D. Special Designations

1. Areas of Critical Environmental Concern

a) Background

Areas of Critical Environmental Concern (ACECs) are an administrative designation unique to BLM. BLM regulations (43 CFR Part 1610) define an ACEC as an area "... within the public lands where special management attention is required (when such areas are developed or used or where no development is required) to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes, or to protect life and safety from natural hazards." While an ACEC may emphasize one or more unique resources, other existing multiple-use management can continue within an ACEC so long as the uses do not impair the values for which the ACEC was designated. Section 202 (c)(3) of FLPMA mandates that BLM give priority to the designation and protection of ACECs in the development and revision of land use plans. BLM Manual 1613 describes the process followed to nominate ACECs and to evaluate areas for their suitability for ACEC designation. Currently there are no designated ACECs within the planning area.

b) Nominated Areas

During the scoping process for the Bay RMP, the Anchorage Field Office actively solicited nominations and comments from the public regarding areas that should receive consideration as ACECs. Two nominations were received from the public and BLM specialists (Figures 2.7 and 2.8):

- Carter Spit ACEC - Nominated by BLM specialists.
- Bristol Bay ACEC - Nominated by the Alaska Coalition, the public, and BLM specialists.

Based on interdisciplinary review, the following areas met both the relevance and importance criteria and will move forward for additional consideration as Alternatives within this Environmental Impact Statement. For more specific information on specific measures proposed for these areas, see the detailed Alternative comparison tables in Chapter 2.

(1) Carter Spit ACEC

The Carter Spit area has known cultural resources and it also has high potential for previously undiscovered resources given its geographic setting on the coast and within prime hunting areas for marine and terrestrial game and fish. Archaeological surveys have not been conducted in the area.

The rivers and tributaries within the proposed Carter Spit ACEC contribute to the watershed and feed the coastal marshes. They provide habitat for economically important subsistence, commercial and recreational fisheries. This area is part of the Kuskokwim Bay ADF&G Fisheries Management Area. The rainbow trout stocks which inhabit the area are considered "world class" with high catch rates and large rainbow trout.

Several wildlife-related resources justify protection of the habitats in the Carter Spit ACEC for maintaining species diversity. Carter Bay and coastal areas provide molting and staging habitat for Steller's eiders, a threatened species under the Endangered Species Act (Shaw et al. 2004). Many BLM sensitive species use the area for staging and migration in fall including black brant, black scoters, blackpoll warblers, bristle-thighed curlews, grey cheeked thrush, harlequin ducks, king eiders, long-tailed ducks, red-knot, hudsonian godwit, red-throated loon, surf scoter, white-fronted geese and harbor seals (Seppi 1997). The area is also remarkable for the wide variety of plants, and several rare plant species have been documented in the Carter Spit/Goodnews Bay area (Lipkin 1996, Parker 2005). The coastal estuaries

and watersheds have concentrations of breeding shorebirds and waterfowl, including several trans-oceanic shorebird species.

Subsistence activities serve local communities, through egging and spring waterfowl hunting, fishing, seal and Beluga whale hunting. Brown bears, a subsistence and sport hunted species, concentrate in coastal areas in spring to forage for vegetation and feed on marine mammal carcasses. They later concentrate on coastal salmon streams to catch salmon.

The importance of these subsistence activities is underscored by the presence of several named historic sites in the Carter Spit ACEC. *Neqlercuryaraq* is at a lake in the ACEC southeast of Carter Spit, and is named for white-fronted geese. *Taqiikatarmiut* is in the northwestern part of the ACEC, located prominently at the mouth of Cripple Creek where it empties into Jacksmith Bay. *Nerviaq* is not located within the ACEC, but is situated at the mouth of Jacksmith Creek, the upper half which drains the northern part of the ACEC. *Maqallarliq* is located at the base of an unnamed spit in Jacksmith Bay. An unnamed creek that drains an unnamed lake south of Carter Creek and empties into Carter Bay was particularly noted during scoping as being an important water body deserving of protection as the only source of fresh water in that area.

The Jacksmith Creek watershed is a fresh water source for the Togiak National Wildlife Refuge Coastal Wetlands, and the Jacksmith Bay/Carter Spit estuary and mudflats.
The islands in Carter Bay and the coastal estuaries, while not in BLM jurisdiction, are dependent upon the terrestrial watersheds within the ACEC for fresh water and nutrient input which maintains the estuary tidal flat ecosystems adjacent to BLM lands.

(2) Bristol Bay ACEC

The Bristol Bay ACEC, taken as a whole, provides habitat for the Mulchatna caribou herd, spawning and rearing habitat for five species of salmon and numbers of freshwater fish, yearround habitat for moose, and a summer fisheries forage base for brown bears. The northeast portion of the ACEC has concentrations of nesting trumpeter swans (Gibson and Maley 2003) and the remainder of the ACEC has nesting tundra swans (Wilk 1988). The widespread wetland habitats in the Bristol Bay ACEC, considered separately, have moderate productivity; however, taken all together the area ranks high in statewide waterfowl productivity. Waterfowl hatched and reared here are harvested throughout the Pacific flyway. Sensitive species in the region include trumpeter swans, white-winged and black scoters, black-poll warblers, rusty blackbirds (not on the Special Status Species list), and bald eagles. These BLM lands, though discontiguous, provide movement corridor continuity for caribou movement and important seasonal habitats for caribou, including calving and important winter range. Five plant species noted by the Alaska Natural Heritage Program as rare are located in the Bristol Bay ACEC (Batten and Parker 2003). Tidal mudflats that are not BLM lands but are adjacent to the Bristol Bay ACEC in Kvichak Bay and Nushagak Bay are recognized as a shorebird migration stopover site of regional importance, under the Western Hemisphere Shorebird Reserve Network (WHSRN 2005). These migratory shorebirds may also use the shores of the many lakes in the region during their stopover.

BLM lands in the Bristol Bay ACEC are almost exclusively situated away from the major rivers draining the Bristol Bay region; however, the headwaters of many of the streams emptying into these rivers are located in the Bristol Bay ACEC, and are important to the terrestrial watersheds within the ACEC and elsewhere for fresh water, nutrient input, and habitat for a world-class red salmon fishery, and for spawning and rearing the wide variety of other fish species found here.

Residents of the region are dependent upon this area for commercial, subsistence, and sport fishing, and for subsistence and sport hunting. The Bristol Bay ACEC offers an area for guided sport hunting and fishing in a remote, pristine setting.

2. Wild and Scenic Rivers

An assessment of comparative resource values for river segments within the Bay Planning Area is ranked according to river eligibility. These rankings can be found in Appendix A. In order for a river to be eligible for designation as a component of the National Wild and Scenic River System, a river must be both free-flowing and possess one or more "outstandingly remarkable" characteristics described below. Rivers that receive a value of 1 or 2 have an outstandingly remarkable value. Outstandingly Remarkable Value is defined as a unique, rare or exemplary feature that is significant at a comparative regional or national scale. The criteria used for ranking these rivers, creeks, and tributaries are based on a numerical value of 1 to 5. The following rating key used for the Wild and Scenic River Matrix is listed below:

1 Exemplary, one of the better examples of that type of resource at a national level.
2 Unique, a resource or combination of resources that is one of a kind at a regional level.
3 High quality at a regional and/ or local level.
4 High quality at a regional and/ or local level.
5 Unknown. A resource specialists' team at the (AFO) inventoried and assessed these water bodies, leading to a determination of the river's eligibility for the Bay RMP/EIS.

Provided below are the factors considered for each resource team specialist.

Fisheries. The Kvichak River, the largest sockeye salmon run in the world (Minard 1998), was only river to receive a value of 1; however, the river is not in BLM jurisdiction. The 2 value was assigned to rivers with existing high recreation and subsistence fishing for anadromous and resident fish species. The 3 value was assigned to rivers with moderate recreation and subsistence fishing for anadromous and resident fish species. Rivers and creeks with no subsistence or recreational fishing were assigned a value of 4. The majority of the subsistence and recreational fishing activity occurs within the rivers that received a value of 2 or 3.

Recreation. The ratings provided were based on recreational and scenic qualities within the following rivers, creeks, and tributaries. Rivers that are free-flowing with unique recreational features and accessible to large numbers ranked with a 2 value. For example, the Kvichak River is a unique watershed with trophy rainbow trout fisheries. Scenic values are unique because of the river basin being widely used since all five salmon species appear here. Those rivers that rated with a 3 value were based on high populations of fish and usage.

Wildlife/Subsistence. Both Subsistence and Wildlife were grouped together for the purpose of this evaluation since chapter 3 discussion was referenced in the same manner. Rivers and creeks that ranked with a 1 value represent anadromous fish runs, known bear or moose or caribou harvest, and includes the main stem portion of the watershed, for example, the Alagnak River. The 2 value given was based on salmon runs, bear numbers, but numbers of animals not as high as 1 rank and/or extent of habitat not as large as 1. The 3 value shows high quality habitat; but not unique in the region which only accounts for a small portion of the watershed within high elevations. All other rivers and creeks rated at a 4 since they are common on a local or regional basis. Also no salmon runs occur and there is no association with a higher order watershed.

Cultural/Historic. The ranking system used for these rivers, creeks, and tributaries was based on a numerical value ranging from 1 to 5. The criteria for evaluation of cultural resources on proposed wild & scenic rivers within the Bay RMP are listed below.

The 1 value represents that there is an observable settlement pattern of cultural sites (either eligible for listing on National Register of Historic Places individually or as a group), and/or sites exhibiting evidence of two or more cultures using the area, and/or an area of religious or cultural significance for local population (TCP eligible). A rating of 2, illustrates there is at least one site eligible for listing and high potential for more.

Rivers and Creeks that rank out at 3 reveal no cultural resources are known for this segment, but there is high potential for cultural resources. High potential for cultural resources in this area includes: well drained areas adjacent to salmon streams/rivers, inlets/outlets to lakes that do not freeze to bottom in the winter;

overlooks where game herds would funnel through a natural constriction such as a valley. A value of 4 reveals no cultural resources are known within such segments, but there is medium potential for cultural resources. A value of 5 indicates that no cultural resources are known within such segments, and there is low potential for cultural resources. Low potential for cultural resources in this area includes: poorly drained areas, areas not adjacent to trout or salmon streams, streams draining from lakes that freeze to the bottom in winter, steep slopes of over 30 degrees.

E. Social and Economic

1. Public Safety

a) Abandoned Mine Lands

The BLM Abandoned Mine Lands (AML) Program is administered under Federal policy to meet Federal and State cleanup requirements. The AML Program addresses the mines as environmental and safety hazards on public land resulting from a culmination of former mining activity on Federal claims (BLM 2004b). The AML program focuses on the longer term clean up of mine related waste materials that may be considered hazardous to human health and the environment. If hazardous materials are present at abandoned mine sites they are most often considered non-time critical removal actions under the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) rather than emergency removal actions that are typical of many hazardous materials problems. Typical hazardous materials found at the sites include petroleum hydrocarbons from diesel powered equipment and building heating fuel, lead acid batteries associated with heavy equipment and vehicles, asbestos insulation and lead paints used in mine building construction, and mine tailing wastes. The AML program also focuses on physical safety dangers from open shafts, adits, and pits.

b) Hazardous Materials Management

Hazardous materials are a broad category of substances or chemicals that humans bring onto or produce on Federal lands. Hazardous materials are defined by multiple Federal regulations, but may be summarized as follows: hazardous materials are substances or materials capable of posing an unreasonable risk to health, safety, and property. Some regulations list specific chemicals as hazardous, and evaluate other materials based on their characteristics: toxic, ignitable, corrosive, or reactive.

Hazardous materials which may be present on public lands are there because they were used or produced by recreational or industrial processes, included with illegally dumped household or industrial solid waste, used and generated by clandestine drug lab operations, or result from off-site releases that migrate onto public land. Authorized industrial processes on public land may include mineral exploration and production of oil, gas, metallic ores, and gravel or rock material for construction processes.

BLM's objective is to be in full compliance with all Federal and State laws, regulations, and policies related to hazardous materials (Appendix A). The Hazardous Materials Management Program goals include:

- Protection of public health and safety from hazardous materials on public lands, including public land users, visitors, neighbors, employees and other publics.
- Compliance with applicable hazardous materials management and other laws and regulations at the Federal and State levels.
- Minimization of future hazardous materials related liabilities and costs.
- Protection of natural resource(s) and the environment on public lands from hazardous materials.

- Coordination and mutual support with other Bureau programs that have hazardous materials roles, activities, or implications on public lands.

BLM manages hazardous materials in the Bay planning area in a manner that is consistent with Federal, State, and local governmental requirements and constraints. The BLM Alaska Environmental Protection Program is responsible for identifying and protecting public lands and the users of those lands from the effects of hazardous materials and waste. The Environmental Protection Program is responsible for the:

- Inventory of public land for hazardous materials.
- Investigation and reporting of hazardous waste/materials sites.
- Assurance that conveyed lands to and by the Federal government do not contain known hazardous materials/wastes.
- Completion of cleanup of contaminated Federal sites.
- Support of legal actions to recover cleanup costs on hazardous waste sites.
- Point of contact for the emergency response plan (BLM 2005c).

(1) Affected Environment

Current management concerns related to hazardous materials on BLM-administered lands in the Bay planning area consist of one active hazardous materials site.

Red Top Mine and Mill Site (two geographically separate sites)

The Red Top Mine and Mill Site are located approximately 2 miles east-southeast of Aleknagik. The site consisted of a mercury lode mine on Marsh Mountain, and a mill site on the east bank of the Wood River. Cinnabar was first discovered on Marsh Mountain in 1941. Exploration and minor development continued until 1952. According to available information, from 1952 until about 1955 sixty flasks (1 flask equals 1 quart or 72 pounds) of mercury was produced from ore extracted from Marsh Mountain. Cinnabar ore was transported from the mine to the mill facility built on the banks of the Wood River where the mercury was retorted (heated to a high temperature, separating and collecting the liquid). Mining ended by 1959, leaving an ore stockpile at the mill estimated to contain another 60 flasks of mercury. In the 1960s the stockpiled ore was high-graded and shipped to a retort facility in Anchorage. In 1985 BLM issued abandoned and void decisions for the Red Top Mine and Mill Site claims AA-12608. All of the Site lands, with the exception of the Mill Site, were Interim Conveyed to Aleknagik Natives, Ltd. in 1980. The legal description for the parcel that remains under BLM management is: Lots 1 and 2, USS 12403, Section 32, Township 10 South, Range 55 West, Seward Meridian. Lot 1 is 2.57 acres and Lot 2 is 2.39 acres.

BLM became aware of hazardous materials issues at the Site in 1992 and initiated cleanup. In coordination with the Alaska Department of Environmental Conservation site characterization, interim removal activities, and site remediation began in 1994. Work progressed in stages with some periods of inactivity. EPA placed the site on the Federal Agency Hazardous Waste Compliance Docket on June 27, 1997. In 1998 work was completed on a CERCLA based Emergency Removal Action at the retort site. The remaining stockpiled cinnabar and mercury contaminated soils were removed from the site along with a number of drums of Bunker C oil and oil impacted soils. BLM completed the CERCLA required Preliminary Assessment for the site on December 31, 1998. The materials were loaded on a barge, taken to Dillingham and shipped to approved disposal facilities. EPA notified BLM on September 10, 1999 that after evaluating the PA and the Remedial Action reports, the Hazard Ranking System score applied was not high enough for the site to be listed on the National Priorities List. The Docket now reflects a No Further Remedial Action Planned status for the site. The Site remains listed as an active cleanup site in the ADEC contaminated sites database. BLM is in the process of seeking closure from ADEC.

BLM land management activities regarding hazardous sites in the Bay RMP planning area are implemented by the Anchorage Field Office (AFO) (BLM 2005c). The AFO is also responsible for

administering the Hazmat Program for the Bay RMP planning area. Typical hazardous materials and waste issues on BLM properties are found around abandoned mines, logging operations, abandoned military sites, illegal dumps, or due to accidental spills of hazardous materials. Hazardous materials may threaten the health and safety of public lands and its users directly or indirectly through the contamination of soil, surface water, or ground water. A summary of potential hazardous materials sources within the Bay RMP planning area described in Table 3.28. Abandoned mine operations and former military sites are the most common sites on BLM managed lands where hazardous materials impacts have been identified. Former mine claimants and military operations have left hazardous materials in the form of drums of chemicals, fuels, oils, solvents; as well as batteries, asbestos, heavy metal contaminated mine tailings, and fuel contaminated soils. Typically, the USACE or other Department of Defense agencies perform funding, management, and cleanup operations of FUDS and other DOD sites involving hazardous materials and are not specifically listed in this document. However, BLM typically manages cleanups of abandoned mines and illegal dumping activities on non-DOD property where there have been hazardous material impacts.

Table 3.28. Activities and Associated Hazardous Materials

Potential Hazards	Examples
Hazardous materials associated with historic and active mine operations	Heavy metals leaching from tailings impoundments, chemicals associated with processing ore or used in laboratories (i.e. cyanide and/or xanthates); explosives such as dynamite, ammonium nitrate, caps, and boosters; heavy metals from mine tailings; asbestos; batteries, and petroleum hydrocarbons from mine operations (e.g., fuel, oil, and solvents); and PCBs from power generation/distribution systems.
Hazardous materials associated with historic and active logging operations	Asbestos; batteries; and petroleum hydrocarbons from logging operations (e.g., fuel, oil, and solvents)
Military operations	Unexploded ordinances; petroleum hydrocarbons from military operations (e.g., jet fuel, diesel fuel, gasoline, solvents); PCBs; asbestos; lead based paint; heavy metals; and batteries
Illegal dumping	Unauthorized drum dumping of waste fuels, oils, and PCBs; solid waste dumping; dumping of lead acid batteries; dumping of miscellaneous other chemicals; and lead-based paint or asbestos containing building materials.
Illegal activities	Drug labs, debris burn sites; illegal firearm activity (lead and heavy metal impacts)
Spillage of hazardous materials	Materials spilled from overturned trucks, cars, or train cars; spillage from pipelines
Oil and Gas activities	Hydrogen sulfide gas, oil spills; petroleum hydrocarbons from drilling wastes and operations; heavy metals and fuel contamination from drilling wastes (e.g., chromium, barium, diesel based drill muds); and seismic survey related blasting agents
Facilities on public land either Federal or private (under a right-of-way)	Leaky underground storage tanks, asbestos; PCBs; batteries; petroleum hydrocarbons

Source: (BLM 2004b; BLM 2004c)

Illegal Dumping. Illegal dumping of hazardous materials is a management concern on BLM property. The BLM's policy is to identify potentially responsible parties (PRPs) who are liable for hazardous materials releases affecting BLM lands or resources. After a PRP is identified, the BLM will ensure that the PRP cleans up the hazardous material, or reimburses BLM for costs incurred to clean up the hazardous substance release.

Oil Spills. Spills of oil are a management concern on BLM property. The BLM's policy is to require all users of BLM managed lands to fully comply with State and Federal regulations concerning prevention of, and response to, releases of oil. BLM includes the requirement to comply with Spill Prevention, Control,

and Countermeasures prescribed by Federal and State regulations in all Land Use Permits. When a release of oil, usually a diesel or gasoline range fuel, is identified, BLM policy is to identify potentially responsible parties (PRPs) who are liable for the release. After a PRP is identified, the BLM will ensure that the PRP cleans up the oil release, or reimburses BLM for costs incurred to clean up the release.

ADEC and EPA Listed Sites. There are no USEPA-permitted hazardous waste treatment/Storage/Disposal facilities on or adjacent to public lands within the Bay RMP planning area. Non-hazardous solid waste disposal facilities (NHSW Landfills) are regulated by EPA and administered by ADEC under 18 AAC 60. BLM generally does not permit landfills on public land; however properly permitted NHSW landfills are occasionally established/operated at Federal mine claims or other industrial sites. Closed landfills of various sizes exist on or near public lands within the Bay RMP planning area. Some of these landfills are included in the ADEC's records, some are yet undiscovered/unrecorded. Hazardous materials are likely to have been placed in some landfills that operated prior to modern standards being established. If present these hazardous materials can possibly leach into groundwater. Other potentially regulated sources of hazardous materials within the Bay RMP planning area include the use of aboveground storage tanks (ASTs) and underground storage tanks (USTs). With the exception of specifically excluded UST uses (e.g., home heating oil), UST operations are regulated by the USEPA and administered by the ADEC under 18 AAC 78. A listing of permitted USTs in Alaska can be obtained at the following web site: http://www.state.ak.us/dec/spar/csp/db_search.htm Based on that database, no BLM-owned regulated USTs are located in the Bay RMP planning area; however, there may be USTs on BLM lands that are owned by other entities (e.g., DOD, other Federal agencies).

EPA and ADEC have identified contaminated sites within the Bay RMP planning area. ADEC contaminated sites program is administered under the regulatory authority of 18 AAC 75. This program identified sites that are known to have contamination currently or that have been cleaned up during administration of the program. Due to the large area included in the Bay RMP planning area, sites may be included in both the ADEC and EPA databases. Additionally, other regulatory programs may have sites that are not included in the ADEC and EPA databases such as those reported to the US Coast Guard or other Federal agencies.

2. Social and Economic Conditions

This section summarizes demographic and economic trend information, and describes key industries in the planning area that could be affected by BLM management actions. Local industries most likely affected by BLM land management policies and programs are: travel, tourism and recreation, and mineral exploration and mining.

a) Regional Overview

The Bay planning area includes the Lake and Peninsula Borough, the Bristol Bay Borough, Dillingham census Area, and the villages Goodnews Bay, Platinum, and Quinhagak within eastern Bethel Census Area. There are 24 villages or towns in the planning area. Dillingham and King Salmon are "gateway communities," trade and transportation centers for the region. Naknek and Iliamna are also gateway communities, based upon their importance to commercial and recreation activities in the region. The total population considered within the planning area is 7,917 (2000 Census).

Dillingham, Iliamna, and King Salmon have commercial airline service connecting cities outside the region. Air service also provides the only year round access to most villages in the planning area. Although there are roads connecting communities on the north side of the Naknek River, in the Iliamna area, and in the Dillingham area, no road leaves the planning area. Waterways are important travel routes and links between communities in this region during months of ice free water. Snowmachine travel is relied upon for nearly six months of the year.

The planning area can be characterized as a mixed subsistence-market economy. Villages such as Twin Hills and Kokhanok fit this description closely, while Dillingham and King Salmon are closer to the classic industrial-capitalist character. Subsistence is of universal significance in the planning area. Bristol Bay communities continue to be natural resource dependent.

Many of the villages and towns are incorporated and collect sales tax ranging from 2% in Togiak to 6% in Dillingham. Several towns and villages collect other taxes, including raw fish taxes, liquor taxes, bed taxes, and gaming taxes. Property tax is assessed in Dillingham. Bristol Bay Native Corporation, and Calista Corporation are regional corporations formed under ANCSA as were native village corporations within the planning area. There are 25 villages with Tribal status. The village of Ekuk is not included in economic analysis because census data is unavailable.

The Bristol Bay region has long been reliant on commercial salmon fishing as its main industry. The Alaska Department of Labor and Workforce Development reported 1,881 workers in the seafood processing industry of which 1,569 were nonresidents for Bristol Bay in 2003 (Nonresidents Working in Alaska, 2003). Both the value and volume of fish harvest in the planning area as well as Alaska have declined in the last 20 years. The majority of Alaska's fish harvest now occurs beyond state waters in the Federally-controlled Extended Economic Zone (Trends, December, 2004).

Recent change agents in the planning area include the passage of ANCSA, and the passage of ANILCA, including creation of four conservation units in the area. These include: Lake Clark National Park and Preserve, Alaska Peninsula National Wildlife Refuge, and Togiak National Wildlife Refuge. These events directly resulted in employment, and income in the planning area. With growth of major population centers (Southcentral Alaska and Fairbanks), visitation, and use of area resources has dramatically increased in the last 20-30 years. Population in the area has grown over the last three decades, although migration from the area has also increased. Also, renewed interest in exploration for oil and gas, and minerals is occurring. The Pebble Prospect is within the planning area, although not located on BLM managed land.

Increasing incomes and desire for basic amenities often not available in Bush villages inspire out-migration. Consider for example, in the Dillingham Census Area almost 20% percent of housing lacked complete plumbing and 14% lacked complete kitchen facilities.

Energy is very expensive in the region. Market basket surveys conducted by the University of Alaska Fairbanks Cooperative Extension Service in December, 2004 reported Dillingham area electricity 76% more expensive than Anchorage, and 156% higher than the U.S. average; heating oil 17% less expensive than Anchorage; unleaded gasoline 82% higher than Anchorage; and propane 91% higher than Anchorage. Census 2000 reported that almost 22% of workers in the Dillingham Census Area walked to work, and 17% used "other means," referring to personal modes of transportation other than motor vehicles and public transportation. Diesel generated electricity provides the main source of power throughout the region. Food costs are much higher in the planning area than urban centers in Alaska. The market basket for a family of four in Dillingham cost 1.76 times that of Anchorage and 1.9 times that same basket in Fairbanks in March, 2005.

Data used in this analysis are largely from the Alaska Department of Labor and Workforce Development, the Alaska Department of Commerce, Community, and Economic Development, the U.S. Census Bureau, and from the Sonoran Institute's Economic Profile System.

b) Community Profiles

Community profiles for all villages, towns, and cities in the state, in both summary and detailed report forms, are available at the Alaska Department of Commerce and Community Development, Community Database Online at http://www.commerce.state.ak.us/dca/commdb/CF_BLOCK.htm. Detailed information on planning area communities can be found at this site.

c) Demographics

Diilingham (2,466), has the highest population in the planning area followed by, Togiak (809), Naknek (678), Quinhagak (555), and New Stuyahok (471). The remaining nineteen villages within the planning area range in population from 36 (Portage Creek) to 399 (Manokotak). The planning area encompasses two boroughs, Dillingham Census Area, and three towns in the Bethel Census Area. The population is approximately 70% Alaska Native, primarily indigenous Alutiiq, Athabascan, and Central Yupik people. In comparison, Alaska Natives comprised 16% of the state's population, which is a larger percentage of Native Americans than in any other state. The balance of the race distribution in the area and the state is primarily white, comprising as much as 70% of the state population. Although the Alaska Native population has doubled in the last 30 years, the population growth in these regional communities slowed in the 1990s. Tables 3.30 and 3.31 show historic and modern population for communities and boroughs in the planning area.

Alaska Natives are migrating to urban population centers including the Matanuska-Susitna Borough, and Anchorage. The growth rate of the Native population for these two areas is 68.3% and 30% respectively. The growth rate of Native population in Fairbanks North star Borough is relatively low at 7.2% for the decade, which is half the growth rate for the state. See Table 3.29 Growth of Alaska Native Population.

Overall, the population growth in the three boroughs/census areas touching the planning area is very similar to the population growth rate for the State of Alaska, while it is far below the population growth rate of southcentral Alaska. The median age ranges from 29 In Dillingham Census Area and Lake and Peninsula Borough to 36 years in the Bristol Bay Borough. The State median age was just over 32 years (2000).

Out migration is evident with 3.4 persons per year per 1000 population leaving the Dillingham census Area, and 14.8 persons per year per 1000 population left both Bristol Bay and Lake and Peninsula Boroughs during1990-2003. This is similar to Fairbanks North Star Borough (-11.5/1000/year), and similar to most rural Alaska. Net positive migration was reported in Juneau, Anchorage, the Kenai Peninsula, and the Matanuska-Susitna Borough (highest at 25.5/1000/year) during the same reporting period. (Alaska Department of Commerce, 2005)

d) Employment and Income

Table 3.35 provides information about local resident employment. Commercial salmon and herring fishing has long been the predominant economic activity in Bristol Bay and in Southwest Alaska. As elsewhere in rural Alaska, public employment is very important to the economy of the planning area. The largest employers in the region are the Bristol Bay Area Health Corporation, Bristol Bay Native Association, Wards Cove Packing Association, and Borough government and school districts.

Table 3.29. Growth of Alaska Native Population

Area/Year	1990	2000	Percent Growth
Alaska	85,698	98,043	14,4%
Anchorage	14,569	18,941	30%
Fairbanks	5,330	5,714	7.2%
Mat-Su	1,939	3,264	68.3%
Dillingham Census Area	2,925	3,452	18%
Bristol Bay Borough	455	550	20.9%
Lake and Peninsula Borough	1,261	1,340	6.2%

Source: U.S. Census Bureau, Census 1990, 2000

Table 3.30. Population per Community, Historic U.S. Census Data

	Year				
Community	1960	1970	1980	1990	2000
Aleknagik	231	128	154	185	221
Clark's Point	138	95	79	60	75
Dilliingham	424	914	1,563	2,017	2,466
Ekwok	106	103	77	77	130
Goodnews Bay	154	0	168	241	230
Igiugig	36	36	33	33	53
Iliamna	47	58	94	94	102
King Salmon	227	202	545	696	442
Kokhanok	57	88	83	152	174
Koliganek	100	142	117	181	182
Levelock	88	74	79	105	122
Manokotak	149	214	294	385	399
Naknek	249	178	318	575	678
New Stuyahok	145	216	331	391	471
Newhalen	63	88	87	160	160
Nondalton	205	184	173	178	221
Pedro Bay	53	65	33	42	50
Platinum	43	55	55	64	41
Port Alsworth	0	0	22	55	104
Portage Creek	0	60	48	5	36
Quinhagak	228	340	412	501	555
South Naknek	142	154	145	136	137
Togiak	220	383	470	613	809
Twin Hills	0	67	70	66	59

Source: U.S. Census Bureau, Census 2000

Table 3.31. Population of Selected Boroughs, Census Areas

Regional Entity	Year				
	1960	1970	1980	1990	2000
Fairbanks North Star Borough	43,412	45,864	53,983	77,720	82,840
Anchorage Municipality/Borough	82,833	126,385	174,431	226,338	260,283
Dillingham Census Area	1,213	2,322	3,203	4,012	4,922
Bristol Bay Borough	618	1,147	1,094	1,410	1,258
Lake and Peninsula Borough			1,384	1,668	1,823

Source: NRWIA 2005

Both seafood harvesting and processing are highly seasonal industries in Bristol Bay. Salmon and herring fishing comprise most of the harvest activity which occurs between May and September. In 2003, 21% of private sector workers in Alaska were nonresidents of the state. (NRWIA 2005) Seafood processing employs the highest number of nonresident workers (63.4%) in this state. In 2002, there were 2,820 fish harvesting jobs in Southwest Alaska. This was 21% of all private sector employment. Adding seafood processing workers (3,900) makes the fishing industry in Southwest Alaska the largest sector of employment (49% of private jobs.) The State reports fish harvesting jobs using a regional approach, estimating employment since the number of workers does not correspond to wage and salary employees who are qualified for workers compensation. Although Southwest Alaska includes areas outside the Planning area, it is a reasonable measure of the Bristol Bay region.

Table 3.32. Workers and Wages in the Seafood Processing Industry

Locale	Total Workers	Total Wages (millions)	Nonresident Workers	Nonresident Percent	Nonresident Wage (millions)	Nonresident Percent
Bristol Bay Borough	1,316	$9.2	1,071	81.4%	$7.1	76.8
Dillingham	228	$2.0	180	78.9%	$1.6	81.0
Lake and Peninsula Borough	337	$2.9	318	94.4%	$2.7	91.8
Plan area Total	1881	$14.1	1,569	83.4	$11.4	80.9
Alaska	19,480	$247.4	13,858	71.1%	$156.8	63.4

Source: NRWIA 2005

Table 3.33. Commercial Fishing Permits Held by Residents

Community	Permits
Aleknagik	33
Clark's Point	16
Dillingham	277
Ekwok	6
Goodnews Bay	41
Igiugig	5
Iliamna	17
King Salmon	36
Kokhanok	8
Koliganek	18
Levelock	15
Manokotak	96
Naknek	115
New Stuyahok	43
Newhalen	7
Nondalton	14
Pedro Bay	3
Platinum	9
Port Alsworth	4
Portage Creek	Not reported
Quinhagak	83
South Naknek	43
Togiak	244
Twin Hills	15
Total	**1148**

Source: Alaska Department of Commerce, Community & Economic Development, Alaska Economic Information System 2004

Government employment includes State of Alaska, borough, city, and Federal agency jobs in the planning area. The Alaska Department of labor reported that government employment ranged from 33% of the workforce in Bristol Bay Borough (398 of 1203), 39% in the Dillingham Census Area (904 of 2,332), to 50% in the Lake and Peninsula Borough (320 of 636) during 2003.

Table 3.34. Employment by Sector (Percentage of Total Employment)

Employment by Sector	Dillingham Census Area	Bristol Bay Borough Area	Lake and Peninsula Borough	Alaska
Agriculture, forestry, fishing, hunting, mining	3.9	0.9	1.4	4.9
Construction	4.2	11.4	4.8	7.3
Manufacturing	1.9	1.5	1.2	3.3
Wholesale trade	0.6	0.3	0.5	2.6
Retail trade	10.0	7.7	5.7	11.6
Transportation, warehousing and utilities	9.9	17.4	10.2	8.9
Information	1.1	6.4	0.9	2.7
Finance, insurance, real estate, rental and leasing	2.7	2.4	1.0	4.6
Professional scientific, management, administrative and waste management	1.8	4.1	2.4	7.6
Education, health and social services	37.9	23.6	33.9	21.7
Arts, entertainment, recreation, accommodation and food services	2.9	7.2	6.2	8.6
Other services	9.4	2.2	7.2	5.6
Public administration	13.7	14.7	24.6	10.7

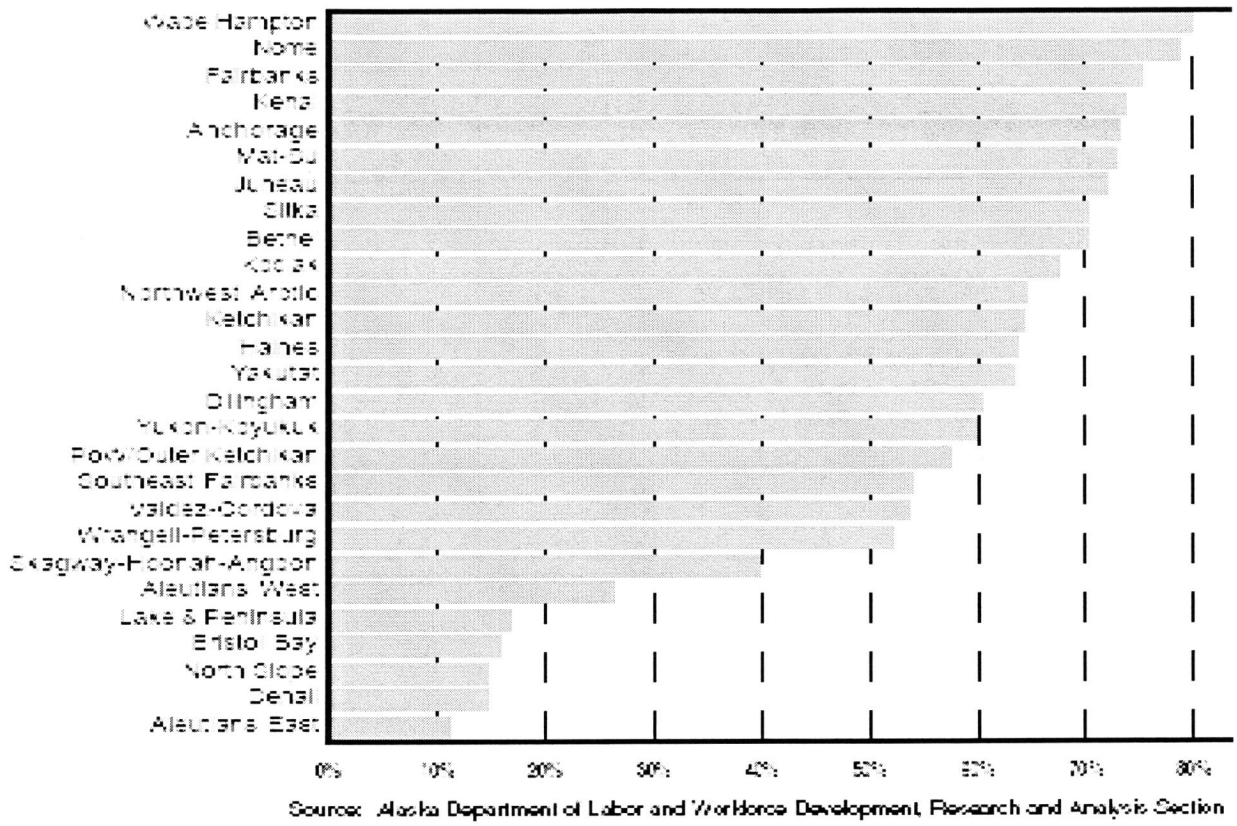
Source: U.S. Census Bureau, Census 2000.

State of Alaska statewide data indicate that mining, oil and gas, and oil and gas services industries employed 24% to 26% non-resident workers in 2003. North Slope Alaska industry employs less than 15% within region labor. These industries, which may be expanding presence in southwest Alaska, are likely to provide jobs to Alaskans; however, they will be primary out of region residents. Tech Cominco Alaska has worked with NANA Regional Corporation to employ NANA shareholders at Red Dog Mine in northwest Alaska. However, most of the NANA shareholders employed at the mine are out of region residents.

Teck Cominco Alaska provided 412 direct jobs to employees and contractors in 2003. This is slightly over 14% of wage and salary employment, and 22% of non-government employment in the Borough. Over 50% of mine workers are NANA shareholders. Those directly employed by Teck Cominco Alaska receive free transportation to the job site from their residence within the state. As a result only about 140 employed NANA shareholders live in the planning area. The mine operation also resulted in the Borough's largest source of revenue through payments in Lieu of taxes of $5.9 million in 2003 (Trends 2005; ADOL 2005; Alaska Economic Trends 2005).

Even visitor related industries provide a significant number of jobs to non-resident Alaskans. ANCSA Corporations and subsidiaries provide jobs in some locations within the planning area. The regional corporation is headquartered in Anchorage.

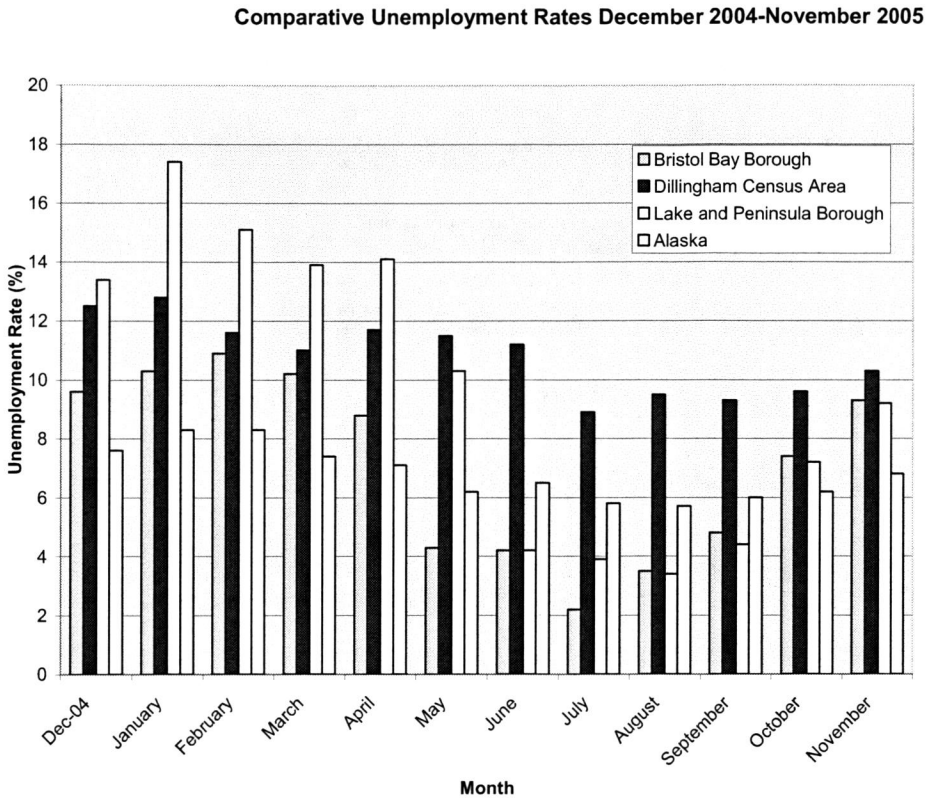
Table 3.35. Percent of Private Sector Workers Who Are Local Residents



Source: Jeff Hadland, et.al., Nonresidents Working in Alaska-2003, Alaska Department of Labor and Workforce Development, January 2004.

Unemployment in the planning area is fluctuates widely compared with urban centers in Alaska and the state average. According to State of Alaska data average unemployment during 2004 ranged from 10.2% in the Lake and Peninsula Borough, 6.6% in Bristol Bay to 11.2% in Dillingham Census Area. At the same time the state average was 7.5% (ADOLWD 2005).

Table 3.36. Comparative Unemployment Rates December 2004-November 2005

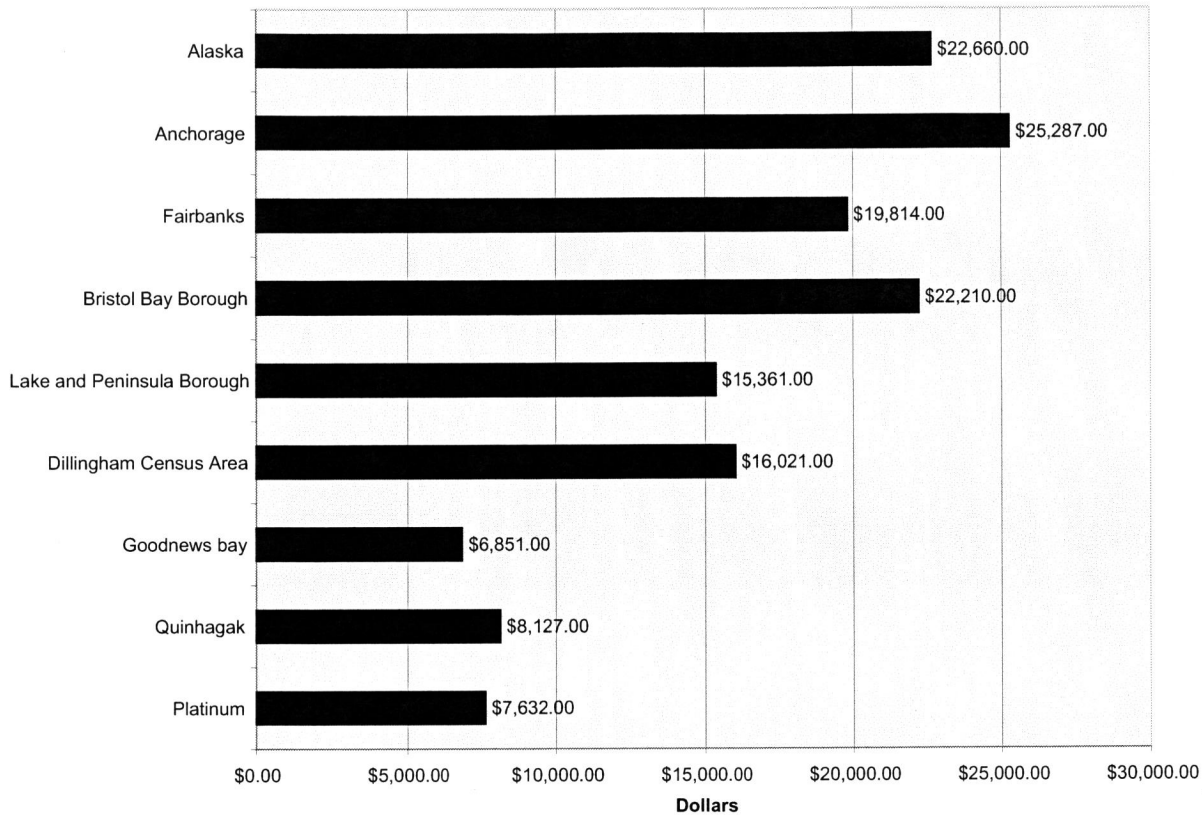


Labor force participation rates are low as is typical in bush Alaska (Table 3.36). This measure reports the number of individuals in a census area that are not seeking employment. Census data shows that Kokhanok has the lowest participation rate in the planning area, where about 64% of the population was not in the labor force in 2000. Eleven villages in the planning area have labor force participation rates in excess of 50%. This underscores the relative scarcity of jobs, and emphasizes the role and importance of subsistence activities.

The educational attainment curve lags in bush villages. Over 60 percent of residents in the State of Alaska have some college; 88% have completed high school, and almost 25% have college degrees. In the planning area, 59% of residents completed high school, and 11% hold bachelor's degrees or higher. The difference may be exaggerated by out-migration of more highly educated and therefore employable individuals.

Per capita income in the planning area ranges from almost equal to the Alaska average in Bristol Bay Borough, to under $8000 per year in smaller villages (Table 3.37 and Table 3.38). Only in the regional centers does per capita income begin to respond to the high cost of living.

Table 3.37. Comparison of Per Capita Income (2000)



The extent of individuals considered at or below poverty level in the planning area is much higher than the average for the state of Alaska. In the Bristol Bay Borough 9.5% Individuals were below poverty level in 2000. In the Dillingham Census Area 21.4% Individuals were below poverty level in 2000. In the Lake and Peninsula Borough, 18.9% of the population was below poverty level in 2000. In comparison, 9.4% of individuals in Alaska were below the poverty level in 2000.

Table 3.38 Environmental Justice Data from the 2000 Census

State or City	Per Capita Income	Percent of Population as a Minority[1]	Percent of Individuals Below Poverty Level Income[2]	Percent of Households Below Poverty Level Income[2]	Percent of Unemployed Population Over 16 Years of Age	Percent Population Over 16 Years of Age Not In The Labor Force
Alaska	$22,660	19.0	9.4	6.7	6.1	28.7
Aleknagik	$10,973	81.9	40.8	21.7	13.3	39
Clark's Point	$10,988	90.7	45.7	20	5.1	53
Dillingham	$21,537	52..6	11.7	9.2	7.1	27
Ekwok	$11,079	91.5		29.2	11.1	44
Goodnews Bay	$6,851	92.6	39.0	37.8	9.9	55
Igiugig	$13,172	71.7	6.9	0	0	55
Iliamna	$19,741	50.0	3.1	0	0	28
King Salmon	$26,755	29.0	12.4	8.8	6.9	22
Kokhanok	$7,732	86.8	42.6	40.0	4.1	64
Koliganek	$13,242	87.4	19.3	14.9	9.2	30
Levelock	$12,199	89.3	24.5	16.7	0	53
Manokotak	$9,294	94.7	35.3	32.5	5.5	54
Naknek	$21,182	45.3	3.7	3.1	6.7	29
New Stuyahok	$7,931	92.8	31.7	32.6	9.2	46
Newhalen	$9,448	85.0	16.3	26.7	17.9	43
Nondalton	$8,411	89.1	45.4	37.3	18.7	50
Pedro Bay	$18,420	40.0	6.0	0	0	21
Platinum	$7,632	90.2	22.0	33.3	20.0	26.7
Port Alsworth	$21,716	4.3	6.0	0	0	29
Portage Creek	$8,010	86.1	0	0	0	50
Quinhagak	$8,127	96.0	26.1	27.2	6.3	59
South Naknek	$13,019	83.9	27.1	16.1	12.5	48
Togiak	$9,676	86.3	29.9	32.5	11.9	55
Twin Hills	$16,856	84.1	27.9	22.2	0	50

Source: Census 2000

There is some income outflow evident in the planning area. In Bristol Bay Borough, the outflow decreased from 45.6% in the 1980's to 28% in 2000. (EPS 2005) Dillingham Census Area and Lake and Peninsula Borough experience income outflow to a far lesser degree.

e) Revenue

Local government revenue in the planning area is influenced by exemption of ANCSA village corporations and regional corporations from certain forms of property taxation.

Villages and boroughs are empowered to levy and collect tax revenues if they are incorporated political subdivisions. Several villages or towns in the planning area levy sales taxes and specific use or product taxes. The City of Dillingham and the Bristol Bay Borough collect property tax.

Table 3.39, 2004 Per Capita Tax Revenues in Dollars, lists collections by those villages and boroughs that levy taxes. The columns labeled "Other Tax" aggregate collections for items such as liquor, tobacco, bed use, and fish processing. The North Slope Borough collections and revenue are greatly enhanced by North Slope oil field property taxes. This greatly skews the per capita revenues compared with the rest of the state. Anchorage, Fairbanks North Star Borough, Matanuska-Susitna Borough, and the city of Fairbanks are included in the table for comparison purposes.

Table 3.39. 2004 Per Capita Tax Revenues in Dollars

Municipality[1]	Property Tax (Inc. Oil & Gas)	Sales Tax	Other Taxes	Total Taxes Reported	Population (2004)	Per Capita Revenue
Lake and Peninsula Borough	0	0	$731,799	$731,799	1627	$450
Bristol bay Borough	$1,747,532	0	$363,737	$2,111,269	1,103	$1,914
Anchorage	$322,352,907	0	$19,681,861	$342,034,768	273,565	$1,250
Fairbanks North Star Borough	$71,382,439	0	$1,375,192	$ 72,757,631	82,131	$886
Matanuska-Susitna Borough	$55,571,134	0	$716,992	$56,288,126	67,526	$834
Fairbanks, City[2]	$8,685,154	0	$3,748,522	$12,433,676	29,002	$429
Aleknagik	0	$93,429	$618	$2,484,947	235	$400
Dillingham	$1,339,892	$2,014,814	$328,551	$3,683,257	2,390	$1,754
Quinhagak	0	$77,506	0	$77,506	578	$134
Togiak	0	$76,097	$32,680	$108,777	820	$133
Manokotak	0	$1,185	0	$1,185	405	$3
All other towns	0	0	0	0	0	0
Average statewide per capita revenue (excluding the North Slope Borough)						1,224
Average statewide per capita revenue (including North Slope Borough)						1,518

Source: ADCCED 2005. Alaska Department of Commerce, Community, and Economic Development. 2005. 2004 per capita tax revenues. Office of the State Assessor. http://www.commerce.state.ak.us/dca/osa/pub/04AKTax_Tab3a.xls.

[1] Only those municipalities that levy sales, severance, property, or other type of local tax are included in this table.
[2] Both the city of Fairbanks and the borough in which it is located levy taxes.
[3] Per capita revenue encompasses both city and borough taxes.

F. Subsistence

1. Definition of Subsistence

The Federal Subsistence Board assures the subsistence priority among consumptive uses on Federal public lands under ANILCA Title VIII (USDI and USFWS 1992). ANILCA assures a rural priority for Subsistence. This means that rural residents have priority for the use of fish and wildlife resources on Federal lands for wildlife and Federal reserved waters for fisheries. There are no Federal reserved waters on BLM-administered lands in the planning area that fall under the BLM subsistence management responsibility. State- and Native-selected lands are not within the jurisdiction of the Federal subsistence management program, except within Federal CSUs, such as national parks, preserves, and wildlife refuges. Title VIII of ANILCA 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 U.S.C. § 3113).

Under state law, subsistence use means

> The noncommercial, customary and traditional uses of wild, renewable resources by a resident domiciled in a rural area of the state for direct personal or family consumption, such as food, shelter, fuel, clothing, tools, or transportation; for the making and selling of handicraft articles out of nonedible by-products of the fish and wildlife resources taken for personal or family consumption; and for customary trade, barter, or sharing for personal or family consumption (AS 16,05.940[32]).

The state does recognize preferential allocation of resource harvest opportunities for rural or non-rural user groups where uses are allowed.

2. The Federal Subsistence Program

The Federal Subsistence Program, unique to Alaska, and without precedent in Federal law, implements ANILCA Title VIII through the Federal Subsistence Board (FSB), Secretary of Interior-appointed Subsistence Regional Advisory Councils (SRACs), and interagency staff specialists. The FSB consists of the Regional or State Directors of the U.S. Fish and Wildlife Service, BLM, US Forest Service, National Park Service and Bureau of Indian Affairs. The FSB is chaired by a subsistence user representative appointed by the Secretary of the Interior. The FSB is tasked with management of subsistence resources relative to customary and traditional use determinations, animal population health and maintenance, bag limit determinations, seasons of harvest, methods and means of taking determinations, and regulatory and public processes.

The Bay planning area lies within Regions 4 and 5 of the ten Federal Subsistence Program's regions in Alaska. Each region is represented by a Federal Subsistence Regional Advisory Council. These councils provide an opportunity for rural Alaskans to contribute in a meaningful way to management and use of subsistence wildlife, fish and shellfish resources.

The Planning area encompasses, wholly or in part, Game Management Units 9(B), 9(C), 17(A), 17(B), 17(C) and 18 of the State's 25 Game Management Units, Management Areas 6 and 7 of the State's 14 Fishery Management Areas and the Bering Sea Management Area of the eight Alaska Shellfish Management Areas.

The program provides for 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 making and selling of handicraft articles out of non-edible by products of fish and wildlife resources taken. A person must be a qualified rural Alaska resident to harvest fish and wildlife under Federal Subsistence Regulations on Federal public land in and Federal reserved waters in Alaska as defined in ANILCA. All communities within the Bay planning area are rural, as it is defined in the current rural determination. While the majority of Bay planning area inhabitants are Alaska Native and have established the patterns for subsistence use in Alaska, the Federal subsistence regulations apply to all rural residents who have a customary and traditional use of fish and wildlife in the area, irrespective of their race or ethnicity.

Subsistence resources are highly valued and are central to the economies, customs and traditions of many families and communities in Alaska. Customs and traditions include sharing and distribution networks, cooperative hunting, fishing, gathering, and ceremonial activities. Subsistence fishing, hunting, and gathering are important sources of nutrition and livelihood in all of the rural communities in the Bay planning area. ADF&G (2000) estimated that approximately 43.7 million pounds of useable weight of wild foods are harvested annually by residents of rural areas of the state. That would be about 375 pounds per person per year for rural residents. ADF&G (2000) suggests that in Southwest Alaska 65% of rural households harvest game, 86% harvest fish, and 90 - 94% use fish and game. Because this region's residents participate in a mixed subsistence - cash economy, there may be little cash available for store-bought groceries. A 2005 survey comparing living expenses across Alaska indicates that groceries for a family of four for one week in Dillingham cost $227, compared with $122 for the same groceries in Anchorage (University of Alaska Fairbanks 2005).

A person must have his or her primary, permanent residence in a rural area to qualify to hunt and fish under Federal subsistence regulations. Seasonal residence in a rural area does not qualify a person as a rural resident. The FSB determines which communities have customarily and traditionally taken specific fish and wildlife populations in which areas. These customary and traditional use determinations are listed along with seasons and harvest limits for each management unit in the Federal regulations. The Federal program publishes separate hunting/trapping and fishing regulation booklets annually. If there is a positive customary and traditional use determination for specific communities or areas, only those communities and areas have a Federal subsistence priority for that specific species in that management unit. If no customary or traditional use determination for a wildlife/fish population in a management unit has been determined by the FSB, then all rural residents of Alaska may harvest fish or wildlife from that population. The FSB may determine that there is no customary and traditional use of a specific fish or wildlife population.

The planning area has within its borders over 6,400 people in 25 Federally-qualified subsistence communities ranging in population from less than 50 to over 2400 people and the additional rural residents not associated with a community. The following rural communities lie within the Bay planning area.

Table 3.40. Bay Planning Area Communities and their Locations With Relation to the Subsistence Game Management Units

Game Management Unit(s)	9(B)	9(C)	17(A)	17(B)	17(C)	18	Other
Aleknagik					√		
Clarks Point					√		
Dillingham					√		
Ekuk					√		
Ekwok					√		
Goodnews Bay						√	
Igiugig	√						
Iliamna	√						
King Salmon		√					
Kokhanok	√						
Koliganek				√			
Levelock	√						
Manokotak					√		
Naknek		√					
Newhalen	√						
New Stuyahok					√		
Nondalton							
Pedro Bay							
Platinum						√	
Portage Creek					√		
Port Alsworth							√
Quinhagak						√	
South Naknek		√					
Togiak			√				
Twin Hills			√				

Depending upon subsistence determinations, other rural residents of Alaska residing outside the planning area are also qualified subsistence users on Federal Public land in the planning area

3. Historic Subsistence Use Patterns, Social Organization and Sharing Patterns

The following brief overviews of social organization and sharing patterns descirbe those encountered at the time of European contact. While these traditions may continue into the present day, a number of influences brought changes to traditional ways of life. Several epidemics (smallpox, influenza, tuberculosis and measles) decimated local populations and interrupted the transmission of culture. The introduction of European and Euroamerican economic, religious and political practices also brought changes.

Historically, these groups practiced a central based settlement pattern. This typically included an established winter village from which families or small groups would venture to seasonally based camps for fishing, hunting, trapping, and gathering activities such as gathering eggs, berries, basketry materials or pottery supplies.

a) Central Yup'ik

Historically a winter village would contain at least one men's house (*quasig*) and individual houses inhabited primarily by women and younger children. This was an egalitarian society where leaders are chosen by ability, knowledge and articulate speaking. A winter ceremonial season enhanced visiting and hospitality between villages (Fienup-Riordan 1994; Oswalt 1990).

Sharing was highly valued in the society in the past, and continues to be important today. Men might distribute meat after the kill to hunting partners but when the meat was brought home, the women became responsible for sharing it with family and friends. The first kills by young hunters were often completely given away especially to Elders (Fienup-Riordan 1990).

b) Alutiiq

Historically the Alutiit were a ranked society. Wealth and leadership were concentrated among high-ranking lineages and each village was run by a chief who inherited power from his family. The chiefs directed hunting and trading expeditions. Ordinary families made up a class of free, common people and a lower class of slaves was composed of orphans, people captured in raids or taken in trade from other groups. Within the group were also specialists such as whalers, shamans, weather forecasters, healers and midwives (Crowell and Leer 2001).

The cultural emphasis upon sharing was reflected in large ceremonials noted for their lavish hospitality and gift-giving. Like other groups of the region, a boy's first kill was given away.

c) Dena'ina Athabascan

Historically the Dena'ina were a ranked society with a redistributive economic system. High ranking individuals or "rich men" took the role as leaders and functioned as a center for redistribution of goods. They were responsible for caring for their kin group and were responsible for widows, orphans, and the infirm. Their trading partnerships linked their group with other groups in the region (Ellanna and Balluta 1992).

In the Dena'ina area leaders selected for their generosity, willingness to help others, hunting ability, bravery and ability in warfare. An aspiring leader rose through the system by trading to acquire prestige symbols and gathering supporters (Ellanna and Balluta 1992; Townsend 1981).

Sharing of meat was typical between hunting partners. Potlatches were given for several reasons. Large potlatches were given to honor the deceased and smaller ones were given to honor marriages, to help the poor. A small potlatch would be given by a father when his son killed his first big game (Osgood 1976; Townsend 1981).

4. Sociocultural, Socioeconomic and Cosmological Aspects of Subsistence Lifeways

For Alaska Natives today, subsistence is more than the harvesting, processing, sharing, and trading of land and sea mammals, fish, and plants. Subsistence subsumes holistically the cultural, social, and spiritual values that are the essence of Alaska Native cultures. The Alaska Federation of Natives (2002) described subsistence as

> The hunting, fishing, and gathering activities which traditionally constituted the economic base of life for Alaska's Native peoples and which continue to flourish in many areas of the state today...Subsistence is a way of life in rural Alaska that is vital to the preservation of communities,

> tribal cultures, and economies. Subsistence resources have great nutritional, economical, cultural, and spiritual importance in the lives of rural Alaskans...Subsistence, being integral to our worldview and among the strongest remaining ties to our ancient cultures, is as much spiritual and cultural as it is physical.

There are several significant differences between traditional approaches to subsistence and the western notion of hunting. Traditional groups often adhere to recognition of an individual's or a family's customary ownership through long-term use of a hunting locality that may be passed on generation after generation. For example, Dena'ina hunting grounds are passed on from father to son. If anyone else kills game there the owner usually is paid a quarter of the meat from the hunt (Ellanna and Balluta 2001).

A common belief is that animal souls return after death to be born into new animals. The hunter's respectful treatment of animals is reflected in his future success and often the success of the entire group. If respect is not shown, an animal will not continue to give itself to people. Animals may abandon an area if not respectfully treated or they may hide themselves from hunters. Since hunting was a survival situation for groups, behavior was regulated and social sanctions were often enforced (Crowell and Leer 2001; Fienup-Riordan 1994).

Some behavior seen as ethical in western hunting and fishing practices, such as catch-and-release fishing, is seen as disrespectful in traditional Native society (Fienup-Riordan 1990). In the traditional view this type of behavior may threaten future fish runs.

5. Historic and Contemporary Subsistence Use Patterns

Archaeological evidence indicates that the Bristol Bay region has been continuously inhabited by humans for at least the past 8,000 years or more (Dumond 1981). Among the three linguistic groups present at European contact, all of them had subsistence economies, and all participated in widespread formal trade which was well-established in the region and beyond prior to the arrival of the Europeans (Fitzhugh and Crowell 1988). However, the Russian trappers and traders who explored the region in the 18th and early 19th Centuries were the first to develop an export market economy of large scale (Wright et al. 1985; Fitzhugh and Crowell 1988). The Russians established trading posts and churches in parts of the region in the early 1800s. In 1867 the Russians sold Alaska to the United States, and subsequently the fur trade declined (Wright et al. 1985). Commercial salmon fishing began in the late 1800s, and became the dominant industry (Wright et al. 1985).

Many of the communities in the Bay planning area remain predominantly Alaska Native (Table 3.41), and in many of these communities traditional patterns of subsistence hunting, fishing and gathering activities have been retained flexibly, accommodating a part-time cash economy that includes the commercial fishery, trapping for a commercial market as well as for personal use, hunting and fishing guiding activities, and other cash-generating activities (Wright et al. 1985; McClenahan 2004). Having a cash income has proven beneficial in that it provides for the purchase of modern equipment and gasoline that make subsistence activities more efficient and productive. However, it has also required some changes in the duration and timing of some subsistence activities to accommodate wage employment.

A detailed discussion of the subsistence use of salmon and freshwater fish, caribou, and moose was presented in the wildlife portion of Chapter 3. In addition to these three leading subsistence resources, upland game, grizzley and black bears, furbearers and waterfowl are all important local subsistence resources but are of lesser importance in terms of biomass harvested for food and fiber than fish, caribou and moose (ADF&G 2005).

Table 3.41. Bay Planning Area Communities and their Alaska Native Population Composition (U.S. Census Bureau 2004)

Community	Population	Percent Alaska Native
Aleknagik	221	85
Clarks Point	75	92
Dillingham	2466	56
Ekuk	2	0
Ekwok	130	94
Goodnews Bay	230	94
Igiugig	53	83
Iliamna	102	58
King Salmon	442	30
Kokhanok	174	91
Koliganek	187	87
Levelock	57	95
Manokotak	437	95
Naknek	601	47
Newhalen	183	91
New Stuyahok	477	96
Nondalton	205	90
Pedro Bay	47	64
Platinum	39	93
Portage Creek	49	86
Port Alsworth	113	22
Quinhagak	612	97
South Naknek	88	84
Togiak	805	93
Twin Hills	67	94

6. Resources Harvested

Residents of regional centers like Dillingham participate in a mixed subsistence and cash economy. Residents earn cash through commercial fishing and employment in government, service, and trades, but they also harvest substantial quantities of wild foods, and share those foods with other households and other communities. Dillingham residents share in non-commercial distribution of fish and game with other communities. This balance of commercial and subsistence activities makes Dillingham, Naknek, and King Salmon distinctive among communities in Southwest Alaska. At the same time, Dillingham residents participate in the overall pattern of resource harvesting activities that are part of the economic system of the Bristol Bay region (Fall et al. 1986).

The cash economy of Dillingham, like the rest of the Bristol Bay region, is inextricably linked to the commercial salmon fishing industry, which is a highly seasonal industry. About 44% of the sampled households in 1984 were involved in commercial fishing, with a smaller percent employed in fish processing or in businesses that provide services to commercial fishermen (Fall et al. 1986).

Tables 3.76a-e provide the names of the wild species used by subsistence users in the Bay planning area.

a) Harvest Estimates

Table 3.42 provides the rates of participation and harvest levels for those Bay area communities for which data are available, for one study year. These data are not current. The discussion by BLM block in the wildlife section of this chapter provides more recent harvest information including locations by Game Management Unit of harvest for caribou, moose, and brown bear in the Bay planning area.

Table 3.42 Bay Planning Area Communities' Subsistence Take for One Study Year (Alaska Department of Fish and Game Community Profile Database 2005)

Community	Study Year	Study Year Population	All Resources	Salmon	Non-Salmon Fish	Large Land Mammals	Small Land Mammals	Marine Mammals	Birds and Eggs	Marine Invertebrates	Vegetation
Aleknagik	1989	143	54,079.00	13,556.00	8,749.00	21,619.00	1,669.00	2,171.00	2,007.00	450.00	3,859.00
Dillingham	1984	2041	494,486.00	288,651.00	35,649.00	117,878.00	16,612.00	6,067.00	10,807.00	2,488.00	16,328.00
Ekwok	1987	107	85,260.00	48,827.00	7,340.00	20,524.00	6,155.00	0.00	390.00	0.00	2,025.00
Goodnews Bay	*										
Igiugig	1983	47	43,028.00	30,961.00	5,439.00	3,447.00	884.00	183.00	485.00	0.00	1,628.00
Iliamna	1991	98	82,915.00	42,204.00	7,492.00	24,702.00	980.00	4,063.00	1,516.00	321.00	1,637.00
King Salmon	1983	369	81,261.00	37,854.00	5,873.00	36,429.00	1,104.00	0.00	0.00	0.00	
Kokhanok	1992	173	175,639.00	97,626.00	18,325.00	45,658.00	4,931.00	728.00	3,942.00	573.00	3,855.00
Koliganek	1987	186	154,705.00	67,520.00	17,743.00	54,699.00	8,550.00	0.00	2,148.00	240.00	3,878.00
Levelock	1992	111	97,677.00	51,710.00	7,279.00	27,742.00	2,466.00	5,548.00	1,311.00	71.00	1,551.00
Manokotak	1985	308	118,337.00	41,847.00	26,229.00	18,610.00	10,661.00	10,052.00	5,197.00	1,391.00	4,349.00
Naknek	1983	383	72,110.00	39,259.00	7,134.00	24,766.00	554.00	397.00	0.00	0.00	
New Stuyahok	1987	353	247,494.00	144,394.00	12,718.00	67,096.00	16,717.00	207.00	1,382.00	139.00	4,840.00
Newhalen	1991	158	117,716.00	66,192.00	5,925.00	32,229.00	3,863.00	1,310.00	3,276.00	513.00	4,409.00
Nondalton	1983	280	329,274.00	215,447.00	48,946.00	50,323.00	5,498.00	0.00	2,442.00	0.00	6,619.00
Pedro Bay	1996	63	24,931.00	18,269.00	1,626.00	4,560.00	0.00	0.00	135.00	132.00	210.00
Platinum	*										
Port Alsworth	1983	76	27,416.00	18,209.00	881.00	7,205.00	142.00	0.00	332.00	84.00	564.00
Quinhagak	1982	474	363,740.00	162,125.00	70,815.00	49,000.00	6,850.00	58,964.00	13,863.00		2,124.00
South Naknek	1992	134	39,893.00	19,451.00	2,703.00	14,832.00	48.00	269.00	277.00	272.00	2,042.00
Togiak	*										
Twin Hills	*										

*Data currently are not available.

b) Annual Round of Seasonal Subsistence Activities

Because salmon and freshwater fish are the primary resource for subsistence users in the Bay planning area, and because a substantial number of Bay planning area residents also commercial fish, the spring - summer - fall portion of the annual round of seasonal subsistence activities is focused largely on their timing and availability, particularly those of salmon. To a much lesser extent this is also true for migratory waterfowl. Most other resources sought by subsistence harvesters are available year round. In addition to seasonal availability of the resource and periodic fluctuations in resource abundance, the seasonal round is affected by the subsistence user's available time, availability of competing subsistence resources, ability to afford fuel for transportation, and regulatory restrictions.

Tables 3.76a-e provide the wild species used by Bay planning area residents for subsistence purposes, and gives the annual round of seasonal activities by subregion (Wolfe et al. 1984; Wright et al. 1985; Morris 1983, 1985, 1986, 1991; Endter-Wada and Levine n.d.; Fall et al. 1986; Chythlook and Fall 1988; Schichnes and Chythlook 1985).

Table 3.76a Seasonal Round of Subsistence Activities for Selected Species, Goodnews Bay, 1983
(Wolfe et al 1984:343-344)

	Months Harvested											
Resources	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
King Salmon												
Chum Salmon												
Red Salmon												
Pink Salmon												
Coho Salmon												
Flounder												
Smelt												
Saffron Cod												
Round Whitefish												
Char												
Grayling												
Rainbow Trout/Steelhead												
Lake Trout												
Blackfish												
Bearded Seal												
Ringed Seal												
Spotted Seal												
Sea Lion												
Belukha												
Brown Bear												
Beaver												
Red Fox												
Lynx												
Squirrel												
Muskrat												
Snowshoe Hare												
Tundra Hare												
Willow Ptarmigan												
Duck												
Geese												
Crane												
Duck/Gull/Murre Eggs												
Roe on Kelp												
Clam/Mussels												
Crab												
Salmonberries												
Blackberries												
Blueberries												
Cranberries												
Basket Grass												
Firewood												

Usual Harvest Period

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Table 3.76b Seasonal Round of Subsistence Activities for Selected Species, Quinhagak, 1983
(Wolfe et al 1984:316-317)

Resources	Months Harvested											
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
King Salmon												
Chum Salmon												
Red Salmon												
Pink Salmon												
Coho Salmon												
Flounder												
Smelt												
Sculpin												
Sole												
Saffron Cod												
Round Whitefish												
Char - Iqallugpik												
Char - Anerrluaq												
Grayling												
Rainbow Trout/Steelhead												
Lake Trout												
Blackfish												
Bearded Seal - Maklak												
Bearded Seal - Maklaaq												
Bearded Seal - Maklassuk												
Ringed Seal												
Spotted Seal												
Ribbon Seal												
Sea Lion												
Walrus												
Belukha												
Brown Bear												
Moose												
Caribou												
Beaver												
Red Fox												
Mink												
Land Otter												
Weasel												
Lynx												
Wolverine												
Marmot												
Squirrel												
Muskrat												
Porcupine												
Wolf												
Snowshoe Hare												
Tundra Hare												
Rock Ptarmigan												
Willow Ptarmigan												
Duck												
Geese												
Crane												
Duck/Gull/Murre Eggs												
Roe on Kelp												
Clam/Mussels												
Crab												
Salmonberries												
Blackberries												
Blueberries												
Cranberries												
Basket Grass												
Firewood												

Usual Harvest Period Intermittent Harvest Period

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Table 3.76c. Seasonal Round of Subsistence Activities for Selected Resources, Togiak
(Dillingham, Aleknagik, Clark's Point, Ekuk)
(Wright et al 1985:36)

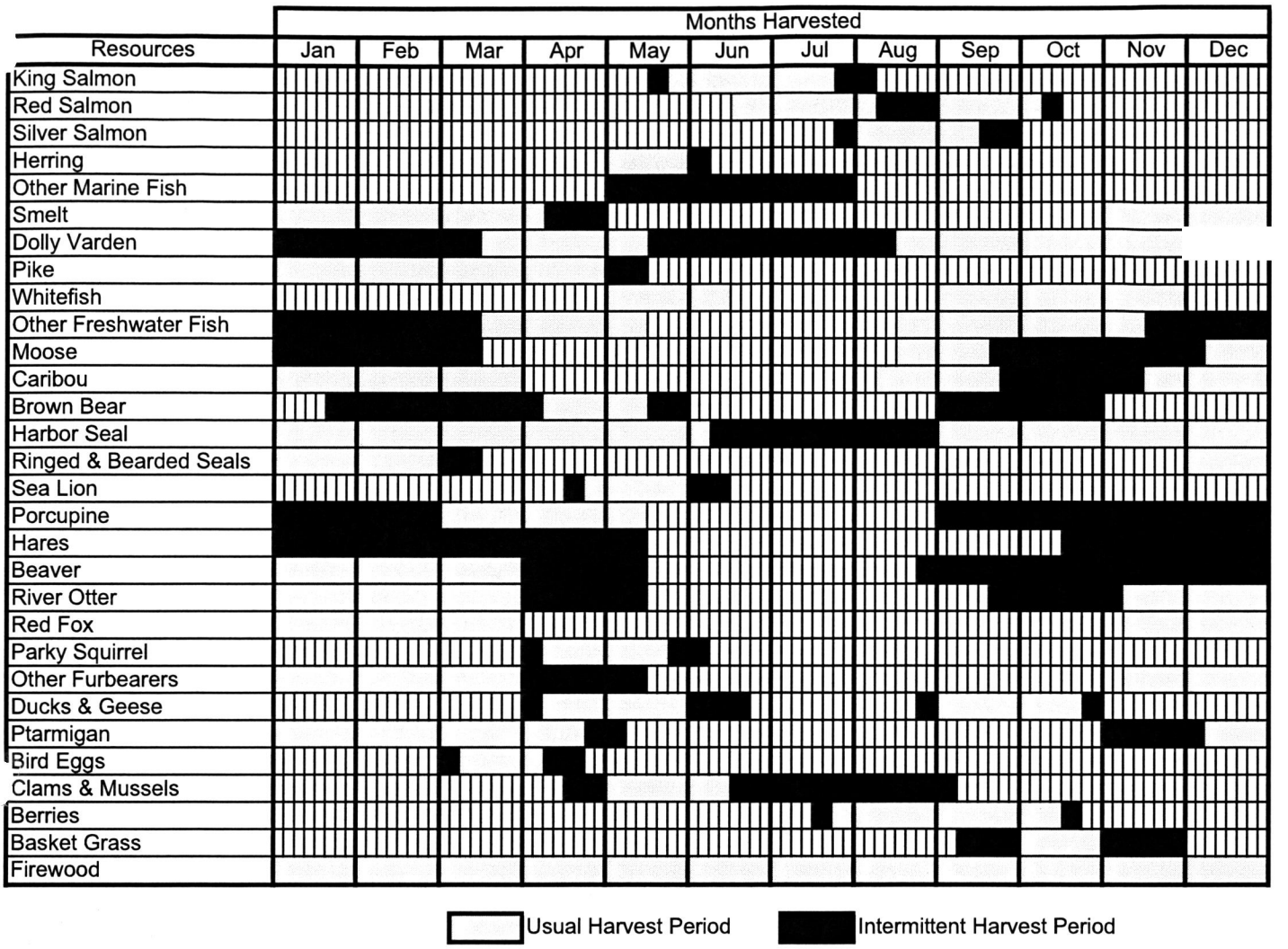

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Table 3.76d Seasonal Round of Subsistence Activities for Selected Resources, Nushagak Bay Subregion
(Togiak, Manokotak, Twin Hills)
(Wright et al 1985:43)

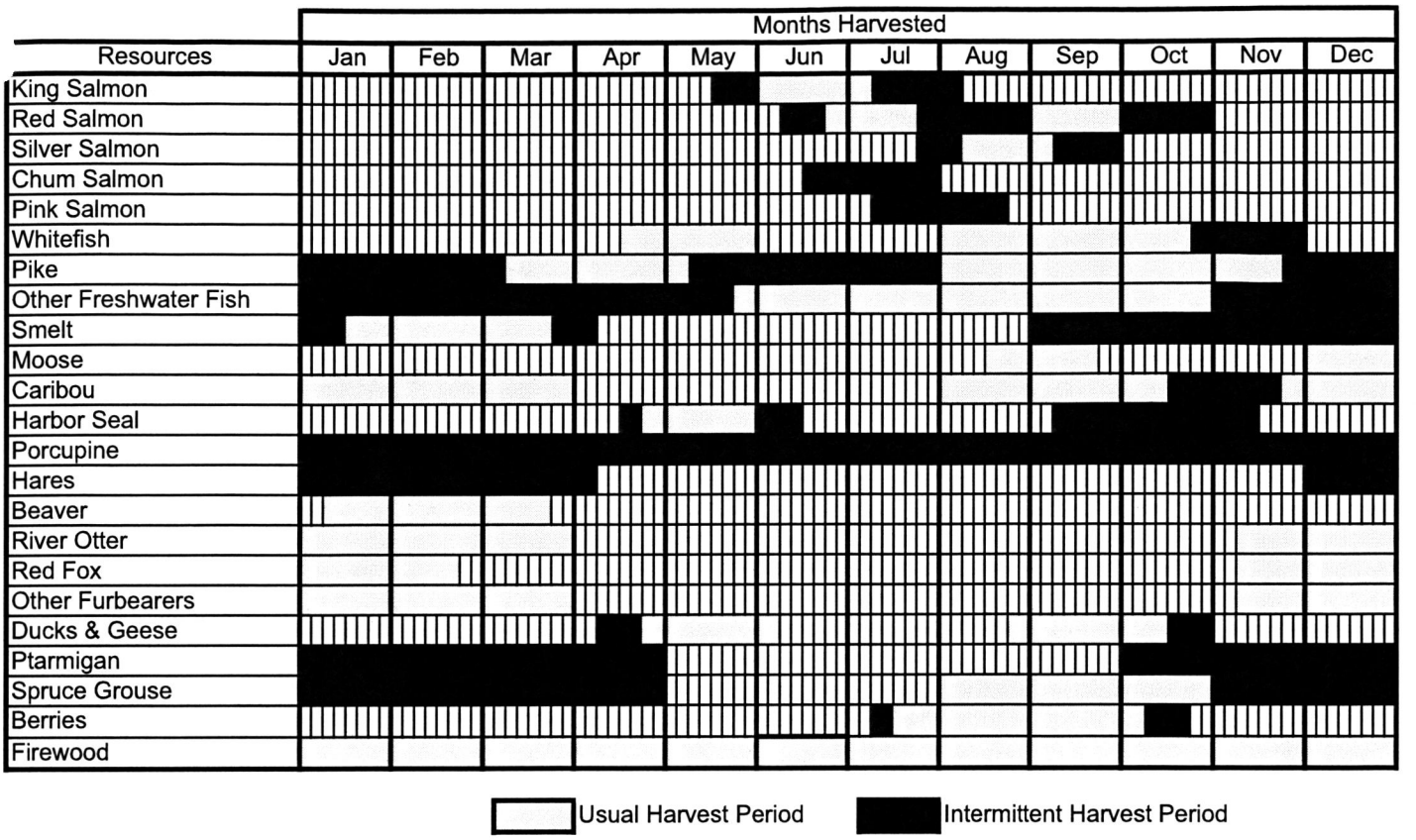

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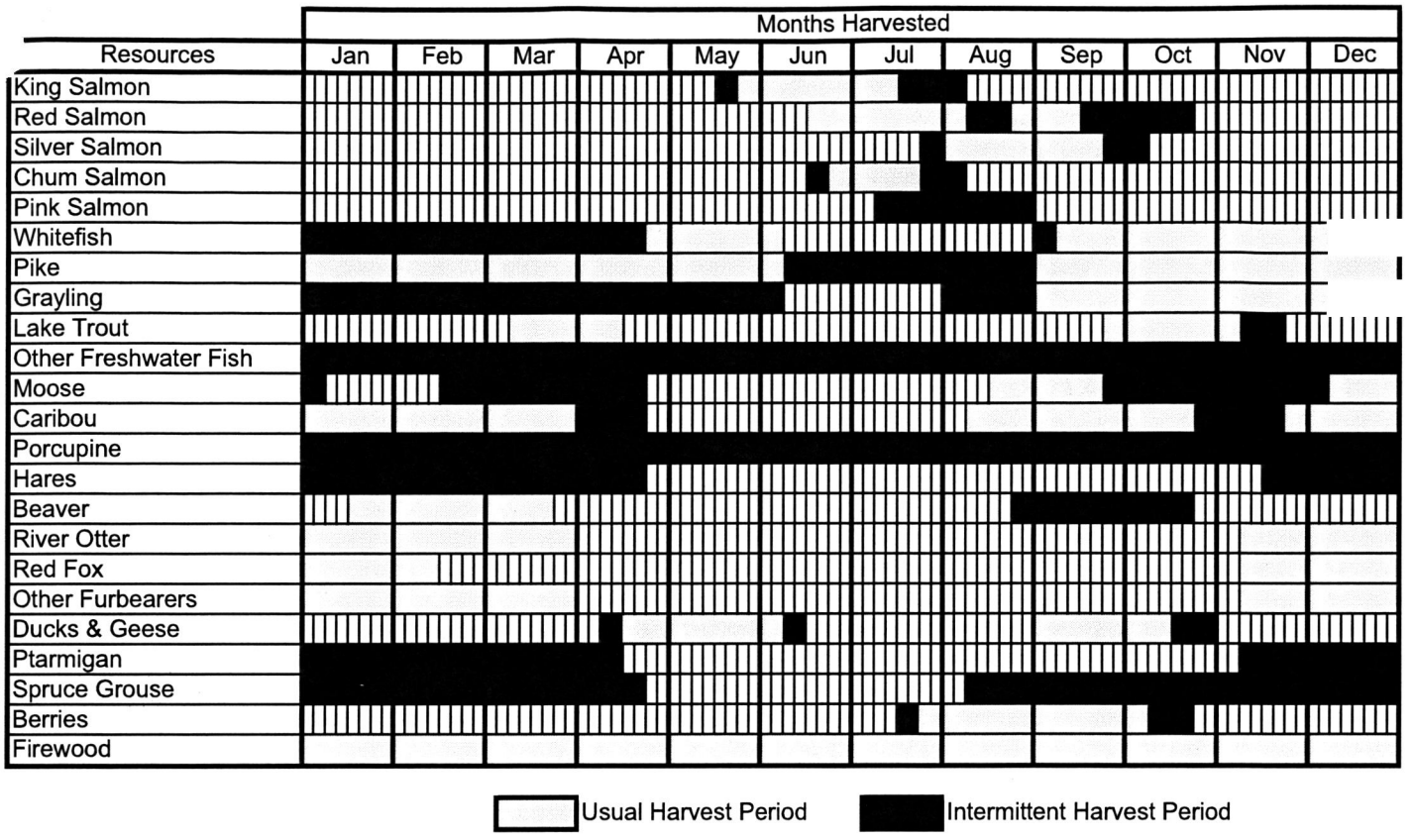
Table 3.76e. Seasonal Round of Subsistence Activities for Selected Resources, Nushagak River Subregion
(Koliganek, New Stuyahok, Ekwok, Portage Creek)
(Wright et al 1985:58)



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c) Federal Subsistence Use Areas

Residents of the Bay planning area use all of the blocks of BLM unencumbered land as well as most of the planning area for subsistence purposes. The discussion by block in the wildlife section provides details about this use.

Appendix B provides subsistence use area maps for each of the Bay planning area communities. Figures 1 - 19 in Appendix B are historic subsistence use area maps, recorded by ADF&G in the 1980s and early 1990s (Wolfe et al. 1984; Wright et al. 1985; Morris 1983, 1985, 1986, 1991; Endter-Wada and Levine n.d.; Fall et al. 1986; Chythlook and Fall 1988; Schichnes and Chythlook 1985).

Regulations implementing amendments to the Migratory Bird Act written in 2000 relate to subsistence taking of migratory birds, primarily ducks and geese, but also all water birds and other migratory fowl. These regulations are currently being finalized and implemented.

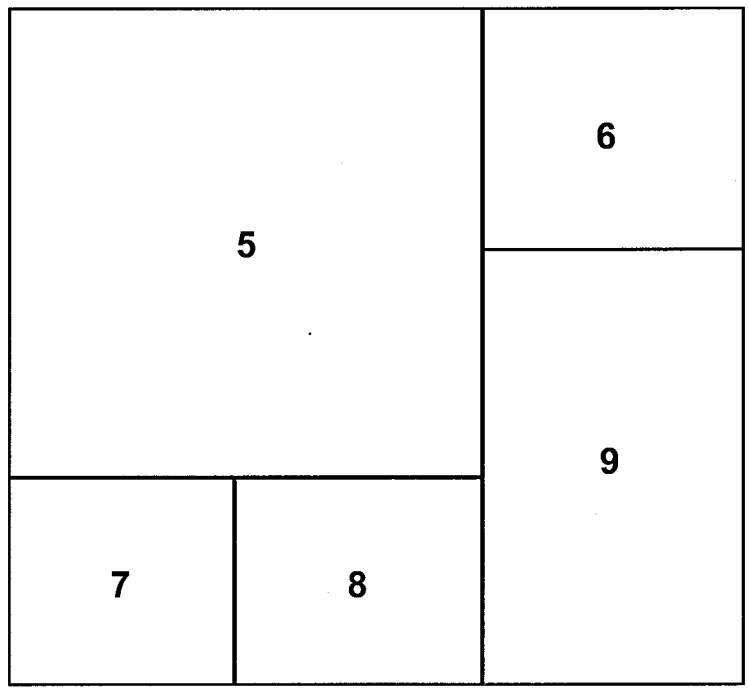
d) Condition of the Resource

The topic of subsistence has not been addressed previously in any BLM land use planning effort for the Bay planning area. All lands in the Bay planning area that meet the ANILCA section 102(3) definition of Federal public land in Alaska have been managed since 1991 under the Federal Subsistence Program.

Fish and wildlife populations and the habitats upon which they rely in the Bay planning area are in good condition overall, with the exception of the Northern Alaska Peninsula Caribou Herd. Some areas of caribou habitat in the Iliamna blocks of BLM unencumbered land may be degraded due to overgrazing by caribou (ADF&G 2002; Valkenburg and Keech 2002). However, no habitat condition surveys have been carried out.

Regional environmental change may alter the quantity and distribution of subsistence resources in the planning area. The potential for extensive and/or intensive mineral resource exploration, extraction, and development as well as development of infrastructure in the region could significantly alter availability, access to, abundance of, distribution of and movement patterns of subsistence resources. Using data from a sample of 98 communities in Alaska, Wolfe and Walker (1987) identified that certain types of economic development can create conditions which diminish subsistence productivity. Construction of roads and settlement entry into roaded areas produce changes associated with lower subsistence harvests, including increased competition for wild resources, increased habitat alteration, and changing community economic orientations away from mixed, subsistence-market adaptations. The current high cost of gasoline makes motorized access to subsistence resources more expensive.

As demonstrated by their meaningful participation in the initial scoping process for the Bay RMP/EIS and as reflected in the many substantive subsistence-related comments received, local communities will be in the forefront in addressing potential conflicts, land use actions and issues that may affect quality, quantity, distribution, access to, and uses of renewable natural resources as well as cultural resources.



BLM Back Cover Photos:

5. BBNC shareholder fishing in Chignik. Photo by Chris Arend © Bristol Bay Native Corporation
6. Fisherman at Graveyard Point, Alaska. Photo by Chris Arend © Bristol Bay Native Corporation
7. Salmon filleting, Graveyard Point, Alaska. Photo by Chris Arend © Bristol Bay Native Corporation
8. All-terrain vehicle at Port Heiden, Alaska. Photo by Chris Arend © Bristol Bay Native Corporation
9. Hunting, Port Heiden, Alaska. Photo by Chris Arend © Bristol Bay Native Corporation

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Draft Resource Management Plan and Environmental Impact Statement

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