section 17(b) easements, which are federally administered public access easements of various widths and purposes that are listed and described in the federal patent. King Cove Corporation lands are also subject to other valid existing rights, such as rights of way and leases that existed prior to the Corporation's selection of the lands. Should the land exchange be completed as proposed, the ANCSA Section 17(b) easements would be extinguished because title would revert to the U.S. Further analysis of specific easements may be necessary to assure that no valid existing rights of third parties would be affected. Management of the existing rights of way and leases would be assumed by the Service.

3.3.1.2 Land Management

Each of the proposed land exchange tracts is subject to existing management regulations. The following discussion identifies each tract and describes the land use plans and management guidelines applicable to each.

Road Corridor

Izembek National Wildlife Refuge

The potential road corridor connecting the City of King Cove and Cold Bay Airport would cross federal land mostly within the Izembek National Wildlife Refuge (see Figure 3.3-2). Inside the Izembek National Wildlife Refuge, approximately 70 percent of the road alignment passes through the Izembek Wilderness.

Figure 3.3-1 King Cove Corporation's ANILCA 1410 Agreement

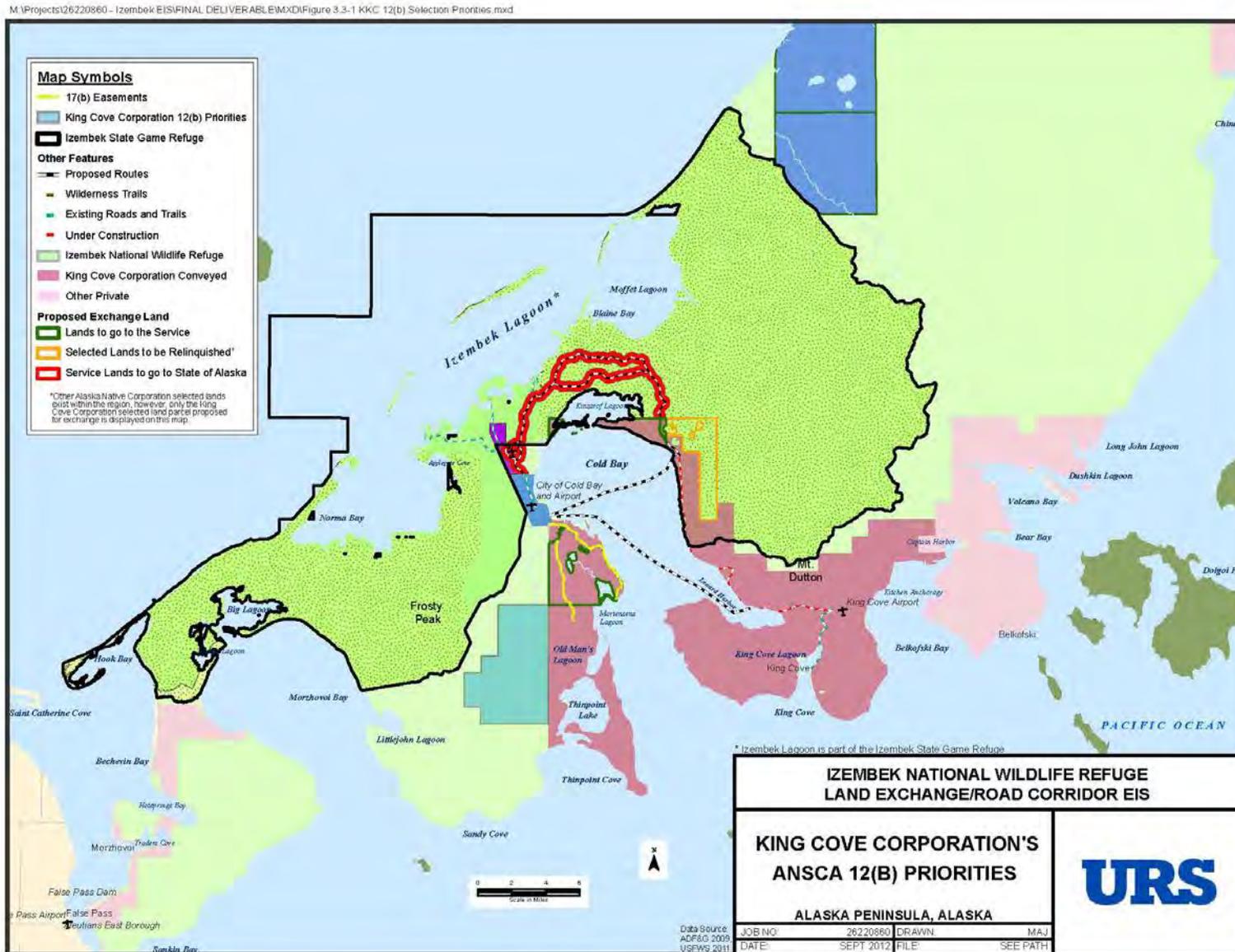
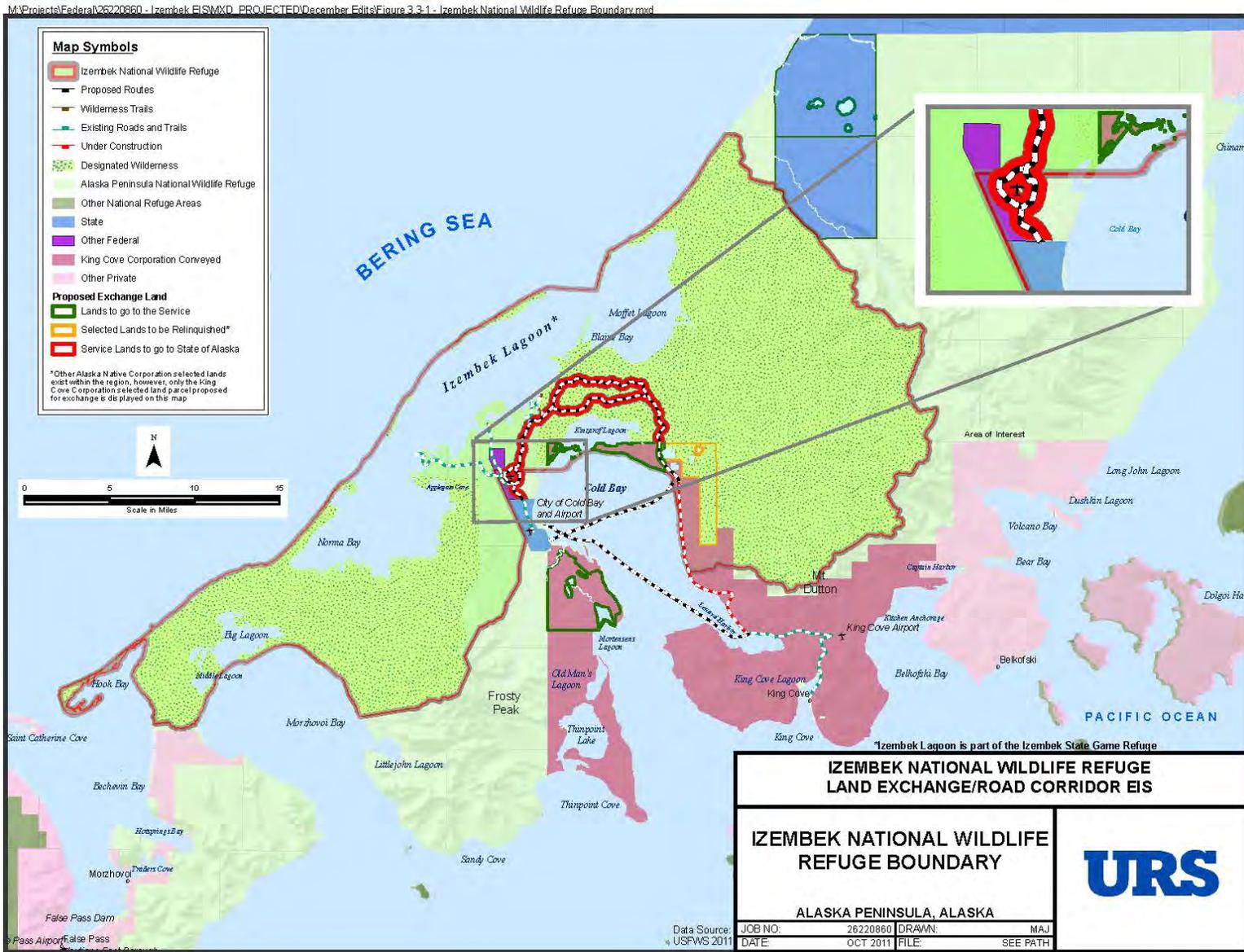


Figure 3.3-2 Izembek National Wildlife Refuge Boundary



The Izembek National Wildlife Refuge was originally established as the Izembek National Wildlife Range in 1960. In 1980, ANILCA redesignated the area as a national wildlife refuge and established the Izembek Wilderness within the refuge boundaries. Unless these lands are exchanged, they are subject to the management policies of the *Izembek National Wildlife Refuge Comprehensive Conservation Plan* (Service 1985a), the *Izembek National Wildlife Refuge Land Protection Plan* (Service 1988b), the *Wilderness Act* (1964), ANILCA (1980), and the *National Wildlife Refuge Improvement Act* (1997). The Izembek National Wildlife Refuge contains approximately 315,000 acres of land.

According to ANILCA Section 303(3)(B),

The purposes for which the Izembek National Wildlife Refuge was established and shall be managed include:

- (i) to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited to, waterfowl, shorebirds and other migratory birds, brown bears and salmonoids [sic];
- (ii) to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats;
- (iii) to provide, in a manner consistent with the purposes set forth in subparagraphs (i) and (ii), the opportunity for continued subsistence uses by local residents; and
- (iv) to ensure, to the maximum extent practicable and in manner consistent with the purposes set forth in paragraph (i), water quality and necessary water quantity within the refuge.

ANILCA Section 702(6) also designated approximately 300,000 acres of the Izembek National Wildlife Refuge as Izembek Wilderness. The purposes identified in the *Wilderness Act* are also applicable to the Izembek Wilderness. A discussion of the Izembek Wilderness is found in Section 3.3.10 of this chapter, including management of access.

Federal Aviation Administration Parcels

Portions of the proposed road corridor near Blinn Lake would pass through lands withdrawn by the Federal Aviation Administration for use in the maintenance of air navigation facilities. The Federal Aviation Administration has primary management authority for these lands while the Service has secondary management authority under the Alaska Peninsula National Wildlife Refuge. If a land exchange is authorized, the Service would grant a right of way for a road corridor or include the road corridor as part of the land exchange, with Federal Aviation Administration concurrence.

RCA Alaska Communications, Inc. Parcel

A portion of the proposed road corridor along Outer Marker Road passes through a 22.95 acre parcel of private land. The fee title to the parcel was transferred in 1971 by the Federal Aviation Administration to RCA Alaska Communications, Inc. under authority created in Public Law 90-135, 40 USC 771-792. The deed transferring ownership reserves to “the Government the right to use, maintain and operate the VORTAC [Very High Frequency Omni-Directional Radio Range Tactical Air Navigation Aid] access road, as constructed and located, across said premises.”

Authorization for use of the road other than that reserved to the U.S. as stated above would have to be obtained from the current owner of the parcel.

Izembek State Game Refuge

In 1972, the Alaska Legislature established the Izembek State Game Refuge (see Figure 1-2). The 480,396 acre refuge encompassed 323,110 acres of uplands within the Izembek National Wildlife Refuge under federal jurisdiction along with 157,286 acres of submerged land and tidelands, coastal lagoons, beds of navigable waterways and open water, under state jurisdiction. The boundary excluded the submerged lands within Kinzarof Lagoon. With the exceptions of Izembek Lagoon, Kinzarof Lagoon, and the marine waters beyond the Kudiakof Islands, the boundary of the Izembek State Game Refuge corresponds with the Izembek National Wildlife Refuge boundary. The dividing line between state and federal jurisdiction is generally the line of mean high water.

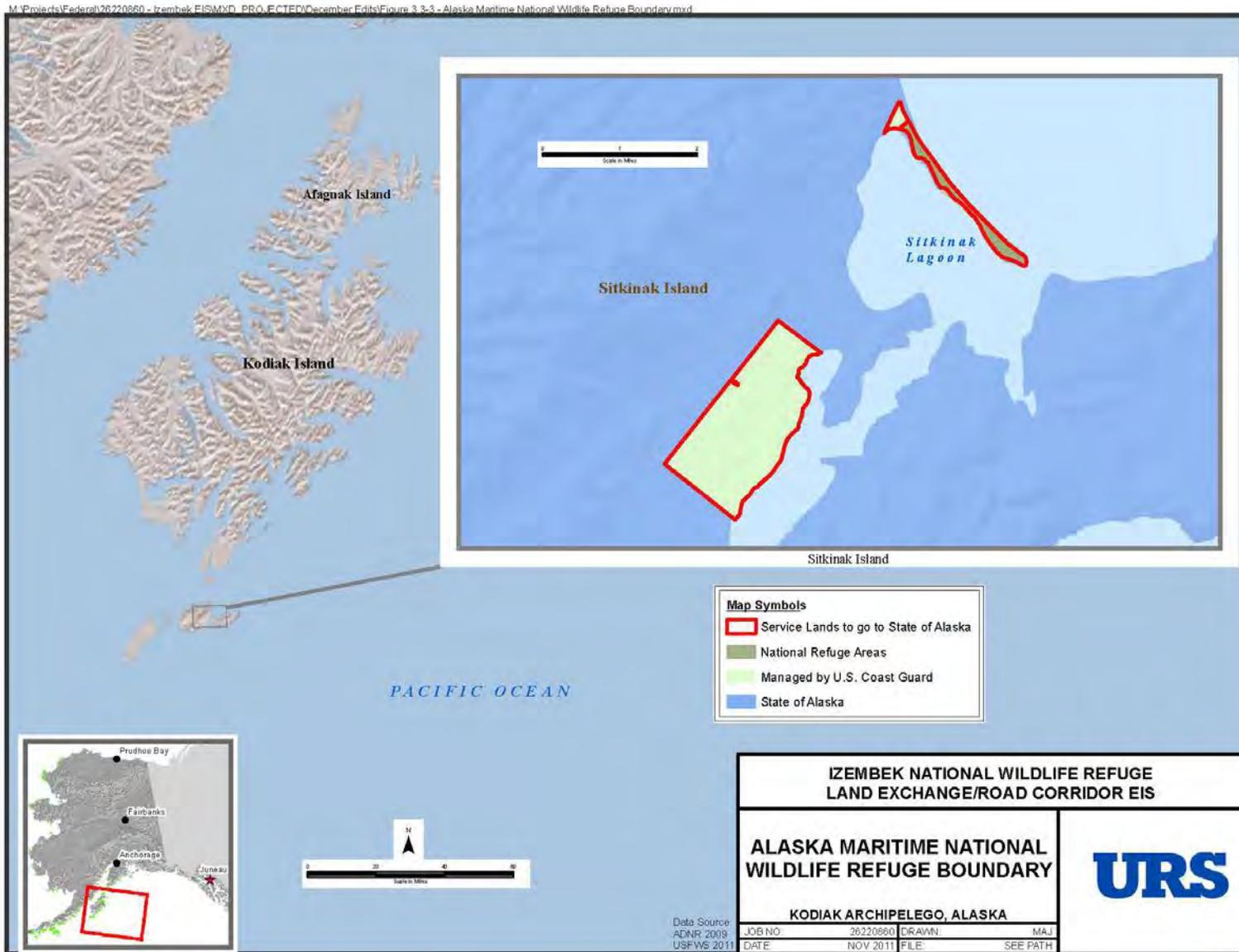
The *Izembek State Game Refuge Management Plan* (ADF&G 2010i) provides direction for land management. The Izembek State Game Refuge is managed to: a) maintain and protect fish and wildlife populations and their habitats, b) allow appropriate public access that is compatible with the management goals of the plan, and c) encourage research, monitoring, and enforcement activities necessary to support the Izembek State Game Refuge goals and policies. The management plan recognizes the possible construction of a future road to connect the communities of King Cove and Cold Bay and makes brief mention of the Joshua Green River Controlled Use Area established in 1993 that restricts motorized vehicle use to power boats for hunting purposes. This is further explained in Section 3.3.3 and 3.3.7.

With adoption of House Bill 210 on August 19, 2010, the Izembek State Game Refuge boundary would be expanded to include all state land and water within and adjacent to Kinzarof Lagoon, if the Secretary of the Interior determines the proposed land exchange is in the public interest.

Sitkinak Island

Sitkinak Island is the largest of the Trinity Islands situated near the southern coast of Kodiak Island. The majority of the island is owned by the State of Alaska with smaller portions owned by the federal government and approved for conveyance from the State to the Kodiak Island Borough. The federally owned parcels proposed for exchange on Sitkinak Island are managed by 2 agencies. As discussed earlier in this chapter, federal parcels subject to Public Land Order 2887 and Public Land Order 664 are managed by the Coast Guard and have been used historically as an airfield and fuel storage. The larger of these parcels contains Mark Lake while the smaller is an uplands area at the northwest end of the spit dividing Sitkinak Lagoon from the Gulf of Alaska. The spit itself is managed by the Service and included within the Alaska Maritime National Wildlife Refuge (see Figure 3.3-3 for ownership pattern).

Figure 3.3-3 Alaska Marine National Wildlife Refuge Boundary



Coast Guard Management Guidelines

The larger federal exchange parcels on Sitkinak Island were withdrawn by the Coast Guard and contain an airstrip, road, and various buildings. Although the Coast Guard has primary management authority, these facilities have not been used for many years and the Coast Guard has indicated a desire to relinquish the land to the Service. This process requires Coast Guard cleanup of hazardous materials before the Service will accept the land for full management as part of the refuge. The Coast Guard and the Service have indicated that in a relinquishment agreement, the contaminated portions can be segregated, with provision that these parcels would be exchanged only upon completion of the cleanup.

Alaska Maritime National Wildlife Refuge

The Alaska Maritime National Wildlife Refuge contains approximately 4.9 million acres of Alaska coastland and islands. The Alaska Maritime National Wildlife Refuge was created by ANILCA in 1980, consolidating 11 pre-existing refuges, adding 1.9 million acres of new land, and combining the majority of Alaska's seabird habitat within a single refuge. The Alaska Maritime National Wildlife Refuge is divided into 5 distinct geographic refuge units: the Chukchi Sea Unit, the Bering Sea Unit, the Aleutian Islands Unit, the Alaska Peninsula Unit, and the Gulf of Alaska Unit. A *Comprehensive Conservation Plan and Wilderness Review* (Service 1988a) for the Alaska Maritime National Wildlife Refuge was adopted in 1988 that designated areas according to their resources and values, outlined programs for conserving fish and wildlife resource values, and specified uses compatible with the major purposes of the refuge.

Sitkinak Island is 1 of the 3 Trinity Islands located off the southern tip of Kodiak Island and is included within the Gulf of Alaska Unit of the Alaska Maritime National Wildlife Refuge (see Figure 3.3-3). It was not part of a pre-existing refuge but contained “additional public lands on islands” added to the Alaska Maritime National Wildlife Refuge by ANILCA Section 303(1)(v). Although Sitkinak Island is not mentioned by name in the *Alaska Maritime National Wildlife Refuge Comprehensive Conservation Plan*, the Service considers it to be within the category of “Islands and submerged lands associated with Kodiak Island” (Service 1988a, Table 36, page III-44) under the “Minimal Management” category, described as follows:

Management under this category is directed at protection of existing fish and wildlife populations and habitats, and restoration of endangered and other species to natural levels. No facilities are to be built and public programs are kept to a minimum. Natural fish and wildlife population dynamics and habitats are emphasized although eradication of introduced predators, fishery development, and regulated hunting, fishing and trapping are allowed. Management for commercial timber harvest will not occur under this category. Management activities will focus on biological monitoring, eradication of introduced predators, research and regulation. Oil and gas studies may be permitted subject to site-specific compatibility determinations. Oil and gas leasing is not permitted. Traditional motorized access is permitted for traditional activities.

In marine environments, floating seafood processors, mariculture, and effluent discharge are not permitted. Floating structures and navigation aids may be permitted. Docks will be permitted subject to the provisions of the Alaska Lands Act section 1110. Log transfer facilities and piers may be permitted subject to the provision of the Alaska Lands Act. (Service 1988a, page III-2)

As discussed in Section 3.3.1.1, the Sitkinak spit (T.42S., R.30W. Tract B) is currently managed by the Service. The Service also has secondary jurisdiction over Coast Guard parcels on Sitkinak Island since these are also within the refuge.

Kodiak Area Plan

The *Kodiak Area Plan* (ADNR 2004), adopted in 2004, encompasses about 3.9 million acres of state land, consisting of about 0.6 million acres of uplands and about 3.3 million acres of state tidelands and submerged lands. The Kodiak Area plan boundary includes all land within the corporate boundaries of the Kodiak Island Borough, which includes the Kodiak Island group (Kodiak, Shuyak, Raspberry, and Afognak Islands), portions of the Alaska Peninsula, and a number of small islands and small island groups, of which the Trinity Islands group is the largest. With the exception of the uplands on Kodiak, Shuyak, and Afognak Islands, tidelands and submerged lands predominate within the area covered by the Kodiak Area Plan. The Kodiak Area Plan also provides future management intent for lands selected for conveyance to the State from the federal government.

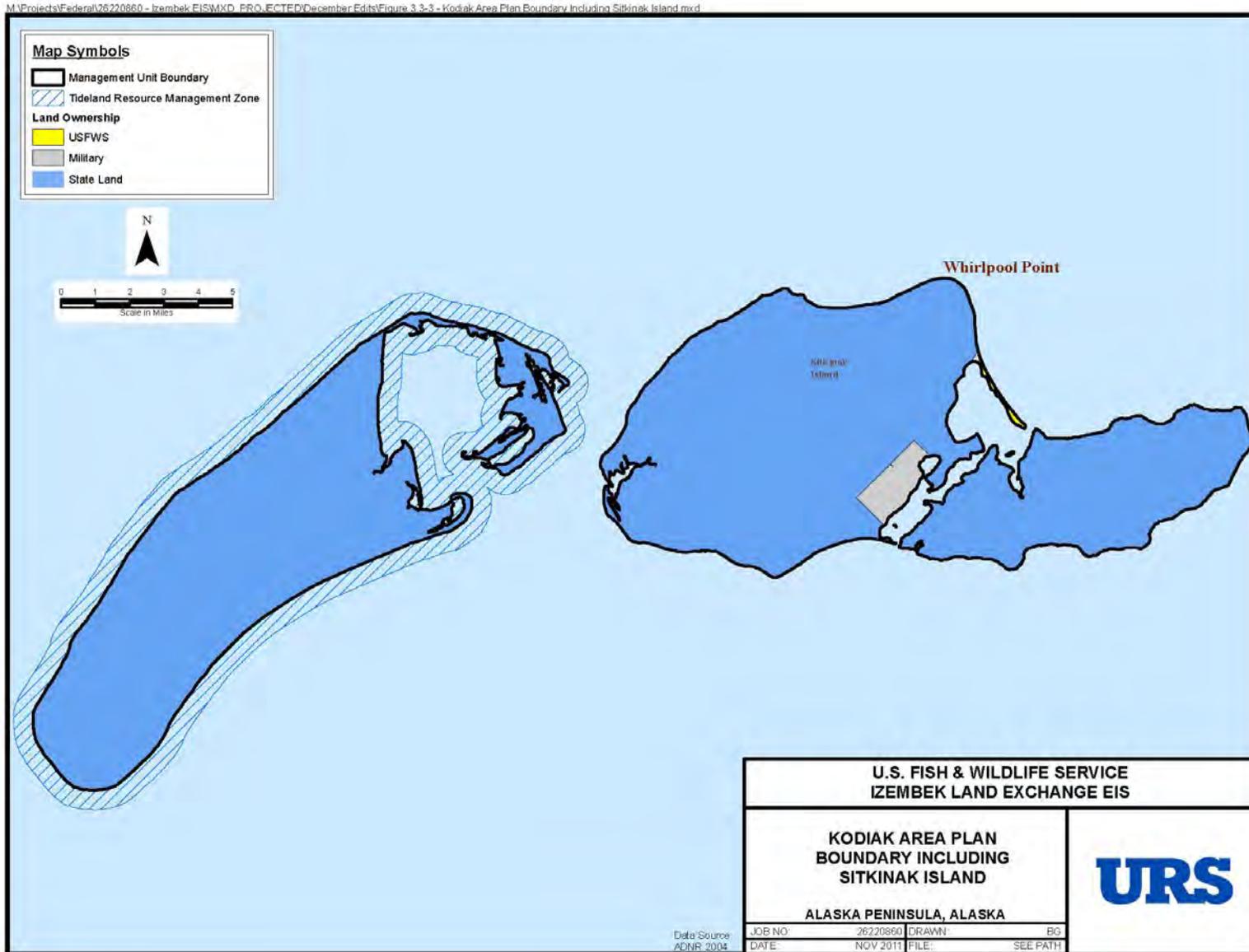
The federally-owned exchange parcels on Sitkinak Island occur within the Trinity Islands Area of the Kodiak Area Plan (see Figure 3.3-4) and are identified as Unit Numbers T-04A (Mark Lake) and T-04B (CG Base). Should conveyance to the State occur under the proposed land exchange, T-04A, is designated Grazing with management direction to protect access to the Sitka black-tail deer population and the prehistoric heritage site. T-04B is designated Settlement and contains the runway and associated buildings as well as any contiguous area that is functionally necessary for development. Commercial, industrial, or institutional uses are considered appropriate for this unit.

Units T-01 and T-02, which comprise the state owned portions of the island (approximately 54,885 acres), are managed for cattle grazing, as they have been since the 1950s. During that time, various operators have raised cattle under leases from the state; the current operator is Sitkinak Cattle Ranch. Presently, the Alaska Department of Natural Resources is processing lease renewals to allow continued grazing on these lands, including a long term lease (ADL201321, 25-year term, 49,257 acres) and a short term lease (ADL230080, 10-year term, 5,628 acres).

State Lands

The State parcels identified in the proposed land exchange are currently managed by the Alaska Department of Natural Resources under the *Bristol Bay Area Plan* (ADNR 2005). These lands adjoin the Izembek Wilderness Area of the Izembek National Wildlife Refuge on the south, other state lands on the north, and the Alaska Peninsula National Wildlife Refuge on the east and west.

Figure 3.3-4 Kodiak Area Plan Boundary Including Sitkinak Island



Bristol Bay Area Plan

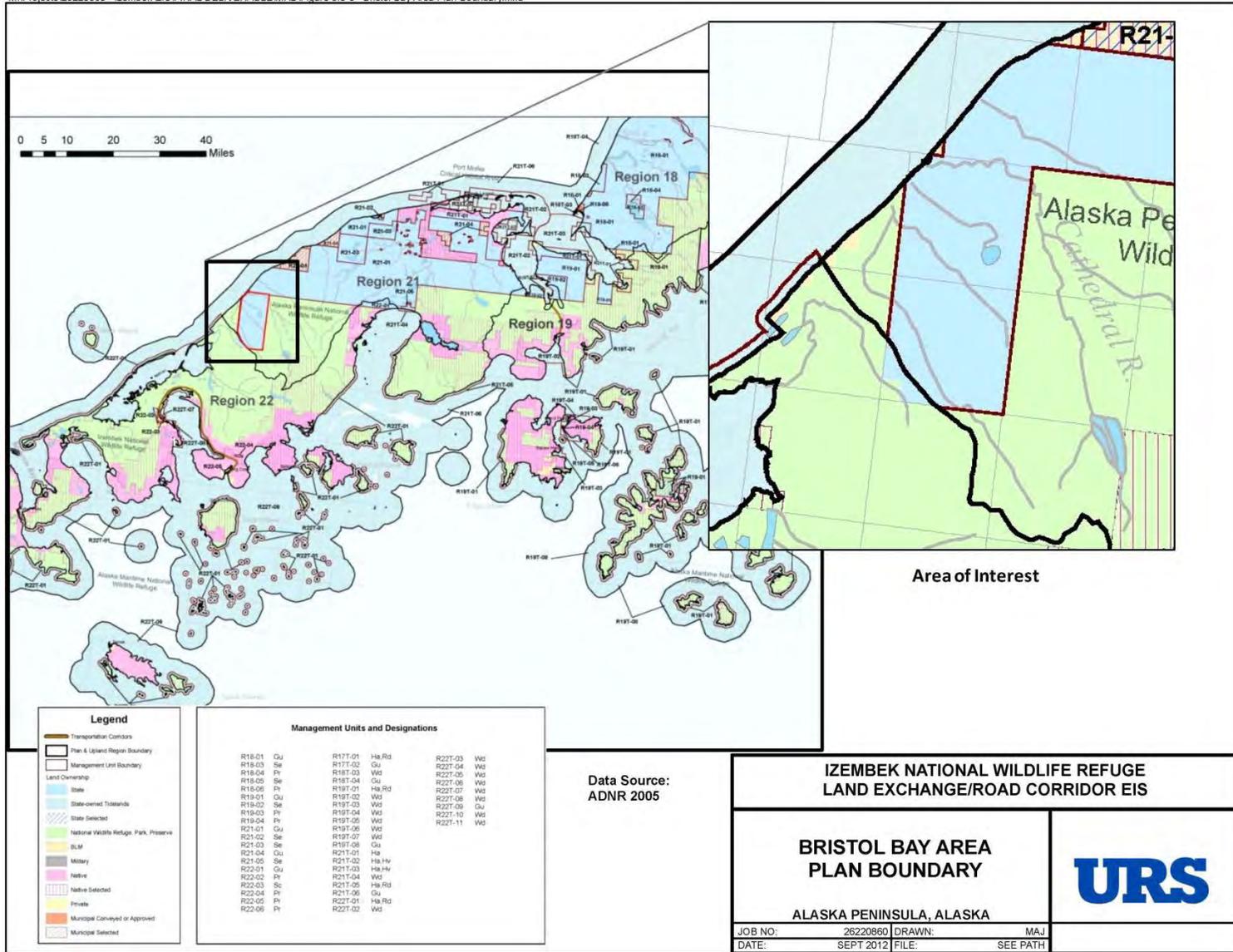
The *Bristol Bay Area Plan* area encompasses 48.8 million acres of land extending from the Yukon Delta National Wildlife Refuge in the northwest, east to Lake Clark National Park and Preserve, and south to Akutan Island on the Aleutian Chain. It was originally developed during the early 1980s and revised in 2005, identifying the management intent, land use designations, and management guidelines that apply to all state lands, including uplands (owned and selected), shorelands, tidelands, and submerged lands, within the Bristol Bay Area plan boundary. Tidelands span the area from mean high water to mean lower low water; submerged lands reach from mean lower low water to a line 3 miles seaward from mean lower low water. Shorelands include the lands below ordinary high water in non-tidal areas (ADNR 2005). The Izembek National Wildlife Refuge and the Izembek State Game Refuge lie within the boundaries of the *Bristol Bay Area Plan*.

As shown in Figure 3.3-5, State parcels identified in the proposed land exchange occur within Management Region 21 under the *Bristol Bay Area Plan* and are designated for General Use. They include a portion of the Cathedral River along their northern edge. General Use areas are typically remote, inaccessible, and are generally not considered suitable for intensive development. Lands designated General Use in Region 21 are managed for a variety of uses, including the maintenance of sensitive habitats, wildlife, and fisheries; and for dispersed public recreation and harvest. Generally allowed uses include travel across state land (via non-motorized modes and motorized vehicles that minimize surface damage), hunting, fishing or trapping, and harvesting of plant materials, small-scale mining, and access improvements like cutting trails or docks/floats for noncommercial use (ADNR-DMLW 2011). Commercial recreational camps or facilities that remain overnight, explosives or hydraulic equipment methods for mining, exploratory drilling not under leased land, and other activities that may interfere with public access or other public uses or interests are not allowed on state lands without permits or authorizations. As a matter of policy, although a variety of uses are allowed (as listed in 11 AAC 96.020), intensive forms of commercial, recreational, or community development are not expected or encouraged due to physical and economic constraints. Site-specific development, such as those that occur with oil and gas exploration and development, is considered acceptable with protection of other resources and uses.

While not under state ownership, a proposed Izembek Road connecting the cities of King Cove and Cold Bay is identified as a regional transportation corridor within Management Region 22 (ADNR 2005, Map O-4 and Figure 2.5) of the *Bristol Bay Area Plan* (ADNR 2005) The proposed road corridor is included in the plan to reflect a regional need identified in the 2002 *Southwest Alaska Transportation Plan* (ADOT&PF 2004a). This is intended to promote consultation with the Alaska Department of Transportation and Public Facilities before any land disposals take place on or adjacent to the corridor. One of the goals of a corridor designation is to promote a road system that supports a wide range of transportation needs, minimizes cost, minimizes adverse effects, promotes efficiency, and ensures public safety. Management guidelines include providing appropriate access for land offerings and resource development projects, joint use and consolidation of surface access, and various guidelines for the protection of hydrologic systems and other natural resources.

Figure 3.3-5 Bristol Bay Area Plan Boundary

M:\Projects\26220860 - Izembek EIS\FINAL DELIVERABLE\MXD\Figure 3.3-6 - Bristol Bay Area Plan Boundary.mxd



Alaska Coastal Management Program

The State of Alaska operated the federally approved Alaska Coastal Management Program from 1979 to 2011 as a voluntary state partner in the National Coastal Management Program. In 2011, the state legislature failed to pass legislation required to extend the state program. By operation of Alaska State law (Alaska Statutes 44.66.020 and 44.66.030), this meant the Alaska Coastal Management Program officially expired on July 1, 2011, resulting in a withdrawal from participation in the National Coastal Management Program. Consequently, the *Coastal Zone Management Act* federal consistency provision, Section 307, no longer applies in Alaska and Alaska is no longer eligible for grants under Sections 306, 306A, 308, 309 or 310. A federally approved coastal management program must be administered by a state agency, so reinstatement of the program would require a change in state law.

King Cove Corporation Lands

King Cove Corporation lands at Mortensens Lagoon and Kinzarof Lagoon are privately owned. Neither of the owners, King Cove Corporation (surface estate) and The Aleut Corporation (subsurface estate), have adopted formal land use or management plans for the parcels.

King Cove Corporation owned lands at Kinzarof Lagoon lie within the Izembek National Wildlife Refuge, but outside the wilderness boundary and are subject to the provisions of ANCSA 22(g). Consequently, the use and development of these lands is subject to a compatibility determination by the Izembek National Wildlife Refuge manager. Proposed uses must be compatible with management policies of the Izembek National Wildlife Refuge; this policy currently applies to these properties.

King Cove Corporation owned lands at Mortensens Lagoon lie within the Alaska Peninsula National Wildlife Refuge. This refuge was created after ANCSA and the provisions of ANCSA 22(g) do not apply. Consequently, these properties are not currently subject to refuge management policies. As a private land owner, King Cove Corporation has exclusive ability to control public access.

King Cove Corporation selected lands east of Cold Bay lie entirely within the Izembek Wilderness of the Izembek National Wildlife Refuge.

Alaska Peninsula National Wildlife Refuge

Created by ANILCA in 1980, the Alaska Peninsula National Wildlife Refuge contains approximately 4.7 million acres mostly on the Pacific side of the Alaska Peninsula with 1 parcel on the Bering Sea side of the Peninsula. The Alaska Peninsula National Wildlife Refuge is divided into 4 distinct geographic units: the Ugashik, Chignik, North Creek, and Pavlof Units. A comprehensive conservation plan and wilderness review (Service 1985b) for the Alaska Peninsula National Wildlife Refuge was adopted in 1985, establishing 640,000 acres of wilderness and designating areas within the refuge according to their resources and values, outlining programs for conserving fish and wildlife resource values, and specifying uses compatible with the major purposes of the refuge, including provisions related to oil and gas exploration, leasing and development.

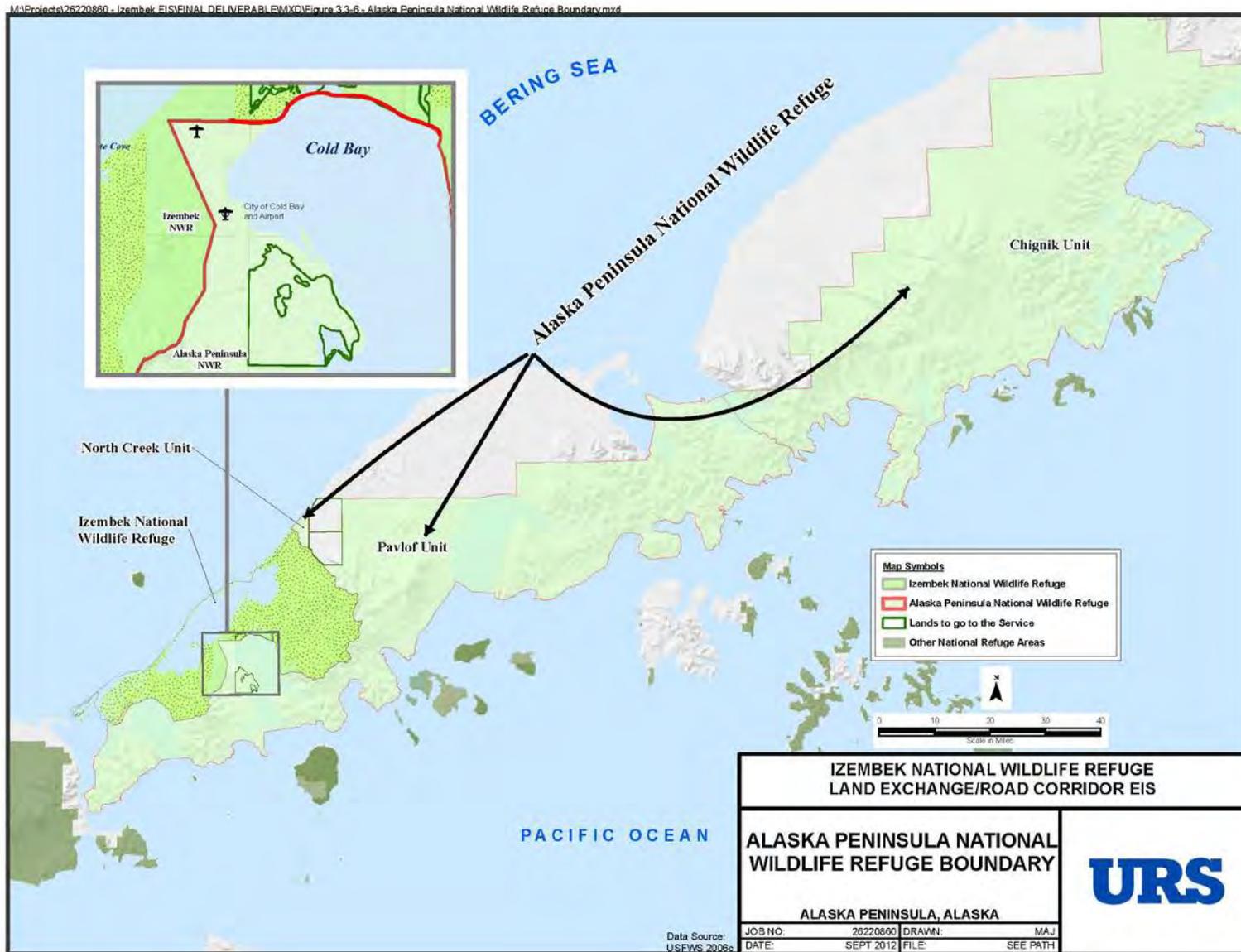
Due to the close physical and ecological relationship with the Izembek National Wildlife Refuge and proximity to the Izembek National Wildlife Refuge headquarters in the community of Cold

Bay, the North Creek and Pavlof Units of the Alaska Peninsula National Wildlife Refuge (along with the Unimak Unit of the Alaska Maritime National Wildlife Refuge) have been managed by Izembek National Wildlife Refuge since 1982. Despite this, these units do not constitute a refuge complex and are guided by 3 comprehensive conservation plans.

A revised comprehensive conservation plan was prepared for the Ugashik and Chignik Refuge Units and the Becharof National Wildlife Refuge in 2006. However, the revision did not include the Pavlof or North Creek Units, which remain under the management policies of the 1985 *Alaska Peninsula National Wildlife Refuge Comprehensive Conservation Plan*.

For reasons noted in Section 3.3.3.1, although the King Cove Corporation owned land at Mortensens Lagoon lies within the boundary of the Pavlof Unit, it is not subject to the management provisions of the Alaska Peninsula National Wildlife Refuge. Adjacent federally owned lands to the west are within the Alaska Peninsula National Wildlife Refuge and managed as non-wilderness areas. The Service reviews activities within the refuge on a case by case basis to ensure that they are appropriate and compatible with the purposes of the refuge. The boundary of the Pavlov Unit and detail area surrounding Mortensens Lagoon is shown in Figure 3.3-6.

Figure 3.3-6 Alaska Peninsula National Wildlife Refuge Boundary



3.3.2 Socioeconomics

This section describes the socioeconomic environment: population, demographics, and economic activity, including private and government sectors. Demographic data are provided by age, gender, race and ethnicity, and housing for these communities. The data on economic activity include information on employment, income, and tax revenues. Section 3.3.10.1 discusses wilderness character and values. It is acknowledged that wilderness values, including passive use values, may exist in the project area, and that these values may be affected by the project. However, these values are not quantified in the EIS. Passive use values for environmental resources in the project area have been quantified by others, including the Wilderness Society, and these estimates have been reviewed by the Service. The Service did not include these estimates in the EIS because of the questions of validity, bias, and reliability that persist in the use of the methods for quantifying passive use values in monetary terms. In addition, Section 6402 (c) of the Act states the “conveyance of Federal land and non-Federal land under this section shall not be subject to any requirement under Federal law . . .relating to the valuation, appraisal or equalization of land.” The Service did not conduct appraisals of land proposed for exchange.

The following data sources are used: decennial population data for years 1940 through 2010 are based on U.S. Census data; annual population data for the years between 1980 and 2009 are based on estimates by the Alaska Department of Labor and Workforce Development (Department of Labor). Demographic and housing data are only available for 1990 and 2000 from the U.S. Census. Data on economic activity are based on the information provided by the Alaska Department of Commerce, Community and Economic Development (Alaska Department of Commerce) as well as the Alaska Commercial Fisheries Entry Commission.

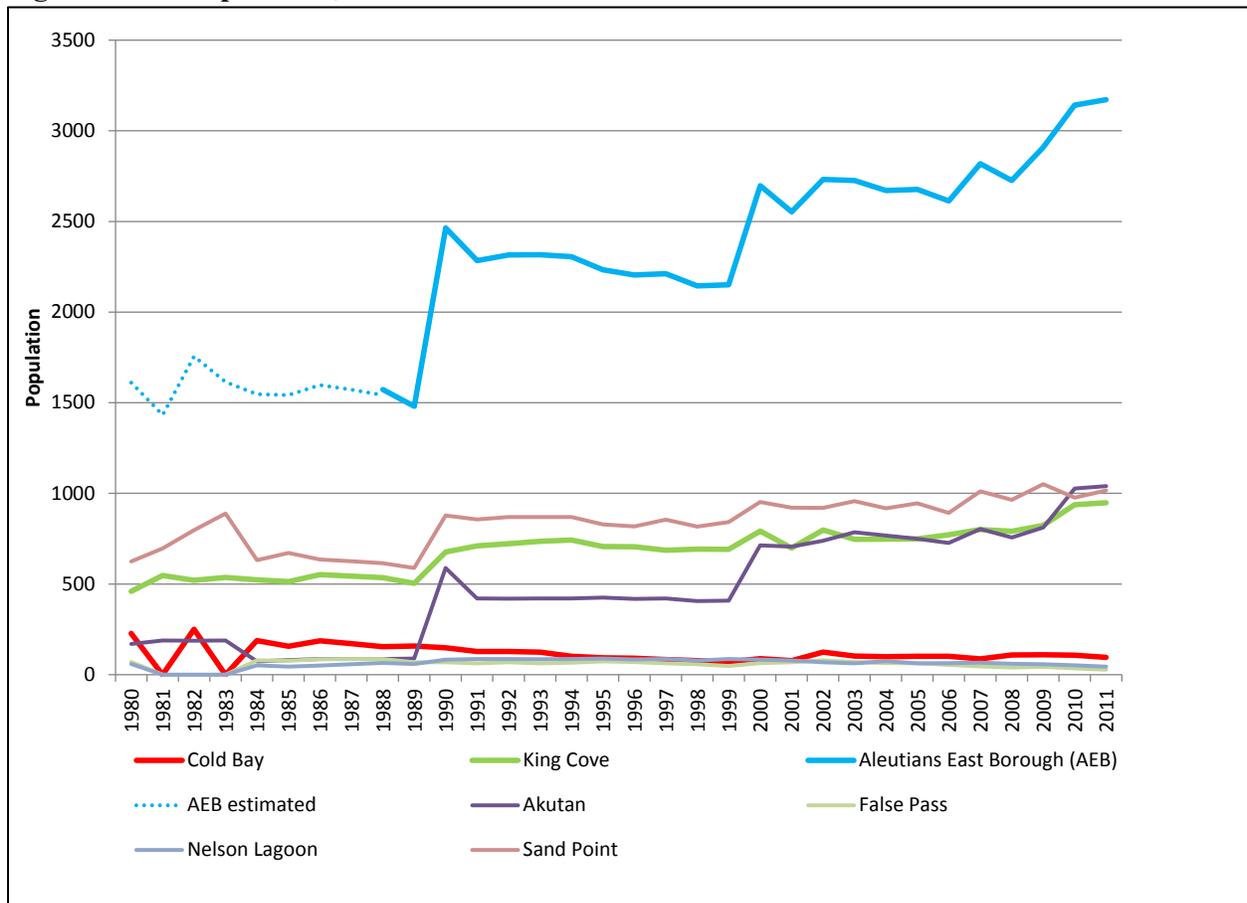
3.3.2.1 Population and Demographics

This section describes the population and discusses demographic factors such as age, gender, race and ethnicity, and housing for the Aleutians East Borough, City of King Cove, and City of Cold Bay. Some general data for other communities in the Aleutians East Borough is also provided.

Population

The Aleutians East Borough was established as a Second Class Borough in 1987. In 2011, approximately 3,172 persons were living in the Aleutians East Borough with a population density of 0.46 people per square mile. The 6 principal communities are Akutan, False Pass, Cold Bay, King Cove, Sand Point, and Nelson Lagoon; Sand Point is the seat of borough government. Figure 3.3-7 shows the historic evolution of these populations. The Aleutians East Borough population has a positive trend over the past 30-year period. The changes in the City of King Cove population track closely with those of the borough, following the same positive trend. On the other hand, the population of the City of Cold Bay trended down from the early 1980s until the late 1990s, before stabilizing around current levels.

Figure 3.3-7 Population, 1980-2011



Note: The Aleutians East Borough and City of Cold Bay were incorporated in 1988 and 1982, respectively. Population for the Aleutians East Borough in 1980-1988 was estimated as the sum of the cities and places that became part of it in 1988. Populations for the City of Cold Bay in 1981 and 1983 were unavailable and therefore were not reported.

Source: ADOLWD 2012a; U.S. Census Bureau 2012

Caution should be used when interpreting the spikes in population in Figure 3.3-7 around the census years 1990, 2000, and 2010. The large jumps in the populations of Akutan, City of King Cove, Sand Point, and Aleutians East Borough are an artifact of the methodology used by the Alaska Department of Labor to estimate population in non-census years, which is paraphrased from the Department of Labor (ADOLWD 2008):

The Department of Labor estimates annual population of all communities, boroughs and census areas, in non-census years. These annual estimates are generally believed to be superior to Census Bureau estimates for the interim years. The Department of Labor starts with the census population living in standard households (occupied housing units are “households”) as opposed to people living in group quarters (such as military barracks, fish processing bunkhouses, lumber camps, shelters, or group homes) from the census year population. The ratio of the non-group quarter population from the census compared to the number of persons from the community that applied for Permanent Fund dividends in the same year is assumed constant for interim years. For each interim year, the non-group quarter’s population is estimated as the non-

group quarters ratio multiplied by that year's number of Permanent Fund Dividend applicants, with adjustments made for changes in military personnel. The Department of Labor currently uses the following methodologies to estimate group quarter populations: 1) group quarters associated with fish processors (as in the Aleutians East Borough) are adjusted in proportion to the average number of employees for the processors during the year; and 2) all other group quarters (prisons, college dormitories, logging camps, etc.) are estimated through a survey of the operators of the quarters.

Prior to 2000, the Department of Labor assumed that the number of persons in group quarters was constant. This assumption contributed to the big changes in population in census years. For example, in the City of King Cove, 189 persons were living in group quarters in 1990 and 299 persons were living in group quarters in 2000, a difference of 110 (Table 3.3-3). This difference is very close to the 102 person difference from the Department of Labor's 1999 population estimate of 691 persons and the 2000 census population data of 792 persons (ADOLWD 2012a; U.S. Census Bureau 2010).

The 2010 spike in population is due primarily to an increase in the estimated population living in group quarters – in particular, Peter Pan Seafoods' workers – and is not the result of such a significant increase in the permanent population (see Table 3.3-3). In turn, the increase in group quarters population is believed to be caused by a change in the timing of the census survey in 2010 compared to previous census. The seafood activity in the area is extremely seasonal. The number of employees can vary from 500 to 100 in a couple of weeks (as will be explained in detail later). Changing the timing of the census survey by a couple of weeks can therefore have a profound impact in the recorded count of people. Understanding this issue is important in the context of this project. An increase in permanent population would generate a higher demand for transportation services all year long, as opposed to an increase in temporary workers that stay in the area for a few weeks.

A comparison between the census years of 1980 and 1990 shows that the populations of the Aleutians East Borough and City of King Cove experienced high average annual growth rates of 4.3 and 3.9 percent, respectively, exceeding that of the State of Alaska (Table 3.3-1). The last years of the 1980s were good fishing years and fish prices were at an all-time high, which contributed to migration into the Aleutians East Borough. In 1990, the populations of the Aleutians East Borough and City of King Cove increased with the movement of a substantial amount of fish processing on shore. The 2000-2010 period saw an average annual increase of 1.3 percent in the state's population and a 1.5 percent in the Aleutians East Borough's population. In contrast, during this same period, the populations in the City of King Cove and City of Cold Bay increased at an annual average of 2.1 and 1.7 percent, respectively.

Table 3.3-1 Changes in Population by Decade, 1980-2010

	1980*	1990	2000	2010	Average Annual Growth Rates (%)		
					1980–1990	1990–2000	2000–2010
State of Alaska	401,851	550,043	626,931	710,231	3.2%	1.3%	1.3%
Aleutians East Borough	1,611	2,464	2,697	3,141	4.3%	0.9%	1.5%
City of King Cove	460	677	792	938	3.9%	1.6%	1.7%
City of Cold Bay	228	148	88	108	-4.2%	-5.1%	2.1%
Akutan	169	589	713	1,027	13.3%	1.9%	3.7%
False Pass	70	69	64	35	-0.1%	-0.7%	-5.9%
Nelson Lagoon	59	83	83	52	3.5%	0.0%	-4.6%
Sand Point	625	878	952	976	3.5%	0.8%	0.2%

Note: Population for the Aleutians East Borough and the City of Cold Bay correspond to 1988 and 1982, respectively, which are the years when they were incorporated. Population for the Aleutians East Borough was estimated as the sum of the population in the cities and places that became part of it in 1988.

Source: ADOLWD 2012a; U.S. Census Bureau 2012

In 2010, the City of King Cove was the third largest community in the Aleutians East Borough with an estimated population of 938 individuals, accounting for 29.9 percent of the borough’s population. Table 3.3-1 provides population estimates for the City of King Cove since 1980. These estimates clearly include some processing workers, but do not represent the community during peak processing periods. Historically, the community of King Cove has a large influx of non-resident fish tenders, seafood processing workers, fishers, and crew members each summer due to local salmon fisheries. With the increased importance of crab, followed by cod and pollock in the winter, a second seasonal employment/population peak has occurred.

The number of people living and working in the City of Cold Bay has shown substantial fluctuation in direct response to military operations in the area during the 1970s, 1980s, and 1990s (USACE 2003). As shown in Table 3.3-2, the City of Cold Bay had 86 residents in 1960, swelling to 256 in 1970, then returning to the 1960 level of 88 people by 2000. In 2010, the 108 people living in the community of Cold Bay accounted for 3 percent of the borough’s population.

Table 3.3-2 Directly Affected Communities Populations, 1940-2011

	City of King Cove	City of Cold Bay
Decennial U.S. Census Bureau Data		
1940	135	N/A
1950	162	N/A
1960	290	86
1970	283	256
1980	460	228
1990	677	148
2000	792	88
2010	938	108
Annual Department of Labor Data		
2001	699	77
2002	798	124
2003	747	103
2004	748	99
2005	749	101
2006	772	101
2007	801	87
2008	791	109
2009	824	110
2010	938	108
2011	948	95

Source: ADOLWD 2012a; U.S. Census Bureau 2012

Demographics

This section discusses the demographic composition of the communities of King Cove and Cold Bay. This information is particularly important for the community of King Cove because the large number of processing workers living in group quarters have very different demographic characteristics than the more permanent population living in standard housing units (houses, apartments, etc.). The section provides information on housing, race and ethnicity, gender, and age.

Housing

As shown in Table 3.3-3, 38 percent of the total population in the City of King Cove (299 people) were living in group housing in 2000, increasing to 47 percent (438 people) in the year 2010. Group housing is an important element of the community's population picture because of the large number of temporary workers that reside in the dormitories of the large fishing processing plant.

Table 3.3-3 Population by Housing Type in the City of King Cove, 1990- 2010

Year	Total Population	Group Quarters Population		Population in Standard Housing Units (NGQ Population)	
		(#)	(%)	(#)	(%)
1990	677	189	27.9%	488	72.1%
2000	792	299	37.8%	493	62.3%
2010	938	438	46.7%	500	53.3%

Source: U.S. Census Bureau 2012

In the year 2010, the City of King Cove had 500 persons living in 181 households, which translated into an average household size of 2.8 persons. Out of all households in 2010, 119 (66 percent) were family households, including married-couple families and other families. The U.S. Census Bureau defines a family household as a householder and 1 or more people living in the same household who are related to the householder by birth, marriage, or adoption. The average family size was 3.33 persons in the year 2010.

Table 3.3-4 displays selected characteristics of the housing units of the City of King Cove. Housing costs increased 24 percent in a decade, rising from a median rent of \$583 in 1990 to \$725 in 2000. However, rental costs fell by almost 9 percent between 2000 and 2010.

Table 3.3-4 Characteristics of Standard Housing Units in the City of King Cove, 1990 - 2010

Year	1990		2000		2010	
	(#)	(%)	(#)	(%)	(#)	(%)
Total Housing Units	195	--	207	--	229	--
Total Households	144	73.8%	170	82.1%	181	79.0%
Vacant Housing Units	51	26.2%	37	17.9%	48	
Median value of owned homes	\$79,200	--	\$113,900	--	\$113,800	--
Median rent paid	\$583	--	\$725	--	\$663	--

Source: U.S. Census Bureau 2012

As shown in Table 3.3-5, in 2010, only 1 person was living in group quarters in the City of Cold Bay. In the same year, 107 persons were living in 46 households (Table 3.3-6), which translated into an average household size of 2.3 persons. The City of Cold Bay had 29 families (including married-couple families and other families), which made up 63 percent of the total number of households in 2010. The average family size in the City of Cold Bay was 2.9 persons.

Table 3.3-5 Group Quarters in the City of Cold Bay, 1990 - 2000

Year	Total Population	Group Quarters Population		Population in Standard Housing Units (NGQ Population)	
		(#)	(%)	(#)	(%)
1990	148	2	1.4%	146	98.7%
2000	88	6	6.8%	82	93.2%
2010	108	1	0.9%	107	99.1%

Source: U.S. Census Bureau, 2012

Table 3.3-6 shows that housing costs in the City of Cold Bay increased nearly 22 percent in a decade, rising from a median rent of \$563 in 2000 to \$685 in 2010.

Table 3.3-6 Characteristics of Standard Housing Units in the City of Cold Bay, 1990 - 2010

Year	1990		2000		2010	
	(#)	(%)	(#)	(%)	(#)	(%)
Total Housing Units	73	--	98	--	82	--
Total Households	54	73.8%	36	63.3%	46	56.1%
Vacant Housing Units	19	26.2%	62	36.7%	36	
Median value of owned homes	\$87,500	--	\$325,500	--	\$71,700	--
Median rent paid	\$388	--	\$563	--	\$685	--

Source: U.S. Census Bureau 2012

Race and Ethnicity

This section provides information on the race and ethnicity of the populations of the communities of King Cove and Cold Bay. The population and racial composition of the communities in their entirety with changes from 1990 to 2010 are described. The section then drills down to describe the racial composition of the population in standard housing units and the population in group quarters (i.e., processing plant workers). In the City of King Cove, these subsets of the population have very different compositions and explain some of the apparent anomalies in the population. In the City of Cold Bay, the differences between the group quarters population and the population in standard housing units are not as apparent.

Table 3.3-7 and Figure 3.3-8 describe the racial and ethnic diversity in the City of King Cove. Between 2000 and 2010, the Alaska Native category decreased from 47 percent to 38 percent of the total population while the White category remained relatively stable at 16 percent. In 2010, the city's population also included Asian and Pacific Islanders (36 percent), and African American (1 percent); 11 percent of the population identified themselves as being of Hispanic ethnicity.

Table 3.3-7 Racial/Ethnic Composition of Population in the City of King Cove, 1990 - 2010

		1990		2000		2010	
		(%)	(#)	(%)	(#)	(%)	(#)
Race	Alaska Native/Native American	39.2%	177	46.7%	370	38.4%	360
	Asian/Pacific Islander ¹	27.7%	125	26.9%	213	36.7%	344
	White	28.2%	127	15.0%	119	16.2%	152
	African American	1.3%	6	1.6%	13	1.0%	9
	Other (includes all multi-racial persons) ²	3.5%	16	9.7%	77	7.8%	73
	Total	100%	451	100%	792	100%	938
Ethnicity	Hispanic ³	11.8%	53	7.4%	59	11.2%	105

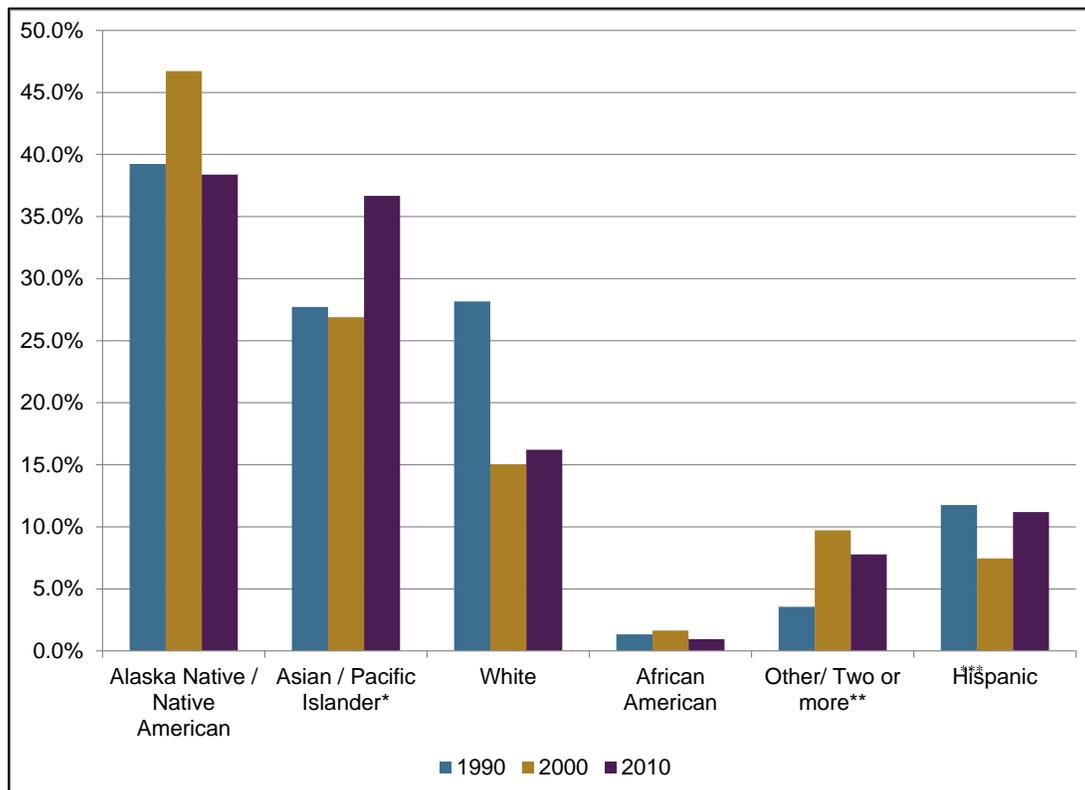
¹ In the 2010 Census, this category was split into Native Hawaii, Other Pacific Islander, and Asian.

² In the 2010 Census, this category was split into Some Other Race and Two or More Races.

³ Hispanic is an ethnic category and may include individuals of any race (and therefore is not included in the total, as this would result in double counting).

Source: U.S. Census Bureau 2012

Figure 3.3-8 Racial/Ethnic Composition of Population in the City of King Cove, 1990 - 2010



¹ In the 2010 Census, this category was split into Native Hawaii, Other Pacific Islander, and Asian.

² In the 2010 Census, this category was split into Some Other Race and Two or More Races.

³ Hispanic is an ethnic category and may include individuals of any race (and therefore is not included in the total, as this would result in double counting).

Source: U.S. Census Bureau 2012

Table 3.3-8 and Figure 3.3-9 show numerically and graphically the differences in racial composition between the population in group quarters (temporary processing workers) and the more permanent population in standard housing units from the 2010 decennial census. Approximately 70 percent of the population living in standard housing units was Alaska Native / Native American, while only 3 persons of that racial group lived in group housing. The population in group quarters was primarily Asian/Pacific Islander (71 percent), while only 4 percent of the population in standard housing is Asian/Pacific Islander. It is important to keep the very significant differences in the population subsets in mind when thinking about other issues, such as education, health care, and employment, for example.

**Table 3.3-8 Racial Composition of the City of King Cove
by Housing Type, 2010**

Racial Composition	Total	Population in Group Quarters		Population in Houses, Apts. Etc.	
		(#)	(%)	(#)	(%)
White	152	76	17%	76	15%
African American	9	7	2%	2	0%
Alaska Native/Native American	360	3	1%	357	71%
Asian/Pacific Islander ¹	344	314	72%	30	6%
Other (includes all multi-racial persons) ²	73	38	9%	35	7%
Total	938	438	100%	500	100%
Hispanic ³	105	88	20%	17	3%

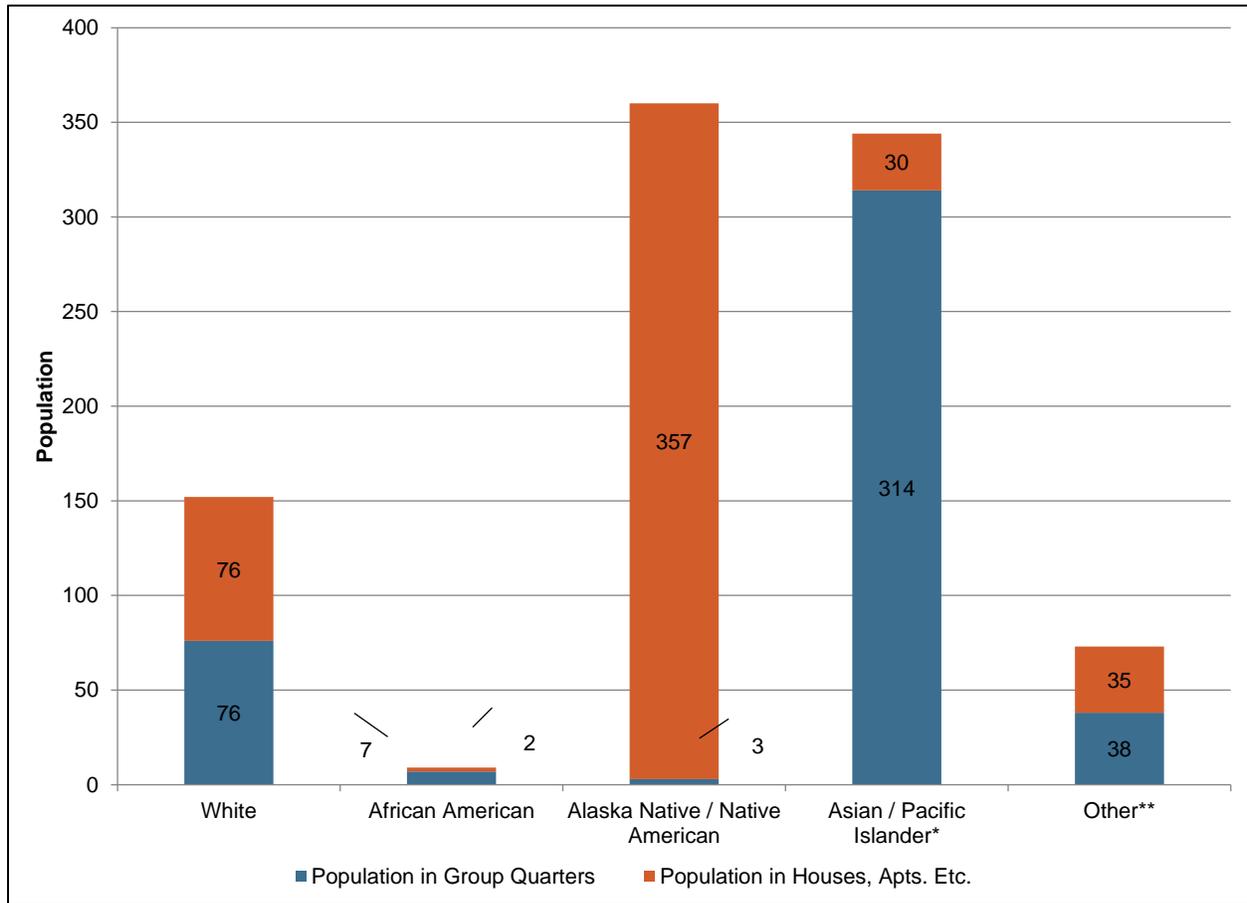
¹ In the 2010 Census, this category was split into Native Hawaii, Other Pacific Islander, and Asian.

² In the 2010 Census, this category was split into Some Other Race and Two or More Races.

³ Hispanic is an ethnic category and may include individuals of any race (and therefore is not included in the total, as this would result in double counting).

Source: U.S. Census Bureau 2012

Figure 3.3-9 Racial Composition of the City of King Cove by Housing Type, 2010



* In the 2010 Census, this category was split into Native Hawaii, Other Pacific Islander, and Asian.

** In the 2010 Census, this category was split into Some Other Race and Two or More Races.

Source: U.S. Census Bureau 2012

The racial composition of the City of Cold Bay is predominantly White; although the share of Whites has declined from 93 percent in 1990 to 74 percent in 2010 (Table 3.3-9 and Figure 3.3-10). Small increases in the number of Alaska Native and Asian/Pacific Islander residents have led to increases in their share of the population. The Alaska Native population has increased from 5.4 percent to 12.0 percent and Asian/Pacific Islanders have increased from 1.4 percent to 1.9 percent. Collectively these groups comprised nearly 14 percent of the population in 2010, up from 7 percent in 1990.

Table 3.3-9 Racial/Ethnic Composition of Population in the City of Cold Bay, 1990 – 2010

		1990		2000		2010	
		(%)	(#)	(%)	(#)	(%)	(#)
Race	Alaska Native / Native American	5.4%	8	17.0%	15	12.0%	13
	Asian / Pacific Islander ¹	1.4%	2	6.8%	6	1.9%	2
	White	92.6%	137	71.6%	63	74.1%	80
	African American	0.0%	0	3.4%	3	1.9%	2
	Other ²	0.7%	1	1.1%	1	10.2%	11
	Total	100%	148	100%	88	100%	108
Ethnicity	Hispanic ³	0.7%	1	2.3%	2	4.6%	5

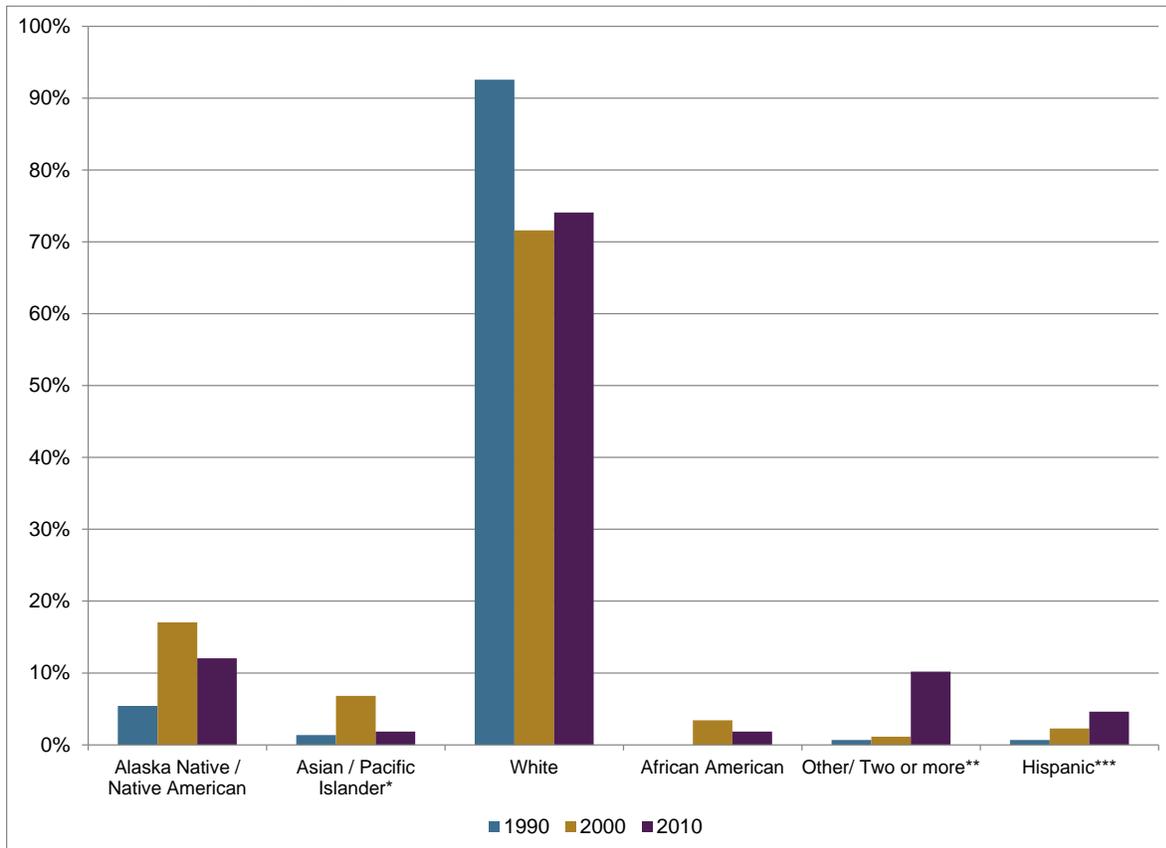
¹ In the 2010 Census, this category was split into Native Hawaii and Other Pacific Islander and Asian.

² In the 2010 Census, this category was split into Some Other Race and Two or More Races.

³ Hispanic is an ethnic category and may include individuals of any race (and therefore is not included in the total, as this would result in double counting).

Source: U.S. Census Bureau 2012

Figure 3.3-10 Racial/Ethnic Composition of Population in the City of Cold Bay, 1990 - 2010



* In 2010 Census, this category was split into Native Hawaii and Other Pacific Islander and Asian.

** In the 2010 Census, this category was split into Some Other Race and Two or More Races.

*** Hispanic is an ethnic category and may include individuals of any race (and therefore is not included in the total, as this would result in double counting).

Source: U.S. Census Bureau 2012

The impact of the group quarters population on racial diversity is not nearly as significant in the City of Cold Bay as it is in City of King Cove. First, group quarters are a much smaller percentage of the total, and the racial composition of the group quarters population is not significantly different from the population in standard housing units. Table 3.3-10 and Figure 3.3-11 provide comparisons between of the racial composition of the City of Cold Bay populations in group quarters and in standard housing units for 2010.

Table 3.3-10 Racial Composition of the City of Cold Bay by Housing Type, 2010

Racial Composition	Total	Population in Group Quarters		Population in Houses, Apts. Etc.	
		(#)	(%)	(#)	(%)
White	80	1	100%	79	73.8%
African American	2	0	0%	2	1.9%
Alaska Native/Native American	13	0	0%	13	12.1%
Asian/Pacific Islander ¹	2	0	0%	2	1.9%
Other (includes all multi-racial persons) ²	11	0	0%	11	10.3%
Total	108	1	100%	107	100%
Hispanic ³	5	0	0%	5	4.7%

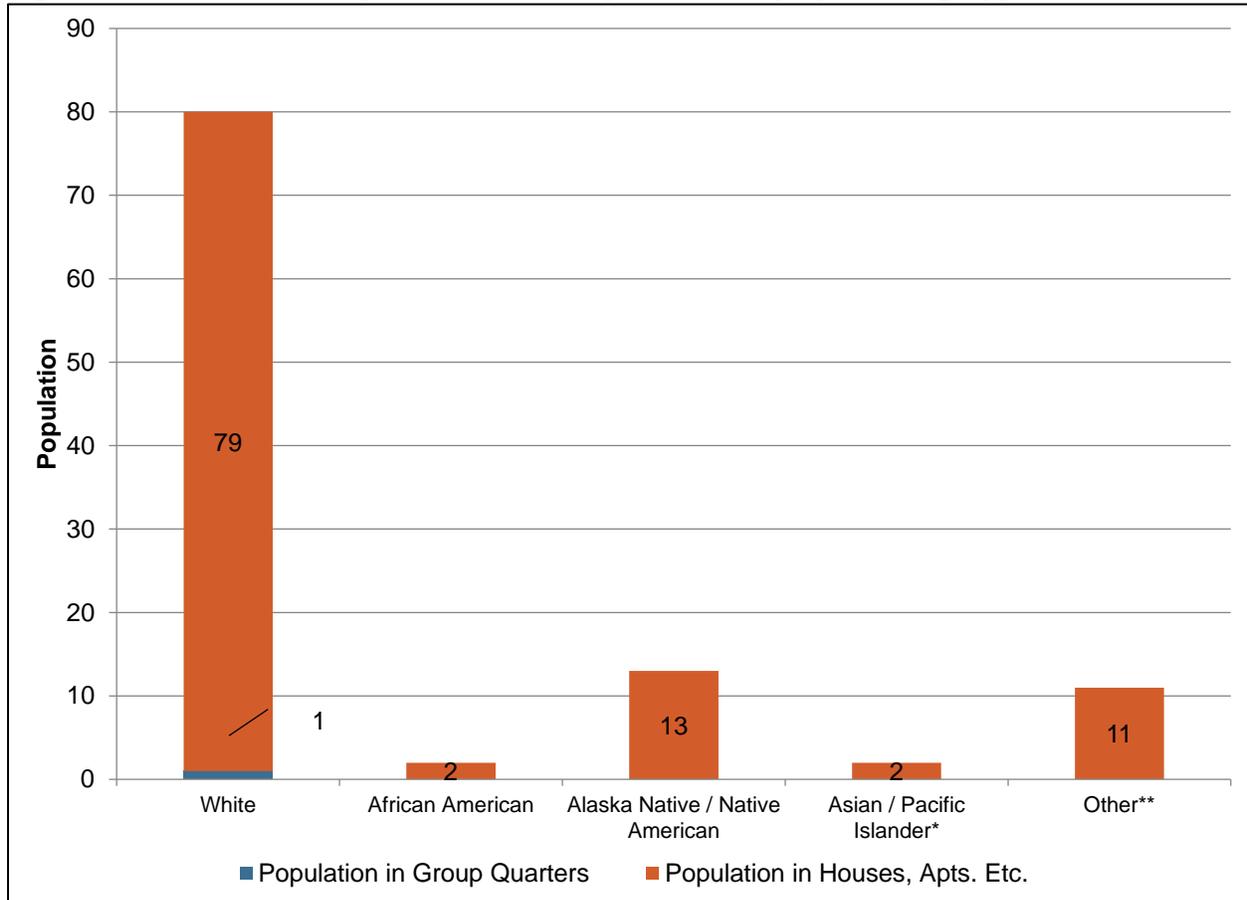
¹ In the 2010 Census, this category was split into Native Hawaii, Other Pacific Islander, and Asian.

² In the 2010 Census, this category was split into Some Other Race and Two or More Races.

³ Hispanic is an ethnic category and may include individuals of any race (and therefore is not included in the total, as this would result in double counting).

Source: U.S. Census Bureau 2012

Figure 3.3-11 Racial Composition of the City of Cold Bay by Housing Type, 2010



* In the 2010 Census, this category was split into Native Hawaii, Other Pacific Islander, and Asian.

** In the 2010 Census, this category was split into Some Other Race and Two or More Races.

Source: U.S. Census Bureau 2012

Gender

This section describes the gender breakdown of the communities of King Cove and Cold Bay. The discussion of gender is included because the communities exhibit gender compositions that are very different from each other and from the state as a whole. The uneven composition of genders could affect many elements of the human environment including health care needs, poverty levels, education attainment, and employment. The section also provides information on gender for persons living in group and in standard housing units.

As shown in Table 3.3-11, the populations in the City of King Cove and the Aleutians East Borough are predominantly male. This is consistent with a transient, male-dominated, fish processing workforce as a significant proportion of the population. The gender distribution in the City of King Cove has shifted to be slightly more even from 1990 to 2010. Males constituted 65 percent of the population in 1990 and 61 percent of the population in 2010. The increase in the share of females from 35 percent to 39 percent reflected a doubling of the number of female residents from 159 to 361. The gender composition of the population in the City of Cold Bay is also predominantly male, with an increase from 58 percent of the population in 1990 to 61

percent in 2010. For comparison purposes, approximately 52 percent of the state’s population is male; Alaska has had the highest male to female ratio of any state in the nation.

Table 3.3-11 Gender Composition of the Population in the Study Area, 1990-2010

		1990		2000		2010	
		(%)	(#)	(%)	(#)	(%)	(#)
Aleutians East Borough	Male	64%	1,582	65%	1,750	67%	2,093
	Female	36%	882	35%	947	33%	1,048
City of King Cove	Male	65%	292	60%	472	61%	577
	Female	35%	159	40%	320	39%	361
City of Cold Bay	Male	58%	86	65%	57	61%	66
	Female	42%	62	35%	31	39%	42

Source: U.S. Census Bureau 2012

As shown in Table 3.3-12, in the City of King Cove, the gender composition of persons living in standard housing units is nearly 50-50, but very skewed toward males in the group quarters population (73 percent). In the City of Cold Bay, the population in standard housing units was 61 percent male.

Table 3.3-12 Comparison of Gender Composition in Group Quarters and Standard Housing Units in King Cove and Cold Bay, 2010

	Total		Group Quarters		Standard Housing	
	Male	Female	Male	Female	Male	Female
King Cove (Count)	577	361	318	120	259	241
King Cove (Percentage)	61.5%	38.5%	72.6%	27.4%	51.8%	48.2%
Cold Bay (Count)	66	42	1	0	65	42
Cold Bay (Percentage)	61.1%	38.9%	100%	0%	60.7%	39.3%

Source: U.S. Census Bureau 2012

Age

This section discusses the age distributions in the cities of King Cove and Cold Bay and compares them to the age distribution of the state as a whole. Age is an important dimension in issues related to health care, education, and employment. As with racial and gender composition, the age composition of the City of King Cove is skewed by the somewhat abnormal age distribution of the population in group quarters; group quarters do not have the same impact in the City of Cold Bay. Table 3.3-13 compares the age distribution of the communities of King Cove and Cold Bay for 2010 by housing type (Population in Group Quarters v. Population in Standard Housing) at 3 levels: 0 - 17, 18 – 64, 65+.

The group quarters population is almost entirely between the ages of 18-64. This makes sense because the population in these quarters are employed persons living where the job takes them. Person less than 18 are generally still living at home and persons 65 and older are less likely to accept work where living in group quarters is required.

Table 3.3-13 Comparison of Age Composition in Group Quarters and Standard Housing Units in the Cities of King Cove and Cold Bay, 2010

	Total			Group Quarters			Standard Housing		
	0 - 17	18 - 64	65+	0 - 17	18 - 64	65+	0 - 17	18 - 64	65+
King Cove (Count)	151	730	57	2	426	10	149	304	47
King Cove (Percentage)	16.1%	77.8%	6.1%	0.5%	97.3%	2.3%	29.8%	60.8%	9.4%
Cold Bay (Count)	21	86	1	0	1	0	21	85	1
Cold Bay (Percentage)	19.4%	79.6%	0.9%	0%	100%	0.0%	19.6%	79.4%	0.9%

Source: U.S. Census Bureau 2012

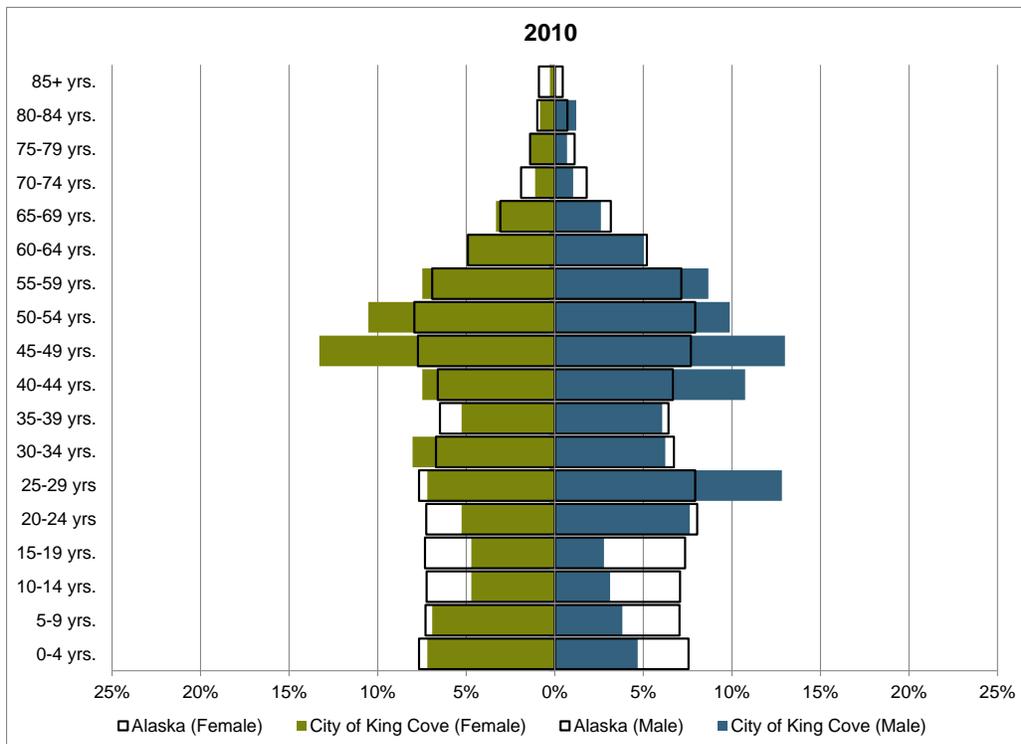
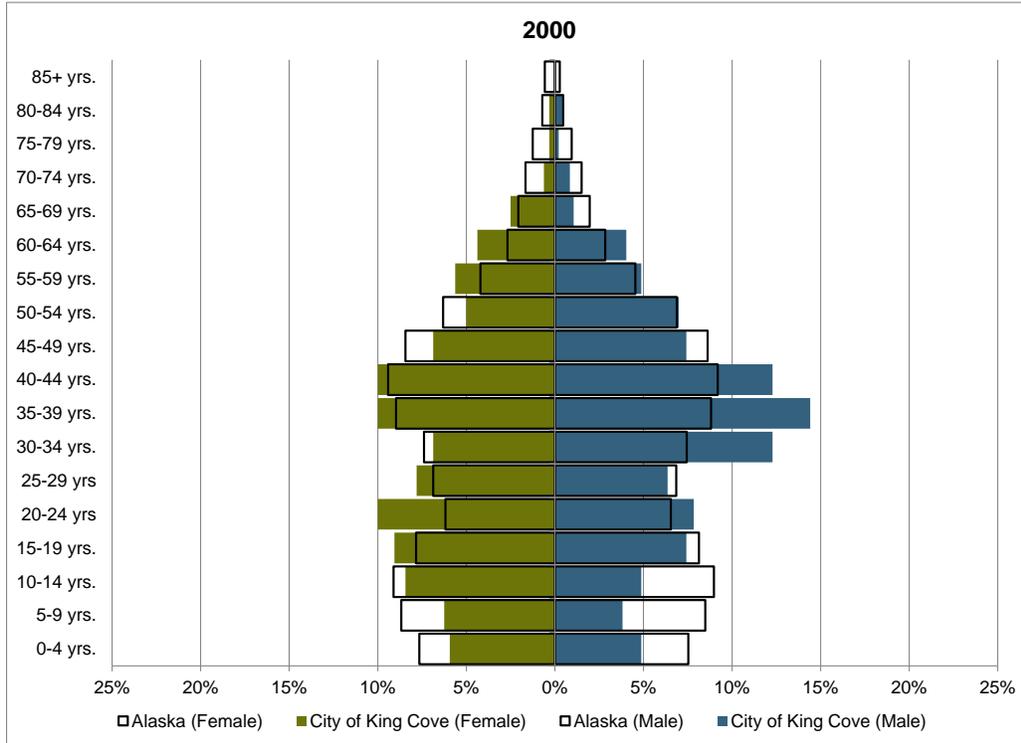
Figure 3.3-12 shows the population pyramid of the City of King Cove for the entire population (group quarters and non-group quarters). In the figure, each bar represents the percentage of the population in each of the age ranges specified on the vertical axis. On the horizontal axis, the bars to the right of the center line represent the percentage of males and the bars to the left represent females. The outlined bars superimposed without colors show the percentages in age group for the State of Alaska as a whole.

Relative to the state as a whole, the City of King Cove population pyramids for 2000 and 2010 were narrow at the base reflecting relatively few children and teenagers (particularly few males), and few people above 70 years of age living in the community.

The cohort of males between 30 and 44 years of age in 2000 is significantly bigger in the City of King Cove than in the State of Alaska. This is consistent with the increase in employment opportunities in fishing and seafood processing activities during the 1990s. Comparing the evolution of the population between 2000 and 2010, the population has grown older. The median age in the City of King Cove in 2000 was 34.9 and 41.2 in 2010.

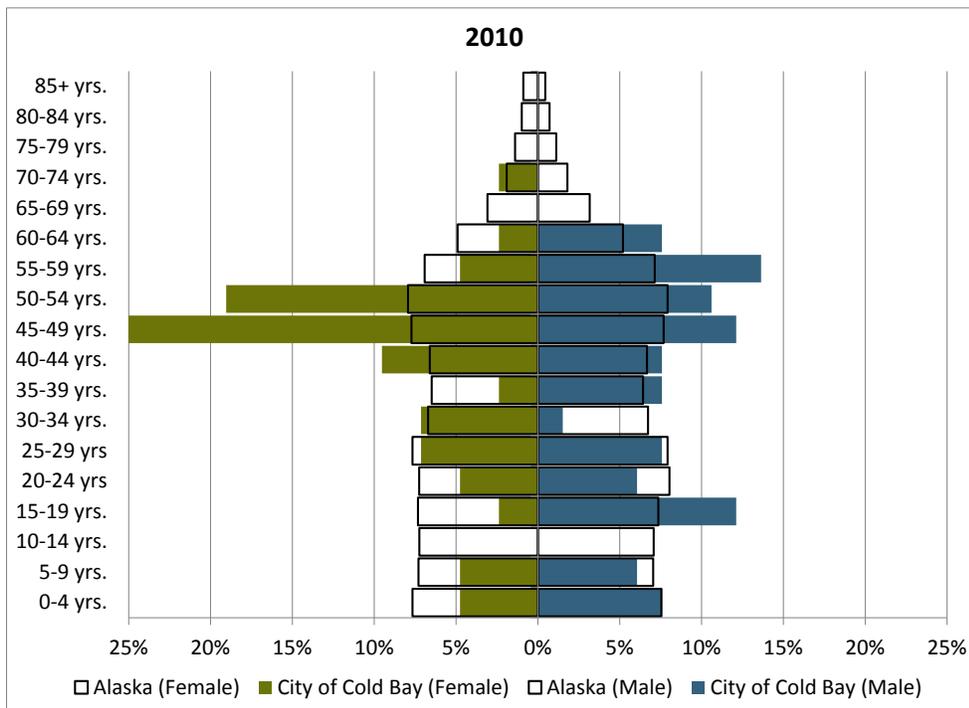
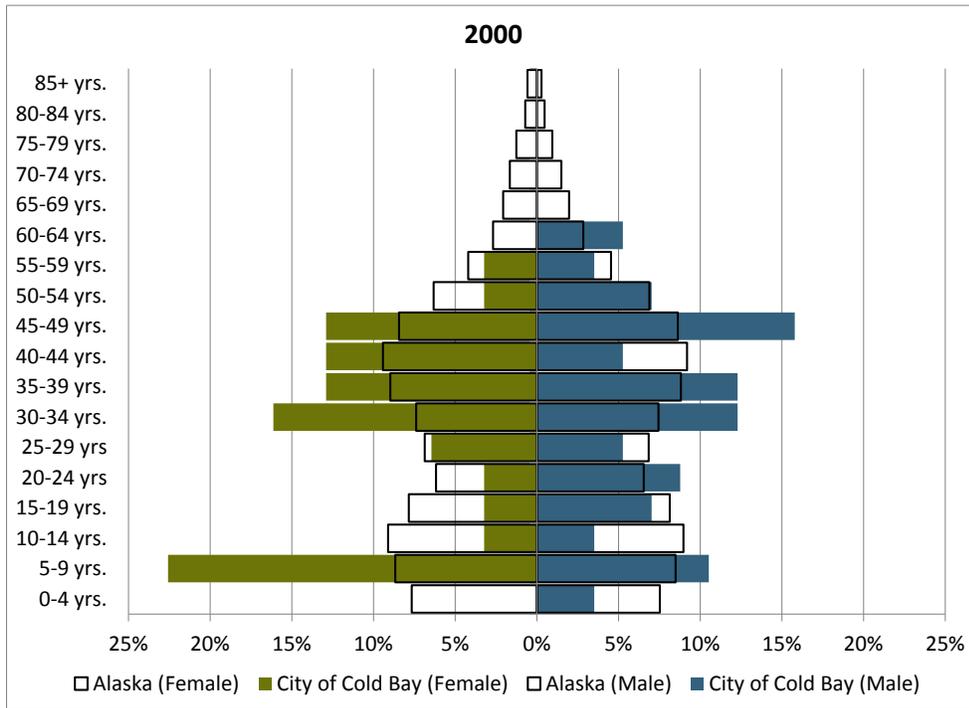
The City of Cold Bay population pyramids reflect no residents older than 65 years of age living in the community in 2000 and only 2 in 2010 (Figure 3.3-13). Caution should be used when comparing the community's age distribution to that of the state as a whole. The small population implies that a small number of demographic events, such as births, deaths, or migration, can significantly change the shape of the population pyramid. The median age has increased from 34 years in 2000 to 44 years in 2010.

Figure 3.3-12 Population Composition by Age and Gender in the City of King Cove, 2000 and 2010



Source: U.S. Census Bureau 2012

Figure 3.3-13 Population Composition by Age and Gender in the City of Cold Bay, 2000 and 2010



Source: U.S. Census Bureau 2012

Education

In 2010, the King Cove School had 13 teachers and 108 students enrolled in all grades from preschool to 12th grade. The Cold Bay School had 2 teachers and 12 students (see Table 3.3-14). It is important for schools to achieve minimum attendance figures to avoid funding cuts or closure. School enrollment in Cold Bay is just above the threshold (10 enrolled students) for receiving financial assistance for school operations from the State of Alaska. .

Table 3.3-14 School Enrollment Characteristics by Grade, 2010

	PK	KG	1	2	3	4	5	6	7	8	9	10	11	12	Total
City of King Cove	14	4	10	8	9	10	4	5	9	5	10	5	10	5	108
City of Cold Bay	1	1	4	1	1	0	0	0	0	0	0	1	2	1	12

Source: (U.S. Department of Education 2012)

Table 3.3-15 shows some differences in the demographic characteristics of the student populations of the communities. The King Cove School has 88 Alaska Native students (81 percent), and 49 students (45 percent) are eligible to receive subsidized lunches at school. In contrast, only 2 students at the Cold Bay School are Alaska Native and no student is eligible for subsidized lunches. The number of school age children and their racial composition will reflect the demographic characteristics of the population in standard housing units, rather than the population of entire community. The fact that 81 percent of the students are Alaska Natives is consistent with the 71 percent Alaska Native population in standard housing units in the City of King Cove.

Table 3.3-15 School Enrollment Characteristics, 2010

	City of King Cove	City of Cold Bay
Teachers	13	2
Students	108	12
Male	57	10
Female	51	2
Alaskan/Native American	88	2
Asian	5	0
African American	0	0
Hispanic	3	2
White	12	7
Free lunch eligible	49	0
Reduced price lunch eligible	10	0

Source: U.S. Department of Education 2012

Educational attainment is an important measure of human capital in a community and is an indicator of productivity and income (Barro and Lee 2000), and an important determinant of employment with respect to Alaska Natives (Lane and Partner 1987). Improved access may make it more likely that students with educational aptitude might stay in school through graduation. Improved access may also make it more likely that individuals and families with higher levels of education will live and be able to prosper in the community.

Educational attainment data for the cities of King Cove and Cold Bay are available from the 2010 U.S. Census. It is noted that the educational attainment data are inclusive of the population in group quarters and may not accurately reflect the educational attainment of long-term residents. In the City of King Cove, 13.8 percent of the population held a bachelor’s degree, but 71.8 percent had at least a high school diploma or equivalent. Educational attainment was lower than in Alaska overall, where 88.3 percent had a high school education and 24.7 percent had a bachelor’s degree or higher. In contrast, educational attainment in the City of Cold Bay was higher – 35 percent of the population held a bachelor’s degree and 100 percent had at least a high school diploma or equivalent.

Table 3.3-16 Educational Attainment, 2010

	City of King Cove (%)	City of Cold Bay (%)
Population over 25 years of age	100% (486 persons)	100% (20 persons)
Less than 9th grade	9.9%	0.0%
9th to 12th grade, no diploma	18.3%	0.0%
High school graduate (includes equivalency)	40.3%	20.0%
Some college, no degree	17.3%	25.0%
Associate degree	0.4%	20.0%
Bachelor’s degree	12.1%	35.0%
Graduate or professional degree	1.6%	0.0%
High school graduate or higher	71.8%	100.0%
Bachelor’s degree or higher	13.8%	35.0%

Source: U.S. Census Bureau 2012

3.3.2.2 Wage and Salary Employment

This section provides information on wage and salary employment in the Aleutians East Borough, the City of King Cove, and the City of Cold Bay. By definition, “wage and salary employment” excludes self-employed workers. Commercial fish harvesting operations account for many jobs, all of which are considered self-employment and are not included in the standard wage and salary employment data. Therefore, a separate section analyzes participation and earnings in commercial fishing and processing in the study area.

The organization of this section begins with a summary of data for the Aleutians East Borough as a whole. This summary includes information describing the limitations on the available data with respect to employment and wages. Following the borough-wide summary, subsections specific to wage and salary employment in King Cove and Cold Bay are provided. These subsections also contain data on unemployment insurance claims and on the number of businesses by industry in the communities.

Wage and Salary Employment Data for the Aleutian East Borough

There are multiple sources of wage and salary employment data, and they may use different definitions and methodologies. Different measures of employment can complement each another, providing different types of information that the others cannot provide. This section analyzes 1) employment by place of work (number of jobs in an area) and 2) employment by place of residence (number of residents in an area who work).

The source of data for employment by the place of work (number of jobs in an area) used in this section is the Quarterly Census of Employment and Wages. The Unemployment Insurance Program is the primary source of funding for the Quarterly Census of Employment and Wages and the primary reason the data collection program exists. An alternative source of employment by place of work is the Current Employment Statistics. However:

The U.S. Department of Labor’s Bureau of Labor Statistics has implemented a change to the method used to produce statewide wage and salary employment estimates. That change has resulted in increased monthly volatility in the wage and salary estimates for many states, including Alaska. Therefore, one should be very cautious in interpreting any over-the-year or month-to-month change for these monthly estimates. The Quarterly Census of Employment and Wages series may be a better source of information for trends analysis (ADOLWD 2011c).

The Alaska Department of Labor, using guidelines from the U.S. Bureau of Labor Statistics, collects employment and wage information for all jobs that are “covered” by unemployment insurance. The census excludes business owners, self-employed, fisher harvesters, and unpaid family help because these categories of workers are not eligible for unemployment insurance. These data do however include all seafood processing employees working in the Aleutians East Borough. With few exceptions, the Quarterly Census of Employment and Wages is completed by all firms that have 1 or more employee. Every quarter, employers submit the census for each location at which they operate and report the total number of employees and total wages by month. The Quarterly Census of Employment and Wages requires that each employee is reported by name with their social security number, as well as their wages for the quarter (U.S. Bureau of Labor Statistics 2011a).

Data for employment by place of work are only available at the borough level and not at the community level for the City of King Cove or the City of Cold Bay. Table 3.3-17 shows the average number of jobs and monthly wages in the Aleutians East Borough for the years 2000-2010. Employment decreased significantly in 2002 and afterwards increased moderately. Wages increased at an average annual rate of 5.6 percent between 2000 and 2010. In 2009, the borough had 1,857 jobs for which employers paid average monthly wages or salaries of \$2,709.

Table 3.3-17 Wage and Salary Employment and Wages by Place of Work in Aleutians East Borough, 2000-2010

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Employment (by place they work)	2,312	2,689	1,710	1,704	1,903	1,835	1,978	1,906	1,959	1,915	1,857
Wage (monthly average)	1,576	1,823	2,324	2,466	2,261	2,489	2,488	2,524	2,587	2,618	2,709

Source: ADOLWD 2012b

Table 3.3-18 provides sector level data on wage and salary employment by place of work by in the Aleutians East Borough. These data show the relative importance of manufacturing in the form of seafood processing to the borough—approximately 7 of every 10 jobs have been in seafood processing since 2002. When reviewing wage and salary employment data by sector, particularly in coastal areas of Alaska, it is important to reiterate that these data do not include information on fish harvesters or other self-employed persons.

Table 3.3-18 Wage and Salary Employment by Industry in Aleutians East Borough, 2000-2010

Industry Sector	2002	2003	2004	2005	2006	2007	2008	2009	2010
Manufacturing (Seafood Processing)	1,143	1,135	1,342	1,305	1,459	1,345	N/A	N/A	N/A
Other Goods Producing	2	4	2	1	2	5	N/A	N/A	N/A
Trade, Transportation & Utilities	83	82	83	75	72	91	99	100	101
Financial Activities	53	30	29	31	30	31	28	29	35
Information, Professional & Other Services	41	40	38	31	30	27	N/A	N/A	N/A
Leisure & Hospitality	9	41	34	33	35	36	45	44	45
Educational & Health Services	63	68	69	70	64	65	N/A	N/A	N/A
Federal Government	23	25	25	25	23	22	23	24	21
State Government	17	17	17	18	17	20	18	20	20
Local Government	278	263	265	246	247	263	261	263	267
All Sectors	1,710	1,704	1,903	1,835	1,978	1,906	1,959	1,915	1,857

Note: Due to changes in industry sector definitions, these data extend back only to 2002. Confidentiality restrictions precluded the release of data for several sectors starting in 2008.

Source: ADOLWD 2012b

An alternative measure of employment is the number of residents in an area who work. The source of data for employment by the place of residence used in this section is the Alaska Local and Regional Information database (ADOLWD 2012d). The Alaska Local and Regional Information database is online and reports the number of workers by place of residence with residence established by matching the Quarterly Census of Employment and Wages wage records with Permanent Fund Dividend information. Some workers are excluded from the Alaska Local and Regional Information database. First, most military and most seafood processing workers are excluded because they are not Alaska permanent residents and are not eligible for the Permanent Fund Dividend. Second, federal employees and the self-employed are excluded from the Alaska Local and Regional Information data because they are not covered by the unemployment insurance in Alaska. As a result, the number of resident workers reported in the Alaska Local and Regional Information database may be significantly lower than the number of workers that live in areas with a large number of self-employed, military, or federal workers, or a large number of “temporary resident” workers. This aspect is particularly important in the Aleutians East Borough and the City of King Cove due to the importance of temporary residents dedicated to fishing and seafood processing activities. Because of the importance of the seafood industry to King Cove, a separate section (Section 3.3.6.3) analyzes employment at the Peter Pan seafood processing plant in the City of King Cove and participation in commercial fishing in the study area.

Historically, data for employment by place of residence at the community level for Alaska has only been available during census years; most employment data has been available only at the borough level. Starting in 2009, the Alaska Local and Regional Information database regarding the number of resident workers is available at the community level (ADOLWD 2010d). The number of resident workers for previous years was obtained through a special data request (ADOLWD 2012c).

Table 3.3-19 shows trends of Aleutians East Borough resident wage and salary employee between 2000 and 2010, disaggregated between private sector, local government, and state government. Total employment decreased between 2001 and 2006 reaching a low of 612 workers, and increased since then reaching 709 resident workers in 2010. This trend was mostly driven by the private sector, which had decreasing employment from 495 workers in 2001 to 387 in 2006. The private sector appears to have recovered with an increase of 19 workers in 2007 and second increase in 2010 to 454 total resident workers. State and local government employment in the borough showed a slight upward trend during the decade.

Table 3.3-19 Resident Wage and Salary Employment in the Aleutians East Borough, 2000-2010

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Employment (by place of residence)	697	724	719	690	656	647	612	643	642	691	709
Private Sector	482	495	482	456	413	407	387	400	390	450	454
State Government	8	12	14	12	14	13	12	13	17	12	15
Local Government	207	217	223	222	229	227	213	230	235	229	240

Note: Federal government, military, self-employed, and “non-resident” seafood processing workers are not included.
Source: ADOLWD 2012b

A comparison of wage and salary employment in the Aleutians East Borough by place of work (Tables 3.3-17 and 3.3-18) with wage and salary employment by place of residence (Table 3.3-19) reveals that on average, 1,148 non-residents were employed in the Aleutian East Borough in 2010. The non-resident employees are roughly 1.6 times the number of resident employees. From 2002–2007, an average of 1,288 seafood processing workers accounted for nearly 100 percent of the non-resident workers.

Unemployment in the Aleutians East Borough

Officially, unemployed persons are those aged 16 years and older who had no employment and had made specific efforts to find employment. The unemployment rate is defined as the number of unemployed as a percentage of the total work force. The official definition of the total labor force includes many persons that are not counted in wage and salary employment (for example, persons actively participating in fish harvesting operations, or persons that are otherwise self-employed). Also included in the labor force are persons that are actively seeking work.

The official estimates of unemployment and the total labor force are based on U.S. Bureau of Labor Statistics surveys of businesses and households drawn from a sample. The standard definition of an unemployment rate is somewhat misleading in rural Alaska because of very low

sampling rates in the data collection methodologies, and for other reasons as well. For example, many adults in these areas are not counted as part of the official work force and therefore are not counted as unemployed despite not being employed. Factors that increase the number of adults not participating in the work force include the large number of fish harvesters who only work during fishing seasons, the high levels of dependence on subsistence, and the limited opportunities to earn cash (which may discourage individuals from actively seeking employment). As a result of these combined factors, 37 percent of the 1,085 Aleutians East Borough residents of working age (16+ years) were not engaged in wage and salary employment in 2010 (ADOLWD 2012f).

The “official” rate of unemployment in 2009 in the Aleutians East Borough was estimated at 9.9 percent. This was based on a monthly average of 112 persons unemployed and an average labor force of 1,129 (ADOLWD 2010a). While these numbers may appear credible, the underlying monthly estimates vary widely. For example, the labor force estimates ranged from low of 752 in December to a high of 1,454 in July. This peak labor force estimate is 461 less than the average employment from the Quarterly Census of Employment and Wages data, and 1,107 less than reported census peak in July (ADOLWD 2010d).

An alternative indicator that is available and reliable for the study area is the unemployed insurance claimants, which is the count of people in an area who had an active unemployment insurance claim in a calendar year. The majority of Alaska workers who are paid wages are covered by the state’s unemployment insurance laws. Those who are not covered include the self-employed, business owners, fishermen, unpaid volunteers or family workers, and private household workers. Federal workers are also not covered (ADOLWD 2009b). The number of unemployment insurance claims provides a different perspective than the number of unemployed. Some people are still jobless when their unemployment insurance benefits run out, some are not eligible, and others may delay or may never apply for unemployment insurance benefits.

Table 3.3-20 shows the number of residents that collected unemployment insurance benefits between 2002 and 2010, with residence established based on Permanent Fund Dividend information. In the Aleutians East Borough, unemployment insurance claimants decreased between 2002 and 2006 reaching a low of 85 claimants, and increased since then reaching a total of 182 resident unemployment insurance claimants in 2010. In 2010, the 182 claimants represented over 17 percent of the 1,052 working age residents in the Alaska Local and Regional Information database. While the steep increases in the number of unemployment insurance claims in 2008 and 2009 correspond to the overall downturn in the U.S. economy, it is uncertain whether the U.S. recession was a causal factor.

Table 3.3-20 Aleutians East Borough Resident Claimants of Unemployment Insurance, 2002-2010

	2002	2003	2004	2005	2006	2007	2008	2009	2010
Aleutians East Borough Residents	118	112	122	101	85	97	112	146	182

Note: Federal government, military, self-employed, and most seafood processing workers are not included.
Source: ADOLWD 2012c

Resident Wage and Salary Employment, Unemployment, and Businesses in the City of King Cove

This section provides data on resident wage and salary employment for the City of King Cove. At the end of the section, data on unemployment insurance claims and local business licenses are also provided.

As stated above, the City of King Cove is heavily dependent on seafood processing and seafood harvesting. However, seafood harvesters are not counted in the wage and salary employment data because they are self-employed and seafood processing workers in King Cove are typically non-residents (using a Permanent Fund Dividend definition) housed in the bunkhouses of the seafood processing facility. Thus, the resident wage and salary employment data for the City of King Cove does not include 2 of the more important groups of workers.

Historical resident non-federal wage and salary employment data for King Cove was provided by the Department of Labor through a special data request (ADOLWD 2011d). Table 3.3-21 shows that the total number of resident workers for the City of King Cove remained relatively stable, ranging within a band from 212 – 252. Within this total, are counteracting trends—resident employment increased in the local government sector and declined in the private sector. In 2010, out of the total 212 resident workers, 90 (42 percent) worked in the local government and 122 (57 percent) in the private sector.

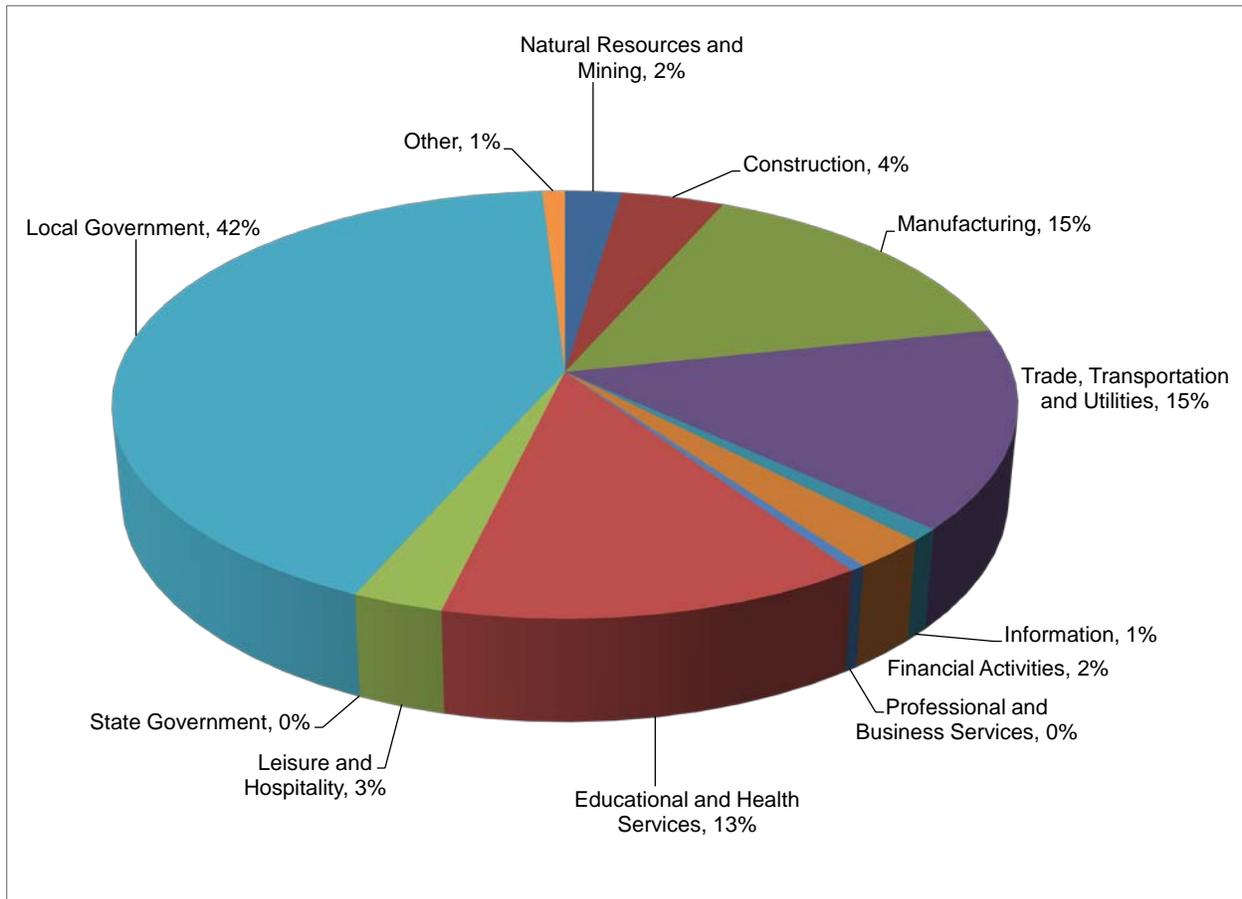
Table 3.3-21 Resident Non-Federal Wage and Salary Employment in the City of King Cove, 2000-2010

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Employment (by place of residence)	228	252	245	227	235	225	213	238	221	216	212
Private Sector	148	181	178	152	130	142	123	129	117	127	122
State Government	4	4	5	5	5	4	2	3	4	0	0
Local Government	76	67	62	70	100	79	88	99	99	88	90

Note: Federal government, military, self-employed, and “non-resident” seafood processing workers are not included.
Source: ADOLWD 2011d

The Alaska Local and Regional Information data for the City of King Cove is available in detail in terms of private sector industries. The pie chart below (Figure 3.3-14) provides a percentage based breakdown of the 212 resident non-federal wage and salary employees. The categories that employ most of the City of King Cove’s resident workers are local government (42 percent), followed by trade, transportation and utilities (15 percent), manufacturing (15 percent), and educational and health services (13 percent). (ADOLWD 2012d).

Figure 3.3-14 Resident Non-Federal Wage and Salary Employment in the City of King Cove by Industry Sector, 2010



Note: The figure was obtained from ADOLWD data for 2009 and, as explained in the text, this source does not include federal employees. Federal employment information for 2010 is reported separately, in the text.
Source: ADOLWD, 2010d

The data in the figure above do not include estimates of federal employees. These data are not available because the federal government does not participate in the same unemployment insurance program as non-federal employers, which is the program the Department of Labor uses to match and estimate employment by place of residence (Fried 2010). According to the city manager, the City of King Cove has 2 resident federal workers, both working for the U.S. Postal Service (Hennigh 2010c).

If the 2 federal workers are added to the 212 residents with non-federal wage and salary employment in 2010, then it might be concluded that only 62 percent of the 342 working age residents of the City of King Cove were employed. However, as discussed with respect to the borough as a whole, persons may be not counted among the employed in these data for many reasons. Importantly, persons that work as fish harvesters are not counted in wage and salary data, and many would not be counted as unemployed if they do not actively seek employment during non-fishing seasons.

As discussed with respect to the Aleutians East Borough as a whole, data on unemployment insurance claims by residents of the City of King Cove are seen as the most reliable indicator of unemployment, but they should not be considered official unemployment estimates. These

claims showed a similar trend as seen in the Aleutians East Borough as a whole, decreasing from 50 claims in 2002 to 39 in the middle of the decade and increasing afterwards until reaching 64 claims in 2009. The 64 claimants in 2009 were 18 percent of the working age residents of King Cove.

Table 3.3-22 City of King Cove Resident Claimants of Unemployment Insurance, 2002-2010

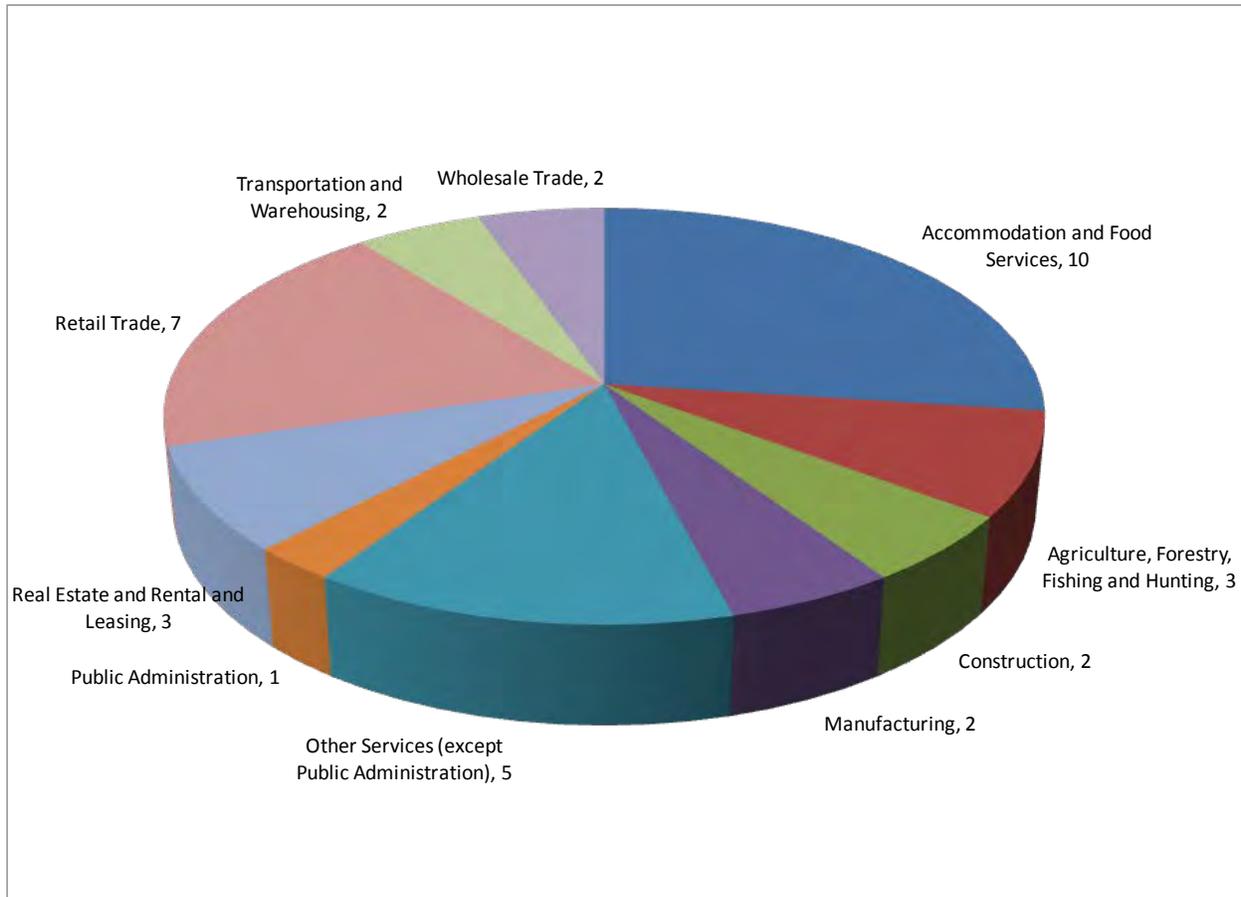
	2002	2003	2004	2005	2006	2007	2008	2009	2010
King Cove Residents	50	48	48	39	42	39	47	64	62

Note: Federal government, military, self-employed, and most seafood processing workers are not included.

Source: ADOLWD 2012c

In 2010, 37 businesses were recorded in the Alaska Department of Commerce Business License Database that listed the City of King Cove as the place of business. Most of these are hotels and restaurants, retail stores, and service providers. The majority (76 percent) of businesses are owned by sole proprietors. The distribution of business types is shown in Figure 3.3-15.

Figure 3.3-15 Number of Businesses in the City of King Cove by Industry, 2010



Source: ADCCED, 2010d

Resident Wage and Salary Employment, Unemployment, and Businesses in the City of Cold Bay

This section provides data on resident wage and salary employment for the City of Cold Bay. At the end of the section, data on unemployment insurance claims and local business licenses are also provided.

The airport is the primary economic driver of the Cold Bay economy. Built around 1941, the airport was the largest in the state at that time, with a 10,000-foot runway. The City of Cold Bay serves as the regional center for air transportation on the Alaska Peninsula, and as an international hub for private aircraft. The airport is now the third largest public use airport in the state in terms of primary runway length behind Anchorage and Fairbanks, noting that the military runway at Eielson is the longest in the state (FAA 2011). A post office was first established in 1954. The city has a deep water dock, but no harbor.

Table 3.3-23 shows that the total number of resident workers of the City of Cold Bay decreased from a peak of 66 workers in 2001 to 32 workers in 2005, and since then has shown a positive trend reaching 41 resident workers in 2010. The changes in the total employment were mostly driven by the private sector, which had a decreasing trend from 42 workers in 2000 to 21 workers in 2007 and then a modest recovery until reaching 25 workers in 2010. Local government employment also decreased in the first half of the decade and increased in the second half, while state government employment remained relatively constant.

Table 3.3-23 Resident Non-Federal Wage and Salary Employment in the City of Cold Bay, 2000-2010

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Employment (by place of residence)	49	66	58	43	32	32	36	31	43	38	41
Private Sector	42	41	42	26	24	25	24	21	27	25	25
State Government	2	5	5	5	4	3	6	5	5	4	5
Local Government	5	20	11	12	4	4	6	3	9	9	11

Note: Federal government, military, self-employed, and “non-resident” seafood processing workers are not included.

Source: ADOLWD 2011d

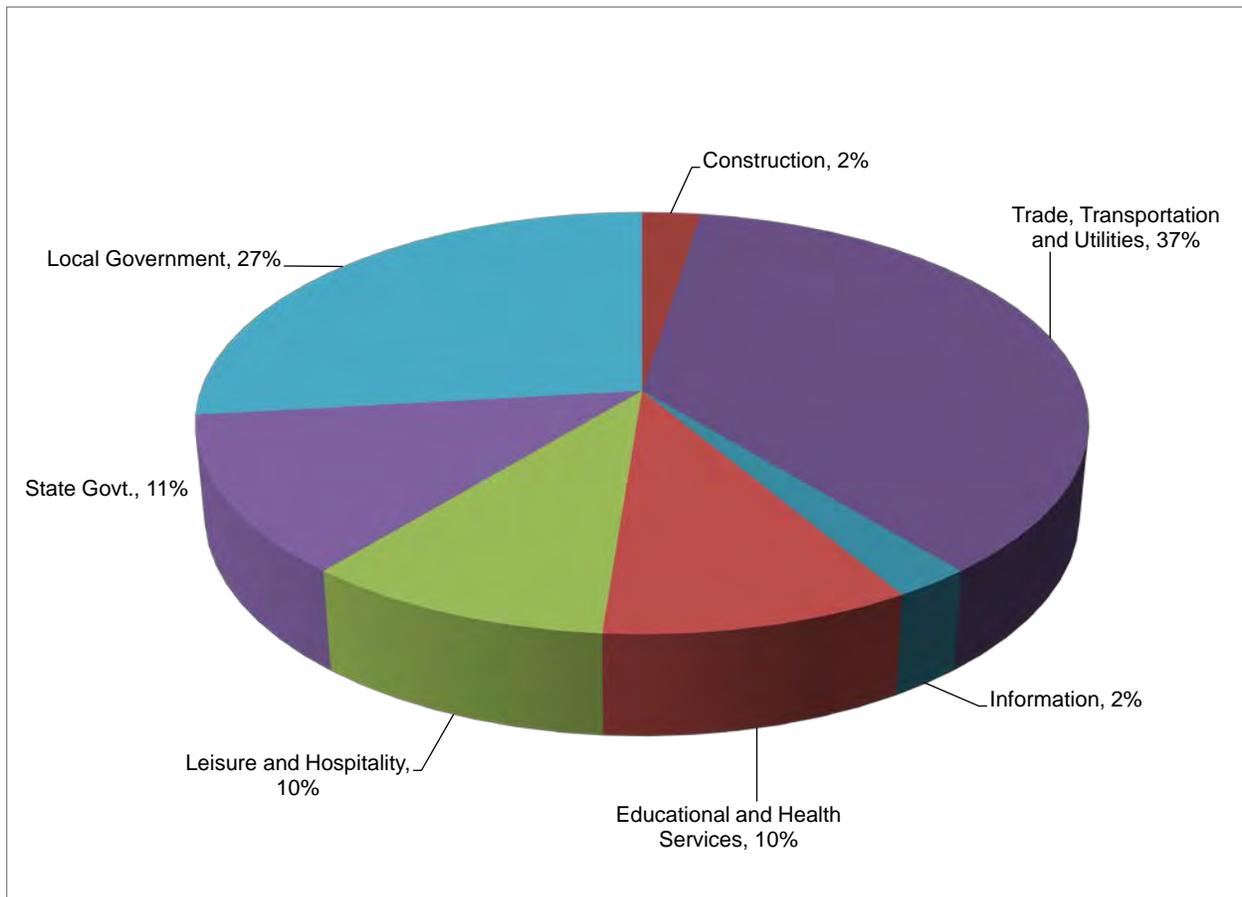
As indicated above, the data on federal employees are not included in the available wage and salary employment data for the City of Cold Bay. The City of Cold Bay has a relatively large number of federal workers, including persons employed by the Federal Aviation Administration, the U.S. Postal Service, the National Weather Service, and the Service. Data on federal workers in Cold Bay were collected through key informant interviews.

- The Federal Aviation Administration Flight Service employs 2 people in permanent full time positions who live in Cold Bay year round. The Federal Aviation Administration Flight Service provides housing for 1 employee in a single-family residence and for another employee in a duplex. In addition, the Federal Aviation Administration Flight Maintenance employs people that are not residents of the City of Cold Bay; they fly in and on average 3 to 4 people could be staying 4 to 6 days in a 2-week period. Federal Aviation Administration Flight Maintenance provides housing for these employees in 1 duplex and 1 single-family unit (Maxwell 2010).

- The U.S. Postal Service employs 2 year round permanent positions in the City of Cold Bay (1 full time and 1 part time). It does not provide housing (Ellis 2010).
- The Service personnel in Cold Bay vary with budgets and workloads. As of February 2010, there were 5 permanent positions, 1 term-appointed position, and 2 intermittent volunteer positions (Casler 2011). In other years, the Service has had 9 full time permanent or term-appointed positions and 4 intermittent volunteer positions (Hoffman 2010b).

Figure 3.3-16 describes the resident non-federal workers in Cold Bay by industrial sector for 2010. Note that the percentages are based on a total non-federal resident employee count of 41, and that, as seen in the previous table, there were 16 local and state government employees accounting for 39 percent of the employees shown in the figure. The trade, transportation and utilities sectors account for 37 percent of the employees shown in the figure (ADOLWD 2010d).

Figure 3.3-16 Resident Non-Federal Wage and Salary Employment in the City of Cold Bay by Industry Sector, 2010



Note: The figure was obtained from ADOLWD data for 2009 and, as explained in the text, this source does not include federal employees. Federal employment information for 2010 is reported separately, in the text.
Source: ADOLWD 2010d

Unemployment in the City of Cold Bay appears to be generally lower than in the City of King Cove and the borough as whole. If the 9 permanent full-time federal workers in the City of Cold

Bay are assumed to be residents by Permanent Fund Dividend standards, and they are added to the 38 residents with non-federal wage and salary employment in 2009, a total 47 of the 53 working age residents in Cold Bay were employed in 2009. Data on unemployment insurance claims by residents of Cold Bay is shown in Table 3.3-23a, and since 2006 has ranged from 0 to 5.

Table 3.3-23a City of Cold Bay Resident Claimants of Unemployment Insurance, 2002-2010

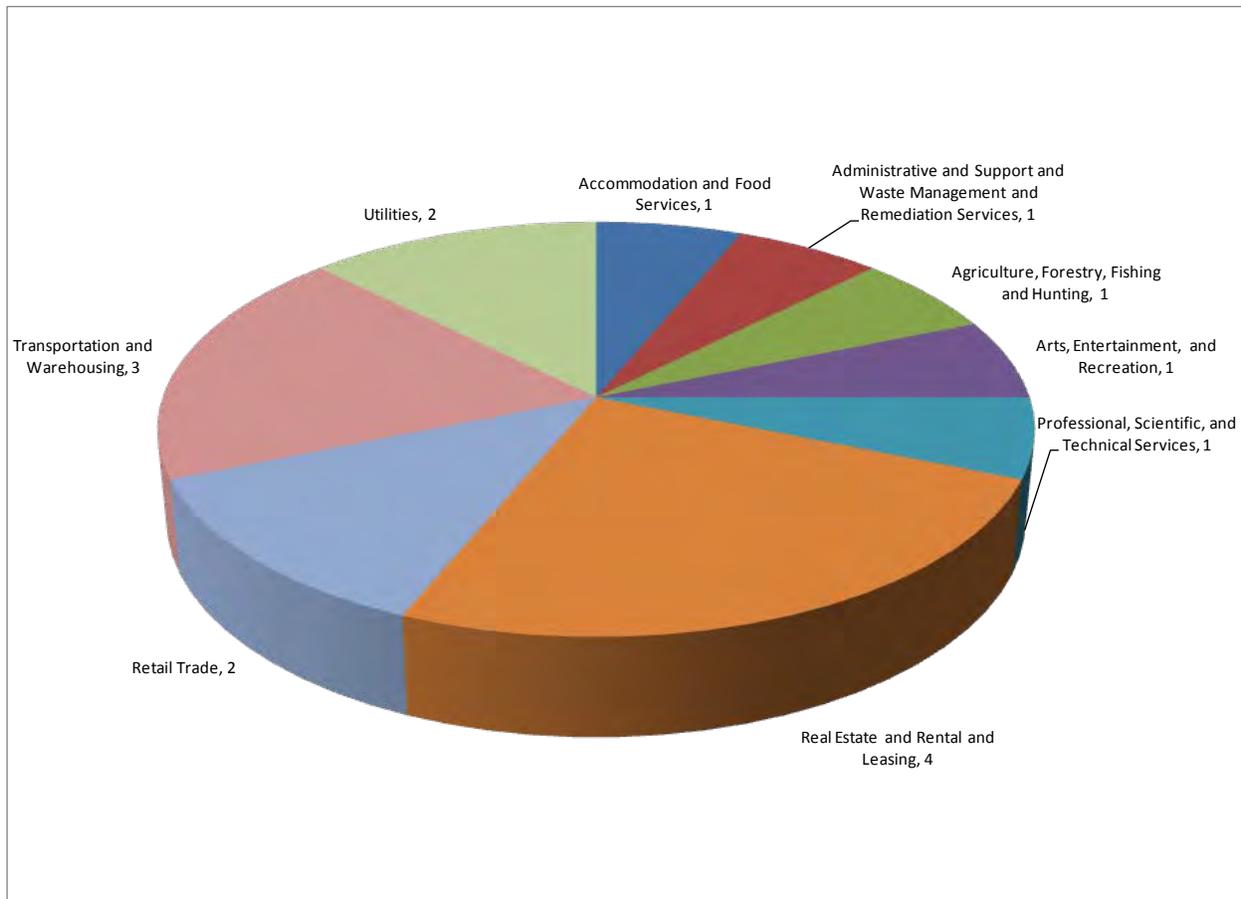
	2002	2003	2004	2005	2006	2007	2008	2009	2010
Cold Bay Residents	8	4	3	5	5	1	0	1	5

Note: Federal government, military, self-employed, and most seafood processing workers are not included.

Source: ADOLWD 2012d

The City of Cold Bay has 16 businesses recorded in the Alaska Department of Commerce Business License Database. The distribution of business types is shown in Figure 3.3-17.

Figure 3.3-17 Businesses in the City of Cold Bay by Industry, 2010



Source: ADCCED 2010a

3.3.2.3 Fish Harvesting and Processing in Directly Affected Communities

This section provides estimates of participation in fish harvesting and processing activities in the communities of King Cove and Cold Bay. Fishing and processing of salmon, groundfish, halibut, and crab generates the vast majority of economic opportunity and income for residents of the City of King Cove, and for many other non-resident harvesters and processing workers that deliver and process seafood for Peter Pan Seafoods. Information on fish harvesting and processing activities is relevant to the EIS because both local and non-local harvesters and processing crew use the Cold Bay Airport. The Cold Bay Airport is heavily used by processing workers, almost none of whom are full-time residents of King Cove. The airport is also used by many non-resident crew members who fly in to Cold Bay to meet their vessels. In addition, because fishing and processing can be relatively hazardous work, harvesters and processors that are seriously injured use the Cold Bay Airport for medical evacuations.

This section is divided into 4 primary subsections.

- 1) A discussion of fishery data sources which explain why we have less than ideal information about fishing activities;
- 2) An overview of relevant information regarding the employment and processing volumes at the Peter Pan processing plant in King Cove;
- 3) An overview of the participation of the City of King Cove and the City of Cold Bay resident permit holders and crew members; and
- 4) An overview of available information on participation of non-resident harvesters delivering to Peter Pan in King Cove.

Fishery Data Sources

Data on landings, revenues, and participation in fish harvesting and fish processing in Alaska are generally good. It is quite easy to use the data to describe particular fisheries, or fishing activities over a relatively large area such as a borough. However, because of regulations that preclude release of data on individual harvesters or processors, it is more difficult to obtain precise data on activities for communities where the number of harvesters and processors is limited. While the number of salmon harvesters residing in the City of King Cove is large enough that full summary data for the local fisheries are available, for other local fisheries (e.g., groundfish and crab) and non-local fisheries (e.g., the Bristol Bay salmon fishery), a large portion of the official data is confidential. In addition, because of the small number of fish harvesters in the City of Cold Bay, all official landings and revenue data for that community are confidential. Also confidential are comprehensive data that show the amount and value of fish processed at the Peter Pan Seafoods plant in King Cove, data on employment at that facility, and the number of local and non-local harvesters that deliver to the plant. Information on processing activities at Peter Pan is limited to key informant interviews with Peter Pan officials and other participants in the fisheries, and secondary reports and data that provide information about certain components of Peter Pan's activities.

To provide more complete information on fisheries where official data are confidential, Northern Economics developed a proprietary database—the Community Fisheries Database. This database uses mathematical algorithms to augment data from the Alaska Commercial Fisheries Entry Commission in their report series, “Permit & Fishing Activity by Year, State, Census

Division, or Alaskan City” (CFEC 2012a). The Alaska Commercial Fisheries Entry Commission reports permit and fishing activity summarized by Alaska city, Alaska census area, or state in which the permit holder resides. State of Alaska regulations preclude the release of fishery data if very small numbers of harvesters are included. The Community Fishery Database addresses the data confidentiality issue by systematically estimating “confidential” data points using the best information provided in the Alaska Commercial Fisheries Entry Commission reports. For example, in 2008, landings and revenue data for the Aleutians East Borough in the halibut fishery were reported by the commission, as were landings and revenue for the communities of King Cove and Sand Point. Because of low numbers of halibut permit holders in Akutan (6), False Pass (2), and Cold Bay (1), the commission did not report landings and revenues for those communities. Northern Economics’ Community Fishery Database calculates the average landings and revenue of the unreported data for Aleutians East Borough as a whole and applies those averages to each of the unreported communities. Data from the Community Fisheries Database is the primary source of information on fish harvesting by residents of the communities of Cold Bay and King Cove.

Another significant gap in the available fisheries data is reliable information on the employment and earnings of fish harvesting crew members. This is primarily because fishing crew and permit holders are considered self-employed and therefore do not report whether they have worked in the industry, or how much they earned through the standard sources of employment data. It is possible to generate estimates of the number of persons that work as fish harvesters using participation and earnings data from the Alaska Commercial Fisheries Entry Commission (CFEC 2012a, b, c) combined with information developed by researchers at the Department of Labor (Windisch-Cole and Warren 2008) on the number of crew members that are generally used in each type of fishing operation. Estimates of earnings (also referred to as “payments to labor”) in fisheries after accounting for expenses are also generally unavailable. Information from a report prepared for the Aleutians East Borough in 1999 (NEI 2000) is used in this section to estimate earnings by fish harvesters.

Seafood Processing in the City of King Cove

The City of King Cove is home to Peter Pan Seafood’s largest processing facility. King crab, snow crab (*c. opilio*) and other tanner crab (*c. bairdi*), pollock, Pacific cod, salmon, halibut, and black cod (sablefish) harvested in the Bering Sea and the Gulf of Alaska are processed throughout the year. According to the Peter Pan Seafoods website (Peter Pan Seafoods 2010), the plant, with origins back to the early 1900s, has the largest salmon canning capacity of any plant in Alaska. All 5 species of salmon are abundant in the nearby waters. Salmon remains a major part of the annual operation, but the plant has expanded and streamlined whitefish operations. The plant produces several different whitefish product forms including pollock fillet block, shatterpack fillets, mince, and surimi. Cod shatterpack fillets and salt cod are mainstays. The vast majority of these products are shipped out of King Cove by barge with destinations in Asia or Washington State. Peter Pan does, however, ship some fresh salmon out of Cold Bay by air during the summer season, as well as fresh Pacific cod milt in the winter season. In both cases, they use contracted tender vessels to transport the product from King Cove to the City of Cold Bay (Schwarzmilller 2011).

The plant has a long history in the community and a strong relationship with the local catcher fleet, which is the major source of employment of permanent residents of the City of King Cove.

Official data on employment at the plant are considered confidential; the following information was gathered from interviews with plant managers. Processing employment varies considerably with the season. Over the period from 1998 to 2004, employment peaked in January through March with about 500 employees (for the pollock and crab fisheries), had a secondary peak of 400 to 500 employees from mid-June to mid-August (corresponding to the salmon fisheries), and maintained employment in the low 100s for the rest of the year. During the year-end maintenance period, only about 30 employees were present (EDAW and NEI 2008).

In 2005, the crab fishery was rationalized, moving from a “race for fish” with license limitation to a system of quota share allocations to individuals (an individual fishing quota [IFQ] system). This shift is thought to have changed the composition of the local fleet by reducing the number of vessels fishing, but information is not available about the effect this may have had on processing activity and employment at Peter Pan Seafoods.

Processing employment at Peter Pan Seafoods is highly seasonal and falls into 5 distinct periods during a given year. The following are general average employment estimates that were validated through interviews with plant management (Schwarzmilller 2010). Approximately 500 people are employed as processing crew members during the winter peak. This period, from mid-January to early April, is focused on processing pollock, cod, and opilio crab. During the spring transition (mid-April – May), the plant employs a total crew of about 100. During the summer peak (June – August), the plant employs approximately 500 people and processes salmon, pollock, and cod. During the fall transition (September – late November), the estimated total crew of 100 employees processes pollock, cod, and king crab. Finally, between late November and early January, the plant closes for cleanup, maintenance, and repairs and employs a minimum crew of approximately 25 people.

Table 3.3-24 shows data on processing employment and wages and salaries in the Aleutians East Borough and estimates for Peter Pan Seafood in the City of King Cove, by month, for 2007. More recent data are not available because of confidentiality restrictions that preclude the release of data by the Department of Labor. Data for the monthly employment estimates at Peter Pan’s processing plant in King Cove are imputed by the analysts from the information from Peter Pan provided in the previous paragraph. As seen in the table, the monthly average of employees over the year at the Peter Pan plant is 290 employees or approximately 22 percent of the average for the borough. Estimates of wages by month use the average reported monthly wages from Department of Labor data for the Aleutians East Borough. It should be reiterated that the sources of the data for the borough and the plant at King Cove are different and therefore should be used with some caution.

Table 3.3-24 Processing Employment and Wages and Salaries in Aleutians East Borough and City of King Cove, 2007

Location	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Average
Monthly Employment at Fish Processing Facilities													
Aleutians East Borough	1,717	1,568	1,558	2,026	874	1,303	1,906	1,774	1,390	943	787	297	1,345
Estimates for City of King Cove	25	500	500	500	100	500	500	500	100	100	100	25	287.5
Monthly Estimated Wages and Salaries at Fish Processing Facilities (\$ Million)													
Aleutians East Borough	4.40	4.02	3.99	5.19	2.24	3.34	4.88	4.54	3.56	2.42	2.02	0.76	41.35
Estimates for City of King Cove	0.06	1.28	1.28	1.28	0.26	1.28	1.28	1.28	0.26	0.26	0.26	0.06	8.84

Note: The estimates for the City of King Cove are imputed from conversations with Peter Pan (Schwarzmilller, 2010).
Source: ADOLWD 2010d; Schwarzmilller 2010.

Overview of Fish Harvesting Activities by Residents of the Cities of King Cove and Cold Bay

The City of King Cove is the home of a large commercial fishing fleet with a primary focus on salmon, but also engaged in other fisheries, including halibut, herring, groundfish, and crab. Table 3.3-25 reports the number of permits held and actually fished by residents of the City of King Cove and the City of Cold Bay combined, as well as the landings and revenues generated by those permits, aggregated over all fisheries, all gear types, and all fishing areas. The same information is depicted in Figure 3.3-18, but for a longer period. The figure shows that the number of permits held and fished by residents gradually declined throughout the 1990s, but since 2000, have remained relatively stable. Fishery revenues were quite variable from 1990 to 2000, and increased during the period from 2000 to 2008. In 2009 revenues fell to half of their 2008 levels where they remain today. Data in the table show that in terms of the number of participants, the salmon fisheries are clearly the most important, but revenues from the groundfish and crab fisheries also generate a substantial portion of overall revenue.

The table provides aggregate information for residents of the City of King Cove and the City of Cold Bay. Within the City of Cold Bay, 1, or at most 2, people have held all of the permits from 2005 through 2010. For this reason, that person has been included with the City of King Cove in the table in terms of fishing activity and estimated ex-vessel revenue. While it is possible to develop an estimate of the revenue earned by only 1 fisher, it is inappropriate to do so due to confidentiality and accuracy issues.

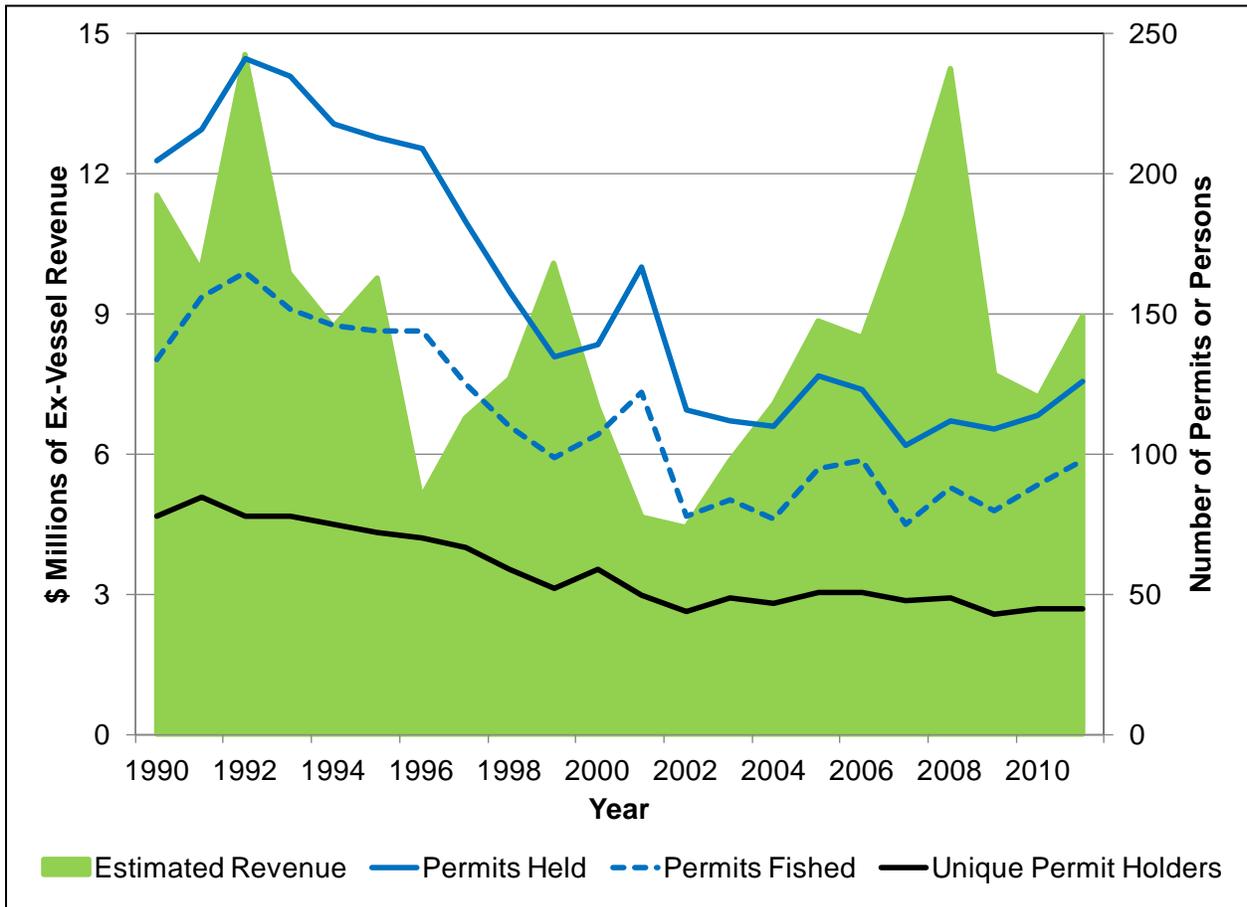
The permit holder in Cold Bay keeps his vessel on a trailer (Carr 2010). While the City of Cold Bay does not have vessel haulout facilities, local equipment is able to lift the vessel. The permit holder mentioned that other the City of Cold Bay residents are active crew members on vessels based in King Cove and in Nelson Lagoon.

Table 3.3-25 Fish Harvesting Revenues and Participation for Major Fisheries by City of King Cove and City of Cold Bay Residents, 2000-2011

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Crab and Shellfish Fisheries												
Permits Held	13	35	9	7	9	24	19	8	11	12	19	23
Permits Fished	10	27	6	7	8	19	13	3	7	9	16	18
Unique Permit Holders	5	22	4	4	4	17	12	3	7	9	16	17
Estimated Revenue (\$ Millions)	1.25	0.80	0.94	1.38	1.34	1.85	0.83	1.33	1.71	0.29	0.37	1.97
Halibut and Sablefish Fisheries												
Permits Held	16	14	12	11	13	13	13	11	12	12	12	11
Permits Fished	14	13	10	10	13	10	12	11	11	11	11	11
Unique Permit Holders	13	13	10	10	12	10	12	11	11	11	11	11
Estimated Revenue (\$ Millions)	0.60	0.49	0.55	0.60	1.05	0.87	0.92	0.84	1.00	0.61	0.79	1.10
Groundfish and Herring Fisheries												
Permits Held	53	64	42	42	33	34	35	30	36	36	36	45
Permits Fished	35	38	27	28	19	24	30	20	27	22	23	31
Unique Permit Holders	22	24	19	21	17	16	23	16	21	17	19	23
Estimated Revenue (\$ Millions)	2.75	1.91	1.76	2.23	2.23	2.27	3.51	4.45	4.76	1.67	3.60	2.83
Salmon Fisheries												
Permits Held	57	54	53	52	55	57	56	54	53	51	47	47
Permits Fished	48	44	35	39	37	42	43	41	43	38	39	38
Unique Permit Holders	47	39	32	35	35	41	41	39	40	36	39	35
Estimated Revenue (\$ Millions)	2.42	1.45	1.19	1.65	2.46	3.87	3.24	4.51	6.80	5.14	2.46	3.06
All Fisheries Combined												
Permits Held	139	167	116	112	110	128	123	103	112	109	114	126
Permits Fished	107	122	78	84	77	95	98	75	88	80	89	98
Unique Permit Holders	59	50	44	49	47	51	51	48	49	43	45	45
Estimated Revenue (\$ Millions)	7.02	4.65	4.43	5.86	7.09	8.86	8.50	11.13	14.27	7.71	7.23	8.97

Northern Economics analysis adapted from CFEC 2012a, 2012b, 2012c

Figure 3.3-18 Fish Harvesting Revenues and Participation by City of King Cove and City of Cold Bay Residents, 1990-2011



Northern Economics analysis adapted from CFEC 2012a, 2012b, 2012c

Estimates of Employment in Fish Harvesting by Residents of the Cities of King Cove and Cold Bay

As indicated in the discussion of data sources above, there is no conclusive way to estimate the total number of participants in fish harvesting operations because no data are collected that document the specific individuals that participate as a crewmembers. Table 3.3-26 provides lower and upper bound estimates of the total number of fish harvesters in the communities of King Cove and Cold Bay. The upper and lower bound estimates are developed from alternative methodologies that are described in the tables and text following Table 3.3-26. From 2002–2011, it is estimated that as many as 186 and as few as 137 residents participated in commercial fisheries as permit holders or crew members.

Table 3.3-26 Estimates of City of King Cove and City of Cold Bay Residents Participating in Fish Harvesting, 2002 – 2009

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Lower Bound Estimate of Resident Permit Holders and Crew Members	151	160	157	141 ¹	157	149	150	137	145	139
Upper Bound Estimate of Resident Permit Holders and Crew Members	167 ¹	170 ¹	186 ¹	164	179 ¹	172 ¹	162 ¹	170 ¹	162 ¹	n/a ¹

¹Numbers are estimated in Table 3.3-27 based on data on active permits from CFEC 2012a and estimates of crew factors by permit type from the Department of Labor (Windisch-Cole and Warren 2008). The other numbers are based on Table 3.3-28, which used data from CFEC 2012b.

Table 3.3-27 summarizes the actual number of permit holders and the estimated number of crew positions by fishery type. While the Alaska Commercial Fisheries Entry Commission provides a count of unique permit holders that made landings in a given year, there is no way to eliminate with certainty all of the potential double counting in the estimates of crewmembers. To generate estimates of unique numbers of crewmembers that are shown in the next to last row of Table 3.3-27, the following assumptions are made:

- 1) Local permit holders only hire local crewmembers, and they hire the same crewmembers for all the fisheries in which they participate;
- 2) Because the salmon fishery is the predominant fishery in terms of local permit holders, the minimum number of local permit holders and crewmembers will not be less than the estimated participation levels in the salmon fishery; and
- 3) If the number of active permits for a year is greater than the number of active salmon permits, then the difference is assumed to represent participation in the groundfish fisheries. Groundfish is chosen because the primary fishing seasons for groundfish do not overlap with salmon fishing seasons.

As an example, based on the assumptions above, it is estimated that in 2002, there were 35 permit holders in the salmon fishery and 9 additional permit holders in the groundfish fishery for a total of 44. The 35 salmon permit holders hired 74 crew members, and the 9 additional groundfish permit holders hired 33 additional crewmembers that were not active in the salmon fishery. Overall, it is estimated there were 44 permit holders, 107 crewmember, and 151 participants in total.

Table 3.3-27 Permits and Estimated Crew Positions by Fishery in the City of King Cove and the City of Cold Bay, 2002 – 2011

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Active Crab Permits	6	7	8	19	13	3	7	9	14	18
Estimated Crab Crew Positions	30	35	36	55	37	9	22	18	28	30
Estimated Total Positions in Crab Fisheries	36	42	44	74	50	12	29	27	42	48
Active Halibut & Sablefish Permits	10	10	12	10	12	11	11	11	11	11
Estimated Halibut & Sablefish Crew Positions	21	21	25	21	24	22	22	22	22	22
Estimated Total Positions in Halibut & Sablefish Fisheries	31	31	37	31	36	33	33	33	33	33
Active Herring Permits	0	0	0	1	1	0	0	0	0	0
Estimated Herring Crew Positions	0	0	0	3.5	3.5	0	0	0	0	0
Estimated Total Positions in Herring Fisheries	0	0	0	4.5	4.5	0	0	0	0	0
Active Groundfish Permits	27	28	19	23	29	20	27	22	13	18
Estimated Groundfish Crew Positions	98	88	68	84	82	60	74	64	38	46
Estimated Total Positions in Groundfish Fisheries	125	116	87	107	111	80	101	86	51	64
Active Salmon Permits	35	39	37	42	43	41	43	38	39	38
Estimated Salmon Crew Positions	74	80	74	80	83	80	85	79	82	76
Estimated Total Positions in Salmon Fisheries	109	119	111	122	126	121	128	117	121	114
Total Number of Unique Active Permit Holders	44	49	47	51	51	48	49	43	45	45
Best Estimate of Unique Crew Positions	107	111	110	113	106	101	101	94	100	94
Best Estimate of Total Position in all Fisheries	151	160	157	164	157	149	150	137	145	139

Source: CFEC 2012a; Windisch-Cole and Warren 2008

An alternative estimate of the total number of persons participating in the fisheries can be made by assuming that all persons that pay the annual fee to obtain a permit or a commercial crew member license do participate in the fisheries at some point during the year. The Alaska Commercial Fisheries Entry Commission provides counts by community by year of the unique number of persons that obtained a license or permit (CFEC 2012b), shown in Table 3.3-28. In general, these data are believed to overestimate the number of persons that actually participate as fish harvesters during the year.

Table 3.3-28 Number of Persons Issued Permits and Crew Licenses in Cities of King Cove and Cold Bay, 2002 – 2010

	2002	2003	2004	2005	2006	2007	2008	2009	2010
King Cove	163	165	174	130	171	166	156	165	156
Cold Bay	4	5	12	11	8	6	6	5	6
Total	167	170	186	141	179	172	162	170	162

Source: CFEC 2012b

Estimates of Earnings from Fish Harvesting by Residents of the Cities of King Cove and Cold Bay

The available data on revenues generated from fish harvesting are known as ex-vessel revenue and represent the total amount that processors pay harvesters for their fish. In general, ex-vessel revenue data are believed to be very reliable. However, these data do not account for the expenses that accrue to boat owners, permit holders, and crew members, and therefore ex-vessel revenue data alone are not reliable estimators of the labor income generated from fish harvesting. Further, the portion of ex-vessel revenue that goes to expenses varies widely across fisheries. Although cost information by fisheries is not well documented, the amount of ex-vessel revenue that constitutes payments to labor is estimated to range from 25 percent in very capital-intensive fisheries up to as high as 70 percent in labor-intensive fisheries.

In 1999, Northern Economics conducted a study for the Aleutians East Borough (NEI 2000) that included a survey of resident permit holders. The survey enabled an estimation of costs in various types of fishing operations. These cost estimates were applied to resident fishing operations from 1990 to 1998. Over this 9-year period, Northern Economics estimated that 55 percent of ex-vessel revenue could be considered payments to labor accruing either to crew members, permit holders, or vessel owners. However, in 1990 and 1992, revenues were extremely high and likely skewed the average. If only the last 5 years are considered (1994 to 1998), the payments to labor percentage drops to 47 percent. Further, since diesel fuel prices in the City of King Cove have increased from \$0.93/gallon in 2002 to \$3.19 in 2009 (Alaska Energy Authority 2010), shares to fish harvesting labor for fishing operations in the Aleutians East Borough are likely to be even smaller. Assuming that vessel operating costs from the 1999 survey increased by 50 percent due to rising fuel costs, then payments to labor are estimated to be approximately 42 percent of ex-vessel value. Table 3.3-29 shows estimated ex-vessel revenue and payments to labor for fish harvesters in the communities of King Cove and Cold Bay.

Table 3.3-29 Estimated Ex-Vessel Revenue and Payments to Labor from Fish Harvesting – Cities of King Cove and Cold Bay, 2002 – 2011

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Average
Total Estimated Ex-Vessel Revenue (\$ 1,000)											
King Cove	4,395.2	5,812.1	6,980.3	8,596.9	8,381.5	11,055.1	14,169.9	7,497.4	7,146.3	8,899.8	8,293.43
Cold Bay	37.0	52.1	107.7	264.2	122.5	79.3	103.7	213.5	81.6	65.7	112.72
Total	4,432.2	5,864.2	7,087.9	8,861.0	8,504.0	11,134.4	14,273.5	7,711.0	7,227.8	8,965.5	8,406.2
Total Estimated Payments to Labor (\$1,000) (Assumes payments to labor are 42 percent of revenue)											
King Cove	1,846.0	2,441.1	2,931.7	3,610.7	3,520.2	4,643.1	5,951.3	3,148.9	3,001.4	3,737.9	3,483.2
Cold Bay	15.6	21.9	45.2	111.0	51.5	33.3	43.5	89.7	34.3	27.6	47.3
Total	1,861.5	2,462.9	2,976.9	3,721.6	3,571.7	4,676.4	5,994.9	3,238.6	3,035.7	3,765.5	3,530.6

Source: Northern Economics analysis adapted from CFEC 2012a and Northern Economics 2000

Estimates of Non-Local Participation in King Cove Fisheries

Non-resident permit holders and crew members that make commercial fishery deliveries to the processing plant in King Cove are potential beneficiaries of improved access between the communities of King Cove and Cold Bay. As described below, the analysis estimates that between 424 and 657 non-resident permit holders and crew members make deliveries to King

Cove during a typical fishing year (discussed below). While data on the exact number of non-resident permit holders and crew members that deliver groundfish, salmon, halibut, and crab to Peter Pan at King Cove during the year are not available due to confidentiality, some information can be used to generate estimates:

- 1) Anecdotal information from Peter Pan regarding the number of crew members they assist with travel arrangement into King Cove;
- 2) Information regarding the Bering Sea and Aleutian Island pollock deliveries to Peter Pan by vessel in annual reports mandated by the *American Fisheries Act*;
- 3) The annual allocations of Bristol Bay king crab and of Bering Sea snow crab to Peter Pan are known and from these, data estimates of landings and number of vessels for these fisheries can be derived; and
- 4) It is estimated that Peter Pan buys and processes somewhere between 40 and 60 percent of the salmon harvested in Alaska Peninsula salmon fisheries (also known as the Area M salmon fisheries), and that between 50 and 70 percent of the active permit holders sell at least some portion of their harvest to the plant in King Cove. These ranges can be used to estimate a reasonable range of the number of salmon vessels and salmon landings.

Managers at Peter Pan were asked if they could provide information or verify estimates on the number of non-resident permit holders and crew members that make deliveries or otherwise come through King Cove on an annual basis. Peter Pan estimates that currently “about 200 non-resident crew members, observers, etc.” get to King Cove by flying through Cold Bay. (Schwarzmilller 2011). In addition, Schwarzmilller (2011) indicates that:

- 1) Preliminary estimates on the numbers of crew members for Bering Sea and Aleutian Island pollock and crab are “in the ballpark;”
- 2) Peter Pan takes Area M salmon deliveries from a large (but confidential) number of non-local harvesters, including permit holders from other ports in the Aleutians East Borough;
- 3) The large majority of Peter Pan’s groundfish (pollock, rockfish, flatfish, and Pacific cod) deliveries from the Western Gulf of Alaska are harvested by vessels that also deliver salmon, but there are 5 to 10 other non-resident vessels in these fisheries; and
- 4) Several larger longline non-resident vessels (greater than 60 feet in length) deliver halibut and black cod from the individual fishing quota longline fisheries.

The remainder of this section develops and provides numerical estimates of the number of non-resident permit holders and crewmembers in the Bering Sea and Aleutian Island pollock and crab fisheries, the Area M salmon fisheries (purse seine, drift gillnet, and set gillnet), and the halibut and black cod longline fisheries.

Bering Sea pollock deliveries by non-resident permit holders and crew members are described in the annual *American Fisheries Act Pollock Cooperative Report* submitted by the Peter Pan Cooperative to the National Marine Fisheries Service. All of the vessels participating in the cooperative are owned and operated by permit holders that are not residents of the communities of King Cove or Cold Bay. It is also assumed that none of the crew members on these vessels reside in the communities of King Cove or Cold Bay. A summary of information in the co-op reports from 2006 – 2011 is provided in Table 3.3-30.

Table 3.3-30 Bering Sea and Aleutian Island Pollock Deliveries to Peter Pan, 2006 – 2011

	2006	2007	2008	2009	2010	2011
Bering Sea and Aleutian Island Pollock Landings and Revenues						
Landing (lbs-millions)	37.46	37.20	20.53	17.07	20.48	25.98
Revenue (\$ millions)	3.63	3.76	2.94	2.47	2.83	3.22
Number of Vessels with Deliveries to Peter Pan						
Coop Member Vessels Delivering Pollock	5	5	5	6	6	6
Contracted Vessels Delivering Pollock	2	5	7	5	3	1
Estimated Skippers and Crewmembers	35	50	60	55	45	35

Source: Peter Pan Cooperative 2007, 2008, 2009, 2010, 2011, 2012 and CFEC 2012b.

The processing plant in the King Cove facility also processes significant quantities of Bristol Bay red king crab and snow crab (*c. opilio*) from the Bering Sea. Although actual delivery data are confidential, it is possible to generate landings estimates because the crab fisheries were rationalized in 2005, and Peter Pan is allocated a share of the total deliveries on an annual basis. While each company's annual share is reported, data are not available indicating whether those deliveries actually occurred. Table 3.3-31 provides estimates on king and snow crab deliveries from 2006 – 2012. Note that the crab fisheries are primarily fished in the fall and winter, and thus the seasons cover parts of 2 calendar years. As shown in the table, the number of vessels delivering crab to King Cove ranges from 19 to 24, with an estimated total crew complement of 105 to 120. Information from the Commercial Fisheries Entry Commission (CFEC 2012b) indicate that 3 residents with Bristol Bay permits participated in 2006, but only 1 resident permit holder participated in these fisheries in 2007 and 2008. Therefore, we can assume on the order of 100 non-resident crews and permit holders participated in these crab fisheries during the period shown.

Table 3.3-31 Estimated King and Snow Crab Deliveries to Peter Pan at King Cove, 2006 – 2012

	2006/2007	2007/2008	2008/2009	2009/2010	2010/2011	2011/2012
Bristol Bay Red King Crab (October - December)						
Estimated Deliveries (lbs. millions)	1.78	1.69	1.35	2.29	1.99	1.05
Fishery-wide Average ex-vessel price (\$/lb)	3.65	4.34	5.01	4.58	7.37	8.95
Estimated Total Ex-vessel Value (\$ millions)	6.49	7.35	6.77	10.50	14.66	9.40
Actual Number of Deliveries to King Cove	37	25	38	33	41	n/a
Estimated Average Lbs./Delivery (thousands)	62.0	109.8	80.2	69,532	48,493	n/a
Estimated Average Ex-vessel Revenue/Delivery (\$ millions)	0.23	0.48	0.40	318,267	357,456	n/a
Bering Sea Snow Crab (January - April)						
Estimated Deliveries (lbs. millions)	2.17	2.05	3.64	3.17	3.59	5.87
Fishery-wide Average ex-vessel price (\$/lb)	1.16	1.60	1.70	1.41	1.31	2.14
Estimated Total Ex-vessel Value (\$ millions)	2.51	3.28	6.21	4.46	4.70	12.54
Actual Number of Deliveries to King Cove	16	29	26	22	28	n/a
Estimated Average Lbs./Delivery (thousands)	150.5	143.6	148.7	144,167	128,051	n/a
Estimated Average Ex-vessel Revenue/Delivery (\$ millions)	0.17	0.23	0.25	202,641	168,015	n/a
Overall Vessel Counts, Crews and Average Revenue						
Number of Vessels with Deliveries to King Cove	24	21	23	23	19	n/a
Estimate Total Crew Compliment (at 5 per vessel)	120	105	115	115	95	n/a
Estimated Average Revenue Per Vessel (\$ millions)	0.47	0.89	0.96	0.65	1.02	n/a

Note: Landings and value estimates for the Bristol Bay Red King Crab Fishery include incidental landings of Eastern Bering Sea Tanner Crab (*c. Bairdi*). Also note that these data include crab allocations to Aleutia, Inc., which, according to industry sources, uses the Peter Pan plant at King Cove as a custom processor.

Sources: CFEC 2012b; NMFS 2012a, b, c.

The third major group of non-residents harvesters that deliver to Peter Pan in King Cove are involved in the Area M salmon fishery. The estimates are based on the size of Peter Pan's King Cove plant relative to the other processors in the region. As mentioned above, Peter Pan's website describes their plant as having the largest salmon canning capacity of any plant in Alaska. This assertion is also verified by other industry sources, and thus it is reasonable to assume they are larger than the other processors involved in the Area M salmon fishery. Three primary processing plants take deliveries of Area M salmon—Peter Pan's plant in King Cove, Peter Pan's plant in Port Moller near Nelson Lagoon, and the plant in Sand Point owned by Trident Seafoods. One industry source that wished to remain confidential estimated that as many as 70 percent of the permit holders in Area M sell at least some their harvest to Peter Pan in King Cove. From this information, it is possible to assume a reasonable range of the percentage of Area M salmon processed at King Cove—its share is probably greater than 33 percent, and not

likely to be more than 70 percent. For analytical purposes, the analysis assumes that between 40 and 65 percent of the salmon harvesters in the Area M drift gillnet and purse seine fisheries deliver their catches to King Cove at some point during the year. It is also assumed that landings from participants in the set gill net fishery are delivered primarily through tender vessels contracted by Peter Pan. As shown in Table 3.3-32, from 2002 to 2011, the estimate of non-local permit holders and crews that deliver salmon to King Cove ranges from a low of 157 in 2003 to a high of 362 in 2010.

Table 3.3-32 Estimated Number of Non-Local Salmon Permit Holders and Crew that Deliver to Peter Pan at King Cove, 2002 – 2011

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Total Active Area M Seine Permits	42	46	42	46	43	46	55	54	63	59
Total Crew Estimate (4 per permit)	168	184	168	184	172	184	220	216	252	236
Total Active Area M Drift Permits	112	109	117	120	127	125	130	141	142	144
Total Crew Estimate (3 per permit)	336	327	351	360	381	375	390	423	426	432
Total Active Area M Permits	154	155	159	166	170	171	185	195	205	203
Total Estimated Crew	504	511	519	544	553	559	610	639	678	668
Estimate of Local Crew in the Salmon Fisheries (see Table 3.3-27)	109	119	111	122	126	121	128	117	121	114
Estimate of All Non-Local Crew	395	392	408	422	427	438	482	522	557	554
Estimate Range of Non-local Crew that deliver Salmon to King Cove	158 - 257	157 - 255	163 - 265	169 - 274	171 - 278	175 - 285	193 - 313	209 - 339	223- 362	222- 360

Note: The estimated range for non-local crews delivering to Peter Pan in King Cove is between 40 and 65 percent of the estimate of all non-local crew in the Area M salmon fishery.

Source: CFEC 2012b.

According to Schwarzmiller (2011) most of the Western Gulf of Alaska groundfish delivered to Peter Pan in King Cove is delivered by vessels and crew that also participate in the salmon fisheries, but that an additional 5 to 10 non-resident vessels that do not participate in the salmon fisheries deliver Western Gulf of Alaska groundfish. Assuming these vessels have a total crew complement of 4 persons including the permit holder generates additional 20 to 40 non-resident crew members on vessels making deliveries in King Cove.

One final group of non-resident vessels delivers halibut and black cod from longline individual fishing quota fisheries in the Western Gulf of Alaska and, to a more limited extent, from the Bering Sea and Aleutian Islands. Schwarzmiller (2011) verifies that these vessels are among the vessels that deliver to King Cove. According to Bob Alverson of the Fishing Vessels Owners Association (the association that represents most of Seattle-based catcher vessels in the individual fishing quota fisheries), 80 to 110 vessels greater than 50 feet in length participate in the individual fishing quota fisheries in the Western Gulf of Alaska and the Bering Sea and Aleutian Islands. These vessels do not fish for salmon, nor do they deliver significant quantities

of other groundfish (Alverson 2011). Alverson estimates that over a 3-year period, roughly half of these vessels will have made deliveries to King Cove, with the smaller vessels having a total crew of 5 including the skipper, and the larger vessels having 6 to 7 on board. Based on this information, the analysis estimates that in a typical year, 1 of every 6 individual fishing quota Seattle-based catcher vessels greater than 50 feet participating in western Alaska halibut and black cod fisheries makes landing in King Cove, that is, from 13 to 18 vessels with a total crew of 78 to 108 persons.

Table 3.3-33 provides a summary of the estimates by year (2006 – 2011) and fishery of the non-resident owned vessels and crew members that are believed to make deliveries to King Cove during the year. The estimates are derived from the preceding text and tables and attempt to eliminate any double counting. It should be reiterated that these are estimates, and that actual data on the non-resident deliveries to King Cove are deemed to be confidential.

Table 3.3-33 Estimated Number of Non-Local Fishing Crews that Deliver to Peter Pan at King Cove, 2006 – 2011

	2006	2007	2008	2009	2010	2011
Estimated Non-resident Bering Sea and Aleutian Island (BSAI) Pollock Crews	35	50	60	55	45	35
Estimated Non-resident BSAI Crab Crews	120	105	115	115	95	n/a
Estimated Range of Non-resident Area M Salmon Crews	171 - 278	175 - 285	193 - 313	209 - 339	223- 362	222- 360
Estimated Range of Non-resident Western Gulf of Alaska (WGOA) Groundfish Crews	20 - 40	20 - 40	20 - 40	20 - 40	20 - 40	20 - 40
Estimated Range of Non-resident Individual Fishing Quota (IFQ) Crews	78 - 108	78 - 108	78 - 108	78 - 108	78 - 108	78 - 108
Estimated Range of All Non-local Crews delivering to King Cove	424 - 581	428 - 588	466 - 636	477 - 657	461 - 650	450- 638

3.3.2.4 Fiscal Conditions of Local Governments

This section describes the fiscal situations of local governments that are likely to be affected by the proposed alternatives. It is likely that the fiscal status of the communities of King Cove and Cold Bay could be affected and the fiscal status of the Aleutians East Borough as whole. This section first describes the fiscal status of the Aleutians East Borough as of 2011, provides a comparison of the different taxes charged by each of the governmental entities, and then moves on to describe the 2010 revenues and expenditures for the cities of King Cove and Cold Bay.

At the borough level, the Aleutians East Borough levies a 2 percent raw fish tax, which generated \$4.6 million in 2011. Total program revenues for the year were \$10.2 million, of which \$182,000 came from user charges for the hovercraft that operated between the communities of King Cove and Cold Bay in that fiscal year. The operating cost of the hovercraft in 2011 was \$1.5 million, resulting in a \$1.4 million loss for that business-type activity. The hovercraft began operating on August 7, 2007; during fiscal years 2008 through 2010, total user charges were \$1.6 million and total expenses were \$5.2 million, resulting in a loss of \$3.6 million over 3 years. The hovercraft ceased operations between the communities of King Cove and Cold Bay in 2010 and was transferred to Akutan for use as a transportation link to a new airport constructed on nearby Akun Island.

Table 3.3-34 summarizes the Aleutians East Borough’s fiscal situation for fiscal years 2004 through 2011. The format of the borough’s financial statements changed in 2004, so earlier years are not included. The hovercraft business-type activity operated at a loss from the time it began service. The King Cove Access Project line item represents congressionally appropriated funds that were used to purchase, maintain, and operate the hovercraft and associated facilities (Boyette 2011).

Table 3.3-34 Fiscal Summary for the Aleutians East Borough, Fiscal Years 2004–2011

	Fiscal Year							
	2004	2005	2006	2007	2008	2009	2010	2011
	Millions of Dollars							
Program Revenues								
General fund / administration	\$ 5.43	\$ 5.78	\$ 6.22	\$ 7.08	\$ 7.71	\$ 7.59	\$ 6.99	\$ 8.40
Bond construction	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 2.05	\$ 0.00
King Cove Access Project	\$ 3.35	\$ 13.22	\$ 12.67	\$ 1.59	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00
Trust fund	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00
Debt service	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00
Maintenance reserve	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00
Capital improvements	\$ 0.83	\$ 0.81	\$ 0.44	\$ 1.54	\$ 2.94	\$ 2.53	\$ 1.11	\$ 1.64
Business-type activity – Hovercraft	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.27	\$ 1.06	\$ 0.27	\$ 0.18
Component unit - Borough School	\$ 6.60	\$ 7.44	\$ 6.22	\$ 7.65	\$ 8.52	\$ 9.70	\$ 8.74	\$ 0.89
Program Revenues, Total	\$ 16.21	\$ 27.25	\$ 25.55	\$ 17.85	\$ 19.44	\$ 20.89	\$ 19.16	\$ 11.11
Expenses								
General fund	\$ 4.26	\$ 4.32	\$ 4.24	\$ 4.36	\$ 15.20	\$ 5.61	\$ 5.39	\$ 5.40
Bond construction	\$ 2.20	\$ 5.27	\$ 7.63	\$ 1.38	\$ 0.21	\$ 0.02	\$ 0.51	\$ 0.07
King Cove Access Project	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.05	\$ 0.00	\$ 0.00
Trust fund	\$ 0.05	\$ 0.03	\$ 0.03	\$ 0.03	\$ 0.02	\$ 0.02	\$ 0.03	\$ 0.03
Debt service	\$ 1.02	\$ 1.38	\$ 1.35	\$ 1.18	\$ 1.40	\$ 1.37	\$ 1.33	\$ 1.41
Maintenance reserve	\$ 0.21	\$ 0.17	\$ 0.00	\$ 0.16	\$ 0.22	\$ 0.34	\$ 0.12	\$ 0.28
Capital improvements	\$ 0.94	\$ 1.14	\$ 0.78	\$ 2.04	\$ 5.39	\$ 0.86	\$ 0.55	\$ 0.24
Business-type activity – Hovercraft	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 1.70	\$ 1.81	\$ 1.66	\$ 1.54
Component unit - Borough School	\$ 6.62	\$ 7.54	\$ 6.63	\$ 7.28	\$ 8.33	\$ 9.22	\$ 8.90	\$ 9.36
Expenses, Total	\$ 15.29	\$ 19.85	\$ 20.66	\$ 16.43	\$ 32.48	\$ 19.29	\$ 18.49	\$ 18.35
Net Revenue (Expense)								
General fund	\$ 1.18	\$ 1.46	\$ 1.98	\$ 2.73	-\$ 7.48	\$ 1.98	\$ 1.60	\$ 3.00
Bond construction	-\$ 2.20	-\$ 5.27	-\$ 7.63	-\$ 1.38	-\$ 0.21	-\$ 0.02	\$ 1.54	-\$ 0.07
King Cove Access Project	\$ 3.35	\$ 13.22	\$ 12.67	\$ 1.59	\$ 0.00	-\$ 0.05	\$ 0.00	\$ 0.00
Trust fund	-\$ 0.05	-\$ 0.03	-\$ 0.03	-\$ 0.03	-\$ 0.02	-\$ 0.02	-\$ 0.03	-\$ 0.03
Debt service	-\$ 1.02	-\$ 1.38	-\$ 1.35	-\$ 1.18	-\$ 1.40	-\$ 1.37	-\$ 1.33	-\$ 1.41
Maintenance reserve	-\$ 0.21	-\$ 0.17	\$ 0.00	-\$ 0.16	-\$ 0.22	-\$ 0.34	-\$ 0.12	-\$ 0.28
Capital improvements	-\$ 0.12	-\$ 0.33	-\$ 0.34	-\$ 0.50	-\$ 2.45	\$ 1.68	\$ 0.56	\$ 1.39
Business-type activity – Hovercraft	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	-\$ 1.44	-\$ 0.75	-\$ 1.39	\$ 1.36
Component unit - Borough School	-\$ 0.02	-\$ 0.10	-\$ 0.41	\$ 0.36	\$ 0.18	\$ 0.48	-\$ 0.17	\$ 8.47
Net Revenue (Expense), Total	\$ 0.92	\$ 7.40	\$ 4.89	\$ 1.42	-\$ 13.04	\$ 1.60	\$ 0.67	-\$ 7.22

Source: ADCCED 2012b

It is noted that revenues generated for the school district, which come from several sources (including state and local funding), have been combined in the table. Also note that the borough's school district expenses include their share of funding as well as funds for small schools in communities with fewer than 10 students.

The cities of King Cove and Cold Bay use different means of taxation to raise revenues. The City of King Cove does not charge property taxes; it levies a 4 percent sales tax that generated almost \$1.6 million in revenues in 2010. The city also levies a fisheries impact tax on the Peter Pan Seafoods plant. Though the tax is based on seafood production, because the plant is the only processor in town, confidentiality restrictions prevent the city from taxing in that way. Instead, the city levies a flat \$100,000 intended to cover impacts the plant and its employees have on the city's infrastructure and services. It is essentially a payment in lieu of taxes paid by the processor.

The City of Cold Bay does not have property or sales taxes, but instead gains the majority of its general fund tax revenues from a fuel transfer tax of \$0.04 per gallon. That tax generated \$50,300 in revenue in 2009, along with an additional \$19,000 from a 10 percent bed tax. The city also generated over \$255,000 from its enterprise funds, including over \$83,000 from docking fees, harbor/dock charges, and dock storage fees. Users of the city dock are charged a 2 percent tax for goods coming across the dock.

Table 3.3-35 summarizes the taxes in place in the Aleutians East Borough, City of King Cove, and City of Cold Bay.

City of King Cove Revenues and Expenditures

The City of King Cove's revenues were almost \$10.3 million in 2010, of which 27 percent was general fund revenue and 43 percent was from general capital projects. The city has a 4 percent general sales tax on everything except for fish, and a 2 percent fish tax. Sales and business impact taxes were a much smaller than normal portion (17 percent) of general fund revenues, outside the range of 60 to 70 percent that the city has seen over the past decade or more, due to more than 73 percent of revenues coming from intergovernmental transfers. Of the sales and business impact taxes, roughly $\frac{2}{3}$ of these taxes come from fish-related taxes in a typical year, with the remainder coming from general sales. Due to confidentiality issues arising from the city only having a single fish processor, the city's financial statements report a flat amount for the fisheries impact tax, even though the city received a monthly fish tax payment based on actual operations (Boyette 2011). On the capital side, virtually all of the funds came from intergovernmental transfers. The largest operating expenditure categories are public safety and general government (each at 22 percent of \$3.2 million total, not including capital expenditures), followed by public works (14 percent). Table 3.3-36 summarizes the City of King Cove's fiscal situation in 2010.

Table 3.3-35 Taxation in the Aleutians East Borough and Cities of King Cove and Cold Bay, 2010

Location	Type	Taxes	FY 10 Tax Revenues (\$)
Aleutians East Borough	Second Class Borough	No property or sales tax	–
		2% raw fish tax	\$ 2,648,995
King Cove	First Class City	4% sales tax	\$ 1,698,279
		2% fish tax/fisheries impact tax	\$ 100,000
Cold Bay	Second Class City	No property or sales tax	–
		10% bed tax	\$ 18,977
		\$0.04/gal fuel tax	\$ 50,294

Source: ADCCED 2010b

Table 3.3-36 City of King Cove Revenues and Expenditures, Fiscal Year 2010

	Major Funds				Non-Major Funds	Total Governmental Funds
	General	Permanent Fund Special Revenue	North Old Boat Harbor Capital Project	General Capital Projects		
Revenues						
Sales and business impact taxes	\$ 1,698,279	0	0	0	0	\$ 1,698,279
Intergovernmental	\$ 1,014,766	0	\$ 1,868,807	\$ 4,294,146	\$ 336,386	\$ 7,514,105
Charges for services	\$ 63,492	0	0	0	\$ 883,597	\$ 947,089
Investment income	0	\$ 569	0	0	0	\$ 569
Other	\$ 13,476	0	0	\$ 100,000	0	\$ 113,476
Total Revenues	\$ 2,790,013	\$ 569	\$ 1,868,807	\$ 4,394,146	\$ 1,219,983	\$ 10,273,518
Expenditures						
Current						
General government	\$ 713,076	0	0	0	0	\$ 713,376
Public safety	\$ 713,899	0	0	0	0	\$ 713,899
Public works	\$ 437,298	0	0	0	0	\$ 437,298
Community services	\$ 319,770	0	0	0	\$ 64,939	\$ 384,709
Water and sewer	0	0	0	0	\$ 229,637	\$ 229,637
Solid waste collection	0	0	0	0	\$ 110,680	\$ 110,680
Boat harbor and port	0	0	0	0	\$ 362,089	\$ 362,089
Other	\$ 163,792	0	0	0	0	\$ 163,792
Debt service						
Principal	0	0	0	0	\$ 34,756	\$ 34,756
Interest and other	0	0	\$ 3,214	0	\$ 72,247	\$ 75,461
Capital outlay	0	0	\$ 2,770,352	\$ 4,572,501	\$ 381,568	\$ 7,724,421
Total Expenditures	\$ 2,347,835	0	\$ 2,773,566	\$ 4,572,501	\$ 1,255,916	\$ 10,949,818

Source: King Cove 2011a

City of Cold Bay Revenues and Expenditures

The City of Cold Bay’s operating revenue for 2010 was about \$643,000, of which nearly 80 percent came from locally generated revenues. This exceeded the \$518,000 of operating expenditures for the city. In addition to operations, the City of Cold Bay had a small, \$2,700 state-funded grant to assist with energy costs. Table 3.3-37 summarizes the City of Cold Bay’s fiscal situation in 2010.

Table 3.3-37 City of Cold Bay Revenues and Expenditures, Fiscal Year 2010

Locally Generated Revenues		Expenditures	
Tax revenues	\$ 69,271	Administration and finance	\$ 114,481
Contracted services	\$ 171,324	Duplex	\$ 8,833
Enterprise revenues	\$ 255,785	Community	\$ 12,586
Rentals	\$ 7,000	Rental house	\$ 6,774
Leases	\$ 3,330	Public works	\$ 44,843
Sales	\$ 2,175	Harbor and dock	\$ 237,121
Other local revenues	\$ 2,527	Water	\$ 51,129
Total Locally Generated Revenues	\$ 511,412	Sewer	\$ 34,231
		Garbage and landfill	\$ 1,241
Outside Revenue Sources		Health facility	\$ 6,956
State of Alaska shared revenues	\$ 117,843	Grant	\$ 2,705
Other outside revenues	\$ 14,088	Total FY 10 Operating Expenditures	\$ 518,195
Total outside revenues	\$ 131,931		
Total FY10 Operating Revenues	\$ 643,343		
Capital/Special Project Revenue Sources		Capital/Special Project Expenditures	
State Capital/Special Projects	0	State Capital/Special Projects	\$ 2,705
Federal Capital/Special Projects	0	Federal Capital/Special Projects	0
Total Revenues for Capital/Special Projects	0	Total Capital/Special Projects Expenditures	\$ 2,705
Total All FY 10 Revenues	\$ 643,343	Total All FY 10 Expenditures	\$ 520,900

Source: Cold Bay 2011

3.3.2.5 Cost of Living in King Cove and Cold Bay

The cost of living in the cities of King Cove and Cold Bay is considerably higher than in Anchorage. In a 2008 study for the Alaska Department of Administration, it was estimated that communities in the Aleutian Region (which includes the Aleutians East Borough) had a cost of living that was 50 percent higher than the cost of living in Anchorage; no other region in the study had higher costs (McDowell Group 2008).

Housing (including shelter and utilities), food, and transportation are often the largest categories of a household’s total expenditures. In 2008, these expenses represented approximately 60 percent of the total household expenditures in the Aleutian Region (McDowell Group 2008).

Monthly housing costs and energy costs therefore serve as a reasonable proxy for analyzing the area's cost of living.

For fiscal year 2010, the effective (subsidized) residential price of electricity was 20.42 cents/kilowatt hour in the City of Cold Bay and 15.09 cents/kilowatt hour in the City of King Cove, as shown in Table 3.3-38 (AEA 2011). The utilities in both communities participate in the Power Cost Equalization Program that reduces the effective residential rate for electricity through a state government funded subsidy. The amount of the subsidy is a function of the legislatively approved contribution to the program each year. The amount of the subsidy to residential electric consumers is based on the local cost of power production. According to the program formula, if the cost of power production decreases, as it does when fuel prices drop, the magnitude of the subsidy would also decrease.

The average residential (unsubsidized) cost of electricity for fiscal year 2010 was 26 cents per Kilowatt hour in the City of King Cove and almost 63 cents per Kilowatt hour in the City of Cold Bay (Table 3.3-38). This significant difference is driven by various factors, including:

- 1) The City of King Cove has a hydro-power facility that is used at a lower cost than diesel-generated electricity;
- 2) The City of King Cove also has bigger, newer, and more energy-efficient diesel-powered generators that produce electricity at higher efficiency rates, which translates into a lower cost of electricity; and
- 3) The City of King Cove is a bigger community and therefore buys higher volumes of diesel fuel than the City of Cold Bay. In addition, Peter Pan is also a large buyer of diesel fuel that is located in the City of King Cove. Therefore much higher volumes of diesel fuel come into the City of King Cove than the City of Cold Bay. Higher volumes can access better prices by taking advantage of economies of scale. In fact, as shown in Table 3.3-38, the average price of diesel fuel was \$2.55 per gallon in the City of King Cove and \$3.51 per gallon in the City of Cold Bay (38 percent higher than in King Cove) in June 2010 (AEA 2011).

Table 3.3-38 Bulk Diesel Fuel and Electricity Costs, Fiscal Year 2010

Community	Diesel Price Paid by the Utilities (\$/gallon)	Average Residential Unsubsidized Cost of Electricity (cents/kWh)	Effective Subsidized Residential Price of Electricity (cents/kWh)
King Cove	\$2.55	\$26.00	\$15.09
Cold Bay	\$3.51	\$62.95	\$20.42

Source: AEA 2011

Public Concerns Related to Socioeconomic Conditions

This section discusses reports contributed at public meetings of individual's real life experiences and concerns regarding socioeconomic conditions in the communities.

The modes of transportation between the City of King Cove and the City of Cold Bay are limited to air and sea transportation. Some comments indicated that severe weather conditions often delay or prevent traveling by air or sea. Travel by air is currently limited to Coast Guard helicopters (for medical emergencies only) and planes. Travel by sea is currently primarily by

small (e.g., fishing) boats. There were many comments that addressed the difficulty of using the Cold Bay dock. There were numerous personal experiences described where members of the community wanted or needed to travel by plane, helicopter, or boat but were delayed or prevented from doing so because of poor weather conditions. In addition, there were numerous comments regarding loss or near loss of life, physical suffering, and decreased quality of life due to the lack of safe transportation to medical facilities during dangerous weather conditions.

Numerous comments addressed the adverse socioeconomic impacts to the community related to the travel difficulties described above. In the discussion below, these comments have been grouped into different categories.

Some comments addressed the potential impacts on population and demographics in King Cove:

- “In the draft EIS under Socioeconomic Overall Effect of the road alternatives, the EIS states ‘Effects to employment, population and demographics would be negligible’. Negligible? I believe the effect of having reliable access to King Cove would be HUGE for both King Cove and Cold Bay... The EIS understates the socioeconomic impacts of the road alternatives.”
- “I worry that without a safer and easier access out of King Cove, our young people will move away and go to live in places where travel time doesn't mean the difference between life and death, or mean they have to watch someone in pain who waits for the weather to clear.”
- “I've been in King Cove most of my life and have six kids that call it (King Cove) home, as well as I call it home but at times I wonder if it's a good idea or not, if my kids or wife gets hurt or sick.”
- “I also think that many residents would soon leave for their health. Our elders want to make sure that if needed they can make it to Anchorage, and with an airplane that just isn't reliable.”
- “So it's terrible that people who are elders can't even come back to their home. We have so many people who want to spend their lives -- the rest of their lives here in town if -- when they're older, elder, and it's getting close to the end where you have to have the hospice care, and they can't even have that here because of not being able to get out of town.”

Some comments addressed the potential impacts on education, including athletics:

- “During the school year in King Cove many students have the opportunity to travel throughout the state. During this year of school there have been many trips cancelled due to high winds, visibility, and ...weather...I would hate to miss any sports trips because the weather will not cooperate with us.”
- “In the past couple of years King Cove students have missed out on many extra-curricular activities and opportunities.....Students here work very hard to be eligible to travel and compete. It really brings players down when they don't make it out of King Cove because of weather, and have to forfeit games. To me, sports/sports trips keep students busy, out of trouble, and decent grades. Students...also miss out on educational trips. Every year the junior class goes on a Close-Up trip to Washington D.C. If those students were to miss that trip, they

wouldn't be able to get reimbursed that money the class had worked very hard to raise...”

- “Another reason is that Cold Bay can come over to here for sporting events that they miss out on because of the weather...The school can also start having field trips that go over to Cold Bay and learn about the wildlife that they don't see around the airport. Cold Bay School students can also come on field trips over this way. They can learn things that go on over here that they don't do over there.”
- “One of the reasons we should have the road to Cold Bay if there is a school trip like the senior trip, Close Up, swim trip or basketball, volleyball or any other [school] trip.”
- “You guys spoke of education as kind of a -- I guess a side effect of reliable transportation, that you thought that people could stay in school longer, there would be more people graduating... I think education is very important and the education especially in rural Alaska is extremely important...”
- “Also, King Cove School Basketball teams (T-Jacks and Rookies) have to play an overwhelming majority of away games versus home games, because other schools athletic directors don't want their teams to get stuck in King Cove, which is ALWAYS a consideration and OFTEN the reality because of weather and environmental factors.”

Some comments addressed the potential impacts on the cost of living and fiscal conditions in the community:

- “People can save money by driving to Cold Bay instead of flying”
- “The last reason that I am going to give is about people missing their plane out of Cold Bay that go to Anchorage because of our weather. When they miss their plane they have to call and change the date for their ticket and it cost money for it to be changed.”
- “When people make reservations to leave to Anchorage sometimes they miss them, and same goes for clinic appointments. It's hard to get reservations for checkups, and also it cost money to cancel them.”
- “It [the road] can save the school in our district money from not having to charter a plane over for the students...”

Additional comments are included in Appendix C, Scoping and Appendix G, Comment Analysis and Response Report.

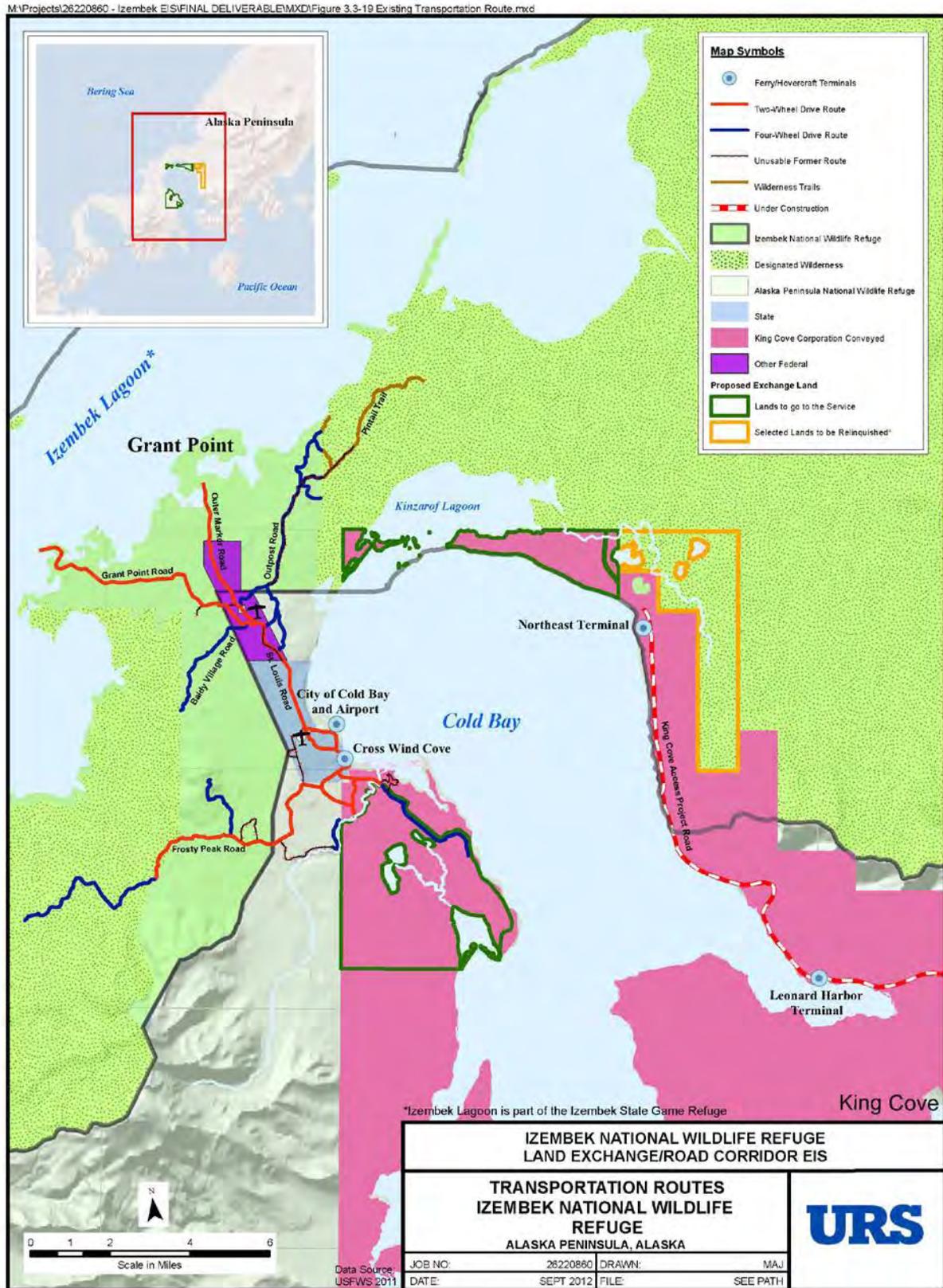
3.3.3 Transportation

During World War II, the U.S. military established Fort Randall Army Air Field at Cold Bay. By 1942, the base supported military aircraft operations, supplied long-range communications, housed supply and logistics facilities, and served supply ships and transport vessels for the region. At its peak, the base accommodated as many as 20,000 to 50,000 soldiers and airmen (Service 2010b). To support U.S. military activity along the Aleutian Chain, facilities at Cold Bay were expanded to provide communications, maintenance of radar sites, and transportation of personnel and materials. During the 1950s, operation of the airstrip at Cold Bay transferred from the Air Force to Reeve Aleutian Airways, to the Federal Aviation Administration, and finally in the 1960s, to the State of Alaska (Service 2010b).

A legacy of the World War II build-up of Fort Randall was the development of about 50 miles of roads and trails on the lands surrounding Cold Bay, including what is now the Izembek National Wildlife Refuge (FHWA 2005). Many of these dirt and gravel routes have not been maintained, though the remnants are still visible in the landscape, and are interconnected with currently used all-terrain vehicle tracks.

Figure 3.3-19 illustrates the transportation routes connected to the Cold Bay Airport and trails in the Izembek National Wildlife Refuge. There are no trails on the eastern side of the Izembek National Wildlife Refuge (Figure 3.3-19). The cities of King Cove and Cold Bay are not connected by road. Transportation options to travel between the communities include commercial and general aviation light aircraft; the Alaska Marine Highway Ferry *M/V Tustumena*; private fishing boats; and formerly, the hovercraft *Suna X*. The hovercraft has been moved to Akutan (Appendix G). These modes of travel are discussed in more detail below.

Figure 3.3-19 Transportation Routes



3.3.3.1 Transportation Facilities

Surface Transportation

Table 3.3-39 lists roads and trails within the Izembek National Wildlife Refuge, the Alaska Peninsula National Wildlife Refuge, and the cities of King Cove and Cold Bay.

Table 3.3-39 Project Area Roads and Trails

Route	Miles	Description
Izembek National Wildlife Refuge Routes		
Frosty Peak Road	0.7	gravel
Frosty Peak Road	6.4	dirt
Grant Point Road	8.6	gravel
Outer Marker Road ¹	4.1	gravel
Swan Lake Road	1.6	dirt
Blinn Lake Loop	1.3	dirt
Baldy Village Road	3.4	dirt
Baldy Mountain Road	2.0	dirt
Pintail Loop Road	1.9	dirt
Outpost Road	4.6	dirt
Kinzarof Lagoon Road	0.8	dirt
Total	35.4	
Wilderness Trails		
Pintail Loop Trail – Wilderness Area	1.3	dirt
Outpost Trail – Wilderness Area	4.3	dirt
Kinzarof Lagoon Trail – Wilderness Area	1.8	dirt
Total Trail Miles Wilderness	7.4	
Total Izembek National Wildlife Refuge	42.7	
Alaska Peninsula National Wildlife Refuge Roads and Trails: Pavlof Unit		
Frosty Peak Road	2.8	gravel
Russell Creek Loop Road	2.6	dirt
Russell Creek Cutoff	1.3	dirt
Hatchery Road	0.6	gravel
Total Road Miles	7.3	
Total Managed by Izembek National Wildlife Refuge	50.1	
Cities of Cold Bay and King Cove Local Roads		
Outer Marker Road (FAA) ¹	5.5 ¹	gravel
Grant Point Road (ADOT&PF)	2.4	gravel
Cold Bay Airport Road (ADOT&PF)	5.0	gravel
Cold Bay Local Roads (City of Cold Bay)	17.8	gravel
City of Cold Bay	25.2¹	

Route	Miles	Description
King Cove Local Roads (City of King Cove)	11.0	paved
King Cove Access Road [King Cove Airport to Lenard Harbor terminal](Aleutians East Borough)	5.6	gravel
Lenard Harbor to Northeast Terminal – under construction (Aleutians East Borough)	12.0	gravel
City of King Cove	28.6	

¹ Outer Marker Road is not included in the Road Inventory for the City of Cold Bay. This road is included in the 51.3 miles of roads/trails that are managed by the Izembek National Wildlife Refuge.
Sources: FHWA 2005; Watson 2010; ADOT&PF 2008

Izembek National Wildlife Refuge

Within the Izembek National Wildlife Refuge, the Service manages a network of approximately 50 miles of gravel roads and dirt trails that extend from the general vicinity of the City of Cold Bay into both Izembek and Alaska Peninsula National Wildlife Refuges (FHWA 2005) (Figure 3.3-19). Some abandoned trails dating to World War II exist within the Izembek Wilderness, but these trails are not maintained and have been re-vegetating naturally with only low levels of intermittent subsistence use. Some of these routes are passable using only a 4-wheel drive vehicle or all-terrain vehicle. Service staff use the roads to access areas within the refuge to monitor visitor activity and conduct studies (Muller 2010a); consistent with Service wilderness policy, Service staff do not operate motor vehicles within the designated wilderness. Izembek National Wildlife Refuge does not have the capability or staff to maintain roads. During the winter, only a small portion of the refuge road system (Grant Point Road access to the radar station) is plowed regularly. The trails in the wilderness area, Pintail Loop Trail, Outpost Trail, and Kinzarof Lagoon Trail, is allowed for local subsistence activities.

ANILCA Section 1110(a) states:

Notwithstanding any other provision of this Act or other law, the Secretary shall permit on conservation system units... and those public lands designated as wilderness study, the use of snowmachines (during periods of adequate snow cover...) motorboats, airplanes and nonmotorized surface transportation methods for traditional activities... and for travel to and from villages and homesites... subject to reasonable regulation.

ANILCA Section 811(b) states:

Notwithstanding any other provision of this Act or other law the Secretary shall permit on the public lands appropriate use for subsistence purposes of snowmobiles, motorboats, and other means of surface transportation traditionally employed for such purposes by local residents, subject to reasonable regulation.

ANILCA Section 811(a) and subsequent implementing regulations (50 CFR 36.12) provide that local rural residents shall have reasonable access to subsistence resources on public lands.

The *Izembek National Wildlife Refuge Comprehensive Conservation Plan* (Service 1985a) states:

Access to refuge lands by traditional means will be permitted for subsistence purposes in accordance with Section 811 of ANILCA. Traditional means as defined in service regulations (50 CFR 36) include boats (excluding air boats),

off-road vehicles (ORV's), light pickup trucks and passenger vehicles. Use of trucks, passenger vehicles and ORV's will be limited to designated roads and trails open to general public use.

Motorboats are allowed by ANILCA; however, regulations were never promulgated to implement any limitations proposed in the comprehensive conservation plan. As a result, motorized vehicles are permitted within the Izembek Wilderness for subsistence use by local rural residents, except where closed by regulation.

Snowmachines are generally not used in the area due to lack of consistent snow cover (Hoffman 2011). After appropriate notice and hearing, on August 7, 2006, the Service published a notice in the Federal Register (71 FR 151:44700) closing a portion of the refuge to off road vehicle use for subsistence access. The notice states:

This notice advises the public of a permanent closure to the use of off-road vehicles (ORVs) within an approximate 4-square-mile (10.4 km ²) area encompassing approximately 2,670 acres of the Izembek Refuge that has not traditionally been used for ORV access for subsistence purposes. We define off-road vehicle as any motor vehicle designed for or capable of cross-country travel on or immediately over land, water, sand, snow, ice, marsh, wetland, or other natural terrain, except snowmobiles as defined by regulation. This definition includes, but is not limited to, four-wheel-drive or low-pressure-tire vehicles, motorcycles, and related two-, three-, or four-wheel vehicles, amphibious machines, ground-effect or air-cushion vehicles, air-thrust boats, recreation vehicle campers, and any other means of transportation deriving motive power from any source other than muscle or wind (50 CFR 36.2).

The Act requires a cable or other barrier as a required mitigation measure for road proposals considered in this EIS. While not explicitly stated, the only logical reason for having such a barrier would be to prevent vehicles from leaving the road. The Act also requires an enforceable mitigation plan to be developed. Therefore, closing areas adjacent to the proposed road to access by all-terrain vehicles is a mitigation measure proposed in this EIS. To implement this mitigation measure would require the Service to follow the direction in ANILCA and the federal rule making process including publishing draft and final regulations in the Federal Register.

The use of all-terrain vehicles began to increase around 1990 when they became more affordable and reliable. Use expanded for travel and recreation, and increased access to remote areas in Alaska including National Wildlife Refuge System lands (ADF&G 1996). Literature documenting the negative impacts of all-terrain vehicles on natural resources including fish and wildlife and their habitats is extensive. These impacts include soil compaction, destabilization and erosion; introduction of sediment into streams; damage to vegetation; habitat fragmentation; altered hydrology; and visible scars on the landscape (Rickard and Brown 1974, Sparrow et al. 1978, Wilshire et al. 1978, Berry 1980, Abele et al. 1984, Happe et al. 1998, Sinnott 1990, Ahlstrand and Racine 1993). Substantial damage to vegetation and soils may occur after only 10 passes by an all-terrain vehicle (Ahlstrand and Racine 1993). All-terrain vehicle use on federal lands frequently results in the creation of unplanned routes in previously undisturbed areas (NPS 2003). Once such a route is created, it can quickly expand into a network branching out from the original route into new areas (Sinnott 1990). Recovery of vegetation is especially prolonged if the organic material covering the soil is sheared or destroyed (Abele et al. 1984, Walker et al.

1987). Continued all-terrain vehicle use under these circumstances and in these areas quickly results in the creation of bogs or mud holes that drivers avoid. As a result the route becomes wider and numerous detours are created. As routes expand from all-terrain vehicle use (authorized and unauthorized), they quickly encroach on wildland areas and continuously expand access into previously inaccessible areas.

Most of the lowland habitat surrounding Cold Bay is open low shrub-ericaceous shrub tundra (Service 1985a). Herbaceous meadows and wetlands occur east of Kinzarof Lagoon and in the Joshua Green watershed. These habitats are particularly sensitive to disturbances. The disturbed areas are very slow to recover because of low air and soil temperatures, an abbreviated growing season, thin organic soil layers, and a lack of species diversity (Bliss et al. 1973). Unmaintained trails created during World War II are still visible over 60 years later. Additionally, the narrow profile, low topographic relief of the isthmus, and abundance of wildlife substantially increases the speed and efficiency that the tundra can be traversed, and the likelihood of wildlife interaction and disturbance. Sowl and Poetter, in their April 26, 2004 report, *Impact Analysis of Off-Road Vehicle Use for Subsistence Purposes on Refuge Lands and Resources Adjacent to the King Cove Access Project*, discuss the existing and potential effects of all-terrain vehicle use on the Izembek National Wildlife Refuge. Their findings support the conclusion that all-terrain vehicle use results in impacts discussed previously in this section.

The low vegetation, limited topographical relief, and abundant wildlife of the Izembek isthmus combine to make the area attractive to both sport and subsistence all-terrain vehicle users. All-terrain vehicles allow users to cover more area, quickly move from highpoint to highpoint to spot game, and easily travel into areas of high wildlife concentration. Specific effects to the natural resources of the Izembek National Wildlife Refuge are discussed by alternative and the specific resource in Chapter 4. Prior to 2004, evidence of all-terrain vehicle use was not recorded in Izembek National Wildlife Refuge in the vicinity of the community of King Cove (Glaspell and Clough, 2003). All-terrain vehicle use has, however, been identified as a resource issue as early as 2003 to 2004 by Izembek National Wildlife Refuge Manager, Rick Poetter. The area has had a substantial increase over time both in abundance, and documentation of the effects on habitat, fish, wildlife, and wilderness values (Siekaniac 2012). Non-subsistence all-terrain vehicle access to the refuge is restricted to designated roads and trails. However, all-terrain vehicle use has resulted in a web of informal all-terrain vehicle paths in Izembek Wilderness, originating from existing roads and trails (See Figures 3.3-19a through 3.3-19d).

Figure 3.3-19a All-terrain vehicle tracks on Izembek National Wildlife Refuge lands east of Kinzarof Lagoon. Photo by Kristine Sowl, 2006.



Another commonly used, all-terrain vehicle access point is from the Kinzarof Lagoon (Figure 3.3-19b). Fishing vessels land at high tide and offload all-terrain vehicles. This has led to a network of routes from the lagoon into the wilderness area. All-terrain vehicles and evidence of all-terrain vehicles have been observed on the beaches of Kinzarof Lagoon at low tide making their way from King Cove, all the way into Cold Bay (Siekaniec 2012).

Figure 3.3-19b All-terrain vehicle tracks along the edge of Kinzarof Lagoon providing access to uplands in Izembek National Wildlife Refuge. Photo by Kristine Sowl, 2006.



Figure 3.3-19c Flight path for October 30, 2006 aerial survey. The black box identifies the area of the all-terrain vehicle tracks photographed (Kristine Sowl, 2006)



The 2003 EIS authorized construction of the Northeast Terminal hovercraft landing site, and a road connecting it to Lenard Harbor. Sowl and Poetter (2004) predicted that the road to the Northeast Terminal would greatly increase access to the isthmus, leading to a substantial increase in all-terrain vehicle use on the Izembek National Wildlife Refuge by providing easy access and a developed launching site. Barriers required by the 2003 EIS to restrict access to the refuge from the King Cove Access Road are yet to be constructed.

Figure 3.3-19d All-terrain vehicle tracks from photo point 162 (see Figure 3.3-19e) originating at the Northeast Terminal site and extending northeast onto Izembek National Wildlife Refuge. Photo by Kristine Sowl, 2008.



Aerial surveys to monitor wildlife populations are conducted approximately annually. The surveys are generally conducted along fixed flight paths or transects. During the surveys conducted in 2006, 2007, and 2008 there were notable changes in observed impacts to vegetation in Izembek National Wildlife Refuge. The fixed flight paths and observed locations of all-terrain vehicle tracks in 2006 are displayed in Figure 3.3-19c, locations observed in 2007 are displayed in figure 3.3-19e, and locations observed in 2008 are displayed in Figure 3.3-19f.

During this time, the Northeast Terminal was constructed and the road from Lenard Harbor to the Northeast Terminal was under construction. The road construction occurred from the Northeast Terminal to the south and from Lenard Harbor to the north. The final construction segment was in the mid-portion of the road alignment; steep grades previously hindering access from Lenard Harbor to the Northeast Terminal were removed in 2010 with the construction for

the mid-portion of the access road. These surveys and aerial photography from 2008 (Figure 3.3-19d) documented a dramatic increase in all-terrain vehicle trail development following the construction of the hovercraft landing site and after a rough alignment was constructed in the central portion of the access road.

All-terrain vehicle tracks developed towards and around Kinzarof Lagoon; in the direction of Moffett Lagoon; and out towards the Joshua Green drainage (Figure 3.3-19g). With the improved access in 2010, another large increase in all-terrain vehicle use was observed in the refuge (Siekaniec 2012). Aerial observations from 2008 (Figure 3.3-19d and 3.3-19f) indicated that the number and intensity of trails documented in 2006 and 2007 had increased substantially (Figure 3.3-19f). The level of landscape scarring indicated high levels of repetitive use relative to the soil and vegetation's ability to recover (Sowl 2011f). Following the pioneering of the King Cove Access Road to the Northeast Terminal, there was noticeably increased all-terrain vehicle use in the Izembek National Wildlife Refuge by 2011. Analysis of changes in all-terrain vehicle use over time is included in Section 4.3.3.1 (Sowl, 2011f).

Figure 3.3-19e New all-terrain vehicle routes were identified during an aerial wildlife survey in 2007 and are indicated by yellow GPS markers. Kristine Sowl, 2007.

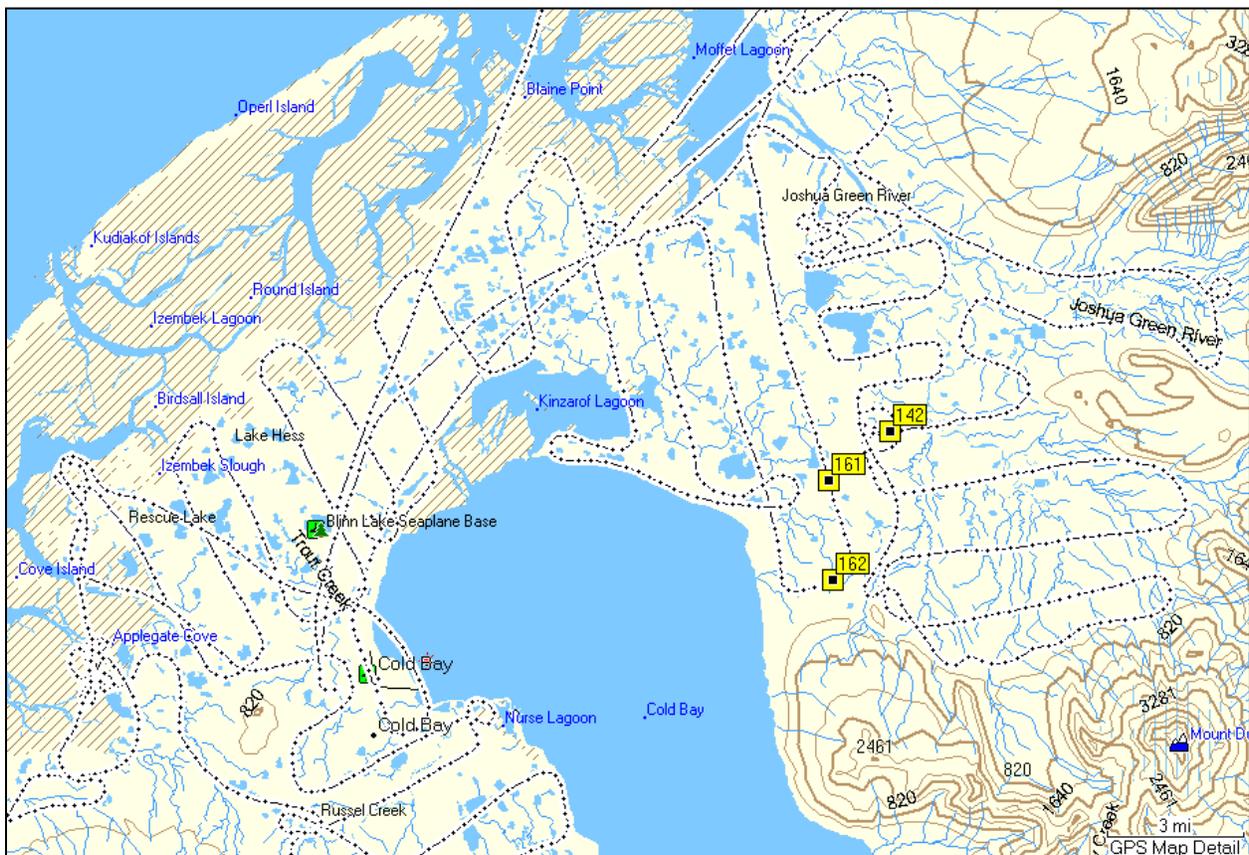


Figure 3.3-19f An aerial survey to monitor wildlife populations conducted in 2008 showed an increase in all-terrain vehicle use since 2007. Green markers indicate where the fixed flight path (same flight path as 2007, depicted in Figure 3.3-19e) intersected all-terrain vehicle tracks. Kristine Sowl, 2008.



Figure 3.3-19g. All-terrain vehicle tracks in the Joshua Green Valley of Izembek National Wildlife Refuge. (See photo point on Figure 3.3-19f.) Photo by Kristine Sowl, 2008.



The road network within the Pavlof Unit of the Alaska Peninsula National Wildlife Refuge includes 3.4 miles of gravel roads and 3.9 miles of dirt trail (FHWA 2005), which includes Frosty Peak Road, Hatchery Road, Russell Creek Loop, and Russell Creek Cutoff. The roads are managed by the Service. These are the only roads of the Alaska Peninsula Wildlife Refuge within the EIS project area.

City of Cold Bay

The City of Cold Bay has a limited road system, which was originally developed in support of the former military base. In and around the airport and community of Cold Bay are 15 roads, about 25 miles in total. Thirteen are maintained by the State of Alaska Department of Transportation and Public Facilities, and 2 by the City of Cold Bay (Watson 2010). Most of these roads are constructed of gravel or native material. While the state does not provide data on the number of registered vehicles, the City of Cold Bay estimates that approximately 60 cars, trucks, and vans are operated within the town (Watson 2010). With about 100 residents, vehicle traffic in Cold Bay is minimal. Three local businesses provide vehicle rental services within the community, with a rental fleet of 12 vehicles, mostly pickup trucks. An air taxi operates a courtesy van from the airport and provides pick-ups/drop-offs for arriving and departing customers (Martin 2010; Watson 2010).

During the winter months, the Alaska Department of Transportation and Public Facilities plows snow on the Cold Bay Airport and the roads adjacent it. The City of Cold Bay maintains 2 roads and assists the state during heavy snow events (Watson 2010). Using a contractor, the FAA plows Outer Marker Road during the winter to maintain access to a navigation aid. The same contractor also maintains the road to the city's power plant (Watson 2010).

City of King Cove

The City of King Cove has an 11-mile local road system spread over an area of approximately 20 square miles. The local road network extends approximately 2.5 miles in either direction from the center of town to serve residential areas and a 5-mile road to the airport (Airport Road). Main streets throughout the community were paved in 2010. Official traffic counts are not conducted in the City of King Cove. According to city officials, there are approximately 200 cars, trucks, and vans in the city. In addition, numerous all-terrain vehicles are used regularly throughout the city (Gould 2010; Hennigh 2010d). With over 700 full time residents and about 500 seasonal cannery workers, local roads sometimes get busy in the summer, especially in the early morning and late afternoon (Calver 2010; Gould 2010; Hennigh 2010d). City officials reported that Airport Road accommodates approximately 20 to 30 vehicles per day to meet 2 scheduled air taxi arrivals and departures (Calver 2010; Gould 2010).

A private company rents vehicles and a single taxi cab provides pickup and drop-off service. During the winter, the City of King Cove maintains and plows most local roads, including the road to the King Cove Airport (Calver 2010; Hennigh 2010d).

A road was constructed from the King Cove Airport to Lenard Harbor and is managed by the Aleutians East Borough. A single lane gravel road is under construction from Lenard Harbor to the Northeast Terminal. The Aleutians East Borough is the permit applicant for the Section 404 permit and the State of Alaska administers the contract for construction. When the road is finished in 2013 (estimated), approximately 17 miles of gravel access road will connect the King Cove Airport to the Northeast Terminal.

State Lands

No roads or vehicle trails are on the State of Alaska lands being considered for exchange near the North Creek Unit. Access to or within the state lands involved in the proposed project area requires the use of an off-road vehicle, aircraft, small boat, or by foot. Float planes can be used in tidal areas and lakes within the parcel.

Corporation Lands

Several roads and informal trails exist on lands owned and selected by King Cove Corporation within the proposed project area, of which some are public access easements. Within the boundaries of the Izembek National Wildlife Refuge, a federally reserved 25-foot wide public access easement (EIN 9a C4) leads to the selected parcel on the east side of Cold Bay. The easement is just over a mile long, and all-terrain vehicles up to 3,000 pounds gross weight are permitted for public access from the shore of Cold Bay to the Izembek Wilderness (across Corporation ownership) (USACE 2003). South of the City of Cold Bay, a gravel road extends towards Mortensens Lagoon. No established roads or trails are within the Kinzarof Lagoon parcel.

The King Cove Access Road, which is located on Corporation land, begins at the King Cove Airport and extends north to the Lenard Harbor terminal. When the King Cove Access Road was constructed from King Cove Airport to the Lenard Harbor terminal, the Izembek National Wildlife Refuge closed an area east of the road to all-terrain vehicle use (Service 2005). This was because the new road could introduce all-terrain vehicle use to a previously inaccessible area and could affect previously undisturbed resources (Sowl and Poetter 2004). On days when the hovercraft Suna X operated, the King Cove Access Road experienced small spikes in vehicle trips. Currently, only occasional vehicle trips are taken for subsistence and recreational opportunities. The King Cove Access Road to the Lenard Harbor terminal is maintained and plowed by the Aleutians East Borough (Calver 2010).

Beyond the Lenard Harbor terminal, a new road, also part of the King Cove Access Project, is under construction. While the road crosses lands owned by the King Cove Corporation, the Aleutians East Borough is the permit applicant for the Section 404 permit and the State of Alaska administers the contract for construction. When the road is finished in 2013 (estimated), approximately 17 miles of gravel access road will connect the King Cove Airport to the Northeast Terminal.

Sitkinak Island

On Sitkinak Island, dirt roads and trails exist in the vicinity of the proposed land exchange parcels. The unmaintained roads and trails date back to the original military installations on the island and an ongoing cattle grazing operation. The roads are used exclusively by the cattle ranchers who periodically operate a few farm vehicles (Alaska Meat Company and Sitkinak Cattle Ranch 2010; Kodiak Military History Museum 2005).

A former military installation that includes a 4,500-foot runway is within the proposed land exchange area, but the installation has been deactivated and dismantled. Although the runway remains, no scheduled aircraft operate from the site (Kodiak Military History Museum 2005).

Aviation

Cold Bay Airport

Cold Bay Airport (FAA Identifier CDB) is one of the largest public airports in the state and the largest public airport serving the region. As a result, it is considered the regional aviation hub. Nearby public airports are King Cove (17 miles), False Pass (32 miles), Nelson Lagoon (72 miles), and Sand Point (76 miles) (ADOT&PF 2004; AirNav 2010b).

The Cold Bay Airport is owned and operated by the State of Alaska, and has an on-site staffed FAA Flight Service Station. It operates from 8 am to 5:45 pm, with an after-hours radio relay link to Kenai Flight Service Station. The airport has 2 lighted and paved runways in good condition. Runway 14/32 is 10,415 feet long and 150 feet wide and provides an instrument approach; Runway 8/26 is 6,235 feet long and 150 feet wide, and is used primarily for crosswind takeoffs and landings. The airport has no maintenance capability currently, but does have aviation fueling services (AirNav 2010b). Due to prevailing winds, approximately 85 percent of approaches to Cold Bay Airport are from the north over Izembek National Wildlife Refuge lands (Jackson 2010).

PenAir provides daily scheduled passenger airline service from Cold Bay Airport to Anchorage, Dutch Harbor, and Sand Point using Saab 340 aircraft. Additionally, PenAir provides scheduled daily air-taxi service from Cold Bay Airport to the communities of King Cove, Port Moller, Nelson Lagoon, and False Pass with Piper Saratoga aircraft (PenAir 2010a,b,c). Ace Air Cargo provides on-demand air cargo service, which results in approximately 3 to 5 trips per week from Anchorage to Cold Bay Airport using Beech 1900 aircraft (ACE Air Cargo 2010). Northern Air Cargo provides non-scheduled flag-stop cargo service to and from Cold Bay Airport from Anchorage with Boeing 737-200 aircraft (Northern Air Cargo 2010a,b).

The National Transportation Safety Board (2010b) reports 6 aircraft accidents dating back to 1964 involving aircraft on approach to, departing from, and operating in the vicinity of Cold Bay Airport. Most of the accidents were attributed to adverse weather conditions, unfavorable winds, and poor visibility. Twelve fatalities resulted from these accidents (see Section 3.3.4 Public Health and Safety.)

King Cove Airport

The King Cove Airport (FAA Identifier KVC) is owned and operated by the State of Alaska. It is a public, daytime-use airstrip using visual flight rules. The airport has a single lighted gravel runway, 3,500 feet long by 100 feet wide, in good condition. The runway is located in a valley with mountainous terrain on both sides. The airstrip accommodates small/light aircraft (less than 12,500 pounds) and is suitable for most single engine and light twin engine aircraft. While the King Cove Airport has a non-precision instrument approach, it can only be used when landing from the east during daylight hours and when the airport can be seen from 5.2 nautical miles (or more) from the east because the last leg must be flown visually (FAA 2010). Visual flight rules generally mean that the cloud cover should be at least 1,000 feet above the ground with visibility of at least 3 miles. The State of Alaska recommends daytime use of the facility due to numerous obstructions on the approaches and unpredictable winds (Walker 2010). Gale force crosswinds and turbulence can occur in the valley where the King Cove Airport is located between volcanic peaks (Jackson 2010).

Nearby public airports include Cold Bay (17 miles), False Pass (43 miles), Sand Point (61 miles), and Nelson Lagoon (65 miles). No hangars, maintenance, or fueling services are available at the King Cove Airport and no aircraft are based at King Cove Airport (AirNav 2010c, Jackson 2010).

The National Transportation Safety Board (2010a) reports 7 aircraft accidents dating back to 1964 involving aircraft on approach to, departing from, or operating in the vicinity of King Cove Airport. Most of the accidents were attributed to adverse weather conditions, unfavorable winds, and poor visibility. Eleven fatalities resulted from these accidents (see Section 3.3.4 Public Health and Safety).

Blinn Lake Seaplane Base

An unattended public seaplane base is located at Blinn Lake (FAA Identifier Z87), approximately 4 miles north of the Cold Bay Airport. The seaplane base provides 2 water runways: Runway E/W is 2,500 feet long by 1,000 feet wide and runway N/S is 2,000 feet long by 1,000 feet wide. The seaplane base averages approximately 50 general aviation aircraft

operations per year. During the summer months, July through October, a local guide operates a seaplane operation at Blinn Lake (AirNav 2010a; Martin 2010; Jackson 2010).

Off-Airport Air Operations

Off-airport operations take place occasionally within the Izembek National Wildlife Refuge and within the North Creek and Pavlof Units of the Alaska Peninsula National Wildlife Refuge. Aircraft landings are allowed on the beaches on the seaward side of barrier islands below the mean high tide line and on spits where the beach material can support aircraft activity (Muller 2010; Service 1985a). Floatplanes can also land on the larger lakes on state lands.

A Special Area Permit from the Alaska Department of Fish and Game is required to land a fixed-wing aircraft in the Izembek Lagoon and for helicopter landings anywhere in the Izembek State Game Refuge (ADF&G 2010a). With the exception of the mouth of the Joshua Green River, aircraft landings are typically prohibited in Izembek Lagoon and Moffet Lagoon (ADF&G 2010a).

No active airports or airstrips are located within the North Creek and Pavlof Units of the Alaska Peninsula National Wildlife Refuge or at Mortensens Lagoon. However, aircraft operations can and do occasionally take place from exposed beaches at low tide (Jackson 2010; USACE 2003; Muller 2010; Service 1985a). Some limited private aviation operations take place at the cattle ranch within the proposed land exchange areas on Sitkinak Island. These involve the occasional operation of light aircraft and/or a helicopter associated with ranching operations and guiding (Alaska Meat Company and Sitkinak Cattle Ranch 2010).

Essential Air Service

After airline deregulation in 1978, Congress added Section 419 to the Federal Aviation Act, which established the Essential Air Service Act program. In 1990, the Omnibus Budget Reconciliation Act of 1990, Public Law 100-508, was implemented. This authorized funds to subsidize air service to eligible communities, under Essential Air Service. (USDOT 2009). Under Essential Air Service, minimum service for King Cove was established at three round trips a week, assuming Part 135 aircraft (generally less than 10 seats). PenAir currently operates scheduled air taxi service to King Cove Airport, but neither they nor any predecessors serving this market applied for the Essential Air Service subsidy (Adams 2012). Air taxis in Alaska do, however, collect subsidies for the mail delivery via the US Postal Service. This is known as “bypass mail service,” and allows consumers to send and receive mail and packages at standard postage rates.

Marine Transportation

Harbors

The City of King Cove is a busy port and home to a large commercial fishing fleet and fish processing facilities. The City of King Cove has a deep-water public dock, which provides marine services and fuel for the fishing industry, 2 boat harbors, and a ramp to launch small boats (ADCCED 2010a; King Cove 2010a).

The City of King Cove offers a full range of dockage and marine services for commercial fishing, cargo, passenger, and recreational vessels. The public marine facilities are operated and

maintained by the city's Harbor Department. King Cove's North Harbor provides moorage for 90 boats and is ice-free year round. The Babe Newman Harbor provides additional moorage for fishing vessels up to 160 feet. Both harbors are equipped with shore power hook-ups. Large vessels, including the state ferry *M/V Tustumena*, cruise ships, and cargo vessels can be accommodated at King Cove's deep-water pier (King Cove 2010a). Peter Pan Seafoods owns and operates 3 deep-water docks.

On the other side of the bay, the City of Cold Bay operates a deep-water dock which is used to offload supplies, equipment, goods, and passengers. The city does not have a small boat harbor.

The project area has regularly scheduled marine cargo services via Seattle Coastal Transportation. The company, based in Seattle, has a terminal in Dutch Harbor and provides weekly marine cargo transport service to ports on the Alaska Peninsula and the Aleutian Islands, including the communities of King Cove and Cold Bay (Coastal Transportation 2010a, b, c, d).

Alaska Marine Highway Ferry

Beginning in May and continuing through September, the Alaska Marine Highway System *M/V Tustumena* provides ocean-going passenger and vehicle ferry service to and from the communities of Cold Bay and King Cove twice per month (ADOT&PF 2010b, c). The ferry does not run between October and April due to winter weather and daylight concerns, but the ferry is very reliable from May through September with only occasional slowdowns for weather (Belfry 2011). The trip from King Cove to Cold Bay takes approximately 2 hours (ADOT&PF 2011).

Arriving at the Cold Bay dock from King Cove, the ferry schedules a 3-hour port call providing passengers the opportunity to tour Izembek National Wildlife Refuge. A passenger shuttle bus operated by the Service meets the ferry at the dock and transports passengers on a tour of Izembek National Wildlife Refuge, out to the Grant Point Wildlife Overlook. When tour demand exceeds the bus capacity, the Aleutians East Borough provides an additional shuttle van to assist. The tours and bus rides are provided free of charge (Muller 2010).

Residents from the communities of King Cove and Sand Point occasionally ride the ferry to Cold Bay to engage in subsistence activities in the central area of Izembek National Wildlife Refuge. The ferry stops in Sand Point, King Cove, and then Cold Bay on its south-bound journey to Dutch Harbor on Friday morning and returns on Sunday morning, allowing a stopover of 2 days in Cold Bay.

Passenger Hovercraft

Until November of 2010, the Aleutians East Borough operated a passenger hovercraft, the *Suna X*, from Lenard Harbor to Cross Wind Cove on the western side of Cold Bay. Service began in 2007 with 6 days a week operations. By 2008, the *Suna X* typically operated on Sunday, Tuesday, and Thursday from the Lenard Harbor terminal at 10:30 am, returning in the afternoon. However, the service was flexible in that it would adjust to changes in the PenAir Cold Bay Airport schedule changes. The hovercraft was also chartered for emergency medical evacuations, transporting patients from the community of King Cove to the Cold Bay Airport for transit to Anchorage or elsewhere (Hennigh 2010d; AEB 2010; King Cove 2010c; Izembek Enhancement 2010c). Medical evacuations are discussed in further detail in Section 3.3.4, Public Health and Safety.

The Suna X is an 88.6-foot craft operable in seas below 6 feet and winds below 30 knots. In emergencies, it can be operated in more extreme weather conditions, at the captain's discretion (Weiss 2010). A trained and certified crew of 3, including the captain, is necessary to operate the craft. According to information and records provided by the Aleutians East Borough, 2007-2010 hovercraft operations were hampered by trained crew shortages, maintenance issues, budget overruns, and revenue shortfalls (AEB 2010, 2011; Hennigh 2010d; Izembek Enhancement 2010a,b). In November 2010, the Aleutians East Borough suspended Suna X operations between the communities of King Cove and Cold Bay. After some equipment modifications, the Suna X was then redeployed for use at Akutan in 2012.

Other Marine Facilities

No marine services or marine facilities are located within the North Creek and Pavlof Units of the Alaska Peninsula National Wildlife Refuge, or at Mortensens Lagoon (USACE 2003). On Sitkinak Island, a dock is located on the north side of the island. Originally constructed to facilitate movement of cattle to the island in the 1930s, the dock was later used by the military operations on the island. The dock is used by the private cattle ranch and meat processing operation located on the island (Kodiak Military History Museum 2005).

Bicycle and Pedestrian Facilities

No designated bicycle or pedestrian facilities are located along the roadway systems within the communities of Cold Bay and King Cove, or the Izembek National Wildlife Refuge. Undeveloped trails exist throughout the Izembek National Wildlife Refuge, with many accessible from the roadway system. These footpaths are often used by hunters, fishermen, and wildlife observers. Hiking is not restricted to trails and is allowed throughout Izembek National Wildlife Refuge and other refuge lands. Backpacking and camping are allowed, although no established campgrounds exist in the area (USACE 2003, Service 1985a).

Some unmaintained trails exist within the Mortensens Lagoon tract south of the City of Cold Bay and within the proposed land exchange parcels on Sitkinak Island. These footpaths are used by hunters, fishermen, and wildlife observers. Backpacking and camping are allowed, although no established campgrounds exist in these areas (USACE 2003; Kodiak Military History Museum 2005; Muller 2010; Service 1985a).

3.3.3.2 Traffic

Only very general data is available about air, marine, and surface traffic, since it is either not counted or recorded, or it is proprietary.

The King Cove Airport averages about 20 aircraft operations per week consisting of approximately 70 percent air taxi operations and 30 percent general aviation (AirNav 2010c, Jackson 2010). The U.S. Department of Transportation reported 5,399 King Cove Airport enplanements in 2009. PenAir schedules 2 flights per day, 6 days per week from the Cold Bay Airport to the King Cove Airport with Piper Saratoga aircraft (PenAir 2010b).

The Cold Bay Airport averages 73 aircraft operations per week consisting of approximately 53 percent air taxi operations, 30 percent general aviation, 9 percent commercial, 4 percent local general aviation, and 4 percent military operations (AirNav 2010b). During crab fishing season, the Coast Guard has operated as many as 10 C-130 Hercules fixed-wing and helicopter flights

per day from the Cold Bay Airport (AirNav 2010b; Jackson 2010; USACE 2003). Typically, 3 light aircraft are based at the airport depending on the season. From July through October, aircraft operations increase as pilot-guides operate light bush aircraft from Cold Bay Airport to lodges and hunting and fishing sites throughout the region (Jackson 2010; Martin 2010).

City officials reported that the road from the City of King Cove to the airport accommodates approximately 20 to 30 vehicles per day to meet the 2 scheduled air taxi arrivals and departures (Calver 2010; Gould 2010). Other local roads sometimes get busy in the early morning and late afternoon, especially when seasonal cannery workers are present (Calver 2010; Gould 2010; Hennigh 2010d).

According to estimates provided by the City of Cold Bay, the average number of vehicle trips from the city to the Izembek National Wildlife Refuge is approximately 8 to 10 per day, rising to perhaps 12 trips per day on nice weather days. The busy season in the community is typically July through the end of October when Izembek National Wildlife Refuge and sportsmen visits peak. During these months, vehicle trips to the refuge and the headquarters may range as high as 20 to 24 trips per day (Watson 2010).

Hovercraft operational records were kept in some months but not in other months, so a historical pattern of reliability cannot be documented.

- In 2007, for the 6-month period from July 9, 2007 to December 31, 2007, the Suna X was listed as operational for 166 days. The hovercraft was out of service for 31 of those days due to weather, and an additional 20 days for maintenance related issues (Boyette 2010).
- From July 1, 2008 to June 30, 2009, the Suna X was scheduled to make 156 runs, and completed 100. The hovercraft was out of service for 56 days; 42 days due to weather and an additional 14 days for maintenance related issues (Boyette 2010).
- From July 1, 2009 to June 30, 2010, only limited operations records were kept by the borough. During this period, the Suna X completed 93 runs (Boyette 2010). Passenger records from this period indicated 774 passengers for fiscal year 2010.
- For the 4-month portion of fiscal year 2011, July 1, 2010 to October 31, 2010, of the 53 days of scheduled service (operating only on Tuesday, Thursday, and Sunday), the hovercraft was out of service for 16 days, 14 weather-related days and 2 days due to lack of crew availability (Boyette 2010).

In 2010, the *MV Tustumena* transported 149 passengers and 31 vehicles from the City of King Cove to the City of Cold Bay and transported 99 passengers and 32 vehicles from the City of Cold Bay to the City of King Cove (AMHS 2011). The 248 passengers who travelled between the communities of King Cove and Cold Bay on the ferry in 2010 represented an increase over the 200 passengers traveling in 2009 and 124 passengers in 2008 (AMHS 2011).

Reliability

The reliability of transportation modes is challenging to estimate as various factors influence rates of trip completion. Weather is the most important deterrent to completion of scheduled operations. However, weather-related delays are sometimes made up later in the day, as weather conditions clear. Crew availability and mechanical problems can also create delays or cancellations. All modes are affected by the flexibility of a craft to operate in specific

conditions. Tides, winds, fog, and exposure to open ocean influence marine travel. Snow removal, fog, and other conditions affecting visibility can delay road traffic, and can affect air travel. Conditions also vary from year to year, so using only a few years of information can affect rates of reliability. Reliability is considered here in its broadest operational sense, that is, the ability of a mode to complete any frequency of scheduled or unscheduled trips, considering the above. These trips could occur in either direction between the communities of King Cove and Cold Bay, at any time of day. Estimates were provided in the 2003 EIS for air travel delays. The 2003 EIS cites an earlier study that indicated the King Cove Airport is accessible only 65 percent of the time during daylight hours. Daylight hours are necessary to fly under the visual flight rules. It was also estimated that the air taxi, PenAir, had about a 75 percent schedule completion rate to King Cove (USACE 2003). For 2010, the Cold Bay Airport PenAir station manager estimated a higher completion rate at about 88 percent (Muller 2010). It should be noted that some PenAir flights originate in Anchorage, and other airports in the project region, so flights connecting to the Cold Bay Airport can be delayed by weather in other places.

Reliability of the former hovercraft operating from Lenard Harbor is also difficult to assess. There were 56 “not in service days” for the hovercraft during the period of July 1, 2008 through June 30, 2009 due to adverse weather (42 days), scheduled maintenance (3 days), unscheduled maintenance (1 day), facilities repairs (4 days), holidays (3 days), and minimum crew not available (3 days) (AEB 2010). This represented about a third of scheduled trips. Weather required for normal operation of the hovercraft included seas below 6 feet and winds below 30 knots per hour, but operations were sometimes hindered by 3-foot seas. The operator, Aleutians East Borough, characterized the Lenard Harbor area as having distinctly unorganized winds and waves, as compared to other spots on Cold Bay (AEB 2011a).

Weather and visibility limit boat travel between the harbor at King Cove and the Cold Bay dock. Boats leaving the King Cove harbor traverse about 2 miles of open North Pacific Ocean before turning into the entrance of Cold Bay. Storms and tides can produce dangerous seas with waves in excess of 20 feet. Dense fog can also occur (USACE 2003).

Ferry travel, either the *M/V Tustamena*, or a craft as described in the 2003 EIS and Alternative 5 in this EIS, could have a higher reliability rate than aircraft or hovercraft. An inter-island ferry travels from Prince of Wales Island to Ketchikan, and operates in similar conditions to that of Cold Bay. A ferry representative there estimated a nearly 100 percent reliability rate in that service has not been cancelled due to weather in several years. They do plan for 2 to 3 days of weather cancellations (Jones 2011). However, because a ferry based in King Cove or Cold Bay would likely have to travel to a dry dock for scheduled inspections, which the Ketchikan ferry does not, a number of weeks could be lost from annual operations, somewhat reducing reliability.

For purposes of analysis in this report, the reliability for completing scheduled transportation for the above are summarized as follows. A hovercraft is assumed to have 70 percent reliability; roads 98 percent reliability; a ferry 96 percent reliability; and air transportation 75 percent reliability. These broad estimates should be considered with caution because of the complexity of factors that affect them, and the limited data on which they are based. This is discussed further in Chapter 4, as the impacts of the alternatives are described.

Beyond the estimates of modal reliability, availability of a transportation mode in a 24-hour period, throughout the year, is another factor to consider. This informs an evaluation of the

availability of a travel mode originating in King Cove to satisfactorily meet scheduled, chartered, and emergency Cold Bay Airport flights, for example. Availability is described by alternative in Chapter 4. For air transportation, availability is mostly limited to daylight hours because of limitations at the King Cove Airport, and commercial schedules. Charter flights may or may not be available beyond scheduled flights. The hovercraft functioned with lower operating tolerances than the aircraft commonly accommodated at the King Cove Airport, and with a more limited operating schedule.

Road transportation is almost always available for on-demand travel, assuming regular and timely maintenance. The same is true for ferry transportation, which has broad operating tolerances, though they must be grounded periodically for maintenance and inspections.

3.3.4 Public Health and Safety

The World Health Organization defines “health” as a “state of complete physical, mental, and social well-being, and not merely the absence of disease or infirmity” (WHO 1946). Public health is related to incidences and death rates for infectious and chronic diseases or other health conditions, including mental health. It can be affected by demographics (such as poverty and minority status), the availability of health care services, and prevalence of behavioral and social problems. Public safety is related to the incidence of accidents, suicides, and violent crimes leading to injuries and deaths. It can be affected by the prevalence of behavioral and social problems, as well as by the presence of a police force and fire department, availability of safe transportation, and weather conditions.

This section identifies existing public health and safety resources within the region that may be affected by the proposed land exchange, mainly with regard to safe transportation to medical services. The primary potentially affected communities for the land exchange for the road corridor are the cities of Cold Bay and King Cove, which are serviced by the Anna Livingston Memorial Clinic and King Cove Clinic, respectively. Residents in nearby communities such as Sand Point, Nelson Lagoon, or False Pass rarely use the King Cove Clinic (EAT 2011). The number of visits to the Anna Livingston Memorial Clinic in the City of Cold Bay from residents of False Pass ranged from 4 to 7 visits per year from 2008 to 2010. The number of visits to the Anna Livingston Memorial Clinic from residents of Nelson Lagoon ranged from 7 to 9 visits per year from 2008 to 2010. Therefore, these communities were not included in the current evaluation.

This section identifies the indicators of public health and safety that are relevant to the affected communities and the proposed transportation alternatives. Health status indicators represent the current health condition of the affected populations and communities using statistically developed descriptors of general overall health and safety status (e.g., life expectancy, leading causes of death and death rates, and incidence of chronic diseases and morbidity). Additional indicators which influence health status are many and varied and include, for example, natural biological factors, such as age, gender, and ethnicity; behavior and lifestyles, such as smoking, alcohol consumption, diet, and physical exercise; the physical and social environment, including housing quality, the workplace, and the wider urban and rural environment; and access to health care (Lalonde 1974; Labonté 1993). All of these are closely interlinked and lead to the need for access to healthcare facilities.

Examples of relevant indicators for this evaluation include:

- Health and safety conditions in the King Cove area that may require emergency or regular access to health care facilities that are not available in the community of King Cove (e.g., complex and advanced diagnostics, surgeries, in-patient care);
- Leading causes and rates of morbidity, death, and reasons for visits to hospitals;
- Accident and injury rates;
- Available and accessible health care facilities in the affected communities (i.e., King Cove) and the nature and level of service that they are able to provide;

- Level of usage of existing transportation facilities to access non-local healthcare facilities (i.e., in Cold Bay and Anchorage); and
- Adequacy of current transportation facilities to meet the needs for non-local health care access, including availability, speed, and safety of transportation facilities.

Overall, it is noted that safe, timely, and reliable access to healthcare is desired by all communities, regardless of their baseline health status. The health status indicator approach serves as documentation of the need for access to healthcare and provides a framework for evaluating whether these needs would be met by the proposed roadway or its alternatives.

3.3.4.1 Current Environment (Baseline Conditions) and Indicators for Public Health

This section discusses the current environment and indicators for public health, including demographics, socioeconomic factors, availability of health care, transportation, and health conditions. More detail can be found in the Socioeconomic (3.3.2), Transportation (3.3.3), and Environmental Justice (3.3.5) sections.

Demographics

Aleutians East Borough

According to 2010 population estimates, approximately 3,141 inhabitants live in the borough (U.S. Census Bureau 2012). In 2010, approximately 67 percent of the population was male and 33 percent was female (U.S. Census Bureau 2012). According to the 2009 American Community Survey, the individual poverty rate for the Aleutians East Borough was listed as 10.4 percent (307 out of 2,949 individuals for whom poverty status was determined), while the family poverty rate was 8.4 percent (18 out of 215 families for whom poverty status was determined).

City of King Cove

The U.S. Census Bureau (2012) lists the population of King Cove in 2010 as 938. The population by race, based on 2010 U.S. Census data is 38.4 percent Alaska Native or part Native, 16.2 percent white, and 36.7 percent Asian or Pacific Islander (U.S. Census Bureau 2012). Two federally recognized tribes are located in the community, the Agdaagux Tribe of King Cove and the Native Village of Belkofski (ADCCED 2010a). In 2010, approximately 61 percent of the population of King Cove was male and 39 percent was female. Relative to the state as a whole, the City of King Cove has a lower percentage of children and teenagers (particularly male teenagers) and a lower percentage of people above 70 years of age living in the community. The median age in the City of King Cove in 2010 was 41.2 years. According to the 2009 American Community Survey, the individual poverty rate for the City of King Cove was estimated as 11.5 percent (54 out of 468 individuals for whom poverty status was determined), while the family poverty rate was estimated as 16.7 percent (11 out of 66 families for whom poverty status was determined). The City of King Cove meets the definition of a minority community (any readily identifiable group of minority persons who live in geographic proximity), as defined by Executive Order 12898.

City of Cold Bay

The U.S. Census Bureau (2012) lists the population of Cold Bay in 2010 as 108. The population by race, based on 2010 U.S. Census data, is 12 percent Alaska Native or part Native, 74.1 percent white, and 1.9 percent Asian or Pacific Islander (U.S. Census Bureau 2012). In 2010, approximately 61 percent of the population of the City of Cold Bay was male and 39 percent was female. Due to the small population in the City of Cold Bay, small demographic events, such as births or deaths or migration, can have a large effect on overall demographics. The median age in the City of Cold Bay in 2010 was 44 years (U.S. Census Bureau 2010). According to the 2009 American Community Survey, the individual poverty rate for the City of Cold Bay was listed as 22.1 percent (19 out of 86 individuals for whom poverty status was determined), while the family poverty rate was zero percent (0 out of 11 families for whom poverty status was determined). The City of Cold Bay meets the definition of a low-income community (any readily identifiable group of low-income persons who live in geographic proximity), as defined by the U.S. Department of Health and Human Services (DHHS 2010a).

Health Care Facilities

Health care facility indicators include availability of health care providers (full time or part time physicians, nurses, behavioral health specialists, health aides) and types of health care available (outpatient, emergency care, in-patient, hospitalization, medical testing). Access to health care, including availability of safe and rapid transportation to appropriate health care facilities (facilities that can provide the necessary treatment), is also an indicator for health care facilities.

Health care facilities in the communities of King Cove and Cold Bay currently have limited services; the nearest location that can provide full health care services is Anchorage. The Aleutians East Borough has been designated a Medically Underserved Area by the Health Resources and Services Administration of the U.S. Department of Health and Human Services (HRSA 2010a). Medically Underserved Areas are designated by the Health Resources and Services Administration as having too few primary care providers, high infant mortality, high poverty, and/or high elderly populations.

Aleutians East Borough

Eastern Aleutian Tribes, Inc. was formed as a non-profit health organization in June 1991 and currently operates under a Public Law 93-638, Title V funding agreement (IHS 2010). Eastern Aleutian Tribes, Inc. operates all of the clinics in the Aleutians East Borough (EAT 2008). Medical services provided by the Eastern Aleutian Tribes, Inc. include immunizations, physical examinations, health information, family planning, screening, well-child, prenatal care, primary, chronic, and urgent care (EAT 2010). Dental care consists of emergency care and quarterly visits by dental professionals (EAT 2010). The facilities also serve as Community Health Centers as defined under Section 330 of the *Public Health Service Act* (HRSA 2010b). The community health services typically include elder care, health prevention and education, diabetes prevention and treatment, emergency medical training, and social services (IHS 2010). The Behavioral Health team provides comprehensive mental health and substance abuse counseling (EAT 2010).

City of King Cove

The City of King Cove does not have a hospital. The King Cove Clinic has an emergency room and examination rooms and limited ability to hold patients overnight (2 patients may be held overnight in the emergency room and 7 patients may be held overnight if the exam rooms are also used) (EAT 2011). The clinic is a qualified Emergency Care Center (ADCCED 2010a). Staffing at the King Cove Clinic includes 3 mid-level medical providers and 2 community health aides (EAT 2010). To date, the King Cove Clinic has been unable to attract doctors with the skill level needed to handle emergencies and life-threatening illnesses (AEB 2010a). Emergency service is provided by 911 telephone service, volunteers, and a health aide. Auxiliary health care is provided by King Cove Volunteer Fire & Rescue (ADCCED 2010a). In 2010, 2,975 outpatients were treated at the King Cove Clinic (EAT 2010). The majority of medical services related to injuries that might occur on the water (e.g., injuries to commercial fishermen) are provided by the King Cove Clinic (Hennigh 2010a). In cases where patients cannot be fully treated in King Cove, the patients may be transported to Cold Bay and then to Anchorage, including medical evacuation patients. Depending on weather conditions and availability of transportation, it is sometimes difficult or not possible to immediately transport patients from the King Cove Clinic to the Cold Bay Airport or Anchorage.

Prior to 2007, medical evacuations from the City of King Cove to the City of Cold Bay were by airplane or boat. The primary means of medical evacuation transport between the cities of King Cove and Cold Bay from August 2007 until the winter of 2010 was by hovercraft. In 2010, 10 medical emergencies in the City of King Cove required medical evacuations. An additional 54 medical evacuations in 2010 were urgent referrals to Anchorage for care, but were not emergencies (EAT 2010). It could take more than an hour to transport patients from the King Cove Clinic to the Cold Bay Airport when the mode of transportation for the medical evacuation was the hovercraft (EAT 2011). At least 22 medical evacuations occurred via the hovercraft from August 2007 to October 2010 (Boyette 2010). At least 6 of those were unscheduled runs by the hovercraft (Boyette 2010). In 2 known cases (in 2009/2010), a hovercraft medical evacuation was the preferred mode of transportation, but could not be achieved. One patient was transported by Coast Guard helicopter (to an unknown destination), and the other was transported via boat to Cold Bay (Weiss 2010).

In November 2010, the Aleutians East Borough suspended hovercraft operations for the winter season with plans to re-evaluate staffing and cost and revenue concerns. In 2012, the hovercraft was modified, and redeployed in Akutan. Therefore, medical evacuations from the City of King Cove are currently by air transport or boat. It takes approximately 35 minutes to transport patients from the King Cove Clinic to the Cold Bay Airport when the mode of transportation for the medical evacuation is by airplane (EAT 2011). It can take more than 2 hours to transport patients from the King Cove Clinic to the Cold Bay Airport when the mode of transportation is by boat (EAT 2011). It takes much longer when the mode of transportation is via Coast Guard helicopter located on St. Paul Island approximately 300 miles from the City of King Cove.

City of Cold Bay

The City of Cold Bay does not have a hospital. The Anna Livingston Memorial Clinic was completed in 1983, is 3,294 square feet in size, and primarily contains equipment that was first deployed in 1983 to 1985 (although some equipment have been replaced with newer equipment) (EAT 2012). It is a year round outpatient facility with an emergency room and an examination

room. The clinic has 1 full time mid-level provider and a part time community health aide. There are a total of 5 staff including administrative support staff (EAT 2012). Cold Bay has a portable dental chair, but does not have segregated space for behavioral care (EAT 2012). Emergency services are provided by volunteers. Auxiliary health care is provided by Cold Bay Volunteer Emergency Medical Services (ADCCED 2010a). In 2010, 386 outpatients were treated at the Anna Livingston Memorial Clinic (EAT 2010). Patients that cannot be fully treated in Cold Bay may be transported to Anchorage, including medical evacuation patients. In 2010, there were 12 medical evacuations from the City of Cold Bay, including incoming patients from King Cove waiting for air transportation to a larger medical facility (EAT 2010, 2011). Depending on the severity of the issue, the flight into Anchorage may be via a private Med-Flight or the PenAir regularly scheduled daily flight (Hennigh 2010b).

Anchorage

The Municipality of Anchorage is not a potentially affected community for this EIS. However, Anchorage serves as the primary health care location for patients who cannot be adequately treated in the Aleutians East Borough, including emergency medical evacuations from the communities of King Cove and Cold Bay. Local hospitals or health clinics in Anchorage include Alaska Regional Hospital, Providence Alaska Medical Center, Alaska Native Medical Center, Elmendorf Air Force Base 3rd Medical Group, U.S. Army Medical Clinic/Fort Richardson, and numerous others. Alaska Native, Alaska Regional, Providence, and Elmendorf Air Force Base hospitals are qualified acute care facilities. Fort Richardson provides emergency support only. Numerous public and private providers of specialized care are also available in Anchorage (ADCCED 2010a). The advanced medical services available in Anchorage are especially important to residents living in rural areas of Alaska that lack a full range of medical services.

Public Health Conditions

Public health can be evaluated based on the incidences and death rates for infectious and chronic diseases or other health conditions, including mental health. Public health can also be affected by the prevalence of behavioral and social problems. Information regarding public health is available at the state and regional (borough) level. Limited data on public health is also available at the community level. Table 3.3-40 shows the leading indicators of health-related deaths for the State of Alaska and the Aleutians East Borough. Tables 3.3-41 to 3.3-44 show public health indicators at the community level, based on the leading causes for visits and the leading types of diagnoses for health clinics in the City of King Cove and City of Cold Bay (EAT 2010).

It is apparent that the majority of the leading causes of death (cancers, heart disease) in the borough require access to full-service hospitals and diagnostic services. Some of the reasons for visits to King Cove Clinic appear to reflect a range of initial and non-specific symptoms that may then be referred to hospital or diagnostic care if the local facility cannot provide the required level of service (Tables 3.3-41 to 3.3-44). Some of the more specific reasons and diagnoses for visits to the King Cove Clinic (e.g., hypertension, pregnancy complications), may also result in referrals to full-service hospitals or other non-local services.

Table 3.3-40 Public Health Indicators Related to Deaths – State and Borough Level¹

Location	Birth Rates (Births: Crude) (2006-2008) ¹	Health Status Indicators (2004-2008)			
		Infant Mortality ²	Leading Causes of Death ³	Death Rate (Crude) ⁴	Chronic Diseases/Morbidity Issues ⁵
Alaska	16.5	342 deaths, Rate – 6.3	1. Malignant Neoplasms (3920 deaths)	117	1. Cancer – 3,920 deaths, Age-Adjusted Rate – 179.1 2. Lung cancer – 1,151, Age-Adjusted Rate – 52.9 3. Breast cancer – 277, Age-Adjusted Rate – 21.5 4. Diseases of the Heart – 3,062, Age-Adjusted Rate – 155.9 5. Coronary Heart Disease – 1,784, Age-Adjusted Rate – 88.3 6. Cerebrovascular Disease (stroke) - 849, Age-Adjusted Rate – 48.1 7. Diabetes - 493, Age-Adjusted Rate – 23.4 ⁶ 8. Diabetes, any mention - 1315, Age-Adjusted Rate – 66.2
			2. Diseases of the Heart (3062)	91.4	
			3. Cerebrovascular Diseases (849)	48.1	
			4. Chronic Lower Respiratory Diseases (787)	NA	
Aleutians East Borough	7.7	3, Rate – n/a ⁷	1. Malignant Neoplasms (8 deaths)	59.7 ⁶	1. Cancer - 8 deaths, Age-Adjusted Rate – 239.5 ⁶ 2. Lung Cancer - 3, Age-Adjusted Rate – n/a ⁷ 3. Diseases of the Heart - 7, Age-Adjusted Rate – 142.4 4. Coronary Heart Disease - 1, Age-Adjusted Rate – n/a ⁷ 5. Cerebrovascular Disease - 2, Age-Adjusted Rate – n/a ⁷ 6. Diabetes - 1, Age-Adjusted Rate – n/a ⁷ 7. Diabetes, any mention - 4, Age-Adjusted Rate – n/a ⁷
			2. Diseases of the Heart (7)	52.3 ⁶	

¹ Crude rates are the number of live births per 1,000 population

² Rates are the number of infant deaths per 1,000 live births

³ Leading causes with less than 3 deaths are not reported

⁴ Crude rates are per 100,000 population

⁵ Age-Adjusted rates are per 100,000 U.S. year 2000 standard population

⁶ Rates based on fewer than 20 occurrences are statistically unreliable and should be used with caution

⁷ Rates based on fewer than 6 occurrences are not reported

Source: Alaska Bureau of Vital Statistics 2010

Table 3.3-41 Top 15 Purposes of Visits to the King Cove Clinic, 2010

Diagnosis Code	Description	Number of Visits	Number of Patients
401.9	Unspecified essential hypertension	145	85
v20.2	Routine infant or child health check	126	60
465.9	Acute upper respiratory infections of unspecified site	107	77
v22.1	Supervision of other normal pregnancy	79	17
460.	Acute nasopharyngitis (common cold)	78	64
382.9	Unspecified otitis media	66	48
v72.2	Dental examination	63	40
250.00	Diabetes mellitus without complication type II or unspecified type not stated as uncontrolled	55	22
599.0	Urinary tract infection site not specified	55	34
692.9	Contact dermatitis and other eczema unspecified cause	49	35
490.	Bronchitis not specified as acute or chronic	47	35
272.4	Other and unspecified hyperlipidemia	19	15
303.9	Other and unspecified alcohol dependence	18	9
786.2	Cough	13	13
v68.1	Issue of repeat prescriptions	13	10

Source: EAT 2011

Table 3.3-42 Top 15 Diagnoses Categories in the King Cove Clinic, 2010

	Diagnosis Category	Number of Diagnoses
1.	Health Status Factors	341
2.	Ear, Nose, Mouth & Throat	301
3.	Circulatory System	160
4.	Endocrine, Nutrition, Metabolic	95
5.	Respiratory System	90
6.	Skin, Breast, Subcutaneous Tissue	69
7.	Kidney & Urinary Tract	62
8.	Musculoskeletal & Connective Tissue	32
9.	Substance Use & Disorders	24
10.	Digestive System	20
11.	Mental Diseases & Disorders	18
12.	Hematopoietic, Immunity	15
13.	Nervous System	8
14.	Female Reproductive System	8
15.	Injury, Poisoning, Drug Toxicity	7

Source: EAT 2011

Table 3.3-43 Top 15 Purposes of Visits to the Anna Livingston Memorial Clinic, 2010

Diagnosis Code	Description	Number of Visits	Number of Patients
401.9	Unspecified essential hypertension	22	18
v72.2	Dental examination	19	18
250	Diabetes mellitus without complication type II or unspecified type not stated as uncontrolled	13	5
465.9	Acute upper respiratory infections of unspecified site	11	11
v20.2	Routine infant or child health check	11	4
692.9	Contact dermatitis and other eczema unspecified cause	10	6
460	Acute nasopharyngitis (common cold)	9	6
599	Urinary tract infection site not specified	9	4
v22.1	Supervision of other normal pregnancy	7	3
272.4	Other and unspecified hyperlipidemia	4	2
401.1	Benign essential hypertension	3	2
786.2	Cough	3	3
305.1	Nondependent tobacco use disorder	3	3
v58.61	Long-term (current) use of anticoagulants	3	1
272.2	Mixed hyperlipidemia	2	2

Source: EAT 2011

Table 3.3-44 Top 11 Diagnoses Categories in the Anna Livingston Memorial Clinic, 2010

	Diagnosis Category	Number of Diagnoses
1.	Health Status Factors	58
2.	Circulatory System	33
3.	Ear, Nose, Mouth & Throat	27
4.	Endocrine, Nutrition, Metabolic	21
5.	Skin, Breast, Subcutaneous Tissue	16
6.	Kidney & Urinary Tract	10
7.	Respiratory System	6
8.	Nervous System	2
9.	Digestive System	2
10.	Hepatobiliary & Pancreas	1
11.	Hematopoietic, Immunity	1

Source: EAT 2011

Table 3.3-45 shows the indicators of health-related behavior for adults in the State of Alaska, including all adults, adults in Alaska rural communities, and adults who are American Indian or Alaska Native, Asian or Pacific Islander, or white.

Table 3.3-45 Public Health Indicators for Adults Related to Behavior – State Level

Risk Factor Among Alaskan Adults	Alaska Total Population	Alaskan Rural Communities	American Indian or Alaska Native	Asian or Pacific Islander	White
Smoking	22%	32%	40%	14%	18%
Overweight	37%	34%	34%	DSU	38%
Obesity	28%	29%	38%	18%	26%
Binge Drinking	16%	15%	18%	DSU	15%
No Leisure Time Physical Activity	21%	25%	29%	DSU	19%
Current moderate to severe depression	8%	8%	9%	DSU	7%
No Health Insurance (adults, age 18 years or older)	18%	22%	16%	36%	16%

DSU - Data do not meet the criteria for statistical reliability, data quality, or confidentiality (data are suppressed).
Source: Alaska Division of Public Health 2010a

Table 3.3-46 shows the indicators of health-related behavior for high school students in traditional schools in the State of Alaska, including all high school students and students who are American Indian or Alaska Natives, Asian, Pacific Islander, or white.

Table 3.3-46 Public Health Indicators for High School Students Related to Behavior – State Level

Risk Factor Among Alaskan High School Students	Alaska Total Population	American Indian or Alaska Native	Asian	Pacific Islander	White
Currently Use Cigarettes	16%	25%	N/A	N/A	14%
Currently Use Alcohol	33%	33%	N/A	N/A	36%
Ever Used Marijuana	45%	58%	N/A	N/A	40%
Ever Used Methamphetamines	4%	1%	N/A	N/A	4%
Attend PE Daily	18%	24%	N/A	N/A	16%
Obesity	12%	12%	N/A	N/A	11%

N/A - Less than 100 respondents
Source: Alaska Division of Public Health 2010b, based on prevalence in 2009

The type of population may in some cases be indicative of specific health care needs in a community. For example, King Cove is a rural community with a large Alaska Native and Asian or Pacific Islander population. Statistics at the state level suggest that persons living in rural communities and Native Alaskans have a higher rate of smoking than all Alaskans (Tables 3.3-45 and 3.3-46). High smoking rates may contribute to cancer and diabetes, as well as circulatory, respiratory, and pulmonary diseases. At the state level, Asian or Pacific Islander populations have much higher rates of no health insurance than all Alaskans (Table 3.3-45). Persons lacking health insurance may be less likely to address health issues, leading to an increased chance for significant health problems. The need for chronic and emergency care is

highly influenced by the prevalence of behavioral risk factors and lack of insurance. Lack of adequate local facilities that can address these needs would result in higher morbidity or mortality rates. However, information on smoking (and other public health indicators) was not available at the community level. Therefore, it is not known whether King Cove has specific health care needs related to higher rates of smoking or any other public health indicators.

3.3.4.2 Current Environment (Baseline Conditions) and Indicators for Public Safety

This section discusses the current environment and indicators for public safety, including conditions related to accidents, suicides, and violent crimes; the presence of a police force and fire department; and transportation and the weather.

Public safety may be evaluated based on the incidences of accidents, suicides, and violent crimes leading to injuries and deaths. Public safety can also be affected by the prevalence of behavioral and social problems, and by the presence of a police force and fire department, availability of safe transportation, and weather conditions. Information regarding public safety is available at the state and regional (borough) level.

Existing Conditions Related to Accidents, Suicides, and Violent Crimes

Table 3.3-47 shows the leading indicators of safety-related deaths for the State of Alaska and for the Aleutians East Borough from 2006-2008.

Table 3.3-47 Public Safety Indicators Related to Deaths – State and Borough Level

Location	Intentional Accident/Injury (2006-2008)		Unintentional (2006-2008) ^{1,2}
	Suicide ^{1,2}	Homicide ^{1,2}	
Alaska	448- Crude Rate (22.1), Age-Adjusted Rate (22.6)	121- Crude Rate (6), Age-Adjusted Rate (6)	<ol style="list-style-type: none"> Poisoning (289), Crude Rate – 14.2, Age-Adjusted Rate – 14.1 Motor Vehicle Accidents (263 deaths), Crude Rate - 13, Age-Adjusted Rate – 13.4 Drowning and Submersion (77), Crude Rate – 3.8, Age-Adjusted Rate – 3.7 Falls (72), Crude Rate – 3.5, Age-Adjusted Rate – 5.8 Snowmachine-related Accidents (42), Crude Rate – 2.1, Age-Adjusted Rate - 2.2
Aleutians East Borough	0, Crude Rate (0), Age-Adjusted Rate (0)	0, Crude Rate (0), Age-Adjusted Rate (0)	<ol style="list-style-type: none"> Drowning and Submersion (1), Crude Rate – n/a³, Age-Adjusted Rate – n/a³ Falls (1), Crude Rate – n/a³, Age-Adjusted Rate – n/a³ Water transport (0), Crude Rate – n/a³, Age-Adjusted Rate – n/a³ Air transport, 0

¹ Crude rates are per 100,000 population

² Age-Adjusted rates are per 100,000 U.S. year 2000 standard population

³ Rates based on fewer than 6 occurrences are not reported

Source: Alaska Bureau of Vital Statistics 2010

The Alaska Bureau of Vital Statistics (2010) reported no suicides or homicides in the Aleutians East Borough between 2006-2008 (Table 3.3-47); however, 3 suicides and 1 homicide were reported for the 7 year period from 1999-2005. No statistical information on violent crimes other than homicides was located for the Aleutians East Borough.

Behavioral and social problems such as alcohol and drug use can impact public safety. The rates of some of these public safety indicators at the state level are summarized in Tables 3.3-45 and 3.3-46. Information on public safety indicators was not available at the community level. Therefore, it is not known whether residents of the City of King Cove have specific health care needs related to public safety indicators.

The City of King Cove has the large Peter Pan Seafoods seafood processing plant. Medical services related to injuries and illnesses at the King Cove facility of Peter Pan Seafoods are initially provided by the King Cove Clinic. In the U.S., food manufacturing has one of the highest incidences of injury and illness among all private industries; seafood product preparation and packaging (along with dairy product manufacturing) have the highest incidence of injury and illness among all food manufacturing industries (USDOL 2011a). The 2009 incidence rate for non-fatal injuries and illnesses for the manufacturing sector in Alaska of 6.5 per 100 full time workers is much higher than the respective incidence rate of 3.9 per 100 full time workers in the U.S. (USDOL 2011a). The 2009 incidence rate for non-fatal injuries and illnesses for seafood product preparation and packaging in Alaska was 7.3 per 100 full time workers (USDOL 2011a). Information was not available regarding the incidence of non-fatal injuries and illnesses at the King Cove facility of Peter Pan Seafoods. Therefore, it is not known whether Peter Pan Seafoods has specific health care needs.

The Aleutians East Borough has a large commercial fishing industry. The majority of medical services related to injuries and illnesses that might occur on the water (injuries to commercial fishermen) are provided by the King Cove Clinic (Hennigh 2010a). The 2009 incidence rate for non-fatal injuries and illnesses for agricultural, forestry, fishing, and hunting in Alaska was 13.6 per 100 full time workers (USDOL 2011a). Information was not available regarding the incidence of non-fatal injuries and illnesses for commercial fishermen treated at the King Cove Clinic. Therefore, it is not known whether the commercial fishing industry has specific health care needs.

Existing Conditions Related to the Presence of a Police Force and Fire Department

The City of King Cove has a Department of Public Safety consisting of a police department and King Cove Fire & Rescue. The police department has a chief and 3 patrol officers (King Cove 2010b). All police officers in the King Cove Department of Public Safety are certified according to Alaska Police Standards (Babcock 2012). The King Cove Fire & Rescue has 23 volunteer personnel and 1 paid fire chief responsible for fire protection, emergency medical services, hazardous material response, and related emergencies within the community (King Cove 2010a). They provide professional emergency services 24 hours a day, 7 days a week, for the citizens of the City of King Cove.

The City of Cold Bay does not currently have a police force. The City of Cold Bay falls under the jurisdiction of the Department of Public Safety Alaska State Troopers. Alaska State Troopers do not regularly patrol the City of Cold Bay (Peters 2012). However, when necessary State Troopers stationed in Dillingham will respond to calls from the City of Cold Bay (Peters 2012).

The City of Cold Bay has a volunteer fire department, and does not have firefighting equipment. However, the volunteer fire department is allowed to use firefighting equipment owned by the Alaska Department of Transportation and Public Facilities. The City of Cold Bay also has an Emergency Medical Services crew and an ambulance that is owned by the Emergency Medical Services crew (Lyons 2011).

Existing Conditions Related to Transportation and Weather Conditions

Weather conditions and the availability of safe transportation are particularly important public safety issues for residents of the communities of King Cove and Cold Bay. The climate in the northern Gulf of Alaska is categorized as sub-arctic. The weather pattern throughout the western end of the Alaska Peninsula consists of moderate temperatures, strong winds, and poor visibility with low cloud ceilings and dense fog. These weather patterns can contribute to hazardous conditions during transportation by road, sea, or air. Visibility and wind conditions are discussed in detail in Section 3.1.2, Climate.

It is usually necessary for City of King Cove residents to connect with flights at the Cold Bay Airport to leave or return to the region. The Cold Bay Airport is equipped for instrument landings and provides a 10,415-foot runway, as well as a 6,235-foot crosswind runway. Transportation options from the City of King Cove currently include air, the ferry *M/V Tustumena*, and private boats. Depending on weather conditions, transportation between the communities of King Cove and Cold Bay by air or sea can be dangerous, or at times impassable.

Ground Transportation

Motor vehicle accidents from ground transportation are the second leading cause of unintentional deaths in the State of Alaska (Table 3.3-47). Table 3.3-48 shows the incidence and types of traffic accidents for the State of Alaska and for the Aleutians East Borough.

Table 3.3-48 Traffic Accidents – State and Borough Level, 2001-2002, 2004-2007

Location	Property Damage Only	Minor Injury	Major Injury	Fatal	Total
Alaska	54,731	20,890	2,554	477	78,652
Aleutians East Borough	11	12	2	2	27

Source: ADOT&PF 2010a

As indicated in Table 3.3-48, 27 traffic accidents resulted in 2 deaths in the Aleutians East Borough during the 6-year period from 2001-2002 and 2004-2007 (2003 data not available).

The City of King Cove has an 11-mile road system spread out over an area of approximately 20 square miles. The King Cove Police Department reports between 6 and 12 traffic accidents per year on local roads, most involving alcohol. No vehicle accidents have been reported on Hydroelectric Road or the King Cove Access Road. There has never been a traffic fatality in King Cove. Accidents are investigated by the King Cove Police Department (Gould 2010).

The City of Cold Bay has a road system developed as part of the former military base. Most roads are constructed of gravel or dirt. Vehicle traffic in Cold Bay is negligible and commuting traffic congestion is not an issue. As a result, the number of motor vehicles within the City of Cold Bay is limited. According to the City of Cold Bay, only 1 accident has been reported

involving a vehicle crash within the past 4 years (Watson 2010). A private vehicle struck a pedestrian in Cold Bay on October 31, 2008. The accident resulted in an injury and a medical evacuation flight to Anchorage. Minor fender benders occur on local roads periodically, but they are not serious, usually result in no injuries, and are not reported or investigated.

Marine Transportation

The Alaska Bureau of Vital Statistics (2010) reported 1 water transport death in the Aleutians East Borough for the 10-year period from 1999-2008. When weather and other factors restrict use of aircraft, private fishing vessels have been used to transport passengers, including medical emergency cases, from the City of King Cove to the Cold Bay dock. Transport by sea between the City of King Cove and the City of Cold Bay can be difficult and potentially hazardous depending on the weather; Cold Bay sometimes has 15 to 20-foot seas in the winter (AEB 2010a). Access from a boat onto the Cold Bay dock deck is via a 20-foot vertical steel ladder. It is also possible to be pulled up via a basket to reach the deck of the dock. It takes more than 2 hours to transport patients from the King Cove Clinic to the Cold Bay Airport when the mode of transportation for the medical evacuation is by boat (EAT, 2011).

The Alaska Marine Highway System Ferry *MV Tustumena* provides seasonal twice a month ferry service from the terminal in Homer, via Kodiak, Chignik, Sand Point, King Cove, Cold Bay, False Pass, Akutan, and Unalaska/Dutch Harbor. The ferry does not run October through April due to winter weather and daylight concerns (Belfry 2011). The ferry is very reliable from May through September with only occasional slowdowns for weather (Belfry 2011). Late in the season weather may be an issue; the trip is generally completed but can be delayed due to weather (Belfry 2011). The trip from King Cove to Cold Bay takes approximately 2 hours (ADOT&PF 2011).

Air Transportation

The King Cove Airport is a means of transportation of medical evacuation patients from the City of King Cove to the City of Cold Bay. It takes approximately 35 minutes to transport patients from the King Cove Clinic to the Cold Bay Airport when the mode of transportation for the medical evacuation is by airplane (EAT 2011). The National Transportation Safety Board (NTSB 2010) reported the following aviation accidents associated with the King Cove Airport:

- An accident on April 7, 1964, in which a Piper PA20 approaching the airstrip at King Cove sustained substantial damage when it landed in the water. The probable cause of the accident was unfavorable wind conditions and improper compensation for wind conditions by the pilot. No fatalities or serious injuries.
- An accident on March 29, 1979, in which a Piper PA-18-150 sustained substantial damage when it collided with terrain near the King Cove Airport. The probable cause was the pilot continued the flight into adverse weather conditions and selected unsuitable terrain to land. No fatalities or serious injuries.
- An accident on December 12, 1980, in which a Piper PA-32 flying from King Cove Airport to the Cold Bay Airport was destroyed when it crashed into water. The flight was for an unscheduled emergency medical evacuation, in bad weather (snow squalls) and as darkness was approaching (USACE 2003). The pilot, community nurse, patient, and passenger were killed (USACE 2003).

- An accident on July 15, 1981, in which a Beech 200 flying to the King Cove Airport crashed into a hillside. Six people were killed. The ceiling was low due to fog and rain, and the crew was not familiar with the destination geography. The probable cause was improper planning and in-flight decisions by the pilot and crew.
- An accident on February 17, 1990, in which a Piper/PA-31-350 flying from the King Cove Airport to the Cold Bay Airport was destroyed when it crashed into a 1,250-foot ridgeline north of the King Cove Airport. The pilot was killed (no passengers were on board). Weather reports indicated snow showers in all quadrants. The adverse weather and terrain contributed to the accident.
- An accident on April 26, 2010, in which a Piper PA-32-301 sustained substantial damage when it encountered wind gusts/shear and landed hard on the King Cove Airport runway. The left main landing gear collapsed and the left wing struck the ground. The probable cause of the accident was the pilot's failure to maintain an appropriate descent rate during gusty winds while landing, resulting in a hard landing and damage to the airplane. No fatalities or injuries.

Cold Bay Airport is one of the largest public airports in Alaska and the largest public airport serving the region. It has a crosswind runway, is open 24 hours, and can handle very large commercial and military aircraft. The airport has 2 lighted and paved runways in good condition. The National Transportation Safety Board (NTSB 2010) reported 22 aviation accidents associated with the City of Cold Bay. Most of the accidents described by the National Transportation Safety Board (NTSB 2010) occurred near the City of Cold Bay, but were not associated with the Cold Bay Airport. Two were fatal accidents that were also associated with the King Cove Airport (occurring on December 12, 1980, and February 17, 1990) and were described above. Five additional accidents listed by the National Transportation Safety Board (2010b) are described below.

- An accident on October 21, 1971, in which a Piper PA-18 crashed while taking off from the Cold Bay Airport. The probable causes of this accident were unfavorable wind conditions and the pilot exercised poor judgment. No fatalities or serious injuries.
- An accident on September 9, 1973, in which a DC-8-63F flying from Travis AFB to Cold Bay was destroyed when it crashed into Mount Dutton near King Cove. The probable cause of the accident was the captain deviated from approved instrument approach procedures. All 6 people on the plane were killed.
- An accident on May 11, 1975, in which a Piper PA-18 crashed into the water while taking off from the Cold Bay Airport. The probable causes of the accident were unfavorable wind conditions and the pilot attempted operation beyond experience/ability level and failed to maintain directional control. No fatalities or serious injuries.
- An accident on November 8, 1980, in which a Cessna 170B flying from Anchorage sustained substantial damage when it bounced and the gear collapsed during landing at the Cold Bay Airport. The probable causes of this accident were unfavorable wind conditions and a lack of familiarity by the pilot with the aircraft. No fatalities or serious injuries.

- An accident on January 30, 1988, in which a Piper PA-32-300 flying from the Cold Bay Airport to Nelson Lagoon sustained substantial damage when it collided with terrain. The probable causes of this accident were white out conditions due to fog and snow and unfamiliarity of the pilot with the terrain. The pilot was seriously injured.

In general, flying in the State of Alaska can be more dangerous than in other parts of the U.S. Aviation data analyzed by the Aircraft Owners and Pilots Association's Air Safety Foundation found a rate of 13.59 accidents per 100,000 flight hours in Alaska between 2004 and 2008. The comparative national rate for smaller general aviation aircraft was 5.85 accidents per 100,000 flight hours (Bohrer and D'Oro 2010).

Public Concerns Related to Transportation Safety, Availability, and Weather Conditions

This section discusses reports contributed at public meetings of individual's real life experiences and concerns regarding the safety challenges in the communities.

Public comments regarding the challenges for transportation in the area focused on two issues:

- 1) Weather conditions are often very severe; and
- 2) The modes of transportation between the City of King Cove and the City of Cold Bay are limited to air and sea transportation.

Descriptions of typical weather conditions in the area included: "poor," "bad," "very bad," "really bad," "rough," "horrible," "nasty," "harsh," "terrible," "treacherous," "severe," "extremely high winds," "blizzard conditions," "white out conditions," and "extreme cold." One comment stated the "weather is bad here about 90 percent of the time."

Some comments indicated that these extreme weather conditions can make traveling by air or sea difficult, frightening, dangerous, and at times impossible. Travel by air is currently limited to planes and Coast Guard helicopters. Pilots described flights between the King Cove and Cold Bay airports as "very tricky," "a risk," "pretty violent," and "the scariest plane ride of your life." Members of the community indicated they are "afraid," "terrified" and "scared to death" of flying in the area. There were numerous personal experiences described where members of the community wanted or needed to travel by plane or helicopter, but were prevented from doing so because of poor weather conditions.

Regarding previous medical evacuations, a former hovercraft captain for Aleutians East Borough stated that "...of 32 medevacs that were completed... more than half of those were completed in near perfect weather conditions... The other half of those medevacs — sorry — were completed in pretty rough weather, weather bad enough to keep my crew and I from returning home from medevacs for over a week." A member of the Agdaagux Tribe of King Cove and the King Cove Corporation stated that "...one medevac at one point in time used to cost \$10,000. Well, you're looking at \$30,000 a medevac today. And when you take that times 18, 20 medevacs a year — and understand that that dollar amount is going to increase every year — that money that's — it's taxpayers' dollars. When you start putting the Coast Guard in there and their bigger planes taking patients out of Cold Bay or C-130s, you better add up a lot more than that because that dollar is there."

Travel by sea is currently primarily by small (e.g., fishing) boats. There were numerous personal experiences described where members of the community wanted or needed to travel by boat but were prevented from doing so because of poor weather conditions. One comment stated that in

bad weather the “boat is coming up and down five, ten feet at a time.” In addition, there were many comments that addressed the difficulty of using the Cold Bay dock:

- “I’ll also not miss ... having to jump from a bucking fishing vessel onto an icy ladder to get up on the Cold Bay dock”
- “Cold Bay is a very hard place to get into during a heavy storm. I’ve tried to tie up by the docks. It’s impossible.”
- “...in the winter months the dock in Cold Bay has so much ice you can’t get to the dock by boat.”
- “Have you ever tried to take a wounded person off a boat? You’re running the danger of you falling in the water. You’re running the danger of the crew falling in the water. You’re running the danger of the patient falling in the water.”

There were numerous comments addressing the adverse impacts to the community related to the travel difficulties described above. In the discussion below, these comments have been grouped into different categories. The vast majority of the comments addressed attempts to travel from King Cove for medical reasons. There were several comments that discussed the loss of lives:

- “Many people have died because of limited access to the Cold Bay airport, some in plane crashes, some not even getting the chance to take a plane or a boat to Cold Bay due to weather conditions and no other way of transportation to access the Cold Bay airport.”
- “There have been many deaths and serious health conditions in King Cove that could have been prevented if there was a dependable way to get to Cold Bay from King Cove.”
- “How many people in King Cove have died waiting for a medevac? Now, Don Young’s office said they know of at least 11. I suspect there are many more.”
- “Congressman Young’s office said they know of 11 people that have died waiting for medevacs.”
- “We could not complete this Medivac due to extreme cold temperatures and winds upward of 70 miles per hour. It is the worst feeling in the world to tell someone that ‘no I’m sorry we can’t save you.’ But we had no choice.”
- “My dad ... suffered a heart attack in 1994 and could not get to a doctor for 5 or 6 days because he could not get transportation out of King Cove due to poor weather conditions. By the time he got medical attention he was so weak and could no longer fight; he died.”

Some comments addressed near misses:

- “One time it took us over 4 hours to get to Cold Bay which is usually a 20 minute ride. The patient had severe trauma and is very lucky to be alive.”
- “...by the time we got into Anchorage my son’s [appendix] burst and [he] had to stay in the hospital for 30 plus days. I feel lucky that we still have our son with us and it all started because we couldn’t get out of King Cove in a timely manner.”
- “I am thankful that I am here today to speak to you. If I was not able to get to Cold Bay when I had my last heart attack, I would not be here. The coast guard waited in Cold Bay for an hour and a half and made another attempt to get me out of King Cove.”

Numerous comments addressed physical suffering due to the difficulties associated with transportation:

- “In 2011, where my ankle was broken in three places, and sitting up there suffering and waiting for the weather to calm down, had to crawl down to the boat and climb on a boat to get to Cold Bay and trying to get up the ladder in Cold Bay with a broken ankle.”
- “Most recently my mother had to wait in King Cove with a broken ankle for a few days only to have to catch a boat to Cold Bay in bad weather to get to Anchorage for proper medical care.”
- “My uncle had a ruptured appendix and had to get sent out in horrible weather of blowing about 50 mile per hour winds, and he was on the boat. It was very hard to dock up in that harsh weather, and they had to use the crane to lift him up to the dock.”
- “...we've got people that are in baskets that can't walk, can't move, and we're having to hoist them up the dock with cranes in high wind conditions.”

Some comments addressed a decreased quality of life:

- “there are many people who wait months for medical check ups ... and need to reschedule because they did not make it out.”
- “So many people would feel safer living here knowing that our normal 55 mph winds weren't going to determine if they get to leave King Cove.”
- “Sometimes family members can't get here to visit because the weather is bad, or we can't get out to visit them”
- “I worry that without a safer and easier access out of King Cove, our young people will move away and go to live in places where travel time doesn't mean the difference between life and death, or mean they have to watch someone in pain who waits for the weather to clear.”

There were numerous comments that a road between King Cove and Cold Bay would help decrease the adverse impacts to the community from the current travel difficulties:

- “...the road is the only option that I see from a medical side.”
- “The residents of King Cove have waited decades for a dependable life-line, and it's my hope that this road will finally become a reality.”
- “This road to Cold Bay is important to me because if planes can't fly and boats can't dock people who are hurt can't get out fast enough.”
- “Safe travel for anyone is essential; most especially those who do not have the medical facilities, staff, etc. Please allow this exchange so future disasters and loss is avoided.”
- “I want a road is because if somebody gets sick or gets seriously injured on a windy or foggy day when planes cannot fly, an ambulance can take them over and get them medicated them out to Anchorage.”
- “That is why we need a road from King Cove to Cold Bay, so if you need to, you can get to Anchorage for medical help.”

Additional comments regarding anecdotal descriptions are included in Appendix C, Scoping, and Appendix G, Comment Analysis and Response Report. Increased access between the communities of Cold Bay and King Cove could increase access to medical evacuations via the Cold Bay Airport, but also bring about new health and safety considerations. This is evaluated in Chapter 4.

3.3.5 Environmental Justice

Executive Order 12898 requires federal agencies to identify and address disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on low-income populations and minority communities. “Minority community” and “low-income” are defined for the purposes of analyzing the effects of the agencies’ actions on potentially affected populations. A minority is any individual self-identified as American Indian, Alaska Native, Asian or Pacific Islander, African American, or Hispanic. A low-income population is a community or group with a median household income at or below the U.S. Department of Health and Human Services poverty guidelines. Poverty guidelines are an administrative tool that determines financial eligibility for certain programs and are comparable to the poverty thresholds calculated by the U.S. Census Bureau for statistical purposes. “Disproportionate high and adverse human health or environmental effects” are defined when the health effects of an action are significant or above generally accepted norms (e.g. infirmity, illness, or death); the risk or rate of hazard exposure is significant and exceeds the rate to the general population; or the population is exposed to cumulative or multiple adverse exposures to environmental hazards. A broader set of demographic data can be found in Section 3.3.2.

Low-income populations and minority communities are defined as any readily identifiable group of minority or low-income persons who live in geographic proximity and their population percentage is meaningfully greater than the low-income/minority population percentage in an appropriate geographic unit of analysis (CEQ 1997). If circumstances warrant, geographically dispersed or transient persons (e.g., seafood processing workers) who would be similarly affected by a proposed program, policy, or activity may also be considered low-income populations and minority communities. Impacts to Native Alaska populations may be different from impacts on the general population due to a community’s distinct cultural practices (CEQ 1997). Therefore, agencies would consider impacts to subsistence as a component of the environmental justice analysis.

3.3.5.1 Affected Populations

The populations potentially affected by the proposed action are the permanent and temporary residents of the communities of King Cove and Cold Bay. Temporary residents include transient seafood processing workers living in group housing (shown in Table 3.3-3 and described in Section 3.3.2.1).

Residents of other communities within the Aleutians East Borough (e.g., False Pass, Nelson Lagoon, and Sand Point) may visit the communities of King Cove and Cold Bay and may occasionally use the parcels of land identified in the proposed exchange, but they will not be discussed for the purposes of this analysis. The subsistence uses of these areas are discussed in Section 3.3.7, Subsistence.

3.3.5.2 Ethnicity and Race

In the 2010 U.S. Census, the City of Cold Bay had a population of 108 individuals, identified as predominantly White (74 percent). The City of King Cove had a 2010 population of 938 individuals, with Alaska Natives comprising 38 percent of residents and an overall minority population of 84 percent. The larger population of the City of King Cove, in contrast to that of Cold Bay, is due in part to the Peter Pan Seafood processing plant that employs hundreds of

seasonal, non-resident workers. Historically, Native Alaskan families from nearby Belkofski relocated to the City of King Cove. The City of Cold Bay began as a transient community that grew around the establishment of a major airfield in World War II and remained as a regional transportation hub.

As shown in Table 3.3-7, the City of King Cove is considered a minority community under the definition of Executive Order 12898 because Alaska Native and other ethnic minority categories total 85 percent of the population. The population of the City of Cold Bay is predominantly white (Table 3.3-9), resembling the overall makeup of the State of Alaska. Both communities are part of the Aleutians East Borough, which is a nearly even mix of people that identified themselves as Alaska Native, Asian/Pacific Islander, and White during the 2010 U.S. Census. Additional demographic analysis can be found in Section 3.3.6, Socioeconomics.

3.3.5.3 Income Distribution and Poverty Status

The most reliable and recent income and poverty data for the cities of King Cove and Cold Bay is the 2000 U.S. Census, but 2009 American Community Survey data can also be used. The 2010 U.S. Census did not track income. Both sets of data are shown in this section to demonstrate differences.

Per capita income for the City of Cold Bay and City of King Cove residents is less than State of Alaska and national averages (shown in Table 3.3-49). In general, Aleutians East Borough residents average less income (measured per capita, median household, and median family income) than the average for the State of Alaska and nation. It is not clear from the 2000 and 2009 data that the cities of Cold Bay and King Cove are low-income compared to non-affected communities because at times the categories of household income, family income, and per capital income are higher than Aleutians East Borough or the state and nation. The large upward swing in median family income for the City of Cold Bay in 2009 may demonstrate the potential margin of error using the 2009 data.

Table 3.3-49 2000 US Census and 2009 American Community Survey Income Estimates

Geographic Area	2000 Median Household Income ¹	2009 Median Household Income ²	2000 Median Family Income ¹	2009 Median Family Income ²	2000 Per Capita Income ¹	2009 Per Capita Income ²
City of Cold Bay	\$55,750	\$45,000	\$64,375	\$147,917	\$20,037	\$22,679
City of King Cove	\$45,893	\$47,679	\$47,188	\$54,167	\$17,791	\$20,557
Aleutians East Borough	\$47,875	\$56,250	\$50,625	\$60,893	\$18,421	\$21,788
State of Alaska	\$51,571	\$64,635	\$59,036	\$75,493	\$22,660	\$29,382
U.S.	\$41,994	\$51,425	\$50,046	\$62,363	\$21,587	\$27,041

¹ Income in the last 12 months (in 1999 inflation-adjusted dollars)

² Income in the last 12 months (in 2009 inflation-adjusted dollars)

Sources: U.S. 2000 Census; U.S. Census, 2005-2009 American Community Survey 5-Year Estimates

For a family of 4 in Alaska, the poverty threshold is determined by the annual household income, \$21,320 or less in 2000 and \$27,570 or less in 2009 (DHHS 2010a, b). Poverty thresholds in

Alaska are estimated to be approximately 1.25 times magnitude greater than the U.S. due to the higher cost of living (DHHS 2010b).

The City of Cold Bay has a higher individual poverty rate (27.3 percent in 2000 and 22.1 percent in 2009) compared to the City of King Cove (11.9 percent in the US Census 2000 and 11.5 percent in the 2009 American Community Survey. As a region, Aleutians East Borough has a higher individual poverty rate (21.8 percent in the US Census 2000 and 10.4 percent in the American Community Survey 2009) compared to the State of Alaska (9.4 percent in 2000 and 9.6 percent in the American Community Survey 2009) and the U.S. (12.4 percent in 2000 and 13.5 percent in 2009).

The City of King Cove family poverty rate (3.3 percent in the US Census 2000 and 16.7 percent in the American Community Survey 2009) is higher compared to the City of Cold Bay (0 percent in US Census 2000 and in the American Community Survey 2009), Aleutians East Borough (6.4 percent in the US Census 2000 and 8.4 percent in the American Community Survey 2009), the State of Alaska (6.4 percent in the US Census 2000 and 6.9 percent in the American Community Survey 2009), and the U.S. (9.2 percent in the US Census 2000 and 9.9 percent in the American Community Survey 2009). Tables 3.3-50 and 3.3-51 compare these individual and family poverty rates for the affected communities, and compare them to the region, state, and nation.

Table 3.3-50 Median Income and Poverty Rates, 2000

Geographic Area	Individuals for whom poverty status is determined	Individuals (#) below poverty	Individual Poverty Rate (%) ¹	Families for whom poverty status is determined	Families (#) below poverty	Family Poverty Rate (%)
City of Cold Bay	88	27	27.3%	18	0	0%
City of King Cove	792	97	11.9%	117	4	3.3%
Aleutians East Borough	2,697	588	21.8%	344	22	6.4%
State of Alaska	626,932	57,602	9.4%	152,337	10,270	6.7%
U.S.	281 mil	33.9 mil	12.4%	71.8 mil	6.6 mil	9.2%

¹ All individuals for whom poverty status is determined in the 2000 U.S. Census
Source: U.S. Census 2000

Table 3.3-51 Median Income and Poverty Rates, Estimated 2009

Geographic Area	Individuals for whom poverty status is determined	Individuals (#) below poverty	Individual Poverty Rate (%) ¹	Families for whom poverty status is determined	Families (#) below poverty	Family Poverty Rate (%)
City of Cold Bay	86	19	22.1%	11	-	0.0%
City of King Cove	468	54	11.5%	66	11	16.7%
Aleutians East Borough	2,949	307	10.4%	215	18	8.4%
State of Alaska	666,059	64,038	9.6%	159,319	10,993	6.9%
U.S.	293.5 mil	39.5 mil	13.5%	75.1 mil	7.4 mil	9.9%

Notes:

¹ All individuals for whom poverty status is determined in the 2005-2009 American Community Survey estimates
Source: 2005-2009 American Community Survey, 5-Year Estimates

3.3.5.4 Summary

The existing condition description for Environmental Justice examines whether the potentially affected communities meet the Environmental Justice Executive Order 12898 definitions for minority and low-income communities. The City of Cold Bay meets the definition of a low-income community and the City of King Cove meets the definition of a minority community. The Environmental Justice Executive Order recognizes the importance of research, data collection, and analysis, particularly with respect to multiple and cumulative exposures to environmental hazards and/or a disproportionately high adverse impact resulting from a federal action.

Section 3.3.4 describes baseline public health and safety data for the communities of Cold Bay and King Cove. These communities have public health and safety issues typical of rural Alaskan communities. The Aleutians East Borough has been designated a Medically Underserved Area. The Cities of King Cove and Cove Bay have clinics staffed with health care providers, but no doctors are on site.

The Scoping Report (Appendix C) provides an overview of the public involvement program, which included outreach in the Cities of King Cove and Cold Bay. In compliance with Executive Order 13175, Consultation and Coordination with Indian Tribal Governments, the Service initiated government to government consultation with twelve potentially affected Federally Recognized Tribes: Agdaagux Tribe of King Cove; Native Village of Belkofski; Chevak Native Village; Native Village of False Pass; Native Village of Hooper Bay; Native Village of Nelson Lagoon; Newtok Village; Native Village of Paimiut; Pauloff Harbor Village; Native Village of Scammon Bay; Qagan Tayagungin Tribe of Sand Point Village; and Native Village of Unga.

Letters were sent to the Federally Recognized Tribes on June 16, 2010 stating that public scoping recently occurred and the Service would be glad to conduct separate meetings to explain the proposal and hear their thoughts. The letters asked if the tribes had any thoughts on the topics of cultural, traditional, or religious sites that could be affected; any known graves or archaeological sites in the project area; any formal tribal positions on the proposal; any information on fish and wildlife that may be affected and any other input the tribe would like to contribute. A government to government consultation meeting was held on August 25, 2010 with representatives from the Agdaagux Tribe of King Cove and the Native Village of Belkofski.

In January of 2012, coinciding with the release of the preliminary Draft EIS, the Service again sent letters to all 12 tribes and the King Cove Corporation to re-initiate consultation. The Agdaagux Tribe of King Cove and the Native Village of Belkofski indicated that they wanted to consult with the Service. Therefore, the Regional Director, Alaska Refuge Chief and the Chief of Planning visited King Cove for formal consultation with the two tribes. As of October 2012, consultations are pending with two tribal governments in Sand Point and additional tribal consultations are pending with the Agdaagux Tribe of King Cove and the Native Village of Belkofski. In summary, the Service believes it has fully met its responsibilities to work with cooperating agencies as spelled out in the signed MOUs with each cooperating agency and continues to meet its responsibilities to consult with tribal governments under Department of the Interior and agency policies.

3.3.6 Public Use

Public use in the project area includes the recreational pastimes of hunting, fishing, photography, and wildlife viewing. Public use is generally concentrated around the existing road network originating from the community of Cold Bay; public use of the remaining lands is sparse and more dispersed. Subsistence uses are covered in Section 3.3.7 of this chapter.

The following sections include descriptions of public use activities occurring on lands involved in the proposed exchange and areas proposed for development of a road corridor or alternate modes of transit. Public uses are discussed by land ownership, including federal lands, state lands, and corporation lands.

3.3.6.1 Federal Lands

Izembek National Wildlife Refuge

The National Wildlife Refuge System, managed by the Service, is a premier system of public lands and waters established to conserve specific wildlife, plants, and fish and their habitat for the benefit of the American people. Although its boundaries overlap with the Izembek State Game Refuge, the following section describes public uses of lands and waters within the boundary of Izembek National Wildlife Refuge as documented by the Service.

As defined by ANILCA, public uses of Izembek National Wildlife Refuge must be compatible with the purposes for which Izembek National Wildlife Refuge was established. In addition to the subsistence uses described in Section 3.3.7, the residents of the communities of Cold Bay, King Cove, False Pass, and to a lesser extent, Nelson Lagoon and Sand Point, use Izembek National Wildlife Refuge lands for a variety of public uses, as shown in Table 3.3-52. (Service 2006a). The most popular public uses for non-local residents and visitors during the high-use months of September through November include waterfowl hunting (estimated 1,125 individual visits in 2010), followed by fresh water fishing (estimated 500 individual visits in 2010) (Service 2006a, 2010b). Other reported public uses that occur within Izembek National Wildlife Refuge are hunting for brown bear, fur trapping, ptarmigan hunting, bird watching, photography, beachcombing, clamming, hiking, and camping. Public use activity generates some economic value for local communities through tourism, including outfitters that guide hunting or fishing excursions and a small amount of flightseeing as indicated by business licenses in the cities of Cold Bay and King Cove (ADCCED 2010a) and Service permits. Other small businesses are located outside the region and bring visitors into Izembek National Wildlife Refuge.

The Izembek National Wildlife Refuge headquarters is located in the community of Cold Bay. The Service does not charge a public use entry fee to Izembek National Wildlife Refuge. Izembek National Wildlife Refuge received an average of approximately 5,220 visitors a year between 2006 and 2010 (Service 2010b). The Service provides visitors to the headquarters building with educational brochures, offers interpretive talks and videos, and conducts bus tours for passengers of the State of Alaska ferry (Service 2006a). One Service staff member maintains the boat launch at Grant Point, portions of the road system (maintenance predominantly occurs during non-snow months), kiosks, and buildings (including Grant Point observation site) (Muller 2010a).

While annual visitation numbers have fluctuated over time, recent data indicate steadily increasing visitation since 2005 (Service 2010b). Visitors to the refuge often participate in more than 1 activity during their visit, therefore the total number of visitors is not a sum of each activity.

Table 3.3-52 Total Number of Visitors¹ to Izembek National Wildlife Refuge, 2006-2010

Activities	2006	2007	2008	2009	2010 ²	2006-10 Average
TOTAL NUMBER OF VISITORS	4,000	4,200	5,300	5,000	7,600	5,220
Participants in special events on site	0	0	0	6	9	3
Visitors to visitor center or contact station	100	140	175	200	350	193
Waterfowl hunt visitor use days	1,045	1,050	1,200	1,025	1,125	1,089
Other migratory bird hunt visitor use days	15	20	20	20	14	18
Upland game hunt visitor use days	350	350	360	360	450	374
Big game hunt visitor use days	650	750	400	350	320	494
Total hunting visitor use days	2,060	2,170	1,980	1,755	1,909	1,975
Fishing visitor use days	453	540	575	550	500	524
Foot trail/pedestrian visitor use days	200	220	250	250	230	230
Auto tour visitor use days	700	775	800	800	770	769
Boat trail/launch visitor use days	35	40	50	60	60	49
Total wildlife observation visitor use days	935	1,035	1,100	1,120	1,072	1,052
Photography participants	500	525	510	500	500	507
Participants in on- and off-site talks/programs/educational programs	375	375	75	200	340	273
Total other recreation participants	1,250	1,175	1,150	1,165	1,000	1,148

¹ One visitor use day is equal to 1 person involved in the specified activity for 1 hour or more.

² In 2010, the Alaska Marine Highway System resumed scheduled seasonal service to Cold Bay twice per month.

Source: Service 2010b

Contributing factors to the higher visitation numbers in 2010 were:

- The Alaska Marine Highway System resumed scheduled service twice per month. In 2009, ferry service to the community of Cold Bay was only monthly;
- Collaboration between the Service and Aleutians East Borough included the borough's shuttle bus as part of the Izembek National Wildlife Refuge tour on ferry days throughout the scheduled season. This was a direct increase in the numbers to the Visitor Center; and
- A Service staff volunteer provided additional outreach and educational opportunities to schools and groups. For example, the Service provided an educational booth at the Silver Salmon Derby (Hoffman 2011a).

The Service authorized 20 special use permits in 2010, which are required for all commercial activities and certain other activities such as research. Special uses on Izembek National Wildlife Refuge in 2010 included commercial guiding, air taxi services, and access for scientific monitoring (Service 2010b). Table 3.3-53 contains a list and number of permitted uses within Izembek National Wildlife Refuge, including public uses of the Wilderness Area. Data associated with Table 3.3-53 is incorporated into the numbers used for annual reporting (Table 3.3-52). Bird hunting and fishing special use permit holders are not allowed to guide with clients into the Izembek Wilderness, only outside the Izembek Wilderness (Hoffman 2011b).

Public use of Izembek National Wildlife Refuge has increased since 2006 (as shown in Table 3.3-52), but the number of special use permits (as shown in Table 3.3-53) has remained relatively constant. Commercial guiding has not increased, but the numbers of people participating in educational, recreational, and other non-consumptive activities are increasing.

Table 3.3-53 Special Use Permits for Izembek National Wildlife Refuge, 2007-2010

	Commercial Hunting Guides	Commercial Fishing Guides	Commercial Waterfowl Guides	Commercial Air Taxi Services	Commercial Filming	Research	Land Use	Total
2007	7	4	3	3	1	0	1	19
2008	7	3	3	3	1	0	1	18
2009	7	3	4	3	1	0	1	19
2010	7	3	5	3	1	1	0	20

Source: Service 2010b

Izembek Wilderness

The Service manages the Izembek Wilderness (consisting of approximately 95 percent of Izembek National Wildlife Refuge lands) in accordance with the provisions of the *Wilderness Act of 1964*, ANILCA, federal regulations, and policy (see Wilderness, Section 3.3.10, for additional information).

ANILCA allows for certain motor vehicles, motorboats, and airplanes by local rural residents in designated wilderness in Alaska for traditional activities, including subsistence purposes, and for access to inholdings, subject to reasonable regulation. Table 3.3-53 identifies permitted uses in Izembek National Wildlife Refuge that include public uses of the wilderness (excluding bird hunting and guided fishing special use permit holders). The Service does not track public uses of the Izembek Wilderness separate from the entire refuge, but it is estimated that in 2009 there may have been less than 10 users outside the local user groups (Hoffman 2011b). Increased use occurs by local residents during waterfowl hunting season (September and October), in areas concentrated areas along the south shore of Izembek Lagoon and within the waters of the Kinzarof Lagoon (Hoffman 2011b). Public use, particularly in the isthmus, is low because access to the wilderness boundary is very limited by winter weather conditions (November through May). Izembek Wilderness has 7.4 miles of (soil) trails that can be accessed when conditions allow (June through October) (Hoffman 2011b).

Izembek Wilderness is discussed further in Section 3.3.10

Sitkinak Island

The parcels identified on Sitkinak Island to be included in the proposed land exchange are located with Alaska Maritime National Wildlife Refuge, but were withdrawn from the public domain for use by the Coast Guard (see Figure 3.3-3 in Land Use, Section 3.3.1). No public use activities occur on these lands currently.

The Alaska Maritime National Wildlife Refuge has the general public uses of wildlife-dependent recreation activities such as fishing, wildlife viewing, photography, hiking, camping, and hunting (following state hunting regulations), and has no public use entry fee (Service 1988a). Special use permits are required within Alaska Maritime National Wildlife Refuge for commercial operations, scientific research, and some other uses like filming, sand and gravel removal, guiding and transporting, and set net fishing (Service 2010b).

3.3.6.2 Lands with Overlapping State and Federal Regulations

Izembek Controlled Use Area

The *Alaska State Game Refuge Plan* (ADF&G 2010i) and Alaska Hunting Regulations describe the Izembek Controlled Use Area, consisting of the portion of the Izembek National Wildlife Refuge commonly known as the Left Hand Valley and Right Hand Valley, (see Figure 3.2-19 which displays the boundary). It is a state restricted/controlled use area in Game Management Unit (Unit) 9D, located within the Izembek Wilderness of the Izembek National Wildlife Refuge. This area is closed to the use of motorized vehicle, but personal watercraft is allowed for hunting (ADF&G 2010d). For information on ANILCA Section 811 that allows federally qualified subsistence users to access public lands by snowmachine, motorboat, and other traditional means of transportation historically used and subject to reasonable regulation, see the Subsistence Section 3.3.7.

Izembek State Game Refuge

The Izembek State Game Refuge was established within the boundaries of the Izembek National Wildlife Refuge and includes submerged lands and navigable waters managed by the state. Since the Izembek State Game Refuge falls within the Izembek National Wildlife Refuge boundary, many of the public uses of these lands are the same, though the state and federal agencies independently track and report public use. The Land Use Section 3.3.1 summarizes land use permitted by the state game refuge plan. Three of the parcels identified for the proposed land exchange fall within the boundaries of Izembek State Game Refuge. The entire Izembek State Game Refuge and all of the proposed land exchange parcels, except Sitkinak Island lands, are within Unit 9D.

The *Izembek State Game Refuge Management Plan* (ADF&G 2010i) describes low intensity recreation activities (e.g., wildlife viewing, trapping, fishing, and hunting) allowed within its boundaries as “Use levels may be managed through the issuance of Special Area Permits, if necessary, to avoid adverse impacts to fish and wildlife populations and their habitats.” The state game refuge public access points remain undeveloped except for the boat launch ramp near Grant Point. Fixed-wing aircraft and helicopter landings require a Special Area Permit. The state game refuge plan contains details for pilots including where beach/sandbar landings are allowed, where floatplane landings are allowed, and FAA-suggested altitudes (ADF&G 2010i).

Special Area Permits are required for any “habitat-altering activity...which disturbs fish or wildlife other than lawful hunting, trapping, and fishing.” This includes the use of motorized vessels. Personal watercraft is not allowed in Izembek Lagoon and Kinzarof Lagoon; however, a Special Area Permit may be issued at the department’s discretion to allow the use of personal watercraft for management or research purposes. The *Izembek State Game Refuge Management Plan* does not address “hardened structures” and prohibits the construction of permanent structures except those necessary to protect and manage Izembek State Game Refuge resources. Temporary structures, such as duck blinds or navigation aids, may be authorized by Special Area Permits. Mining is allowed at valid mining claims or leaseholds under the terms and conditions of a Special Area Permit, but recreational mining is prohibited (ADF&G 2010i).

Hunting is a popular public use activity that occurs within the Izembek State Game Refuge. A summary of hunting and trapping activity within Unit 9D from 2005-2009 is provided in Figure 3.3-20. The distribution of harvests within Unit 9D is tracked by river drainage rather than by the exact location of harvest (Riley 2011). Unit 9D includes all Alaska Peninsula drainages west of Port Moller up to (but not including) False Pass, as well as the Shumagin Islands. The contemporary communities that fall within Unit 9D are Nelson Lagoon, Sand Point, Cold Bay, and King Cove.

Although moose are uncommon on the lower Alaska Peninsula, this species is open to harvest by local and state residents under federal subsistence and state hunting regulations. Bag limits are 1 antlered bull under state regulations, or 1 bull under federal regulations. The seasons are closed if a total of 10 bulls are harvested. The December-January season favors local hunters due to the difficulty of access during that time of year (Service 2006a; ADF&G 2010d). Subsistence and general caribou hunting have been closed in this area since 2008 with the exception of a reopening of the federal subsistence caribou hunt as a limited registration permit hunt in 2012. Illegal (unreported) harvest has likely occurred during the closure (ADF&G 2010e). Caribou from this herd have historically been an important subsistence resource for Aleutians East Borough communities. Hunting of brown bears is allowed on Izembek State Game Refuge lands, but limited to 1 bear every 4 regulatory years by permit (ADF&G 2010i). In addition, the federal subsistence program provides for the communities of Cold Bay, False Pass, King Cove, Nelson Lagoon, and Sand Point to each take annually one brown bear for ceremonial purposes.

3.3.6.3 State Lands

The 2 townships that make up the State of Alaska parcel identified as part of the proposed land exchange are surrounded by the Alaska Peninsula National Wildlife Refuge and are currently managed by the Alaska Department of Natural Resources in Region 21 of the *Bristol Bay Area Plan* (ADNR 2005). These parcels are state owned lands, but do not lie within the Izembek State Game Refuge. The land is managed for Generally Allowed Uses (11 AAC 96.020). Outdoor recreation activities such as hunting, fishing, wildlife viewing, photography, and hiking are allowed in the parcel (ADNR 2005). Site-specific development would be acceptable in the parcel as long as the protection of other resources and uses was considered (ADNR 2005).

Moose hunting is allowed in the area. Subsistence and general caribou hunting have been closed in this area since 2008 with the exception of a reopening of the federal subsistence caribou hunt as a limited registration permit hunt in 2012. Fishing opportunities are primarily associated with saltwater species. Some trapping of red fox, mink, river otter, and American marten may take

place in the area. The Alaska Department of Fish and Game has no staff stationed near these lands and they do not track visitor usage on them (Meehan 2010).

Figure 3.3-20 Hunting and Trapping in State Unit 9D

The area these data were drawn from encompasses the southernmost portion of the Alaska Peninsula from Port Moller and Herendeen Bay south (see figure at right below).

CARIBOU – The Southern Alaska Peninsula herd was closed to all hunting in 2007 due to low population size. Although unreported, illegal harvest is surely occurring, we only have data for legal caribou harvest leading up to the closure.

Year	Caribou Hunters	Caribou Harvested
2005	95	61
2006	128	58
2007	-	-
2008	-	-
2009	-	-

MOOSE – There are very few moose this far south. Thus, hunter effort and harvest are minimal.

Year	Moose Hunters	Moose Harvested
2005	0	0
2006	2	0
2007	4	3
2008	3	0
2009	3	1

BROWN BEAR – The brown bear hunt is carried out every other year in the fall and spring by registration permit. It is predominantly utilized by non-resident trophy hunters employing professional guides.

Year	Bear Hunters	Bears Harvested
2005	13	7
2007	22	8
2009	16	9

FURBEARERS – Most trappers are locals, although other Alaskan residents and non-locals trap or shoot furbearers in winter as well.

Year	Otters Harvested	Wolves Harvested	Wolverine Harvested
2005	37	6	0
2006	16	1	0
2007	16	37	2
2008	7	11	0
2009	6	8	4



Source: ADF&G 2010i

3.3.6.4 King Cove Corporation Lands

King Cove Corporation lands are managed for shareholder use. Permits are sold for non-shareholder use, which include commercial guides. Recreational use by non-shareholders requires formal permission. Only 1 non-shareholder recreational permit was purchased in 2010. A \$100 annual fee or a \$15 daily fee is charged for hunting and other recreational uses on Corporation lands (Trumble 2011; USACE 2003). King Cove Corporation does not have a way to enforce the use of recreational permits (Trumble 2011). It has been witnessed that a popular activity on Corporation lands is fishing. A non-shareholder would need to buy an access permit from the Corporation and a fishing license from the state to participate (Peterson 2010). Wild fish runs targeted by shareholders and the commercial guides include sockeye, coho, pink, chum salmon, Dolly Varden, and steelhead. Bird watchers are known to visit Izembek National Wildlife Refuge; on occasion they view birds on Corporation lands (Peterson 2010).

King Cove Corporation permits 2 (non-shareholder) commercial guides for bear season. They use lands exclusively in the areas around Cold Bay and through King Cove. Occasionally 2 shareholder guides participate during bear season as well (Trumble 2011). A \$500 fee for non-shareholders is charged to hunt brown bear on Corporation lands. On average, 2 to 4 non-shareholder residents and 2 to 4 shareholders participate per year in the bear hunt (Trumble 2011).

An important use of King Cove Corporation lands are subsistence activities, described in Section 3.3.7. Four to 5 cabins on King Cove Corporation lands are used by shareholders for hunting and fishing; 2 of these cabins are near the entrance to Mortensens Lagoon (King Cove Comments in Appendix G). Shareholders also use these lands for recreational activities like berry picking, hiking, and riding 4-wheelers. 4-wheelers are only allowed on trails that exist; no new trails are allowed (Trumble 2011).

3.3.6.5 King Cove Corporation Selected Lands

The block of ANCSA selected lands east of and adjoining the Kinzarof Lagoon parcel is currently managed by the Service as part of Izembek Wilderness in the Izembek National Wildlife Refuge (see Figure 3.3-2 Izembek National Wildlife Refuge Boundary). The Service consults with King Cove Corporation when issuing special use permits, usually for commercial activities.

3.3.7 Subsistence

Subsistence is central to the livelihood of many Alaska Native communities and other rural residents. The patterns of subsistence harvests are shaped by local and regional factors of ecology, community history, culture, and economy. What is termed “subsistence” in law is, on the ground, a myriad of distinct, localized traditions established by communities (Wolfe 2004). The subsistence patterns of local communities can include extensive ecological knowledge, effective harvest techniques, traditions for cooperation and sharing, and cultural ceremonial activities.

Subsistence activities involve hunting, fishing, trapping, and collecting (ADF&G 2010m). A wide array of natural resources is harvested throughout the year in a regular cycle of seasonal efforts timed for availability, access, and condition of the resources. The composition of subsistence harvests includes many species of fish, land mammals, marine mammals and invertebrates, terrestrial invertebrates, waterfowl, berries, plants, and firewood gathering. People rely on these locally available resources for food, clothing, fuel, transportation, construction, art, crafts, exchange, and customary trade (Wolfe 2000).

The use of traditional food in the subsistence lifestyle provides important benefits to users. Subsistence foods are often preferable as they are rich in many nutrients, lower in fat, and considered healthier than purchased foods. Subsistence harvesting of traditional foods, including preparation, eating, and sharing of resources, contributes to the social, cultural, and spiritual well-being of users and their communities (ISER 2010). As of 2003, the Aleutians East Borough population harvested an estimated 315 pounds of wild foods (per person per year) and the annual wild food harvest in terms of total subsistence production for all residents of the census area was 850,155 pounds (Wolfe and Fischer 2003).

This section summarizes the regulatory framework for subsistence uses in the project area, and describes subsistence resource harvest patterns for the communities of King Cove, Cold Bay, False Pass, Nelson Lagoon, and Sand Point, including descriptions of community harvest patterns and subsistence concerns. While community baseline studies can allow a holistic look at subsistence patterns for these communities, some of these major studies are over 2 decades old (Braund 2002). While some aspects of subsistence patterns are quite durable, including the seasonal cycle of harvests and the species pursued, other components may have changed, including rates of participation and harvest levels. As a result of public comments on the Draft EIS, more recent subsistence harvest survey and resource mapping information for Nelson Lagoon and False Pass is included here (Reedy-Maschner 2012).

3.3.7.1 Definitions of Subsistence

In 1980, Congress passed ANILCA, in which Title VIII defines subsistence uses as:

The customary and traditional uses by rural Alaska residents of wild, renewable resources for direct personal or family consumption as food, shelter, fuel, clothing, tools, or transportation; for the making and selling of handicraft articles out of inedible byproducts of fish and wildlife resources taken for personal or family consumption; for barter or sharing for personal or family consumption; and for customary trade. (16 USC Section 3113)

Regional Subsistence Framework

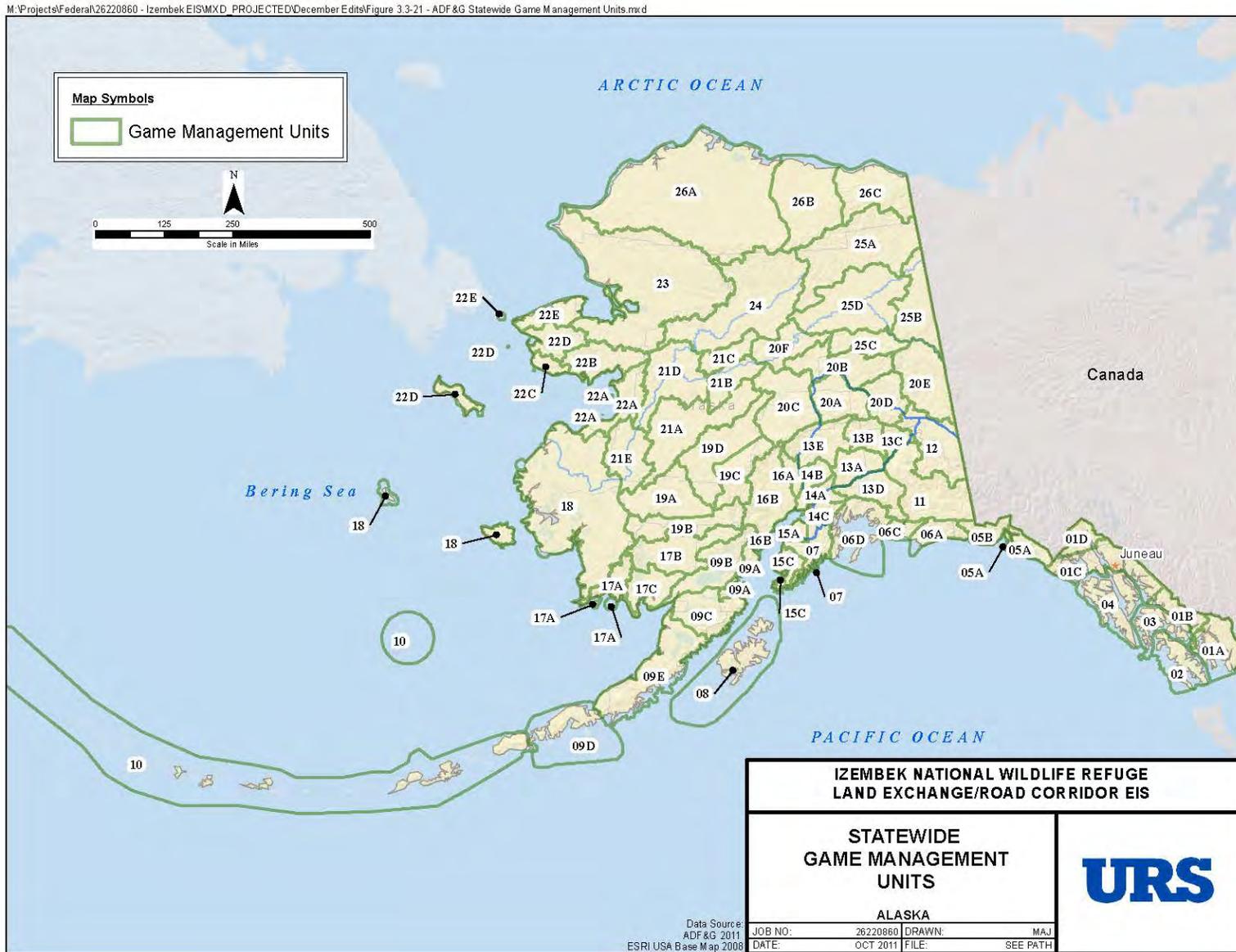
The proposed land exchange areas lie within Region 3, Kodiak/Aleutians Region, of the 10 designated Federal Subsistence Program regions within the state (Service 1992, 2010c). In the area of the proposed land exchange, federal subsistence regulations would apply on the Service-managed lands within the refuge. The nearby communities of Cold Bay and King Cove make use of these and other nearby federal lands for their subsistence activities. The communities of False Pass, Nelson Lagoon, and Sand Point also use this region for subsistence harvest.

Under Alaska state law, all residents qualify as eligible subsistence users. The state distinguishes subsistence harvests from personal use, sport, or commercial harvests based on the character of the harvest, not where the harvester resides. Hunting regulations incorporate subsistence uses into general and drawing hunts. When necessary to limit take, the state provides for subsistence opportunities through registration and permit hunts. State hunting regulations apply to federal land unless specifically preempted by federal regulation.

The state implements its subsistence law through the Alaska Board of Fisheries and the Alaska Board of Game, 82 local fish and game advisory committees, and the Alaska Department of Fish and Game. The Alaska Boards of Fisheries and Game are comprised of members of the public appointed by the governor and confirmed by the legislature, who serve for specified terms. Thirteen local fish and game advisory committees are in the Kodiak/Aleutians area. The Alaska Boards of Fisheries and Game adopted regulations for subsistence fishing and hunting on all State of Alaska managed lands and waters, including state, federal, private lands, and lands conveyed to ANCSA corporations.

The Alaska Department of Fish and Game divided the state into Game Management Units (Units) and subunits (Figure 3.3-21).

Figure 3.3-21 Statewide Game Management Units



The area proposed for exchange that would be conveyed to the state on Sitkinak Island is part of Unit 8 (ADF&G 2010a). The lands proposed for exchange within and surrounding Izembek National Wildlife Refuge are part of Unit 9D, including lands on the northern border of Izembek National Wildlife Refuge situated between the Izembek National Wildlife Refuge and the Alaska Peninsula National Wildlife Refuge. Unit 9D consists of all Alaska Peninsula drainages west of a line from the southernmost head of Port Moller to the head of American Bay, including the Shumagin Islands and other islands of Unit 9 west of the Shumagin Islands (ADF&G 2010h).

A state restricted area within Unit 9D is the Izembek Controlled Use Area. The Alaska Department of Fish and Game defines this area as that portion of the Izembek National Wildlife Refuge known as the Left Hand Valley and Right Hand Valley. It is closed to the use of any motorized vehicle, except outboard motor-powered boats for hunting, including the transportation of hunters, their hunting gear, or parts of game (ADF&G 2010f) (see Figure 3.2-19 and Section 3.3.6, Public Use).

A generalized list of subsistence resources harvested throughout the Aleutians East Borough is included as Table 3.3-54, taken from a 1985 study (Wright, Morris, and Schroeder 1985). Emperor geese are considered a prohibited species and cannot be harvested.

Table 3.3-54 Subsistence Resources Harvested throughout the Aleutians East Borough

Subsistence Resources Harvested by Group	Subsistence Resources Harvested by Species
Fish	Chinook (king) salmon, sockeye (red) salmon, coho (silver) salmon, chum (dog) salmon, pink (humpy) salmon, Dolly Varden, whitefish, lake trout, rainbow/steelhead, Arctic grayling, northern pike, burbot, blackfish, longnose sucker, smelt, Pacific halibut, sole, flounder, herring, capelin, Pacific cod, bass, snapper
Migratory Birds	Ducks (Mallard, Gadwall, Pintail, Green-Winged Teal, Shoveler, Wigeon, Greater Scaup, Goldeneyes, Bufflehead, Oldsquaw, Harlequin, Steller’s Eider, Common Eider, King Eider, Scoters, and Mergansers), geese (Canada Goose, Brant, Emperor Goose, White-Fronted Goose, Snow Goose), Swan, Sandhill Crane, Ptarmigan, Spruce Grouse, bird eggs
Marine Mammals	Harbor seal, spotted seal, ringed seal, bearded seal, Steller sea lion, walrus, beluga, other whales
Land Mammals	Moose, caribou, black bear, brown bear, porcupine, arctic hare, snowshoe hare, marmot, parka squirrel [Arctic ground squirrel], beaver, red fox, arctic fox, wolf, coyote, river otter, wolverine, mink, martin, weasel, lynx, muskrat
Marine Invertebrates	Clams and mussels (razor, butter, and softshell clams, cockles, emmas, and bidarkis), crabs (king, tanner, Dungeness and horse crabs), limpits, snails, octopus, sea urchins, shrimp, herring spawn on kelp
Vegetation	Salmonberries, blueberries, blackberries, low-bush cranberries, high-bush cranberries, huckleberries, crowberries, strawberries; vegetables (wild celery, wild spinach, fiddlehead ferns), herbs (stinkweed, tundra tea), basket grass, firewood (spruce, birch, cottonwood, alder, and willow)

Sources: Wright, Morris, and Schroeder 1985; AEB 2008

3.3.7.2 Subsistence Harvest Patterns by Community

Data presented in this section were gathered from unified federal and state databases reported by community harvest level and not by land status. Community subsistence harvest information was available for affected communities, with the exception of the community of Cold Bay, where data was limited to annual subsistence fish permit results. A majority of the baseline data collected for these communities is 10 to 20 years old and harvest levels of certain species (i.e.,

caribou) have changed and it is likely that other subsistence resources are now harvested instead. However, subsistence use patterns tend to be traditional and follow similar patterns from year to year with the exception of emergency closure or extreme changes in abundance of local resources.

Community of King Cove

Noncommercial resource use is an important part of the socioeconomic environment, culture, and way of life for this community, which has a mixed subsistence-cash economy.

Approximately 60 percent of total meat, fish, and fowl consumed by community residents is from subsistence and represents 25 percent of the total diet (AEB 2008). The species composition in percentage of wild resource harvests by communities that harvest subsistence resources in the project area are shown in Table 3.3-55. In the community of King Cove, composition of per capita harvest was 53 percent salmon, 17 percent fish other than salmon, 15 percent land mammals, 7 percent marine invertebrates, 4 percent bird eggs, less than 1 percent marine mammals, and 3 percent wild plants. The percentage of land mammals harvested by community has likely sharply declined since 1992 as hunting on the South Alaska Peninsula Herd was closed for many years; a federal subsistence caribou hunt reopened as a limited registration permit hunt in 2012. In addition, moose are infrequently harvested (less than 1 per year).

Table 3.3-55 Species Composition in Percentage of Wild Resource Harvests by Community

Community and Year	Salmon	Other Fish	Shell Fish	Land Mammals	Marine Mammals	Birds	Plants	Total
False Pass 1987-1988	44.9%	18.2%	5.4%	18.4%	5.9%	4.2%	3.0%	100%
King Cove 1992	53.4%	16.7%	6.8%	15.4%	0.8%	3.6%	3.4%	100%
Nelson Lagoon 1986-1987	33.3%	3.2%	6.2%	50.5%	0.5%	4.7%	1.7%	100%
Sand Point 1992	53.8%	21.1%	7.0%	11.3%	1.8%	2.3%	2.7%	100%

Source: Scott et al. 1993, cited in Fall et al. 1993.

* Community subsistence harvest data is unavailable for the City of Cold Bay, with the exception of subsistence salmon fishing permit results, found in Table 3.3-58.

In 1992, King Cove community residents were noted to use approximately 16 types of wild food resources throughout the year (Fall et al. 1993). Of households surveyed, approximately 97 percent reported attempting to harvest a resource and 96 percent reported success.

Approximately 95 percent received gifts of wild foods from other households and 81 percent reported giving away wild resources. Fall et al. (1993) reported that the average King Cove household harvested 908 pounds of wild foods for home use with the average per capita harvest reported as 256 pounds (Table 3.3-56).

Nearby communities of Nelson Lagoon and Sand Point reported similar levels of harvest in pounds in usable weight per person at 257 pounds in Nelson Lagoon (1986/1987) and 255 pounds per person in Sand Point (1992). False Pass reported a total of 412 pounds in useable weight per person with salmon and other fish resources being harvested at higher rates in

comparison to the other communities (Table 3.3-56). Caribou and salmon were listed as the most important subsistence resources by weight in the communities of King Cove and False Pass in the early 1990s (Fall et al. 1996). Characteristics of noncommercial wild resource harvesting in King Cove were noted to be similar to other southwestern communities such as Sand Point, Chignik Bay, and Chignik Lagoon (Fall et al. 1993).

Table 3.3-56 Species Composition in Pounds Per Person of Wild Resources Harvests by Community

Community and Year	Salmon	Other Fish	Shell Fish	Land Mammals	Marine Mammals	Birds	Plants	Total
False Pass 1987-1988	193.2	60.4	23.2	79.4	25.3	18.3	12.8	412
False Pass 2009**	284.7	117.9	51.7	184.7	2.7	21.7	25.7	689.2
King Cove 1992	136.8	42.7	17.3	39.4	2.1	9.3	8.6	256
Nelson Lagoon 1986-1987	85.8	4.5	16	130	1.2	12	4.5	257
Nelson Lagoon 2009**	188.5	15.5	3.2	16.8	NA	11.9	25.7	261.8
Sand Point 1992	137.5	54	17.8	28.9	4.7	5.9	7	255
Cold Bay*	NA	NA	NA	NA	NA	NA	NA	NA

Source: Fall et al. 1993; Scott et al. 1995, cited in Fall et al. 1996; Wolfe and Fischer, 2003; Reedy-Maschner, 2012

* Community subsistence harvest data is unavailable for the City of Cold Bay, with the exception of subsistence salmon fishing permit results, found in Table 3.3-58.

** In response to comments on the Draft EIS, additional data were made available by Dr. Katherine Reedy-Maschner.

The most recent subsistence harvest data for harbor seals and Steller sea lions is from 2008 and available from the Alaska Department of Fish and Game (ADF&G 2011b). It was estimated that during the study year, approximately 428 pounds of harbor seal (65 animals) were harvested and 255 pounds of Steller sea lion (1 animal) were harvested for subsistence use.

Subsistence harvest patterns in the community of King Cove have traditionally focused on marine resources, though residents also have hunted caribou and waterfowl (Braund 2002; Fall et al. 1993). Caribou hunting was closed for a number of years due to low population levels; a federal subsistence caribou hunt reopened as a limited registration permit hunt in 2012. Marine resources harvested include salmon, arctic char/Dolly Varden, bottomfish such as halibut and Pacific cod, crab and mollusks (octopus and chitons), and harbor seals (Fall et al. 1993, 1996). Coho and sockeye salmon are the salmon species most frequently taken in the subsistence fisheries (Service 1994; ADF&G 2005). The number of individual salmon harvested, by species, for subsistence by residences of King Cove, is recorded annually by the Alaska Department of Fish and Game through the subsistence permits program (Table 3.3-57). Subsistence harvest of salmon in the community of King Cove during 2003 accounted for 50 percent of the subsistence salmon harvest of the 6 communities for the Alaska Peninsula Area (ADF&G 2005).

Subsistence fishing for salmon has been noted to be combined with commercial fishing with amounts reserved from commercial catches (AEB 2008). King Cove residents reportedly use beach seines for salmon fishing harvest. Other subsistence resources harvested include moose (when available), Ptarmigan, gull eggs, Brant, Canada Geese, Emperor Geese, Teal, Mallards, and other ducks, as well as berries and wild plants (Fall et al. 1993, 1996). Hunting or gathering

the eggs of Emperor Geese is currently closed and has been since 1986 (Pacific Flyway Council 2006a; AMBCC 2011). Subsistence and general caribou hunting have been closed in this area since 2008, with the exception of a reopening of the federal subsistence registration permit hunt in 2012. Additional information regarding the status of caribou in the project area is included in Section 3.2.5.

Table 3.3-57 Estimated Subsistence Salmon Harvest for City of King Cove in Number of Fish

Year	Permits Issued	King Cove Residents Estimated Harvest					
		Chinook	Sockeye	Coho	Pink	Chum	Total
2004	61	44	5,388	2,511	133	161	8,237
2005	62	16	4,034	2,183	405	516	7,154
2006	53	1	3,088	2,203	162	264	5,718
2007	52	9	3,332	2,931	326	369	6,967
2008	57	57	1,694	1,943	216	174	4,084
2009	41	57	1,694	1,943	216	174	4,084
Average	54	31	3,205	2,286	243	276	6,041

Source: Hartill and Keyse 2010

Subsistence resources follow a seasonal cycle and are harvested at various times of the year by local residents depending upon the seasonal movement/migration of resources, availability of time allocated to participate in subsistence activities, availability of cash to support harvest equipment and operating costs, and regulatory restrictions.

Subsistence harvest of salmon begins in May and June and continues through November with coho and sockeye taken in the most abundance in the subsistence fishery although pink, chum, and chinook salmon are also taken (Service 1994). Chum salmon are harvested June to September, while pink salmon are harvested July through September. Coho are harvested from July to November with the peak harvests occurring in August and September (USACE 2003). Subsistence harvest data estimated the harvest of salmon by subsistence permit averaged 8,050 fish from 2001 to 2005 (Tschersich 2007) and 6,041 fish from 2005 to 2009 (Hartill and Keyse 2010).

Marine fishing (bottomfish such as halibut and cod), freshwater fishing, and gathering of marine invertebrates occur throughout the year. Species harvest patterns vary by abundance and season. Gathering of marine invertebrates such as crabs and chitons occurs primarily in the winter. Trapping of furbearers occurs primarily between November and February.

Caribou hunting traditionally occurred during August, September, and December through April. . Hunting of waterfowl occurs traditionally in September and October and opens in April. Ptarmigan hunting starts in mid-August. Vegetation harvesting (gathering) of wild plants, including berries, wild celery or cow parsnip, wild parsley or beach lovage and kelp, occurs from July through late September/October (USACE 2003). Harbor seal hunting occurs in May and June, overlapping with harvest of gull eggs as well as during the fall (USACE 2003).

The geographic pattern of subsistence harvests, also referred to as subsistence use areas, is rooted in land use and occupancy dating back for generations, including historic and contemporary cabin sites used for subsistence purposes. The Agdaagux Tribe of King Cove and King Cove

Corporation provided information about historic cabin sites that reflect important subsistence areas dating back to at least the 1940s. The Tribe and the Corporation note that although the lands of the Izembek and Alaska Peninsula National Wildlife Refuges are remote and may appear unused, the Agdaagux Tribal members had cabins widely dispersed across the landscape in the vicinity of Mortensens Lagoon, Cold Bay, Kinzarof Lagoon, and the shoreline north and east of Izembek Lagoon. The 25 cabin sites displayed in Figure 3.3-22 are indicative of the widespread settlement patterns and dispersed subsistence harvest practices in the decades before residents concentrated in the modern communities.

In recent decades subsistence harvests occur both inside and outside of the Izembek National Wildlife Refuge (Figure 3.3-23 King Cove Subsistence Use Areas). The 1994 *Fisheries Management Plan Izembek National Wildlife Refuge* (Service 1994) noted that subsistence harvest of salmon occurs primarily on the coastal waters adjacent to the refuge. A general use area by King Cove community residents extends from Pavlof Bay southwest to the Sanak Islands, northwest to False Pass and the north side of the Alaska Peninsula, northwest to Moffet Point on the north shore of the Alaska Peninsula, and south to the southern shore of the Alaska Peninsula (Braund 2002). The most concentrated subsistence efforts occur within 20 miles of the community of King Cove due to the ease of access and abundance of resources available for harvest (USACE 2003). Subsistence harvest areas include the shores and waters of King Cove, the eastern end of Lenard Harbor, Kinzarof Lagoon, Mortensens Lagoon, and Nurse Lagoon (USACE 2003). Upland areas include the Delta Creek Valley, while lowland subsistence harvest areas include those areas along the western shore of Cold Bay and north to Izembek Lagoon and Kinzarof Lagoon.

Concentrated subsistence harvest areas for marine mammals, fish, crab, and mollusks by King Cove community residents occur throughout the marine waters of Cold Bay. Marine mammal harvest occurs in the waters of Deer Passage and surrounding Outer Iliasik Island to the east of King Cove (ADF&G 2009a). Bottomfish harvests are concentrated in the waters near King Cove and the eastern coastal entrance to Cold Bay from approximately Bear Rock to east of King Cove. Crab is harvested in the waters of Lenard Harbor and mollusk gathering occurs primarily in the King Cove Lagoon and Lenard Harbor. Salmon harvest concentrations occur from Delta Point to Old Man's Lagoon, in the area in and surrounding Kinzarof Lagoon, Lenard Harbor, and from Bear Rock to King Cove respectively (ADF&G 2009a; Braund 2002). Freshwater fish, mostly arctic char/Dolly Varden, are harvested near a stream on the east shore of King Cove and on Delta Creek (USACE 2003).

Caribou hunting has been closed since 2008, with the exception of a reopening of the federal subsistence limited registration permit hunt in 2012. Harvest areas for caribou and waterfowl varied based on the seasonal movements and availability of these populations within and surrounding the Izembek National Wildlife Refuge. Concentrated subsistence use areas for caribou occurred throughout the area, including Delta Creek and areas from north of Mortensens Lagoon along the western shore of Cold Bay extending north to the isthmus between Izembek Lagoon and Kinzarof Lagoon and east towards the Joshua Green River watershed (USACE 2003). King Cove subsistence hunters previously used the areas north and east of this community for caribou hunting. Flat areas at the head of the Pavlof Bay area are also reported to have been used (AEB 2008). Caribou (when hunting is allowed) and waterfowl are taken in and outside of the refuge on the existing road system. Boats must be used to reach more remote areas in Kinzarof Lagoon.

Waterfowl harvest areas are concentrated along the western side of Cold Bay south of the city near Mortensens Lagoon, Nurse Lagoon, Izembek Lagoon, Moffet Lagoon, Kinzarof Lagoon, Lenard Harbor, King Cove Lagoon, and Morzhovoi Bay (Braund 2002; Schroeder et al. 1987).

Figure 3.3-22 Historic Sites of Subsistence Use and Occupancy

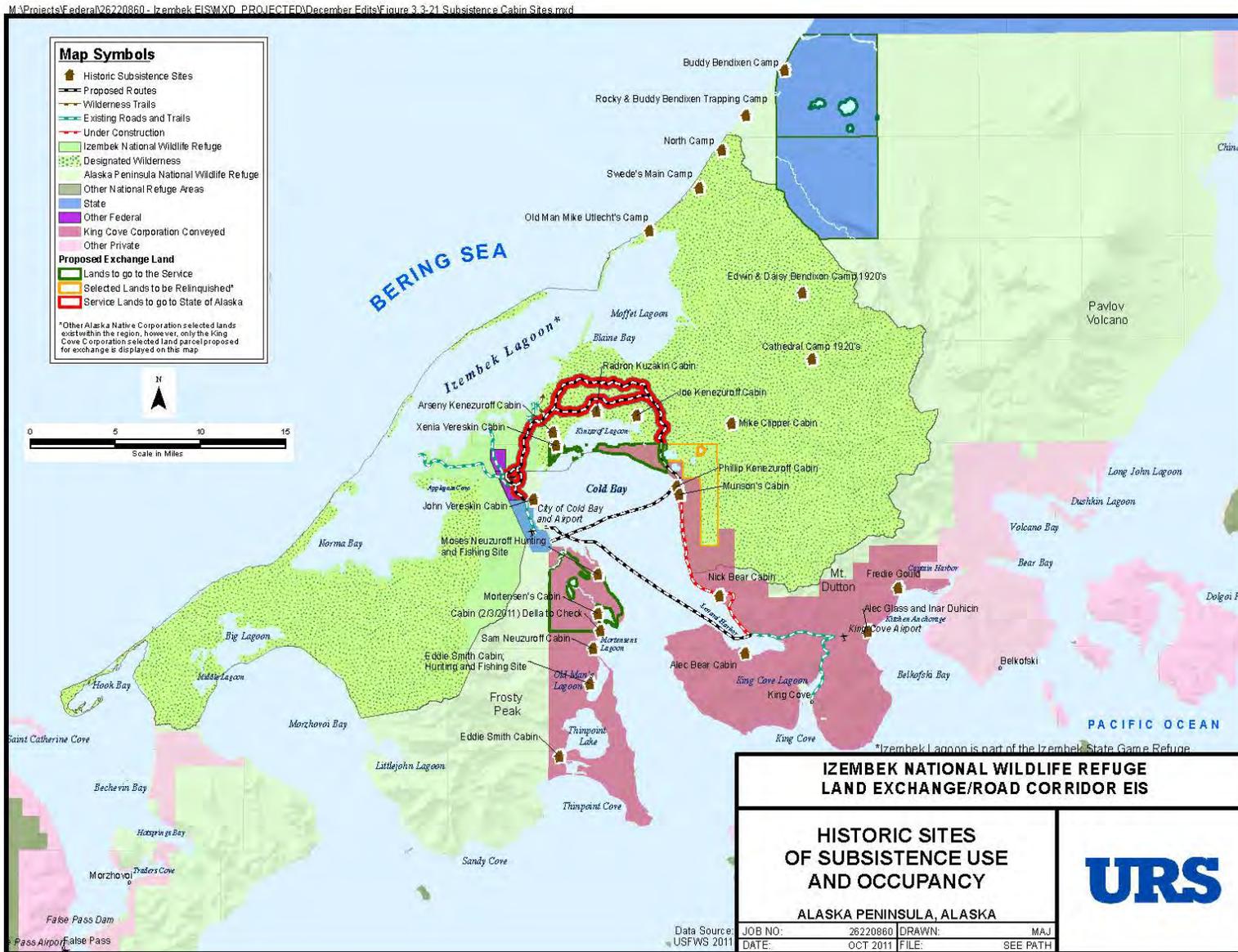
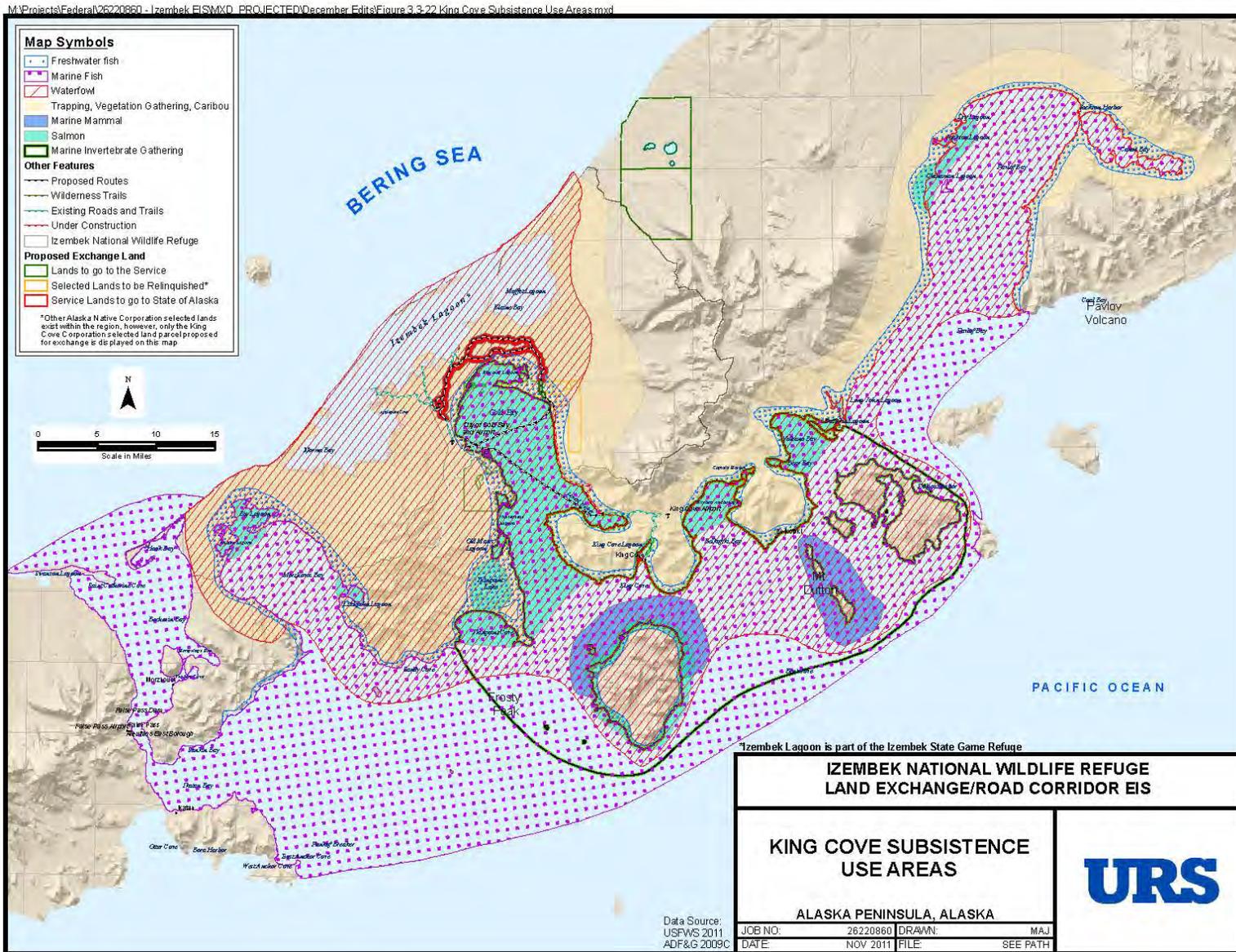


Figure 3.3-23 Community of King Cove Subsistence Use Areas



Community of Cold Bay

Detailed and comprehensive subsistence harvest data are lacking for the community of Cold Bay and have not historically been collected by the Alaska Department of Fish and Game or the Service (ADF&G 2011b; USACE 2003). However, the Alaska Department of Fish and Game has collected data annually on salmon harvests through the subsistence permits program, which issues permits to local residences for noncommercial, customary and traditional uses. The results provide information on subsistence salmon harvests throughout the region, including Cold Bay, in number of individual fish harvested by species.

Table 3.3-58 Estimated Subsistence Salmon Harvest for City of Cold Bay in Number of Fish

Year	Permits Issued	Cold Bay Residents Estimated Harvest					
		Chinook	Sockeye	Coho	Pink	Chum	Total
2004	23	5	679	35	0	23	742
2005	31	2	532	212	2	6	754
2006	31	0	558	31	8	31	628
2007	29	0	661	167	0	3	831
2008	27	0	313	0	7	7	327
2009	20	1	541	33	0	31	606
Average	27	2	547	80	3	17	648

Source: Hartill and Keyse 2010

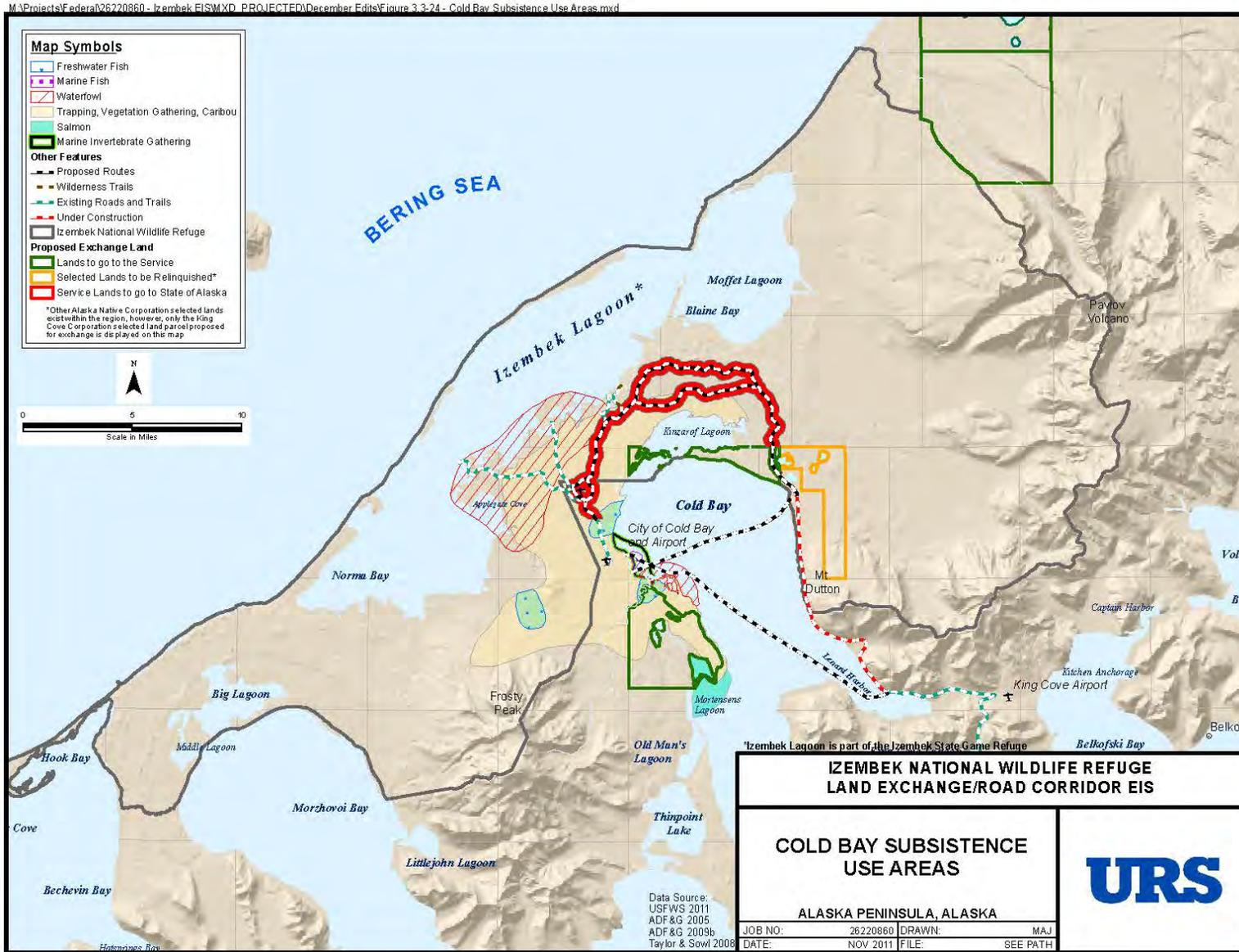
Residents of Cold Bay harvest salmon and freshwater fish, caribou, marine invertebrates (clams), wild plants, berries, ptarmigan, and waterfowl (Scott et al. 1995, cited in Fall et al. 1996; ADF&G 2009b) (Figure 3.3-24 Cold Bay Subsistence Use Areas). Hunting for caribou, trapping, vegetation gathering, and berry picking occur in the areas within 5 to 10 miles of the community of Cold Bay and extends through the areas west and north of Kinzarof Lagoon and the areas south and west of Cold Bay (ADF&G 2009b).

It is likely that Cold Bay residents harvest a higher quantity of subsistence resources within the Izembek National Wildlife Refuge in comparison to King Cove residents given that access is easier using the existing road system north and south of the community of Cold Bay. Residents of Cold Bay have easier access to local resources on Izembek National Wildlife Refuge, but less access to regional resources. Some residents of the other nearby communities have the use of fishing boats, giving access to resources over a greater area. Subsistence harvest data (Table 3.3-58) estimated the harvest of salmon by subsistence permit averaged 648 fish from 2004 to 2009 (Hartill and Keyse 2010). At the outlet of Mortensens Bay, coho and sockeye salmon are harvested by subsistence users from Cold Bay and King Cove (Schroeder et al. 1987; Whitton 2003). Kinzarof Lagoon, Mortensens Lagoon, and Old Mans Lagoon, Trout Creek, Stapp Creek, and Russell Creek near the community of Cold Bay are areas where subsistence harvests of salmon and trout occur by residents of the community of Cold Bay (USACE 2003). Marine water fishing and marine invertebrate gathering occurs near the Cold Bay dock (ADF&G 2009b). Halibut fishing occurs by subsistence permit in Cold Bay (NOAA 2001).

A majority of the caribou that were harvested when hunting was open for subsistence purposes were probably taken near the road system (Service 1994). Areas used in the reopened 2012

federal subsistence registration permit hunt are not yet reported, but are likely to follow the former pattern. Access to harvest areas for caribou when allowed is easier for Cold Bay residents due to the presence of roads and vehicle trails that extend from Mortensens Lagoon to Izembek Lagoon. Residents of the community of King Cove have to access Kinzarof Lagoon and Cold Bay by boat to harvest to meet their subsistence needs. Waterfowl are taken by City of Cold Bay residents in Izembek Lagoon, especially in Applegate Cove and in the Outer Marker Areas (Service 1994), Cold Bay, and on the tundra and lakes on Izembek National Wildlife Refuge. Harvest activities also take place near Nurse Lagoon in Cold Bay (ADF&G 2009b).

Figure 3.3-24 Community of Cold Bay Subsistence Use Areas



Community of False Pass

Residents of False Pass harvest subsistence resources throughout the project area (ADF&G 2009c) (Figure 3.3-25, False Pass Subsistence Use Areas). Additional ethnographic context information for False Pass can be found in K. Reedy-Maschner and H. Maschner (2010). Areas of harvest of waterfowl and marine fish include Izembek Lagoon, Kinzarof Lagoon, Cold Bay, and Morzhovoi Bay. Vegetation gathering occurs throughout the area including along the shorelines of Morzhovoi Bay, within Izembek National Wildlife Refuge, south of the community of Cold Bay and along the shorelines of Cold Bay. Caribou hunting has occurred throughout the project area but this hunt is currently closed. Caribou (when available for hunting) and salmon are the most important subsistence resources harvested by the community residents of False Pass. The wild resource harvests of False Pass are described in Table 3.3-55. False Pass reported a total of 412 pounds in useable weight per person with salmon and other fish resources being harvested at higher rates in comparison to the other communities (Fall et al. 1996) (Table 3.3-56). Subsistence harvest of salmon in False Pass during 2003 accounted for 14 percent of the subsistence salmon harvest of the 6 communities for the Alaska Peninsula Area (ADF&G 2005). As shown in Table 3.3-59, subsistence harvest data estimated the harvest of salmon by subsistence permit averaged 566 fish from 2004 to 2009 (Hartill and Keyse 2010).

Table 3.3-59 Estimated Subsistence Salmon Harvest for False Pass in Number of Fish

Year	Permits Issued	False Pass Residents Estimated Harvest					
		Chinook	Sockeye	Coho	Pink	Chum	Total
2004	8	6	446	424	65	32	973
2005	6	0	795	375	0	0	1,170
2006	5	3	188	163	143	120	617
2007	3	0	0	180	0	0	180
2008	2	12	16	10	28	0	66
2009	4	15	69	11	253	39	387
Average	5	6	252	194	82	32	566

Source: Hartill and Keyse 2010

Marine mammals are harvested by the community of False Pass in the vicinity of the waters near False Pass and in Bechevin Bay (ADF&G 2009c) (Figure 3.3-25, False Pass Subsistence Use Areas). According to the Alaska Department of Fish and Game Community Subsistence Information System (most recent data reported 2008), approximately 154 pounds of harbor seal were harvested (ADF&G 2011b).

Through comments on the Draft EIS, additional subsistence harvest area data was made available for False Pass. As described in Reedy-Maschner (2012):

Maps of False Pass use areas cover Unimak Island, the lower section of the Alaska Peninsula, and the Sanak Islands. Residents have excellent access to the north Pacific and Bering Sea. Commercial vessels are used to travel long distances, and may be used for separate subsistence trips. Travel to Sanak is for cattle and bird hunting and must be conducted using large vessels. The Sanak Corporation has intentionally removed foxes in order to boost the bird populations. Trucks and 4-wheelers are used around the village and in the creek

beds to travel west up the valley behind the village for bird hunting and other pursuits. Caribou hunting areas indicated here are places where they would normally hunt if a season was open, and they remain key locations in the ecological map of residents. False Pass hunters and fishermen have a strong relationship to the lands and waters of their region.

The additional subsistence harvest use areas shown in Figure 3.3-26 are similar to the harvest data presented in Figure 3.3-25. However, more details and discrete use areas for many species, such as marine invertebrates, are shown in Figure 3.3-26. The more recent use areas generally show less overlap with the Izembek Lagoon.

Figure 3.3-25 False Pass Subsistence Use Areas

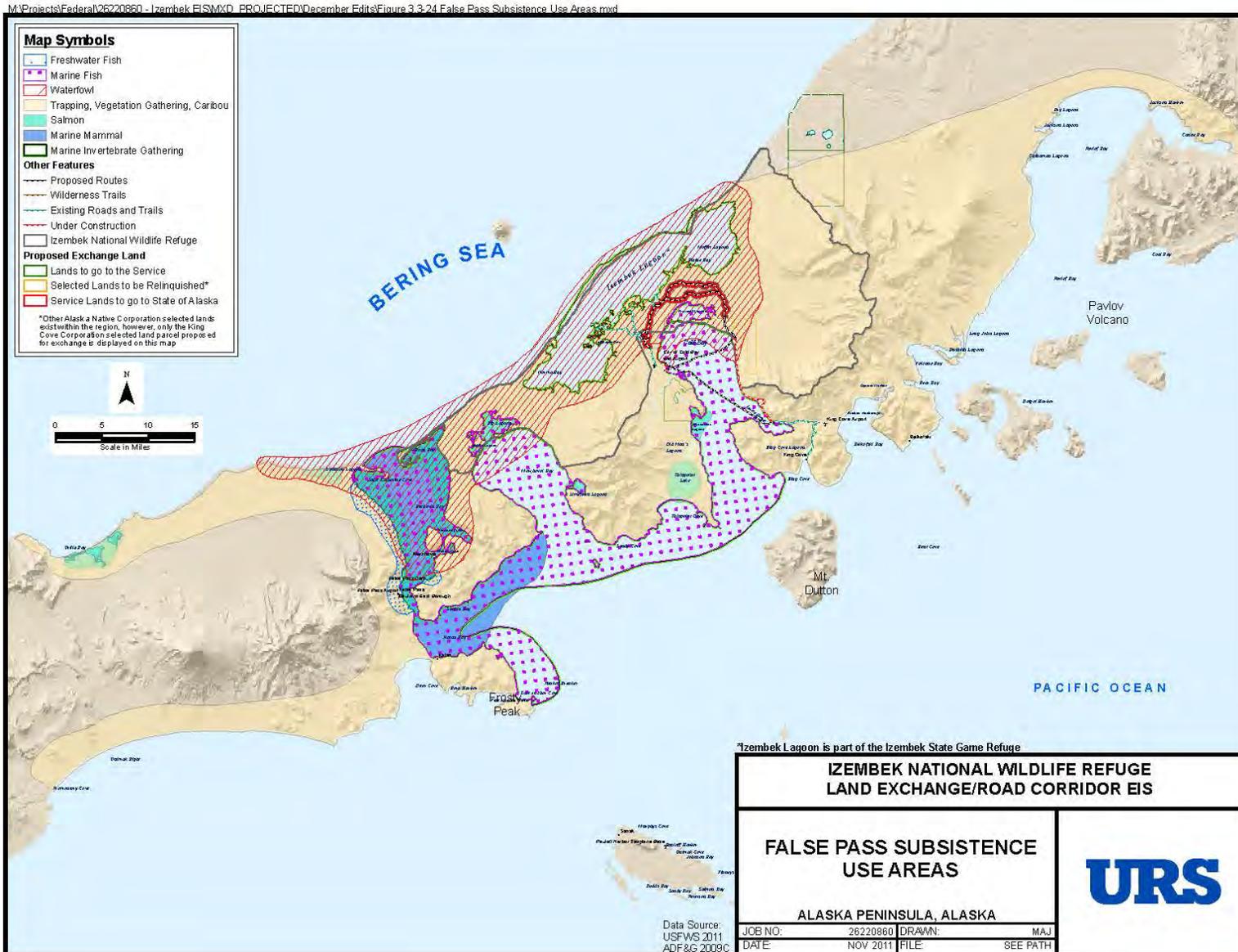
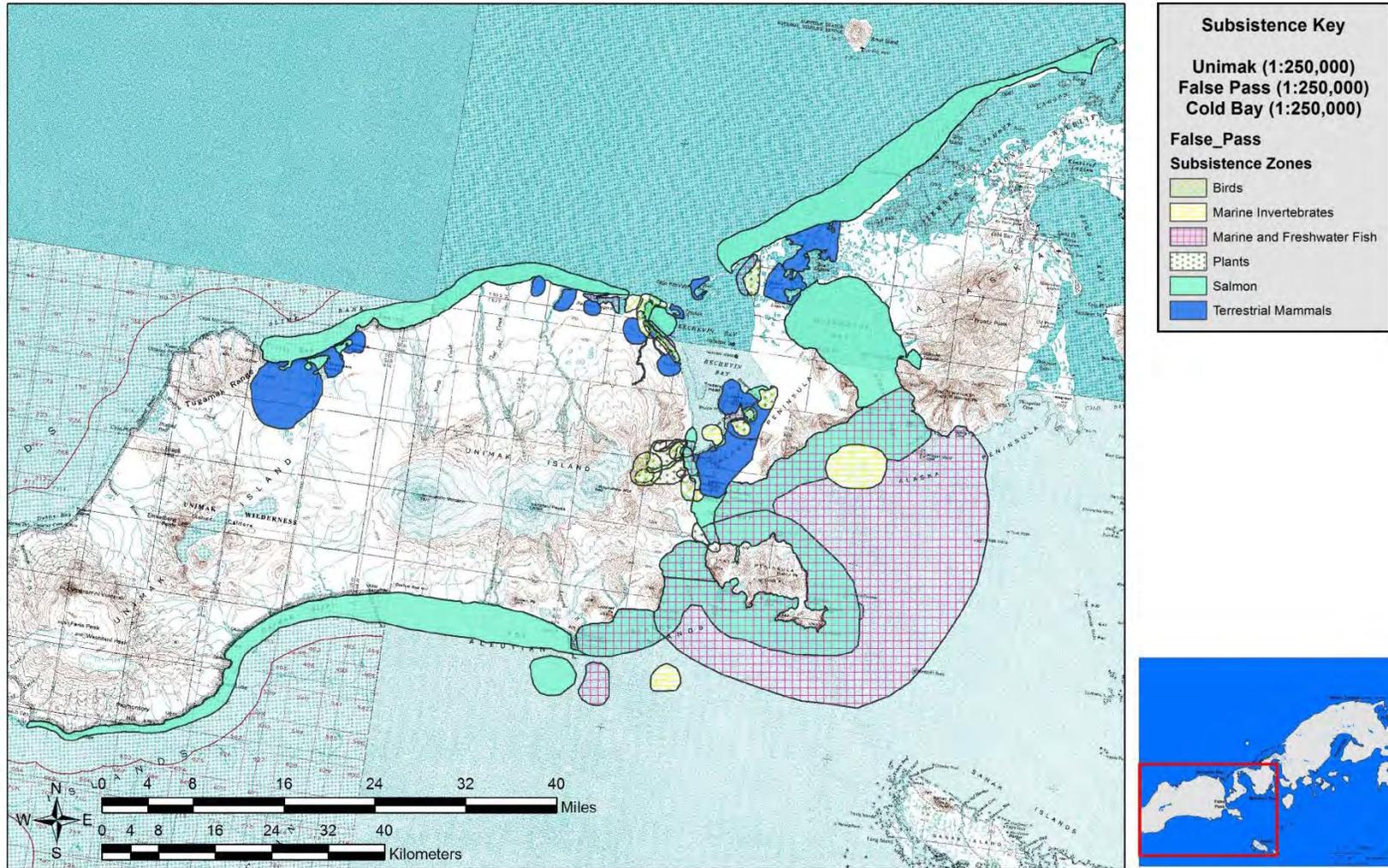


Figure 3.3-26 Community of False Pass Subsistence Use Areas



Source: Reedy-Maschner, 2012

Community of Nelson Lagoon

When caribou hunting is open, Nelson Lagoon residents have reportedly taken caribou twice during the year: in the fall during August and September and in the winter between January and February (ISER 2010). While variation occurs with regard to the number of caribou taken and consumed, it is likely that all Nelson Lagoon households had some caribou throughout the year and that perhaps more subsistence-oriented households could consume approximately 4 caribou during the year when hunting is open (Langdon 1982, cited in ISER 2010). Additional ethnographic context information for Nelson Lagoon can be found in K. Reedy-Maschner and H. Maschner (2010). Subsistence harvest of salmon in Nelson Lagoon during 2003 accounted for 1 percent of the subsistence salmon harvest of the 6 communities for the Alaska Peninsula Area (ADF&G 2005). Subsistence harvest data (Table 3.3-60) for Nelson Lagoon and nearby Port Moller estimated the harvest of salmon by subsistence permit averaged 521 fish from 2004 to 2009 (Hartill and Keyse 2010). The wild resource harvests of Nelson Lagoon are described in Table 3.3-55. Nelson Lagoon reported levels of harvest in pounds in usable weight per person at 257 pounds in 1986/1987 (Table 3.3-56). In 1996 (most recent data available), approximately 1,312 pounds of birds and eggs were harvested and 1,000 pounds of migratory birds were harvested. Bird harvests were higher during the fall migration with 853 pounds harvested (ADF&G 2011b). Limited subsistence harvest of moose occurs due to low numbers present in the area. The Alaska Department of Fish and Game subsistence database documented 1 moose taken in 1987 (ADF&G 2011b).

Table 3.3-60 Estimated Subsistence Salmon Harvest for Nelson Lagoon in Number of Fish

Year	Permits Issued	Nelson Lagoon Residents Estimated Harvest					
		Chinook	Sockeye	Coho	Pink	Chum	Total
2004	4	7	105	140	0	0	252
2005	7	2	257	58	0	0	317
2006	7	8	579	3	0	0	590
2007	6	0	508	0	0	0	508
2008	3	0	750	0	0	0	750
2009	5	0	588	118	3	0	709
Average	5	3	465	53	1	0	521

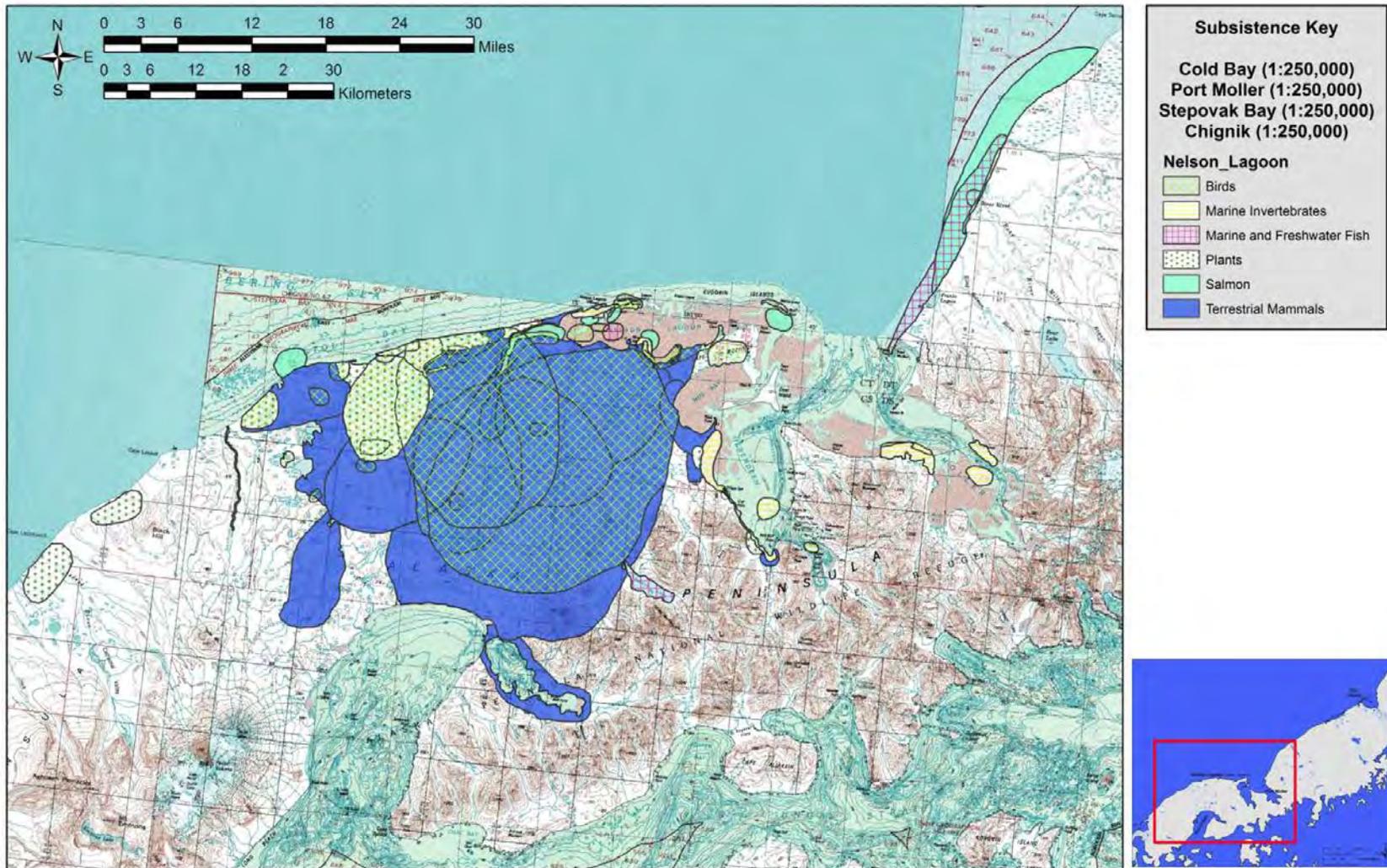
Source: Hartill and Keyse 2010

Through comments on the Draft EIS, additional subsistence harvest area data was made available for Nelson Lagoon (Figure 3.3-27). As described in Reedy-Maschner (2012):

Nelson Lagoon maps show expansive traditional landscapes for Nelson Lagoon residents. The areas of interest described by residents include caribou areas and sockeye salmon spawning grounds, as well as many cabins, camps, runways, and lodges. Former drill pads from 1980s onshore oil and gas activity appear on the basemap, and are sites of importance to Nelson Lagoon residents who use the old roads and a runway built at the time of exploration. Nelson Lagoon’s residents drive southwest down the beach for many miles and harvest along the uplands and interior. They travel by boat throughout the lagoon, Herendeen Bay, Port Moller and north up the coast past Bear River. The large terrestrial mammal hunting areas are closed caribou hunting territories. Residents have not been allowed to

hunt for several years, but all of them noted calving areas, key hunting sites, and where the herd typically ranges. They also highlighted the sockeye spawning lakes, which supports Nelson Lagoon families, the village, their culture, and the economic base. Many of the clam and cockle digging areas are now empty places where they used to get what they needed, but still retain hope that these clam beds will recover. Birding areas are still used heavily, but they cannot legally harvest Emperor geese. Nelson Lagoon residents generally have a very intimate knowledge of the lands and waters around their village and throughout their commercial fishing range, but they are struggling to maintain this connection as they hope for caribou hunting to open once again.

Figure 3.3-27 Nelson Lagoon Subsistence Use Areas



Source: Reedy-Maschner, 2012

Community of Sand Point

An overlap in subsistence harvest areas for the community of Sand Point with the communities of Cold Bay and King Cove subsistence users could be expected, as well as similar trends in subsistence harvests. As documented in household interviews by the Alaska Department of Fish and Game, Division of Subsistence in December 1992 and January – February 1993, subsistence resource harvest areas for the community of Sand Point occur within the project area. For waterfowl and salmon, mapped uses occur in Norma Bay and Applegate Cove, across the isthmus of Izembek National Wildlife Refuge near Kinzarof Lagoon, and along the northern shore of Cold Bay. Waterfowl harvest also occurs near Mortensens Lagoon and south along Old Man’s Lagoon. Harvest for caribou (when open) occurred along the Cold Bay road system and into Izembek National Wildlife Refuge (ADF&G 2009d) (Figure 3.3-26, Sand Point Subsistence Use Areas). A knowledgeable King Cove leader stated that most Sand Point residents tend to use the Pavlov Bay sector as their primary subsistence use area (Trumble 2012).

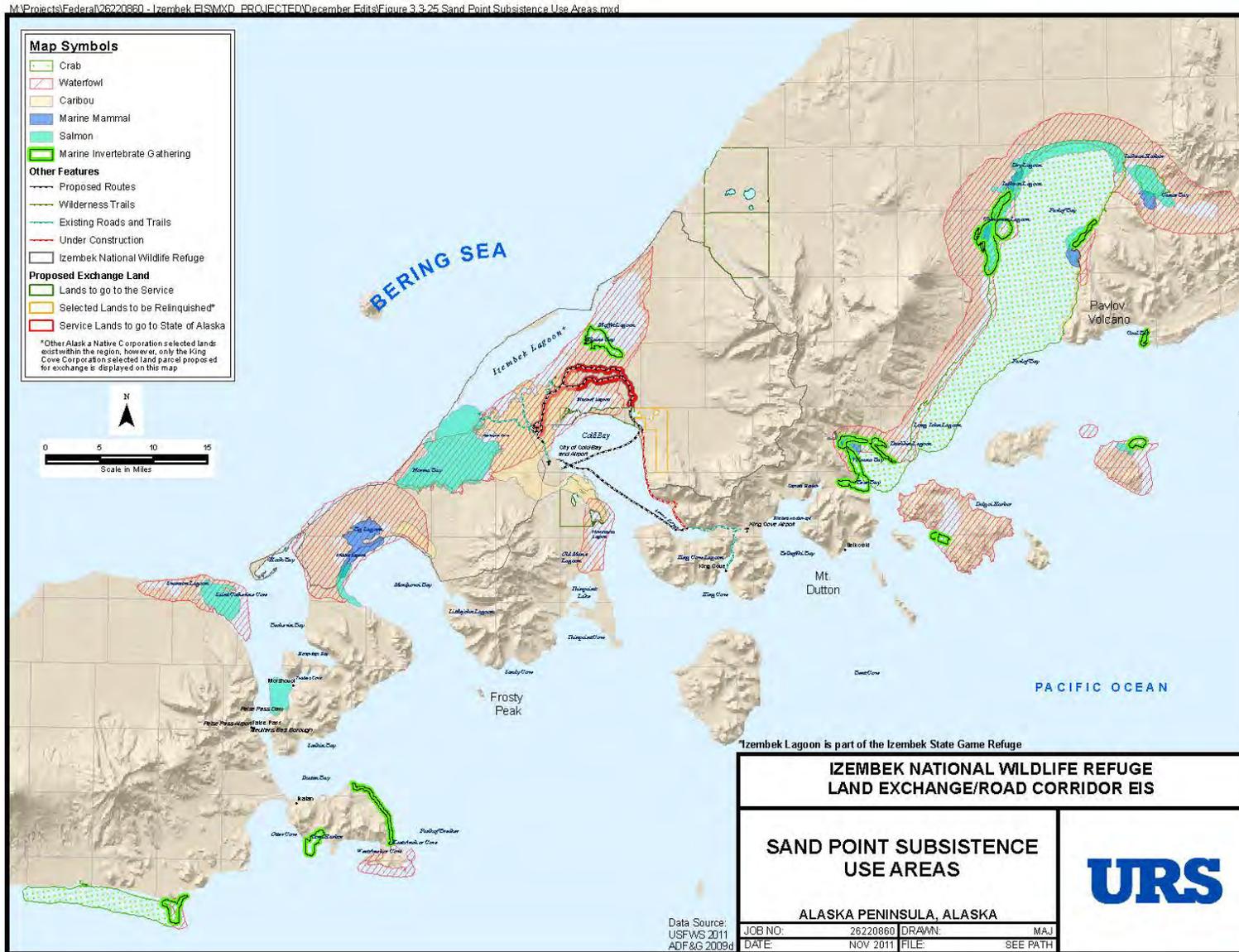
In regard to subsistence harvest levels, ISER (2010) reported that caribou hunting for subsistence purposes is a specialized activity in Sand Point and that during the 1980s, the annual harvest of caribou per household declined to about 0.5 caribou. Limited subsistence harvest of moose occurs due to low numbers present in the area. The Alaska Department of Fish and Game subsistence database documented 2 moose were harvested by Sand Point in 1992 (ADF&G 2011b). The wild resource harvests of Sand Point are described in Table 3.3-55. Sand Point reported levels of harvest in pounds in usable weight per person at 255 pounds in 1992 (Table 3.3-56). Salmon harvests account for the majority of wild resources harvested by Sand Point subsistence users. Subsistence harvest of salmon in Sand Point during 2003 accounted for 22 percent of the subsistence salmon harvest of the 6 communities for the Alaska Peninsula area (ADF&G 2005). As shown in Table 3.3-61, subsistence harvest data estimated the harvest of salmon by subsistence permit averaged 3,254 fish from 2004 to 2009 (Hartill and Keyse 2010).

Table 3.3-61 Estimated Subsistence Salmon Harvest for Sand Point in Number of Fish

Year	Permits Issued	Sand Point Residents Estimated Harvest					
		Chinook	Sockeye	Coho	Pink	Chum	Total
2004	22	94	1,832	148	352	314	2,740
2005	36	67	2,734	599	448	317	4,165
2006	29	61	1,846	170	558	326	2,961
2007	35	60	2,454	200	455	169	3,338
2008	46	55	1,969	780	951	368	4,123
2009	23	45	1,391	301	275	186	2,198
Average	32	64	2,038	366	506	280	3,254

Source: Hartill and Keyse 2010

Figure 3.3-28 Sand Point Subsistence Use Areas



Marine mammals are harvested in Big Lagoon at the northern edge of Morzhovoi Bay (Figure 3.3-28, Sand Point Region Subsistence Harvest Areas). According to the Alaska Department of Fish and Game Community Subsistence Information System (most recent data reported for Sand Point in 2008), approximately 3,504 pounds of harbor seal were harvested and 659 pounds of Steller sea lion were harvested (ADF&G 2011b).

3.3.7.3 Subsistence Access and All-Terrain Vehicle Use

Title VIII of ANILCA specifies that “rural residents engaged in subsistence uses shall have reasonable access to subsistence resources on the public lands.” Regulations specific to Alaska national wildlife refuges also allow the use of “snowmobiles, motorboats, dog teams, and other means of surface transportation traditionally employed by local residents engaged in subsistence uses,” with the caveat that the refuge manager can restrict the use of certain types of transportation on refuge lands when deemed necessary (50 CFR 36.12).

In addition, 43 CFR 36.11(g), states that the use of off-road or all-terrain vehicles in locations other than established roads or parking areas is prohibited, except on routes or in areas designated by the appropriate federal agency in accordance with Executive Order 11644, as amended, or pursuant to a valid permit as prescribed in paragraph (g)(2). Therefore, subsistence use of all-terrain vehicles is allowed except in the areas of permanent closure; and general use of all-terrain vehicles is not allowed except on designated routes, outside of wilderness.

In Izembek National Wildlife Refuge, all-terrain vehicles for general use are not allowed except on designated routes; however, all-terrain vehicles for subsistence use are allowed on the refuge. An approximately 4 square-mile area encompassing about 2,670 acres of Izembek National Wildlife Refuge that had not been traditionally used for all-terrain vehicle access for subsistence purposes was permanently closed August 7, 2006 in the “Notice of Area Closure to Off-Road Vehicles for Subsistence Use in Area Adjacent to King Cove Access Project, Izembek National Wildlife Refuge, AK, 71 Fed. Reg. 44700.” The area with the permanent closure is on the east side of Cold Bay and includes a portion of the 12.0 mile road permitted for construction through the King Cove Access Project to provide a marine-road transportation link between the communities of King Cove and Cold Bay. This road is being built on King Cove Corporation lands located within the exterior boundary of the Izembek National Wildlife Refuge.

Motorized vehicle use for subsistence resources was noted to have occurred on established roads within the Izembek National Wildlife Refuge since before the refuge was established in 1960 as summarized in a literature review by Glaspell and Clough (2003). A comprehensive study of modes of transportation traditionally used has not been completed to date for this area and is not a part of this EIS. Motorized vehicle use has tended to be confined to existing roads and only irregular, isolated occurrences of off-road use have been noted (Glaspell and Clough 2003). The use of vehicles in tundra and wetland habitats on the northeast side of Cold Bay and Kinzarof Lagoon increased after the partial construction of the road on the east side of Cold Bay. The use of motorized vehicles within the Izembek State Game Refuge currently requires a Special Area Permit (ADF&G 2010i). This includes wheeled, tracked, or other ground effect motorized vehicles. Use is not allowed on vegetative intertidal areas or above the mean high tide line, but does occasionally occur.

Local users have developed historical patterns of all-terrain vehicle use for subsistence access (Glaspell and Clough 2003). Approximately 50 miles of gravel roads and trails in the vicinity of

Cold Bay are currently managed by the Izembek National Wildlife Refuge, along with approximately 25 miles of local roads managed by the City of Cold Bay, and approximately 29 miles managed by the City of King Cove (Table 3.3.39). (See additional discussion in Transportation, Section 3.3.3.) The existing road that extends north and to the south and west of the community of Cold Bay into and through Izembek National Wildlife Refuge is used during subsistence harvesting. An historical literature review concluded that it was unlikely King Cove community residents traditionally used off-road vehicles to access hunting lands that were administered by the Izembek National Wildlife Refuge, and notes that data collected by the Alaska Department of Fish and Game indicates that commercial fishing boats were the more common method of access (Glaspell and Clough 2003).

3.3.8 Cultural Resources

3.3.8.1 Regulatory Guidance

The Izembek National Wildlife Refuge Land Exchange/Road Corridor project is subject to various laws, executive orders, and regulations regarding cultural resources. “Cultural resources” as used in this document includes archaeological and historic resources, historic properties (as defined in 36 CFR 800.16), objects of antiquity, cultural items, and places or resources of traditional cultural or religious value that are important to the heritage of the people who live in the communities around the project area today (Service 1985a).

The Section 106 process of the *National Historic Preservation Act* and its implementing regulation (36 CFR Part 800) requires the management of cultural resources and protection of historic properties. In addition, regional management plans such as the *Izembek National Wildlife Refuge Comprehensive Conservation Plan* (Service 1985a), the *Izembek State Game Refuge Management Plan* (ADF&G 2010i), and the *Izembek National Wildlife Refuge Cultural Resource Guide* (Diters 2003) provide management guidance for lands within the proposed areas. Collectively, these regulations and guidelines establish a comprehensive program for the identification, evaluation, and treatment of cultural resources. To ensure that cultural resources are identified and appropriately managed, the Service continues to conduct consultations with State Historic Preservation Officers, Tribes, local governments, and the public.

3.3.8.2 Cultural Overview of the Lower Alaska Peninsula

The Izembek National Wildlife Refuge is situated on the lower Alaska Peninsula, near the presumed eastern boundary of the traditional territory of the Aleut/Unungax[^] people, although McCartney has stressed that the shared border between the Aleut/Unungax[^] people and their neighbors to the east, namely the peninsular Yup’ik Eskimo and the Alutiiq/Koniag of the Kodiak Archipelago, be interpreted as a cultural continuum rather than as a sharp division between monolithic cultural groups (McCartney 1973).

With some exceptions, the material remains from archaeological sites in the Izembek National Wildlife Refuge are decidedly Aleut. However, several classes of artifact typically associated with cultural groups further north and east (e.g., ground slate, pottery, and whalebone masks) are present in some archaeological assemblages. Additionally, the presence of at least 1 semi-subterranean house that displays distinctly Eskimo characteristics (XCB-00003) demonstrates that the prehistoric boundary was permeable to some extent. Several sites outside of the boundaries of the Izembek National Wildlife Refuge, such as Port Moller, display similar comingling of Aleut and Eskimo traits.

For these reasons and more, the lower Alaska Peninsula remains an area of significant anthropological information potential, allowing the study of how pre-contact economies, political organization, and sedentism developed in the region, in addition to how different cultural groups interacted at a regional level. Ecologically, the region’s tectonically active nature allows for the examination of human responses to dramatic shifts in the region’s environmental conditions, and the processes that led mobile groups of hunter gatherers to settle in permanent communities (Maschner 1997).

For the purposes of the present discussion, greater Aleutian regional history can be divided into 3 general cultural periods; the Traditional Culture Period (Pre-1741), the Russian Period (1741-

1867), and the American Period (1867-Present). Archaeological and historic resources located in the region relate to the traditional Aleut and Alutiiq cultures, aspects of Russian occupation, early American influences in the region, and World War II defense facilities.

Traditional Culture Period (Pre-1741)

While our understanding of the culture history of the Aleut region as a whole is far from complete, there are a number of generally accepted assumptions about pre-contact Aleut culture under which most investigators operate. These include the maritime focus of the Aleut economy (Laughlin and Aigner 1975; Veltre 1998; Black 1999), the construction of semi-subterranean houses of varying sizes (Laughlin 1980), and the presumption that the islands were initially colonized from the east to west from the Alaska mainland (Dall 1877; Jochelson 1975).

Regional chronologies have been developed for some areas of the archipelago, including the Near Islands (Corbett, West, and Lefevre 2001), the Unalaska/Dutch Harbor area (Knecht and Davis 2001), the Shumagin Islands (Johnson 1992), and the Lower Alaska Peninsula (Maschner et al. 1997; Maschner 2004).

The earliest inhabitants of the Aleutian Islands are thought to have arrived in the eastern islands of Unalaska and Umnak around 9,000 years before present. This Early Anangula tradition is characterized by a stone tool technology dominated by unifacially retouched blades, almost completely different from later Aleutian tradition stone tools. In addition, burins, ochre grinders, stone bowls and lamps, and small semi-subterranean houses have also been found at sites dating to this period (Laughlin 1980; Dumond 2001). Few dated sites are from this time period, and their antiquity combined with the dynamic nature of the environment of the Aleutian Islands makes their discovery difficult. There are no known sites from this phase located on the lower Alaska Peninsula.

The shift from this unifacial blade technology to the bifacial lithic technology characteristic of the later Aleutian tradition is one of the most archaeologically observable changes in Aleutian history. The appearance of bifacial projectile points in archaeological sites dating between 7000 and 4000 before present marks Knecht and Davis' (2001) "Late Anangula Phase." Sites such as Sandy Beach Bay (Aigner et al. 1976), Idialuk Bay (Aigner 1983), the Anangula Village Site (Laughlin 1980), and Margaret Bay (Knecht and Davis 2001) are included in this phase. As with the previous phase, there are currently no known sites dating to this time period on the lower Alaska Peninsula or the Izembek National Wildlife Refuge.

Beginning about 5000 years before present, the lower Alaska Peninsula possesses a sequence of cultural development distinct from Aleut areas farther west (Knecht and Davis 2001). The definition of this sequence is largely the result of an intensive and long-term investigation by Maschner and his students since 1994 (Maschner 2004), although foundational work in the lower Alaska Peninsula was undertaken by McCartney (1972, 1974), Yarborough (Klingler, n.d.), Dumond (1987), and the Bureau of Indian Affairs' efforts to locate and map cultural and historical sites under Section 14(h)(1) of the *Alaska Native Claims Settlement Act of 1971* (Staley 1988). A review of these efforts will be presented in the following section.

Russian Period (1741-1867)

Although the Alaska Peninsula was sighted by the Russian explorers Bering and Chirkov in 1741 and Russian sailors were well aware of the islands east of Unalaska by 1758 (Black 1999),

contact between Russians and the Aleuts of the Alaska Peninsula did not occur until 1761, when Gavriil Pushkarev arrived in Isanotski Straits and began hunting (Black 1984; Liapunova 1987; Veniaminov 1984). Their abuse of the inhabitants sparked violence and several Russians were ambushed and killed. In retaliation, Pushkarev's men destroyed several villages and took at least 25 prisoners, mainly women and children. They sailed for Kamchatka, where the prisoners were killed. Meanwhile, a ship under Nasedkhin arrived in Isanotski Strait (Black 1984; Khlebnikov 1994; Veniaminov 1984). The crew attacked and destroyed 4 villages along the north coast of Unimak. They were repulsed at Pogromskoe and retreated to their ship, destroying a fifth village. The crew was besieged at their ship and eventually destroyed. Aleut tradition also records the loss of a village on Ikatan and 2 villages in Isanotski Strait sometime during this period. Also in 1761-1762, Ivan Bechevin and his crew wintered on the Alaska Peninsula, apparently committing grave atrocities against the Aleut people of Unimak Island and the Alaska Peninsula (Black 1999, 2004). In 1768, the first Russian government expedition to the Aleutian Islands under Captain Peter Krenitzin arrived to explore and map the Krenitzin Islands, Unimak Island, and the shores of the Alaska Peninsula. Krenitzin wintered at St. Catherine Cove in Isanotski Strait (Black 1999, 2004). Two years after this expedition, Ivan Soloviev spent 11 months exploring Sanak Island and the surrounding area, including Cold Bay (Yarborough n.d.). In addition to hunting sea otter and fur seals, by the end of the 18th century, Aleut people were trapping foxes for the Russian fur markets (Black 1999).

The Aleut population decreased significantly after initial Russian contact through to the end of the first Russian-American Company charter in 1819, both through direct causes such as conflict and work fatalities, and through indirect causes such as introduced diseases. As the Russian interest in the bounty of fur resources in Alaska increased, competition between fur companies increased as well. Aleut men were often impressed into service for various companies, leaving the Aleut villages without able-bodied men to hunt sea mammals. Aleut food stores were raided, further adding to the subsistence hardships being borne by the women, children, and elderly who remained in the Aleut communities (Black 1999).

Sadly, the imperial monopoly of resource extraction in Alaska granted to the Russian-American Company beginning in 1799 did not immediately lead to a better quality of life for most of the Aleut people. The period of Baranov's administration (1799-1818) of the Russian-American Company is characterized by a large amount of social disruption and exploitation of the Aleut people. Entire villages were relocated to new islands or hunting grounds, and compensation for work performed by Aleut people at Russian-American Company stations was lacking (Black 1999). Baranov was removed from office in 1818, and subsequent administration of the Russian-American Company and its interactions with Aleut people was greatly improved.

The second charter legally established the Aleut people's rights as identical to that of the Russian peasantry, and allowed for their continued self-determination and governance (Black 1999). Salaries were paid to workers of the company, their service was patterned so that no man served more than 3 years, and those men who were the sole support for their family were exempt (Black 1999).

The issuance of the third charter in 1844 provided even more support to the Aleut people through funding of the Russian Orthodox Church, requirements of the Russian-American Company to provide education, communication services, and health care to the Aleut people, and compensation to former employees and families of employees who died in service (Black 1999).

Veniaminov suggested in 1840 that during his tenure in the region, that the Alaska Peninsula was not as intensively occupied as the islands of the Aleutian archipelago, supposing that no more than 10 settlements were ever occupied, a majority of which were located on the Pacific side of the peninsula. During this time, only 3 settlements existed in the region: Morzhovoi, Belkovski, and Pavlovski (Veniaminov translated for publication in 1984).

American Period (1867-Present)

The American Period began in 1867, when Russia sold Alaska to the United States. In the 1880s, salmon canneries were established, monopolizing the best fishing areas, disrupting Alaska Native groups' access to the most productive locations for subsistence. Canneries also purchased quantities of the catch destined for winter use, increasing reliance on Alaska's cash economy (Black 1999). The lack of regulation of sea otter and fur seal harvests caused significant damage to the stocks of these animals, and was not controlled until international agreements between the U.S., Russia, and Japan in 1911 banned the hunting of these animals (Black 1999; Yarborough n.d.). It was during this period that the establishment of canneries led to the permanent occupation and formation of the community of King Cove.

Another important aspect of the economy of the region before World War II was fox trapping and farming, both by Natives and non-Natives (Black 1999). The structural remains of the cabins and farming operations are found throughout the area.

Cold Bay was recognized as an important military asset as early as 1890, when it was declared a naval reservation by Executive Order (Denfeld 1988). The Cold Bay area was surveyed a number of times before World War II, but no military construction activity was undertaken until 1940, when the U.S. Army contractor Morrison-Knudsen Company began building a 5,000-foot airfield (Black 1999; Denfeld 1988). With the Japanese bombing of Pearl Harbor in 1941, the U.S. Army took over the construction of the Fort Randall Army Base and airfields (Black 1999).

The Fort Randall Army Base served as a frontline base and refueling site during the Japanese offensive in the Aleutian Islands. Thousands of soldiers were stationed in the facilities at Cold Bay, which at its peak included over 1,000 Quonset huts and wood-framed buildings (Denfeld 1988). As the Allied forces took the offensive in the Aleutian campaign, the role of the Fort Randall Army base changed. It became a support facility for military activity along the chain, providing communications, transfer of goods and personnel, and maintenance of radar facilities (Black 1999). Fort Randall also played a major role as a West Coast port for ships on loan to the Soviet Union Navy under the Lend-Lease program, code named "Hula Two" in 1945 (Denfeld 1988). Hula Two transferred 149 ships to the Soviets and trained 12,400 Soviet sailors in their operation during this short-lived operation, which lasted only 9 months (Denfeld 1988).

By the end of World War II, all regular troops had left Fort Randall, the only remaining personnel were maintenance crews to operate the airfield and the navigation and communication facilities (Black 1999). Control of the Cold Bay facilities was transferred to the U.S. Air Force in 1947, and the facility was renamed Thornborough Air Force Base (Black 1999). In 1959, the Cold Bay White Alice Communications System and Distant Early Warning line went into service. The White Alice Communications System was decommissioned and closed in 1979 and a Minimally-Attended Radar Station replaced the Distant Early Warning line facility (Denfeld 1988).

Black (1999) has described the post-war history of Cold Bay as a steady community development that has at times been presented with significant environmental challenges stemming from its military past. However, the establishment of various agency offices and posts, including the Service, the Federal Aviation Administration, and the National Weather Service, in addition to some private company investments has slowly created the unique character of the modern community of Cold Bay.

3.3.8.3 Cultural Overview of Sitkinak Island

Sitkinak Island Parcel

Two parcels of land on Sitkinak Island in the Kodiak archipelago will be transferred to the State of Alaska under the proposed land exchange. The Sitkinak Island parcels are part of the traditional territory of the Alutiiq/Koniag, who inhabited the Kodiak archipelago and areas of the Alaska Peninsula on the Pacific Coast. Like the Aleut region discussed above, the history of the Kodiak region will be presented in the same historical phases.

Traditional Culture Period (7000 Before Present - 1741)

The earliest cultural tradition in the Kodiak archipelago is the Ocean Bay I Tradition, which appears in the region by approximately 7000 years before present. The material remains of these people consist of chipped stone implements with rare items of ground slate. Around 4500 years before present, a shift occurs increasing the manufacture of ground slate points, lances, and large stemmed knives (Clark 1984). Over the next several centuries, the adoption of ground slate manufacture was distributed unevenly in the region, with some areas of Kodiak Island abandoning nearly all chipped stone technology, while other areas of the Alaska Peninsula merely incorporated the technique into their existing toolkit (Clark 1984).

The Kachemak Tradition (I-III) makes its first appearance in some regions around 4000 years before present, and over the course of 2500 years, the material remains of this group became increasingly elaborate. Late Kachemak Tradition people were especially appreciative of personal adornment such as beads, pendants, figurines, and ornamental pins (Clark 1984). On Kodiak proper, this tradition includes the Old Kiavak Phase (Clark 1966), Uyak Lower Level and Intermediate Level (Hrdlicka 1944), and the Three Saints Phase (Clark 1966).

After approximately 1000 years before present, the cultural influences affecting Kodiak diverge. In the northeast portion of the island, ceramic use was introduced but subsequently abandoned, while the people of the southwestern portion of the island readily adopted this practice around 800 years before present (Clark 1984). These variants of the Koniag culture, which were the people encountered on Kodiak by the earliest Russian explorers, are described by Clark as a result of an amalgamation of both new and old elements by peoples experiencing a large degree of population mobility. It was neither an in situ development, nor the result of a population replacement (Clark 1984).

Russian Period (1741-1867)

The earliest encounters between Koniag groups and Russian fur hunters occurred sometime in the early 1760s (Black 2004). Stephen Glotov and crew spent the winter of 1762-1763 on Kodiak in Russian Harbor, under constant duress from the Koniag (Black 2004; Clark 1984). The first Russian post on Kodiak was established in 1784 by Grigorii Shelekhov, despite

attempts by the Koniag people to oust him and his crew. They established their post in Three Saints Bay, on the southern side of Kodiak Island, and from there numerous exploration parties were sent out to assess the region (Black 2004; Clark 1984). The Russians maintained a strong presence in Kodiak until the transfer of Alaska to the United States. The administration of the Koniag people under the Russians on Kodiak was much the same as it was in the Aleutian Islands, with work groups being conscripted to hunt sea otter, trap fox, and dry fish, with the same concomitant social disruptions that came along with it (Clark 1984).

American Period (1867-Present)

After the sale of Alaska to the United States in 1867, the Kodiak region began developing into the center of the modern commercial fishing industry. Many Alutiiq people engaged in cannery work for cash wages, moving gradually from a subsistence economy into the Western market economy. At the turn of the 20th century, wood framed houses were replacing sod structures and widespread education aimed at assimilating native peoples into mainstream American life was offered to the children of the island. In recent years, efforts to revive Alutiiq language and culture have flourished by involving elders in the education of young Alutiiq students (Service 2008f).

Kodiak became a major staging area for World War II North Pacific operations, and the population of the island soared to over 25,000 people. A submarine base and air station were constructed at Women's Bay, and an Army outpost was established near the Buskin River. Gun emplacements can still be visited at Fort Abercrombie, and additional emplacements existed at Cape Chiniak and Long Island. The Army began construction of a White Alice communication site on Sitkinak in 1950. This facility was never completed. In 1960, the Coast Guard built a Loran Station on Sitkinak that operated until 1977. In 1972, the submarine base and air station at Women's Bay was turned over to the Coast Guard, and remains the largest Coast Guard Station in the nation (Service 2008f).

3.3.8.4 Overview of Potential and Known Cultural Resources within the Proposed Land Exchange

A number of cultural resource surveys and investigations have taken place within the Izembek National Wildlife Refuge, including a field survey conducted by the Service and the State Historic Preservation Office in August 2012 along the proposed road corridors (Alternative 2 and Alternative 3). A single investigation has been undertaken on Sitkinak Island. A summary of these investigations is presented below to establish the nature and types of cultural resources that have been documented in the vicinity of the proposed exchange. In comments during the development this EIS the King Cove Group, (comprising the City of King Cove, the King Cove Corporation, The Aleutians East Borough, the Agdaagux Tribe of King Cove, and the Belkofski Tribal Council) has reported that a thermal springs located on the King Cove Corporation land to be relinquished has cultural value to the shareholders of the King Cove Corporation. The site has not been investigated.

Previous Investigations in the Izembek National Wildlife Refuge

This section chronologically reviews most major archaeological research projects undertaken in the Izembek National Wildlife Refuge to establish the nature of known cultural resources in the Izembek National Wildlife Refuge. Currently, 113 archaeological, cultural, and historical sites

are listed in the Alaska Heritage Resource Survey within the Izembek National Wildlife Refuge. Of this number, 45 are pre-contact, 4 are historic, and 4 are a combination of pre- and post-contact remains in a single location. Sixty currently lack meaningful descriptive information. None of these known sites are located within the proposed land exchange boundaries.

Allen McCartney conducted a survey for sites in the Izembek National Wildlife Refuge in the summer of 1971, identifying and testing 3 sites XCB-0001 to 0003 (McCartney 1972, 1974). At XCB-0001, he excavated a 4-meter by 4-meter test in the center of 1 of the approximately 125 “house depressions,” and conducted smaller tests of unknown size in 6 other features (McCartney 1972). Due to the lack of stone foundations or bone structural elements, McCartney suggested that most of the depressions at this and the other sites he examined were the remnants of temporary shelters, such as tents, rather than permanent structures (McCartney 1972, 1974). In contrast, excavation of a house at XCB-0003 revealed a substantial structure built of over 1,000 boulders and between 32-34 large whale mandibles (McCartney 1974). The material remains from this house were characteristically Eskimo, consisting of ground slate implements and gravel-tempered pottery (McCartney 1974).

McCartney also surveyed areas of the Alaska Peninsula, Shumagin Islands, and other islands south of the Alaska Peninsula for the Service in 1973 (McCartney 1973). This survey was primarily boat based, with McCartney identifying sites and potential sites largely on the basis of vegetation changes (McCartney 1973). As a result of these efforts, McCartney identified 7 sites in the Izembek National Wildlife Refuge and its immediate vicinity.

In 1979, Mike Yarborough led an archaeological survey of portions of the Izembek Lagoon and Unimak Island; 22 sites were identified in the Izembek Lagoon area and 33 sites were recorded in the Unimak Island survey area. The purpose of the survey was to establish a baseline from which to conduct further excavation and investigation of sites to gain more information about the history of the region (Klingler n.d.).

Don. E. Dumond was contracted by the Service in 1986 to generate a predictive model for precontact archaeological site locations within the Alaska Peninsula, Becharof, Togiak, and Izembek National Wildlife Refuges (Dumond 1987). Using data obtained from the Alaska Office of History and Archaeology and from field investigation, Dumond draws several conclusions regarding land use in the Izembek National Wildlife Refuge. Most importantly, he notes that while the data then at hand suggested limited human population in the region, the resource base was likely to have been adequate to support year-round occupation, counter to McCartney’s initial assessment of the archaeology of the region (McCartney 1972).

In 1988, Bureau of Indian Affairs archaeologists conducted investigations of 16 applications from The Aleut Corporation under the ANCSA 14(h)(1), conducting test excavations, shovel tests, and soil probes at the various sites. The investigators note the presence of several varieties of house forms, including large “nucleus-satellite” houses, which suggested a temporal development of housing construction. The crew also noted that nearly every site they visited had artifacts exposed on the surface (Staley 1988).

Herb Maschner at Idaho State University, has conducted extensive survey, excavation, and analysis of previous investigations in the lower Alaska Peninsula region since 1994, and has presented a chronology of cultural development with noticeable changes in the structure of villages and size of houses (Maschner 1999). Based on 65 radiocarbon dates, the chronology is broken into 9 phases, beginning around 3000 years before present and continuing to Russian

Contact. The phases and some defining characteristics are listed below (adapted from Maschner 2004):

- **Moffet Phase (3000 years before present to 1600 years before present)**: Small villages and small houses. Rare ground slate, weakly stemmed basalt projectile points. Settlements placed in locations providing efficient access to marine, intertidal, riverine, and terrestrial resources. Five known villages date to this phase.
- **Russel Creek Phase (1600 years before present to 1300 years before present)**: Triangular endblades, microblades and cores, box hearths, lamps, harpoons without line holes. Houses and settlements remain small and located in areas with efficient access to the marine, intertidal, riverine, and terrestrial resources. This phase is known from a single site.
- **Kinzarof Phase (1300 years before present to 400 years before present)**: Villages and houses becoming larger, endblades with contracting stem are common, and harpoons with line holes appear. Settlement locations largely the same as above. Four known villages date to this phase.
- **Adamagan Phase (400 years before present to 100 A.D.)**: Houses and villages increase in size. Fishtail points and toggling harpoons become common. Items of personal adornment appear. Settlements located for efficient access to marine and intertidal resources, with some evidence for the use of salmon. This phase is known through 5 sites dating to this time period.
- **Ram's Creek Phase (A.D. 100-600)**: A few large villages, many smaller villages. Fishtail points rare, and ground slate still rare but increasing in frequency. Development of the "Ram's Creek" point. Settlement location same as previous phase.
- **Frosty Creek Phase (A.D. 600-1100)**: Smaller villages and houses, similar to Kinzarof Phase. Settlements shift to areas of pink and chum salmon streams. Rare pottery and increasing polished slate.
- **Cape Glazenap Phase (A.D. 1100-1250)**: Large villages and the development of "nucleus-satellite" houses. Izembek Points are common, and polished slate is present. Settlement locations in areas with efficient access to marine, intertidal, and sockeye salmon resources. Boundary between this phase and the Frosty Creek phase is not well defined due to some shared characteristics.
- **Izembek Phase (A.D.1250-1475)**: Apparent population reduction in the region and the disappearance of "nucleus-satellite" houses. Izembek points continue to be common, but settlements move to more open-ocean access locations. McCartney's whale bone house occurs during this time period.
- **Morzhovoi Phase (A.D. 1450-1800)**: Increase in population. Very large "nucleus-satellite" houses with over 300 square meters. Some villages contain over 20 of these houses. Izembek points continue. No pottery and some polished slate present. All major villages (9 in total) are located on major sockeye salmon streams. (Adapted from Maschner 1999, 2004)

All of these studies have focused on the area around Izembek Lagoon, Moffett Lagoon, Applegate Cove, and Norma Bay. Collectively, they define a pre-contact human adaptation that is a variant of the well-known Aleutian Islands pattern for people dependent on marine and riverine resources. Sites are situated to provide access to fresh water, sandy beaches for landing skin boats, level terraces above storm surge waves with adequate soil development to construct semi-subterranean houses, and proximity to resource concentrations. As Maschner's research has shown, the economic focus through time has shifted between marine resources such as sea mammals and fish, to salmon in the rivers, to birds and shellfish in lagoons. The settlement patterns shift to reflect these economic foci. In addition, catastrophic landscape change from tectonic uplift and volcanism, have prompted changes in settlement location. Notably in the Joshua Green Valley, settlements have followed the shifting shorelines of rivers and lagoons.

Previous studies have also focused exclusively on prehistoric resources. When historic remains are noted at all they are appended as afterthoughts. Consequently, remains from the Russian period, early 20th century fox trapping period, and World War II are virtually unstudied.

During the Russian period, as Native populations declined, settlements were consolidated and large areas became virtually unpopulated. The historic village of Morzhovoi, within the Izembek National Wildlife Refuge shifted location several times before being abandoned. Other known prehistoric sites may contain evidence of early contact. Most sites relating to this period are likely to be found along the coast and near known prehistoric sites.

For the early 20th century, a number of historic trapping cabins and camps are known (Maschner 1997, 1999, 2004). These are the primary documentation for a way of life, which elsewhere in the Aleutian Islands, is considered the "traditional" lifestyle. These sites are also located along the coast, often near a freshwater river or stream.

The World War II occupation of the Cold Bay area marked a major change in the way the land was used. The focus was on the land and not the sea. The primary function of Fort Randall was the airfield to support operations further west. Development centered on Cold Bay and the runway and docks there. However, the need to both disperse facilities for defensive purposes, and to develop outlying defensive installations led to the scattering of World War II facilities across the Izembek/Kinzarof isthmus along Outpost Road, to Grant Point, west past Frosty Peak, and to Applegate Cove, and south to the mouth of Cold Bay. Most of the buildings associated with this occupation have been removed or have disintegrated, but the archaeological remains of buildings, Quonset huts, roads, power lines, and other military debris may be eligible for the National Register of Historic Places.

Previous Investigations on Sitkinak Island

Currently, 4 known Alaska Heritage Resources Survey sites are listed in the 2 parcels of land that are involved in the proposed land exchange. These sites are listed below in Table 3.3-62. The sites include 3 pre-contact archaeological sites and the former U.S. Coast Guard LORAN facility. A single cultural resource survey has been conducted in the Sitkinak Island parcel.

In 1983, the 1,700 acre Coast Guard parcel, now managed by the Service, and proposed for the present exchange, was surveyed for archaeological resources by 4 archaeologists from the State University of New York at Binghamton (Cassedy and Dekin 1983). The results of the survey revealed the presence of 1 pre-contact archaeological site (XTI-0052). Ground slate tools, gravel-tempered pottery, and charcoal were among the artifacts recovered through surface

collection and subsurface sampling. In addition, 2 radiocarbon samples returned dates of 190 +/- 50 years before present and 750 +/- 80 years before present, respectively, placing the site in the late pre-contact Koniag period. Although some beach erosion was noted by the investigators, there appears to remain over 20 meters of cultural material along the relict beach that composes the site, and the site was determined eligible for listing on the National Register of Historic Places in 1983 (Cassedy and Dekin 1983).

The other 2 prehistoric sites (XTI-0005 and 0006) are poorly documented and may in fact represent a single site disturbed by construction of the White Alice facility.

The former Coast Guard facility consists of a runway and associated buildings. In 1950, the U.S. Air Force began construction of a White Alice Communication System radar facility. The White Alice Communication System facility was 79 percent completed when it was abandoned. The former White Alice facility lies outside of the boundaries of the exchange parcels. A Coast Guard Loran station (XTI-0078) was constructed in 1960 and was active until 1977 (Reynolds 1988). This site was determined ineligible for listing on the National Register of Historic Places in 1999.

Known and Potential Resources within the Proposed Land Exchange Boundaries

A review of previously recorded archaeological and historic resources located within each land exchange parcel is presented below. This data is available at the Alaska State Historic Preservation Office. The locations of the cultural resource sites (e.g., archaeological sites) are managed as restricted access information. The locations of historic register properties (e.g., buildings and structures listed on the State or National Register) are non-restricted information.

The Alaska Heritage Resources Survey reports 1 site containing both pre-contact and historic period remains and 1 historic period site in the Kinzarof Lagoon parcel, and 1 historic site and 3 prehistoric sites in the Sitkinak Island parcel (Table 3.3-62). The precise location of 2 of the prehistoric sites in the Sitkinak parcel (XTI-005 and XTI-006) is not certain, although they are suspected of being located near their reported locations.

Table 3.3-62 Cultural Resources Within Land Exchange Parcels

Parcel	Alaska Heritage Resources Survey Number	Description	National Register Eligibility
Kinzarof Lagoon	XCB-0164	Prehistoric Village, Phillip’s Cabin Site	Eligible (2003)
Kinzarof Lagoon	XCB-0167	Phillip’s Cabin No. 2	Not Eligible (2003)
Sitkinak Island	XTI-0078	Historic Loran A station	Not Eligible (1999)
Sitkinak Island	XTI-0005	Sitkinak Bar	Unevaluated
Sitkinak Island	XTI-0006	XTI-0006	Unevaluated
Sitkinak Island	XTI-0052	Sitkinak	Eligible (1983)

A cultural resource survey in August of 2012 allows a more detailed discussion of the types of resources within the exchange parcels in Alternatives 2 and 3. The focus was on World War II remains associated as these alternatives would incorporate much of Outpost Road. The survey identified two World War II “camps” adjacent to Outpost trail (Appendix H). The first is an

observation post on a hill top with associated support facilities. This site is to the north of Outpost Trail and reached by a small side road. The second is a cluster of deep depressions immediately adjacent to Outpost Road. These features include tent depressions and probable storage features. They are associated with observation posts on nearby hills, and with a third camp located nearer the coast. In addition to these two discrete sites, telephone wires and the network of military roads crossing the isthmus comprise, with Fort Randall and all of its related facilities, an interconnected World War II landscape. Additional small scale observation posts, and support facilities, may reasonably be expected within a short distance of any road or trail built during World War II.

Maschner (personal communication 2012) reported a single stone tool found in a hilltop exposure along the road. During the 2012 survey, all areas of exposed soil were examined for additional evidence of prehistoric use. A few pieces of unworked red and yellow chert, and petrified wood, were located. No artifacts or features associated with a prehistoric occupation were identified. Since the area was used for over 5,000 years, there remains a strong possibility scattered isolated artifacts, and ephemeral sites will be found.

Based on the information presented above, several classes of cultural resources may be present within the area of the proposed land exchanges. For the Sitkinak Island parcels, the types of resources that are present include pre-contact Alutiiq villages or houses and remains from the Coast Guard operations at the former LORAN station.

For the Kinzarof Lagoon parcel, the types of resources present within the alternative parcels include possible pre-contact Aleut hunting lookouts, and lithic scatters, and remains from military activities. These remains include both specific loci such as observation posts, camps, communications features and roads, but also include the larger World War II historic landscape.

3.3.9 Visual Resources

Existing conditions were assessed following guidelines presented in the Bureau of Land Management visual resource management guidelines (BLM 1986). The description of visual resources focused on predominant landscape type, landscape character elements, and landscape analysis factors.

The proposed project area includes the adjacent areas of the Izembek National Wildlife Refuge and Izembek Wilderness, state owned lands located to the north of the Izembek Wilderness, and Native Corporation lands adjacent to Cold Bay. The geographically separate area of Sitkinak Island is located to the east. Sitkinak Island is included in the Gulf of Alaska Unit of the Alaska Maritime National Wildlife Refuge. Each administrative area is distinct in terms of predominant landscape character and viewer sensitivity. Landscape character is defined as the overall impression created by an area's unique combination of features, such as land, vegetation, water, and existing structures. Visual sensitivity is defined as a measure of public concern for the scenic quality of a given area (BLM 1986). Although considerable overlap exists among visual resources present in each of the administrative areas located on the Alaska Peninsula, they are presented as discrete areas for the purposes of this analysis. Each land ownership area was assigned a visual sensitivity level (high, medium, or low) by applying criteria from the Bureau of Land Management sensitivity level analysis procedure (BLM 1986). Indicators of public concern were estimated based on best professional judgment.

3.3.9.1 Regulatory Environment

Visual resources within designated wilderness within the Izembek National Wildlife Refuge are regulated at the federal level by the *Wilderness Act of 1964* (16 USC 1131-1136), the *Alaska National Interest Lands Conservation Act of 1980* (ANILCA), and the Service's *Wilderness Stewardship Policy* (Service 2008e). The *Wilderness Stewardship Policy* indicates that the natural, scenic condition of the land should be maintained (Service 2008e). Visual resources are not managed within non-wilderness portions of the refuge; however, maintenance of this resource is a goal of the refuge system. Visual resources on the state lands are addressed by guidance contained in the *Bristol Bay Area Plan* (ADNR 2005). This plan provides visual quality guidance for state owned uplands and tidelands in areas designated Public Recreation and Tourism-Dispersed or Public Recreation and Tourism-Public Use Site. Visual resources located on state owned portions of Sitkinak Island are managed by the *Kodiak Area Plan* (ADNR 2004), with the goal of protecting scenic resources in the area that are important to recreation.

3.3.9.2 Landscape Setting

Izembek National Wildlife Refuge and Alaska Peninsula National Wildlife Refuge

The Izembek National Wildlife Refuge is located in the southwestern tip of the Alaska Peninsula. The area contains a variety of landforms, including rugged volcanic mountains, tundra, sand dunes, lakes, and wetlands (Service 1985a). The predominant landscape type is panoramic. The north/northwest portion of the refuge includes the Izembek Lagoon, the Bering Sea, and the vast coastal plain of the Alaska Peninsula. Izembek Lagoon, managed by the State of Alaska as a state game refuge, is noted for supporting some of the largest eelgrass beds in the world. Upland areas are characterized by gently rolling and flat tundra terrain with numerous lakes and ponds and wide, gradually sloping drainages. The dominant vegetation in this area is

upland moist heath tundra (ericaceous dwarf shrubs and willows) alternating with more poorly drained wetlands in depressions (sedge, shrub, and forb dominated) (Figure 3.3-29a, Figure 3.3-29b). The predominant lines created by the landscape and wetland complexes are undulating and flowing. An existing single-track dirt road is present in the isthmus portion of the refuge (Outpost Road/Trail), creating noticeable straight to curving lines in the landscape (Figure 3.3-29c). Snow-free months result in a mosaic of green color across the landscape, punctuated by luminous and reflective wetland areas.

Figure 3.3-29a Typical Upland Vegetation and Wetlands of the Izembek National Wildlife Refuge and Izembek Wilderness.



Figure 3.3-29b Typical View within the Coastal Plain of the Izembek National Wildlife Refuge and Izembek Wilderness (views to the northeast).



Figure 3.3-29c Example of Existing All-terrain Vehicle Tracks located in the Izembek National Wildlife Refuge and Izembek Wilderness (aerial view).



The landscape is largely panoramic; however, enclosure is created by the presence of Cold Bay and the surrounding mountains to the southeast, including the predominant Aghileen Pinnacles, Mount Emmons, and Mount Dutton (Figure 3.3-30). Because of the low topographic relief of the area, views from the ground are often limited. Views from the air, in contrast, are expansive. The Aghileen Pinnacles, located on the border of the refuge, are a prominent scenic feature on the refuge (Service 1985a). This landform is characterized by sharp, angular vertical lines that rise from the relatively flat topography. The peaks are white with snow cover for most of the year. This feature is seldom visible due to extensive and prolonged cloud cover; however, when seen, these features dominate views. The refuge is used extensively by wildlife, imparting a high level of naturalness to the overall aesthetic of the landscape. The aesthetic of the refuge is serene, with the high use by wildlife, including a broad assemblage of avian species, adding subtle movement to the landscape.

The southern portion of the Izembek National Wildlife Refuge is bordered by the Alaska Peninsula Wildlife Refuge. A small portion of the Alaska Peninsula National Wildlife Refuge located west of Cold Bay and north of the City of Cold Bay is within the proposed project area. The landscape character of this area is similar to that described above: topography is described as gently rolling hills with low vertical relief. The area contains numerous wetlands that appear bold both in terms of color and line. The refuge is also bordered by Cold Bay, which creates a dominant visual feature within the landscape. The most notable difference between this portion

of the Alaska Peninsula and Izembek National Wildlife Refuges is the presence of roads (Outpost Road, Outer Market Road, and Blinn Lake Loop) surrounding Blinn Lake, which create bold curving lines within the landscape.

Visual resources within the refuge and its designated wilderness area are strongly tied to the ecological integrity of the landscape, and its diversity of wildlife species and habitat. Existing development within the proposed project area of the Izembek National Wildlife Refuge is limited to remnants of abandoned military infrastructure, including building sites, roads, and trails. Artificial lighting is limited to the town of Cold Bay and the outlying structures (satellite dish area, radar facilities, Outer Marker Road). Evidence of either historic or unauthorized off-highway vehicle use can be seen in the Izembek National Wildlife Refuge (Figure 3.3-29c) (Sowl 2008c).

Figure 3.3-30 Typical View to the Southeast from the Izembek National Wildlife Refuge and Izembek Wilderness. Note Cold Bay, Lenard Harbor, and foothills of Mount Dutton in the distance.



Sensitivity to visual resources within the Izembek National Wildlife Refuge is considered high. The refuge is used for recreation, tourism, and subsistence purposes (see Section 3.3.6, Public Use and Section 3.3.7, Subsistence), and maintenance of visual resources within the Izembek National Wildlife Refuge is a management goal of the Service (Service 2008e).

State Lands

State lands are located to the north of Izembek National Wildlife Refuge, bordering the North Creek Unit of the Alaska Peninsula National Wildlife Refuge. These lands are characterized by a broad, flat coastal plain, situated against the backdrop of Mount Emmons and the Pavlov and Pavlov Sister volcanoes. The vertical relief of the mountain ranges creates an enclosed landscape when viewed to the south/southwest. Views to the north/northwest are dominated by the open panoramic of the Bering Sea. The plain is characterized by gently rolling, green tundra, surrounding numerous lakes and wetlands (ADNR 2005). Dominant lines of the tundra are gentle and curving, in contrast to the more angular lines of the surrounding mountains. Access is limited to boats. Wetland areas are less abundant in the inland portions of the area, with the exception of areas located to the southwest of the Cathedral River. No roads are present, or evidence of all-terrain vehicle trails. Whereas access to this area is limited, it is known for its recreational opportunities, including wildlife viewing and photography (ADNR 2005). Uplands in this area are managed as General Use by the *Bristol Bay Area Plan* (ADNR 2005). No management provisions pertaining to visual resources exist for these areas. However, state owned tidelands located within the proposed project are managed with the goal of protecting the sensitive habitat values, fisheries, and wildlife resources, and the public recreation resources of the adjacent Alaska Peninsula National Wildlife Refuge. The *Bristol Bay Area Plan* states that development in these areas should be located and designed to blend in with the natural surroundings, and requires that stipulations to accomplish a project's aesthetic goals should be attached to the development plan (ADNR 2005).

Sensitivity to visual resources within state owned lands is considered moderate. The area is used for recreation and subsistence (see Section 3.3.5 and Section 3.3.7), and maintenance of visual resources within portions of the area are managed by the *Bristol Bay Area Plan* (ADNR 2005).

Corporation Lands

The Corporation lands located within the proposed project are situated on the north, east, and west sides of Cold Bay. Visual quality standards have not been established for these lands. The lands located north of Cold Bay are situated at the mouth of Kinzarof Lagoon (Figure 3.3-31). The lands consist of narrow, flat peninsulas that form the southern edge of the Kinzarof Lagoon. Like the Izembek Lagoon to the north, Kinzarof Lagoon is characterized by extensive eelgrass beds that support abundant waterfowl. Views of the Kinzarof Lagoon parcels are primarily experienced by individuals traveling across Cold Bay (Figure 3.3-32).

Figure 3.3-31 The Kinzarof Lagoon Parcels, looking west (aerial view).



Figure 3.3-32 View of the Suna X from the Shore



Corporation lands located on the west side of Cold Bay are situated adjacent to the Pavlof Unit of the Alaska Peninsula National Wildlife Refuge. This area is referred to as the Mortensens Lagoon parcel. Corporation lands are described as flat, coastal plains, and include the eastern flanks of Frosty Peak and Thinpoint Lake and Cove. Scenic resources in this area are dominated by the expansive, panoramic views of volcanic peaks and mountains that form the backbone of the Alaska Peninsula and the waters of Cold Bay (Figure 3.3-33) (Service 1985b). Development is limited to isolated structures, and remnants of a decommissioned landing strip at Delta Point. Local access is provided by a road that traverses the northern portion of the parcel. No sources of night-time lighting are present.

Figure 3.3-33 Views to the East from the City of Cold Bay: Pavlov Volcano and Aghileen Pinnacles.



Sensitivity to visual resources within Corporation lands is assumed to be high, due to the presence of residents, travelers, and tourists. A portion of the travel route of the Alaska Marine Highway System, a designated All-American Highway and part of the Alaska State Scenic Byway Program, parallels the south side of the Aleutians in the Gulf of Alaska. In the Kodiak and Aleutians segment, the route includes stops in the communities of King Cove and Cold Bay. Travel along this route is by ferry and includes panoramic views of the diverse landscape of the Izembek National Wildlife Refuge and Izembek Wilderness, the Alaska Peninsula National Wildlife Refuge, and Corporation and state lands located around Cold Bay. The Alaska Maritime Highway System is recognized for cultural, scenic, natural, and historic values. The viewshed includes the windswept tundra slopes, extensive rugged sea cliffs, volcanoes, and black sand beaches. The avian use in this area creates an aesthetic of sound and motion as millions of seabirds swirl, cry, and balance on precarious cliff nests (ADNR 2009).

Because of the residential community and proximity to both the refuge and the maritime highway, visual sensitivity of Corporation lands is assumed to be high.

Sitkinak Island Lands

The proposed exchange lands are sited on federal lands located in the southeastern portion of the island, and includes Mark Lake and a narrow peninsula forming Sitkinak Lagoon. This portion of the proposed project is included in the Gulf of Alaska Unit of the Alaska Maritime National

Wildlife Refuge. In contrast to the predominantly mountainous terrain of the island, the proposed project area is characterized by flat or moderately sloping terrain with wet tundra type vegetation. An old Coast Guard runway and associated buildings are present in the project area.

Land use on the island is dominated by grazing and portions of lands included in the proposed conveyance are managed for grazing (ADNR 2004). The island is generally devoid of artificial lighting, and contains a small area adjacent to the federal lands designated Settlement-Commercial adjacent to the old Coast Guard base (T-04B).

Sensitivity to visual resources within portions of the proposed project located on Sitkinak Island is considered to be high. No designated subsistence use areas are on the island (see Section 3.3.7, Subsistence) and the principal use of upland areas is grazing (ADNR 2004); however, visitors may view the island from the Alaska Marine Highway or by private or charter boat.

3.3.10 Wilderness

The *Wilderness Act of 1964* mandates that “each agency administering any area designated as wilderness shall be responsible for preserving the wilderness character of the area (Section 4(b)).” Section 2(c) defines wilderness:

A wilderness, in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammelled by man, where man himself is a visitor who does not remain. An area of wilderness is further defined to mean in this Act an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man’s work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value.

ANILCA added approximately 56 million acres of Alaska public lands into the National Wilderness Preservation System. ANILCA Section 702(6) designated approximately 307,982 acres of the Izembek National Wildlife Refuge as the Izembek Wilderness. With the passage of ANILCA, Congress did not modify the basic provisions of the 1964 *Wilderness Act*, the definition of wilderness, or the mandate to preserve wilderness character. ANILCA Section 707 states: “Except as otherwise expressly provided for in this Act, wilderness designated by this Act shall be administered in accordance with applicable provisions of the *Wilderness Act*.”

Numerous provisions within ANILCA apply to designated wilderness in Alaska, including transportation and utility systems (Section 1101-1107); the use of snowmachines (during periods of adequate snow cover) motorboats, airplanes, and nonmotorized surface transportation methods for traditional activities (Section 1110(a)); inholder access (Section 1110(b)); temporary access for survey, geophysical, exploratory or other temporary uses (Section 1111(a)); construction of new, and continued use of existing private and administrative cabins (Section 1303 (b)); existing and new public use cabins (Section 1315(c)); navigation aids (Section 1310 (b)); and temporary campsites, tent platforms, shelters, and other temporary facilities and equipment directly related to the taking of fish and wildlife, where permitted (Section 1316(a)).

ANILCA Sections 801-816 address subsistence management and use. Section 803 defines subsistence uses as “the customary and traditional uses by rural Alaska residents of wild, renewable resources” for purposes of “direct personal or family consumption...the making and selling of handicrafts... [and] customary trade, and barter.”

Many Alaskans depend on the natural resources located on public lands for their livelihood. Recognizing these special needs, ANILCA established provisions for conservation system units, including wilderness areas, that are different from those found outside of Alaska. ANILCA Section 811(a) ensures rural residents engaged in subsistence access shall have reasonable access to subsistence resources on public lands. Section 811(b) provides for the use of snowmachines,

motorboats, and other means of surface transportation traditionally employed for subsistence purposes, subject to reasonable regulation.

Section 1110(a) in ANILCA requires that:

... the Secretary “shall permit” on conservation system units,... and those public lands designated as wilderness study, the use of snowmachines (during periods of adequate snow cover or frozen river conditions in the case of Wild or Scenic rivers), motorboats, airplanes, and nonmotorized surface transportation methods for traditional activities (where such activities are permitted by this Act or other law) and travel to and from villages and homesites.

Section 1110(b) assures inholders adequate and feasible access for economic and other purposes, subject to reasonable regulation. ANILCA also allows for cabin use and camps within wilderness areas in Alaska, which is addressed in Sections 1303 and 1315.

Designated wilderness areas in Alaska are managed under the provisions of the *Wilderness Act*, ANILCA, federal regulations, and agency policies. As outlined in the *Service Wilderness Stewardship Policy*, when administering refuge wilderness areas, 3 main priorities are used: the *National Wildlife Refuge Administration Act of 1966* as amended, the *Endangered Species Act*, and the *Wilderness Act* (Service 2008e). The Service first determines what needs to be accomplished to meet refuge purposes, and then confirms that proposed activities comply with the *Endangered Species Act*. Once these priorities are met, then the Service ensures that proposed activities comply with the *Wilderness Act*.

Section 5.3B of the policy states:

We administer wilderness areas in Alaska in accordance with the policy in 610 FW 1-5. The policy addresses the special provisions for Alaska wilderness in ANILCA, and there should be no conflicts. If there is any conflict, we follow the more specific provisions of ANILCA and the implementing regulations at 43 CFR part 36 and 50 CFR part 36.

The *Wilderness Act* permits a number of specific uses in wilderness: “Wilderness areas shall be devoted to the public purposes of recreational, scenic, scientific, educational, conservation, and historical use.” These uses are often referred to as conforming uses. However, the *Wilderness Act* does not specify how to resolve potential conflicts between conforming, non-conforming, or administrative uses of wilderness and the preservation of wilderness character. One of the primary responsibilities of wilderness managers is to protect wilderness character from the potential threats that these uses can pose (Cole 1994).

As stated above, ANILCA contains a number of provisions that limit and sometimes modify the applicability of certain management provisions of the *Wilderness Act*, and stewardship of Alaska wilderness lands requires that the Service takes into account provisions of both the *Wilderness Act* and ANILCA. Section 811(b) of ANILCA allows for access to wilderness lands by subsistence users:

Notwithstanding any other provision of this Act or other law the Secretary shall permit on the public lands appropriate use for subsistence purposes of snowmobiles, motorboats, and other means of surface transportation traditionally employed for such purposes by local residents, subject to reasonable regulation.

Some lands that are now part of designated Alaska wilderness were also historically used by humans prior to ANILCA; evidence of this use is still evident in some places on designated wilderness lands. While the *Wilderness Act* prohibits the use of motor vehicles, an exception is provided by Section 811(b) of ANILCA for the use of snowmobiles, motorboats, and other means of surface transportation traditionally employed for [subsistence] purposes. Former military roads that extend into Izembek Wilderness are managed as trails and use of all-terrain vehicles for subsistence access is currently allowed for local rural residents. Subsistence use of all-terrain vehicles within Izembek National Wildlife Refuge has been limited to existing roads and trails. These trails are not maintained. General public use of all-terrain vehicles anywhere in the wilderness is prohibited. Signs are posted at the wilderness boundary where roads and trails intersect to alert the public that they are entering designated wilderness.

3.3.10.1 Wilderness Character and Values

The Wilderness Act Section 4(b) describes the primary direction for wilderness stewardship as “each agency administering any area designated as wilderness shall be responsible for preserving the wilderness character of the area.” The Service’s *Wilderness Stewardship Policy* (Service 2008e) notes that to preserve wilderness character, both the tangible and intangible aspects of wilderness must be maintained. Wilderness character increases as it approaches the highest measure of natural conditions and being “untrammelled.” For the Service, these tangible and intangible aspects of wilderness include:

- Maintaining the natural, scenic condition of the land. Providing environments for native plants and animals, including those threatened or endangered;
- Maintaining watersheds and airsheds in a healthy condition;
- Maintaining natural night skies and soundscapes;
- Retaining the primeval character or/and influence on the land;
- Serving as a benchmark for ecological studies; and
- Providing opportunities for solitude, primitive, and unconfined outdoor recreation, risk, adventure, education, personal growth experiences, a sense of connection with nature and values beyond one’s self, a link to our American cultural heritage, and mental and spiritual restoration in the absence of urban pressures.

Wilderness character is influenced by the cumulative effect of a myriad of threats and actions. The U.S. Forest Service published *Keeping it Wild: An Interagency Strategy to Monitor Trends in Wilderness Character Across the National Wilderness Preservation System* (Landres et al. 2008) that links indicators and measures to the Section 2(c) definition of wilderness. From this section of the *Wilderness Act*, the Committee arrived at interpretations of the 4 qualities of wilderness. These qualities, as stated in the *Wilderness Act of 1964*, coincide with the aspects of wilderness character identified by the Service (Service 2008e):

- “Untrammelled” – wilderness is unhindered and free from modern human control or manipulation.
- “Natural” – wilderness ecological systems are substantially free from the effects of modern civilization.

- “Undeveloped” – wilderness is substantially without permanent improvements or modern human occupation.
- “Outstanding opportunities for solitude” – wilderness provides opportunities for people to experience solitude or primitive and unconfined recreation, including the values of inspiration and physical and mental challenges.

These 4 qualities of wilderness character are commonly used to assist wilderness managers with planning, management, and monitoring activities within scientific and peer-reviewed literature (Hendee and Dawson 2002; Landres et al. 2008; Hall, Seekamp, and Cole 2010). They mutually reinforce each another and together can comprise an approximation of wilderness character for the purposes of assisting monitoring and management efforts on these lands.

Untrammelled Quality

The word “untrammelled” is rarely used in ordinary conversation, but it has become a key word in the definition of wilderness due to its use in the *Wilderness Act*. Untrammelled means “not hindered or restricted in thought or action” (Collins English Dictionary 2010). Synonyms for untrammelled include unrestrained, unmanipulated, unhindered, unimpeded, unencumbered, and wild. Actions that manipulate or control ecological systems inside wilderness degrade the untrammelled quality of wilderness character, even though the action may be taken to restore what is thought to be natural conditions. The concept of trammeling does not apply to manipulations that occurred prior to wilderness designation, because the mandates of the *Wilderness Act* do not apply prior to designation (Landres et al. 2008). This quality is closely linked to the natural quality of wilderness. The untrammelled quality looks at *actions* that intentionally manipulate or control ecological systems, while the natural quality focuses on intentional and unintentional *effects* from actions taken inside wilderness (Landres et al. 2009).

Typically 2 indicators are used by federal land managers to monitor the untrammelled quality of wilderness character (Landres et al. 2008):

- Actions authorized by the federal land manager that manipulate the biophysical environment
- Actions not authorized by the federal land manager that manipulate the biophysical environment

Natural Quality

Historically, wilderness is strongly associated with protecting and preserving ecological systems from the impacts of modern people (Landres et al. 2008). The natural quality of wilderness can mean that the indigenous species composition and the structures and functions of the ecological systems in wilderness are protected and allowed to exist on their own, without the planned intervention or the unintended effects of modern civilization. Ecological systems inside wilderness are often impacted by things taking place within its boundaries and also outside the wilderness.

Typically 3 indicators are used by federal land managers to monitor the natural quality of wilderness character (Landres et al. 2008):

- Plant and animal species and communities (including population status, extirpated species, invasive, and non-indigenous species)
- Physical resources
- Biophysical processes

Undeveloped Quality

Defining wilderness as “undeveloped land” is what most members of the public envision when they think of what wilderness is. However, many wilderness areas have had at least some modern human occupation or modification. Many developments have been authorized in wilderness by special provisions in enabling legislation, including buildings, roads, powerlines, and water pipe corridors. While the presence of these developments may be legal uses of wilderness, the resulting facilities, structures, or motorized use can have effects on wilderness character (Hendee and Dawson 2002).

Typically 4 indicators are used by federal land managers to monitor the undeveloped quality of wilderness character (Landres et al. 2008):

- Non-recreational structures, installations, and developments
- Inholdings
- Use of motor vehicles, motorized equipment, or mechanical transport
- Loss of statutorily protected cultural resources

Outstanding Opportunities for Solitude or a Primitive and Unconfined Type of Recreation Quality

The intent behind the meaning of the wording in the *Wilderness Act* associated with “outstanding opportunities for solitude or a primitive and unconfined type of recreation” has been the focus of much debate among wilderness managers and scholars (Hendee and Dawson 2002). The “outstanding opportunities” quality was developed to address experiences available to people in wilderness, and is concerned with conditions that affect the opportunity for people who are visiting wilderness to experience solitude, primitive recreation, and/or unconfined recreation (Landres et al. 2008). Solitude is not a variable that is easily interpreted or measured quantitatively. It is multi-dimensional and tends to be deeply personal and individual (Freimund and Cole 2001). Many researchers choose to assess solitude through measures of encounters (Seekamp and Cole 2009), suggesting that solitude is defined by the absence of others. The notion of solitude is also explored through measures of visitor norms, attitudes, or levels of involvement of visitors with the place or experience.

Primitive recreation is conceptualized more narrowly than solitude, often referring to types of recreation that require primitive travel and living in an environment with minimal facilities (Roggenbuck 2004). This type of recreation typically consists of activities that require self-reliance and no modern conveniences (Landres et al. 2008). Unconfined recreation refers to types of recreation in which visitors experience a high degree of freedom over their own actions

and decisions (Hendee and Dawson 2002). Outstanding opportunities for unconfined recreation would most likely occur in wilderness areas that are large, have many acres suitable for off-trail exploration, have relatively low levels of use, and are free from management restrictions over visitor access (Landres et al. 2008).

The Service described this quality as being about the opportunity for people to experience solitude or primitive and unconfined recreation. This quality of wilderness character would be degraded by settings that reduce these opportunities, such as visitor encounters, signs of modern civilization, recreation facilities, noise pollution, and management restrictions on visitor behavior (Service 2010b).

Typically 4 indicators are used by federal land managers to monitor the solitude or primitive and unconfined quality of wilderness character (Landres et al. 2008):

- Remoteness from sights and sounds of people inside the wilderness
- Remoteness from occupied and modified areas outside the wilderness
- Facilities that decrease self-reliant recreation
- Management restrictions on visitor behavior

3.3.10.2 Izembek National Wildlife Refuge Wilderness

Approximately 95 percent of the Izembek National Wildlife Refuge is designated as Izembek Wilderness. As stated in the *Izembek National Wildlife Refuge Final Comprehensive Conservation Plan and Wilderness Review* (Service 1985a), this area is managed to maintain wilderness resources and values, to preserve the wilderness character of the biological and physical features of the area, and to provide opportunities for research and recreation. Traditional access and subsistence uses are allowed under ANILCA. Traditional commercial recreation activities (e.g., guiding and outfitting) that do not require permanent facilities are permitted where compatible with the purposes of the refuge (603 FW 2).

In the comprehensive conservation plan, the Service conducted a wilderness review pursuant to ANILCA Section 1317 to determine whether additional lands within the refuge were suitable to recommend for wilderness designation. The results of the review did not consider any of the non-wilderness lands within the refuge to be suitable for wilderness designation (Service 1985a). The remaining 5 percent of lands within Izembek National Wildlife Refuge that are not designated wilderness are considered administratively as a minimal management area. This designation protects the important fish and wildlife, subsistence, and recreation areas around Cold Bay (Service 1985a).

Wilderness Character and Values of Izembek National Wildlife Refuge Wilderness

The Service completed a review of trends in wilderness character for Izembek Wilderness (Service 2010b). Trends in the 4 areas of wilderness character were evaluated between the years of 1985 and 2010, and are discussed in the sections below.

Untrammelled Quality

In the Service's review of Izembek Wilderness, untrammelled wilderness was considered as "essentially unhindered and free from modern human control or manipulation." This quality

could be degraded by modern human activities or actions that control or manipulate the components or processes of ecological systems inside the wilderness (Service 2010b).

Several measures of indicators were examined by the Service. Currently, no invasive species control projects or active habitat restoration activities are occurring within Izembek Wilderness. Wildlife collaring projects are being conducted within the wilderness areas to understand population dynamics of Tundra Swans, Black Brant, barren ground caribou, and wolves (Service 2010b). Geo-locators are also being used to assess migratory movements of Dunlin. A state fish hatchery previously operated near Izembek Wilderness; however, this hatchery is no longer operational and no fish stocking is occurring in aquatic habitats within the wilderness boundaries. The Service determined that the trend for this quality of wilderness character was currently stable, as compared to 1985 (Service 2010b).

Natural Quality

The Service defined natural quality as “wilderness ecological systems that are substantially free from the effects of modern civilization” (Service 2010b). Native plant, fish, and animal communities are robust and stable throughout Izembek Wilderness lands. Water quality is generally excellent and riparian areas within the wilderness do not appear to be impacted by modern civilization.

One of the primary impacts to natural quality within and outside Izembek Wilderness is the presence of non-indigenous species; an indicator that is often used to track impacts to the natural quality (Landres et al. 2008). Populations of Canada thistle, hawkweed, and Sitka spruce have been identified within Izembek National Wildlife Refuge near the community of Cold Bay. Several Sitka spruce, associated with the former military activities, are located in isolated areas of the wilderness (Service 2010b).

Federally threatened Steller’s Eiders and sea otters are known to use multiple lagoons around Izembek National Wildlife Refuge. Emperor Geese, a species of concern, are common throughout the lagoons adjacent to Izembek Wilderness, and commonly forage within designated wilderness areas. Wildlife habitat throughout the Izembek Wilderness currently maintains a high level of connectivity. The Service determined that the trend for this quality of wilderness character is currently stable, as compared to 1985 (Service 2010b).

Undeveloped Quality

For Izembek Wilderness, the Service defined undeveloped quality as “wilderness that retains its primeval character and influence, and is essentially without permanent improvement or modern human occupation” (Service 2010b). Wilderness lands within Izembek National Wildlife Refuge are virtually undeveloped. A few instances of human activities degrade this quality of wilderness character, but were present when Izembek Wilderness was designated in 1980 through ANILCA. One small cabin is present near Kinzarof Lagoon, but is not being maintained by the Service. ANILCA Section 1110 allows the landing of airplanes within Izembek Wilderness. Landings are restricted to specific sandbars in the Joshua Green River watershed because it is a state controlled use area (Service 2010b) The Service determined that the trend for this quality of wilderness character is currently stable as compared to the level in 1985.

Remnant trails from prior military occupation persist within Izembek Wilderness, but are naturally re-vegetating and are not maintained by the Service. Several unmaintained trails within

Izembek Wilderness are used by local subsistence users in accordance with ANILCA Section 811 (b). Pintail Loop Trail (1.3 miles), Outpost Trail (4.3 miles), and Kinzarof Lagoon Trail (1.8 miles) are identified by the Service as occurring within the boundaries of designated wilderness. These trails are usable during dry weather, but otherwise require a 4-wheel drive or all-terrain vehicle (Logan 2007). See Figure 3.3-19 in the Transportation Section (3.3.3) which depicts existing refuge roads and trails, including wilderness trails.

No roads are maintained in Izembek Wilderness. When Izembek Wilderness was designated in 1980, 1 road corridor, the 7-mile road to Frosty Peak, was specifically excluded from the wilderness designation. Frosty Peak Road is located to the west of the City of Cold Bay and is a popular access road for recreationists. While the road and associated bridges are not located in designated wilderness because the corridor was specifically excluded by law, the Izembek Wilderness was planned and designed around it (Clough 2011).

Frosty Road and Outpost Road access the wilderness areas. Frosty Road accesses the western portion of Izembek Wilderness. The western end of the road is surrounded by Izembek Wilderness, but the legal boundary excludes the road from the wilderness. Outpost Road connects the City of Cold Bay to the Izembek Wilderness located on the isthmus between Kinzarof and Izembek lagoons (see Figure 3.3-19) and becomes Outpost Trail within the wilderness. Use of Frosty Road by visitors to Izembek National Wildlife Refuge is limited (due to terrain) to 4-wheel drive vehicles and off-highway vehicle use in some areas. Motor vehicle use of Outpost Trail within the wilderness area is restricted to local subsistence users.

The Service determined that the trend for this quality of wilderness character is currently stable as compared to the level in 1985 (Service 2010b).

Outstanding Opportunities for Solitude or a Primitive and Unconfined Type of Recreation Quality

The lack of facilities to support recreational users adds to the primitive and unconfined type of recreation offered within Izembek Wilderness. No designated campsites or associated facilities are found within Izembek Wilderness. The primary gateway to the Izembek Wilderness is through the Cold Bay Airport. To reach the boundary of the wilderness, visitors either have to take a vehicle to the boundary, access the area by boat, or travel by single engine aircraft on floats or on wheels suitable for landing on a beach. Izembek Wilderness can also be accessed from King Cove by hiking from the King Cove airstrip to the flanks of Mount Dutton (USACE 2003). The overall remoteness of the Izembek National Wildlife Refuge and associated wilderness also lends itself to providing visitors with outstanding opportunities for solitude. However, noise related to aircraft flights coming in and out of the Cold Bay Airport may reach into portions of the Izembek Wilderness (USACE 2003).

Izembek Wilderness has experienced human influence in the past, including the remains of military infrastructure that can be found throughout the refuge. These former remnants of military infrastructure are not maintained and the area is presently managed to minimize modern human control or manipulation (Service 1985a). The Service determined that the trend for this quality of wilderness character is currently stable as compared to the level in 1985 (Service 2010b).

3.3.10.3 Alaska Peninsula National Wildlife Refuge

Section 302(1) of ANILCA designated 3.5 million acres of public land on the south side of the Alaska Peninsula as the Alaska Peninsula National Wildlife Refuge. ANILCA did not designate any federal lands within the Alaska Peninsula National Wildlife Refuge as wilderness.

To date, no wilderness is designated within the Alaska Peninsula National Wildlife Refuge. The *Alaska Peninsula National Wildlife Refuge Comprehensive Conservation Plan/EIS/ Wilderness Review* (Service 1985b) Preferred Alternative recommended 1.9 million acres, or 53 percent of Alaska Peninsula National Wildlife Refuge, as eligible for wilderness designation. This included approximately 1,300 acres on the southern flanks of Mount Dutton, near the southern boundary of the Izembek Wilderness. The Service has indicated that they would maintain the wilderness qualities of all areas put forward for wilderness designation, whether or not they were eventually congressionally designated.

3.3.10.4 Wilderness Character and Values of Other Parcels Proposed for Exchange

State Parcels

Two parcels of state owned land identified as part of the proposed land exchange are located adjacent to the Pavlof Wilderness Review Unit of the Alaska Peninsula National Wildlife Refuge. The lands surrounding the parcels were identified as eligible for wilderness designation, but have yet to be formally recommended for designation (Service 1985b). These parcels are remotely located and not easily accessible. They are currently managed by the State of Alaska under the *Bristol Bay Area Plan* as General Use. This management regime allows for a variety of activities, but the area is generally not considered suitable for intensive development (see Section 3.3.1, Land Ownership and Use).

King Cove Corporation Parcels

It is assumed that the King Cove Corporation selected lands, identified as part of the proposed land exchange, would exhibit similar patterns in wilderness character qualities as Izembek Wilderness, as the selected parcel is still currently designated as wilderness. The Kinzarof Lagoon parcels are also assumed to exhibit similar patterns in wilderness character and qualities due to the proximity of these parcels to designated wilderness.

See Section 3.3.1, Land Ownership and Use, for a description of current and proposed ownership and management of King Cove Corporation parcels. The Mortensens Lagoon and Kinzarof Lagoon parcels are currently managed for shareholder use, primarily for subsistence activities. Two cabins are on the Mortensens Lagoon parcel; they are used by King Cove Corporation shareholders for hunting and fishing activities (Trumble 2011). The Mortensens Lagoon parcel also contains the remnants of many World War II structures, whereas the majority of these types of structures have been removed from Izembek National Wildlife Refuge.

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