

<i>Martes americana</i>	marten	spruce forest
<i>Gulo gulo</i>	wolverine	subalpine, forest
<i>Ursus arctos</i>	brown (grizzly) bear	alpine, subalpine
<i>Ursus americanus</i>	black bear	forests
<i>Canis latrans</i>	coyote	ubiquitous
<i>Canis lupus</i>	gray wolf	alpine, forest, muskeg
<i>Vulpes vulpes</i>	red fox	ubiquitous
<i>Lynx canadensis</i>	lynx	forest, muskeg
<i>Rangifer tarandus</i>	barren ground caribou	tundra, open forest
<i>Alces alces</i>	moose	brush, forest
<i>Ovis dalli</i> *	Dall sheep	alpine
<i>Bison bison</i> *	bison	grassland, along river bars, agricultural areas

FISH

<u>Scientific Name</u>	<u>Common Name</u>
<i>Lampetra japonica</i>	Arctic lamprey
<i>Stenodus leucichthys nelma</i>	sheefish
<i>Coregonus pidschian</i>	humpback whitefish
<i>Prosopium cylindraceum</i>	round whitefish
<i>Oncorhynchus keta</i>	chum salmon
<i>Oncorhynchus kisutch</i>	coho (silver) salmon
<i>Oncorhynchus tshawytscha</i>	chinook (king) salmon
<i>Oncorhynchus mykiss</i>	rainbow trout (stocked)
<i>Esox lucius</i>	northern pike
<i>Couesius plumbeus</i>	lake chub
<i>Catostomus catostomus</i>	longnose sucker
<i>Lota lota</i>	burbot
<i>Cottus cognatus</i>	slimy sculpin
<i>Thymallus arcticus</i>	Arctic grayling
<i>Coregonus sardinella</i>	least cisco
<i>Salvelinus alpinus</i>	Arctic char
<i>Salvelinus namaycush</i> *	lake trout (stocked)

AMPHIBIANS AND REPTILES

<u>Scientific Name</u>	<u>Common Name</u>	<u>Habitat</u>
<i>Rana sylvestris</i>	wood frog	bogs, lakes, marshes

BIRDS

Scientific Name	Common Name
LOONS, GREBES, PELICANS	
<i>Gavia immer</i>	common loon
<i>Gavia arctica</i>	Arctic loon
<i>Gavia stellata</i>	red-throated loon
<i>Gavia pacifica</i>	Pacific loon
<i>Podiceps grisegena</i>	red-necked grebe
<i>Podiceps auritus</i>	horned grebe
WATERFOWL	
<i>Cygnus buccinator</i> *	trumpeter swan
<i>Cygnus columbianus</i> **	tundra swan
<i>Anser albifrons</i>	greater white-fronted goose
<i>Chen caerulescens</i>	snow/blue goose
<i>Branta canadensis</i>	Canada goose
<i>Branta bernicla nigricans</i>	black brant
<i>Anas platyrhynchos</i>	mallard
<i>Anas strepera</i>	gadwall
<i>Anas crecca</i>	green-winged teal
<i>Anas americana</i>	American wigeon
<i>Anas acuta</i>	northern pintail
<i>Anas clypeata</i>	northern shoveler
<i>Anas discors</i>	blue-winged teal
<i>Aythya americana</i>	redhead
<i>Aythya valisineria</i>	canvasback
<i>Aythya collaris</i>	ring-necked duck
<i>Aythya marila</i>	greater scaup
<i>Aythya affinis</i>	lesser scaup
<i>Bucephala islandica</i>	Barrow's goldeneye
<i>Bucephala clangula</i>	common goldeneye
<i>Bucephala albeola</i>	bufflehead
<i>Mergus merganser</i>	common merganser
<i>Mergus serrator</i>	red-breasted merganser
<i>Clangula hyemalis</i>	oldsquaw
<i>Histrionicus histrionicus</i>	Harlequin duck
<i>Melanitta deglandi</i>	common scoter
<i>Melanitta fusca</i>	white-winged scoter
<i>Melanitta perspicillata</i>	surf scoter
<i>Melanitta nigra</i> *	black scoter
VULTURES, HAWKS & FALCONS	
<i>Haliaeetus leucocephalus</i>	bald eagle
<i>Aquila chrysaetus</i>	golden eagle
<i>Circus cyaneus</i>	northern harrier
<i>Falco rusticolus</i>	gyrfalcon

<i>Falco peregrinus</i>	peregrine falcon
<i>Falco columbarius</i>	merlin
<i>Falco sparverius</i>	American kestrel
<i>Buteo jamaicensis</i>	red-tailed hawk
<i>Buteo jamaicensis harlani</i>	Harlan's hawk
<i>Buteo lagopus</i>	rough-legged hawk
<i>Buteo swainsoni</i>	Swainson's hawk
<i>Accipter striatus</i>	sharp-shinned hawk
<i>Accipter gentilis</i>	northern goshawk
<i>Pandion haliaetus</i>	osprey

OWLS

<i>Asio flammeus</i>	short-eared owl
<i>Bubo virginianus</i>	great horned owl
<i>Strix nebulosa</i>	great gray owl
<i>Surnia ulula</i>	northern hawk owl
<i>Nyctea scandiaca</i>	snowy owl
<i>Aegolius funereus</i>	boreal owl

GALLINACEOUS BIRDS

<i>Lagopus lagopus</i>	willow ptarmigan
<i>Lagopus mutus</i>	rock ptarmigan
<i>Lagopus leucurus</i>	white-tailed ptarmigan
<i>Falcipennis canadensis</i>	spruce grouse
<i>Bonasa umbellus</i>	ruffed grouse
<i>Tympanuchus phasianellus</i>	sharp-tailed grouse

SHOREBIRDS, CRANES, COOTS

<i>Grus canadensis</i>	sandhill crane
<i>Fulica americana</i>	American coot
<i>Charadrius semipalmatus</i>	semipalmated plover
<i>Charadrius vociferus</i>	killdeer
<i>Pluvialis squatarola</i>	black-bellied plover
<i>Pluvialis dominica</i>	American golden plover
<i>Numenius phaeopus</i>	whimbrel
<i>Bartramia longicauda</i>	upland sandpiper
<i>Tringa flavipes</i>	lesser yellowlegs
<i>Tringa melanoleuca</i> **	greater yellowlegs
<i>Tringa solitaria</i>	solitary sandpiper
<i>Heteroscelus incanus</i>	wandering tattler
<i>Actitis macularia</i>	spotted sandpiper
<i>Phalaropus lobatus</i> **	red-necked phalarope
<i>Limnodromus scolopaceus</i>	long-billed dowitcher
<i>Gallinago gallinago</i>	common snipe
<i>Aphriza virgata</i>	surfbird

<i>Calidris pusilla</i>	semipalmated sandpiper
<i>Calidris mauri</i>	western sandpiper
<i>Calidris minutilla</i>	least sandpiper
<i>Calidris alpina</i>	dunlin
<i>Calidris alba</i>	sanderling
<i>Calidris melanotos</i> *	pectoral sandpiper
<i>Calidris bairdii</i> *	Baird's sandpiper
<i>Stercorarius longicaudus</i>	long-tailed jaeger
GULLS & TERNS	
<i>Larus argentatus</i>	herring gull
<i>Larus canus</i>	mew gull
<i>Larus philadelphia</i> **	Bonaparte's gull
<i>Sterna paradisaea</i>	Arctic tern
DOVES	
<i>Columba livia</i>	rock dove
HUMMINGBIRDS	
<i>Selasphorus rufus</i>	rufous hummingbird
KINGFISHER	
<i>Ceryle alcyon</i>	belted kingfisher
WOODPECKERS	
<i>Picoides villosus</i>	hairy woodpecker
<i>Picoides tridactylus</i>	three-toed woodpecker
<i>Colaptes auratus cafer</i>	northern flicker
<i>Colaptes auratus</i> **	yellow-shafted flicker
<i>Picoides arcticus</i>	black-backed woodpecker
<i>Picoides pubescens</i>	downy woodpecker
PERCHING BIRDS	
<i>Sayornis saya</i>	Say's phoebe
<i>Empidonax alnorum</i>	Alder flycatcher
<i>Empidonax hammondii</i>	Hammond's flycatcher
<i>Empidonax traillii</i>	Traill's (willow) flycatcher
<i>Contopus cooperi</i>	olive-sided flycatcher
<i>Contopus sordidulus</i>	western wood-pewee
<i>Eremophila alpestris</i>	horned lark
<i>Tachycineta bicolor</i>	tree swallow
<i>Tachycineta thalassina</i>	violet-green swallow
<i>Riparia riparia</i>	bank swallow
<i>Petrochelidon pyrrhonota</i>	cliff swallow
<i>Hirundo rustica</i> **	barn swallow
<i>Corvus corax</i>	common raven
<i>Perisoreus canadensis</i>	gray jay

<i>Pica pica</i>	black-billed magpie
<i>Poecile atricapillus</i>	black-capped chickadee
<i>Poecille hudsonicus</i>	boreal chickadee
<i>Poecile cinctus</i>	gray-headed chickadee
<i>Troglodytes troglodytes</i> *	winter wren
<i>Certhia americana</i>	brown creeper
<i>Cinclus mexicanus</i>	American dipper
<i>Turdus migratorius</i>	American robin
<i>Ixoreus naevius</i>	varied thrush
<i>Catharus guttata</i>	hermit thrush
<i>Catharus ustulatus</i>	Swainson's thrush
<i>Catharus minimus</i>	gray-cheeked thrush
<i>Myadestes townsendi</i>	Townsend's solitaire
<i>Oenanthe oenanthe</i>	northern wheatear
<i>Regulus calendula</i>	ruby-crowned kinglet
<i>Phylloscopus borealis</i>	Arctic warbler
<i>Anthus spinoletts</i>	American pipit
<i>Bombycilla garrulus</i>	Bohemian waxwing
<i>Lanius excubitor</i>	northern shrike
<i>Vermivora celata</i>	orange-crowned warbler
<i>Dendroica petechia</i>	yellow warbler
<i>Dendroica coronata</i>	yellow-rumped warbler
<i>Dendroica striata</i>	blackpoll warbler
<i>Seiurus noveboracensis</i>	northern waterthrush
<i>Wilsonia pusilla</i>	Wilson's warbler
<i>Euphagus carolinus</i>	rusty blackbird
<i>Pinicola enucleator</i>	pine grosbeak
<i>Leucosticte tephrocotis</i>	gray-crowned rosy finch
<i>Carduelis hornemanni</i>	hoary redpoll
<i>Acanthis flammea</i>	common redpoll
<i>Carduelis pinus</i>	pine siskin
<i>Loxia leucoptera</i>	white-winged crossbill
<i>Junco hyemalis</i>	dark-eyed junco
<i>Passerculus sandwichensis</i>	savannah sparrow
<i>Melospiza melodia</i>	song sparrow
<i>Spizella passerina</i>	chipping sparrow
<i>Melospiza lincolnii</i>	Lincoln's sparrow
<i>Calcarius pictus</i>	Smith's longspur
<i>Calcarius lapponicus</i>	Lapland longspur
<i>Plectrophenax nivalis</i>	snow bunting
<i>Zonotrichia leucophrys</i>	white-crowned sparrow
<i>Regulus calendula</i>	ruby-crowned kinglet
<i>Spizella arborea</i>	American tree sparrow
<i>Passerella iliaca</i>	fox sparrow
<i>Zonotrichia atricapilla</i>	golden-crowned sparrow
<i>Dendroica townsendii</i> **	Townsend's warbler

SOURCES: *Breeding Bird Survey* forms, Fort Wainwright and Fort Greely.

Summers, H. *Small Mammals Survey on Fort Greely, Alaska*. 1980.

U.S. Dept. of the Army. *Draft Environmental Impact Statement Land Withdrawal, 172nd Infantry Brigade, Fort Wainwright, Alaska*. 1979.

U.S. Dept. of the Army. *Final Environmental Impact Statement Land Withdrawal, 172nd Infantry Brigade, Fort Greely, Alaska*. 1980.

Von Rueden, G.R. *Fish and Wildlife Management Plan, Eielson Air Force Base, Alaska*. 1994.

APPENDIX 3.14
U.S. Fish and Wildlife Service
Consultation Letter



United States Department of the Interior

FISH AND WILDLIFE SERVICE

NORTHERN ALASKA ECOLOGICAL SERVICES

101 12th Ave. Box 19, Room 110

Fairbanks, AK 99701

February 16, 1998



Ms. Terri Hicks-Anderson
Colorado State University
Center for Ecological Management of Military Lands
Department of Forest Sciences
Fort Collins, Colorado 80523

Re: Renewal of withdrawal of Ft. Greely and Ft.
Wainwright Maneuver Areas

Dear Ms. Hicks-Anderson:

This responds to your request for formal consultation regarding endangered and threatened species and critical habitats pursuant to section 7 of the Endangered Species Act of 1973, as amended (Act). This information is being provided for your use in the preparation of an Environmental Impact Statement to renew the withdrawal of the Fort Greely Maneuver Area and Air Drop Zone, and the Fort Wainwright Maneuver Area from the Bureau of Land Management under the Military Lands Withdrawal Act, Public Law 99-606. The Service does not believe that formal consultation is necessary because, as the following paragraphs explain, these renewals are not expected to affect listed species. Formal consultation, pursuant to section 7(a)(2) of the Act, is a process a Federal agency utilizes when their actions are likely to adversely affect a listed species or to result in jeopardy to the continued existence of a listed species. Instead of proceeding with the formal consultation process, the Service is providing you with a list of species protected by the Act that may occur in the vicinity of the withdrawn lands and our determination of anticipated effects to those species.

One listed species, the endangered American peregrine falcon (*Falco peregrinus anatum*), and one delisted species, the arctic peregrine falcon (*Falco peregrinus tundrius*), occur in the area of proposed activity.

The American peregrine falcon nests in the forested areas of interior Alaska, and migrates through central, southcentral, and southeastern Alaska during spring and fall migration. There is no designated critical habitat for American peregrine falcons in Alaska. There are no known American peregrine falcon nest sites within the areas proposed for renewal of withdrawal from the BLM, however they may migrate through those areas.

The arctic peregrine falcon (*Falco peregrinus tundrius*) was removed from the list of endangered and

threatened species on October 5, 1994. This subspecies nests in the tundra areas of northern and western Alaska and migrates throughout the state (except the Aleutian Islands) during spring and fall migration.

The Service recommends that agencies and applicants avoid impacts to arctic peregrine falcons as they have recently recovered from threatened status, and could be emergency listed at any time if survey data indicate a reversal in recovery. There are also no known arctic peregrine falcon nest sites within the areas proposed for renewal of withdrawal from the BLM, however, they may migrate through those areas.

Based on the project description provided, and the fact that no new impact areas are proposed, the Service concludes that this project is not likely to adversely impact listed species. Preparation of a Biological Assessment or further consultation under section 7 of the Act regarding this project is not necessary at this time. If project plans change, additional information on listed or proposed species becomes available, or new species are listed that may be affected by the project, consultation should be reinitiated.

This letter relates only to endangered species under our jurisdiction. It does not address other legislation or responsibilities under the Fish and Wildlife Coordination Act, Clean Water Act, or National Environmental Policy Act.

Thank you for your cooperation in meeting our joint responsibilities under the Act. If you need further assistance, please contact Cathy Donaldson at (907) 456-0354.

Sincerely,

A handwritten signature in cursive script that reads "Patrick Sousa".

Patrick Sousa
Field Supervisor

APPENDIX 3.18

Cultural Resources

3.18.A Summary of Regional Cultural Chronology	APP-227
3.18.B Alaska State Historic Preservation Office Consultation Letter	APP-237

Appendix 3.18.A
Summary of Regional Cultural
Chronology

Summary of Regional Cultural Chronology

This summary of regional prehistory and history is excerpted from the *Draft Integrated Cultural Resources Management Plans* for Fort Wainwright and Fort Greely developed by the Alaska State Historic Preservation Office, 1998.

Prehistory

Prehistoric occupation of the lands comprising Fort Wainwright and Fort Greely began about 12,000 years ago. Evidence of this prehistory has been discovered throughout interior Alaska. Early sites, dating back almost 3,500 years, have been discovered near Fort Wainwright on the University of Alaska Fairbanks (UAF) campus (Mobley 1984). Archaeological sites on Fort Wainwright date back about 1,800 years, while some on Fort Greely date back 9,000 years. The earliest evidence of human habitation in Alaska was discovered just north of Fort Greely, leading archaeologists to hypothesize that prehistoric occupation of the lands goes back at least 12,000 years (Bacon et al. 1986). Archaeologists believe that with more research, older sites will be discovered on both posts.

Alaska's earliest inhabitants probably arrived by crossing the dry expanse of land that existed between Alaska and Siberia during the last ice age. They were nomadic hunters traveling in small bands, probably following migrating animals from Siberia to Alaska. Due to geologic and ecologic conditions, their mobile lifestyle, and the organic nature of their cultural material, little evidence of their culture has been found. Remnants of their stone tool technology is represented by small tear-drop projectile points and triangular points (U.S. Department of Interior 1996).

About 11,000 years ago, a microblade technology appeared in the tool kits of Interior groups. This tradition of tool making, called the Paleoarctic Tradition, consisted of small stone blades struck from prepared wedge-shaped cores. The tradition appears to have lasted until about 8,000 years ago, although research suggests that it lasted much longer in interior Alaska (Mobley 1984). The Denali Complex, represented at the Campus Site in Fairbanks, may be a later example of this tradition. Radiocarbon dating methods have produced dates of approximately 3,500 years ago, while analysis of lithic artifacts discovered at the site suggest an affiliation with the Paleoarctic Tradition and possibly the later Northern Archaic tradition. Sites dating from this period have been discovered just east of Fort Wainwright, near Eielson Air Force Base, indicating that it is highly probable that sites will be discovered on Fort Wainwright. Approximately 20 sites representing the Paleoarctic Tradition have been clearly identified on Fort Greely (Bacon and Holmes 1979).

As noted previously, there appears to be some overlapping of the earlier Paleoarctic tradition and the Northern Archaic tradition. This tradition first appeared in northwestern Alaska about 6,500 years ago and lasted until about

1,000 years ago. This coincided with a warming trend and the appearance of spruce in the southern Arctic, suggesting that its development was promoted by the expansion of the boreal forest. Tool kits reflected an adaptation to a new environment. Assemblages containing microblades, bifacial knives and side notched projectile points are associated with the Tuktuk Complex, an Interior variation of this tradition (Anderson 1996). Approximately 15 sites representing or believed to represent this tradition have been identified on Forts Wainwright and Greely (Bacon et al. 1986).

Linguistic evidence suggests that Athapaskan Tradition appeared in the Tanana Valley about 2,500 years ago. Athapaskan legends refer to two migrations into the region, one from the upper Yukon in Canada and the other from the lower Copper River Valley. The Athapaskan Tradition placed greater emphasis on wood and bone in manufacturing tools and jewelry (It should be noted that sites associated with this tradition are generally more recent and therefore better preserved than previous traditions. More research may reveal similar cultural complexity in previous cultures.). Bone, fish hooks, beads, bone buttons, birch bark trays, and bone gaming pieces are representative of Athapaskan cultural items. In the upper Tanana region, copper was available and was utilized in the manufacture of tools such as knives and axes (Clark 1981, Reckord 1983).

Athapaskan settlement patterns depended greatly on the availability of subsistence resources. The Ahtna of the Copper River region had a much greater resource base than interior Athapaskans. They were able to store large quantities of salmon for the winter months, staying in semi-permanent winter camps. Interior bands lived an almost completely nomadic lifestyle, depending primarily on game animals for sustenance. They often had to traverse vast areas to support themselves (Reckord 1983). The Salcha band's annual hunting round encompassed parts of Fort Wainwright and Fort Greely. They spent much of the winter engaged in subsistence activities. It was often necessary to divide into smaller units to find game. Salmon runs on the Tanana River were smaller, shorter, and less varied than those of the Copper River and thus did not form a major subsistence resource. However, salmon supplemented their diet during the lean winter months when finding game animals was most difficult (Andrews 1975).

Use of the region varied greatly from one band to another. Lieutenant Castner observed a small hunting party of "Upper Copper River Indians" (Ahtna) camped near the headwaters of the Delta River during his expedition in 1898 (Castner 1984). It is probable that one or more Ahtna bands used the southern region of Fort Greely during lean periods. The Salcha, Goodpastor, Wood River, and Chena bands of the lower Tanana Athapaskans, and the Healy Lake band of the Tanacross Athapaskans all utilized certain portions of Forts Wainwright and Greely (Mckennan 1981). On Fort Wainwright, the Blair Lakes Archaeological District holds the most promise for producing information on the prehistory of this tradition. Several villages have been reported on or near the installation. One occupied by the Wood River band was located in the southern part of Fort

Wainwright but has not been found (Bacon et al. 1986). Discovery of this site would aid in the understanding of historic and prehistoric Athapaskan life.

Recent History

Contact to the Goldrush, 1847-1928

In 1847, the Hudson Bay Company established a trading post at Fort Yukon. Trade was generally carried out through native middlemen until the late 1860s or 1870s. During this later time, prospectors and traders began entering the Yukon River tributaries (Dixon 1980). In 1894, gold was discovered on Birch Creek, and the gold rush town of Circle City was established. With this, prospectors exploring the Tanana Valley had a closer source of supplies. Salcha natives began direct trade at Circle City, establishing a trade route up the Salcha River to Birch Creek, and prospectors soon followed. A resulting increase in mining and trading activities in the region led the Army to consider the need for better communications in the region, responding with the construction of the Washington-Alaska Military Cable Telegraph System (WAMCATS) in 1899. A section of this system ran from Fort Liscum to Fort Egbert and then across the Fortymile region, east of Fort Greely, to the Tanana River (Dixon 1980).

Additional gold discoveries in 1902 resulted in the settlement of Fairbanks. John E. Bonnifield struck gold at Gold King Creek in 1903 and established the Bonnifield Trail, which crosses the Tanana Flats Training Area, to supply his mining operation. To supply Fairbanks and the interior mining camps, the Fairbanks-Valdez Trail was developed. Thousands of people and tons of supplies came into the interior gold camps over this route, taking advantage of the numerous roadhouses that established themselves along the route. In 1903 there were 500 settlers in the Tanana Valley; six years later there were 15,000 (Naske and Rowinski 1981).

Gold production peaked in 1909, then began a period of decline. Discoveries in the Iditarod district coincided with this decline, inducing laborers to leave for the new fields. Activities in the Iditarod district were followed by World War I, resulting in a further decrease in the population of Fairbanks. The shrinking population and declining economic activities fostered a decrease in construction activities. Throughout the early 1920s, the population of Fairbanks remained at about 1,200. This long period of decline and consolidation ended with the completion of the Alaska Railroad in 1923. By 1926, the population increased slightly to about 1,700. Fairbanks Exploration Company began operations in 1928, bolstering this trend of growth and renewal (Robe 1970).

Numerous sites associated with this period exist, or can be expected to be discovered, in the withdrawal area. Late prehistoric and early contact village sites have been reported on or near Fort Wainwright. Discovery of these sites would increase our understanding of the impact of European contact on native peoples in the region at the turn of the century. Cabins from this period are known to

exist on Fort Wainwright, and the Bonnifield Trail, connecting Fairbanks to Bonnifield's camp, crosses the Tanana Flats Training Area. The trail is still used by the Army during winter training missions (Breun, Personal Communication 1997). Cabins were reportedly located along the trail; however an attempt to discover them has never been initiated (Bacon et al. 1986). Three roadhouses, associated with the Fairbanks-Valdez Trail, have been reported in the vicinity of Dyke Range on Fort Wainwright and are known to exist on Fort Greely.

The Alaskan Air Base, 1928-1941

Throughout the 1910s and 1920s, aviation played an increasingly important role in Fairbanks' development. In 1913, the first airplane to fly in Alaska flew at Fairbanks during the Fourth of July celebration. Fairbanks' location in the Interior and lack of roads throughout Alaska made the airplane an attractive mode of transportation. In 1939, thirty-five commercial aircraft were based at the local airport. Heavy machinery, food, mail and passengers were flown regularly from Fairbanks to hundreds of interior mining camps (Cashen 1971, Robe 1970). It was Fairbanks' status as an aviation hub that compelled Colonel Arnold to recommend that it be considered as the site for an airbase in 1934 (Cloe and Monaghan 1984).

Between the wars, the military realized the need for an airfield in Alaska. General Mitchell predicted that Japan would one day attack the U.S. and that the Aleutians would become a theater of war. He emphasized Alaska's strategic location during a 1925 speech, observing that "he who holds Alaska holds the world" (Clark 1981, Reckord 1983). In 1928, a joint Army-Navy plan established a defensive triangle in the Pacific Ocean to defend the continental United States from such an attack. *Plan Orange* designated Hawaii, Panama, and Alaska as the limits of the triangle. However, funding for Alaska's defenses was not made available until circumstances required it some ten years later.

The Air Corps' inexperience in the Arctic played an important role in the drive for an Alaskan air base. This was underscored when Colonel Ben Eielson disappeared in a winter storm, while flying a rescue mission in the Bering Sea in 1929. Aviators from Alaska, Canada, and Russia joined in the search for Eielson. When assistance was requested from the Air Corps, they responded that they did not have anyone, except Eielson, that was experienced in Arctic flying (U.S. Department of the Interior 1996). Mitchell's farsightedness and Eielson's misfortune served as catalysts for an airfield in Alaska.

Citing Alaska's strategic location and the need for a cold weather airfield, Alaska Delegate Anthony J. Dimond introduced the Dimond Bill in 1934. The bill called for construction of an Alaskan airfield. That same year, following a string of cold weather-related Air Corps accidents, the Baker Board was established by Congress to investigate the inadequacies of the Air Corps. In January 1935, Congressman Wilcox of Florida introduced the Wilcox Bill, which incorporated the findings and recommendations of the Baker Board and the Dimond Bill. An

airfield in Alaska was one of six called for in the bill. Billy Mitchell testified during congressional hearings that, "Alaska is the most central place in the world for aircraft, and that is true of Europe, Asia, or North America" and reemphasized the danger posed by Japan (Mitchell 1982). The bill was signed into law as the "Wilcox National Air Defense Act" on August 12, 1935. On March 31, 1937, President Roosevelt signed Executive Order 7596, officially withdrawing 960 acres near Fairbanks for the establishment of an airfield (Cloe and Monaghan; Fairbanks Daily News-Miner 1937).

In 1939, four million dollars was appropriated for construction of the base (Cloe and Monaghan 1984). The initial authorization called for the construction of a concrete runway 5000 feet by 150 feet, 9 buildings for administration and housing of 561 officers and enlisted men, 6 buildings for technical use, a Medical Corps building, tactical gasoline and oil storage facilities, utilities, roads, drainage, parking apron, and a railroad spur from Fairbanks. A ground garrison camp for 280 officers and enlisted men was later added to the original authorization. In August 1939, a site was selected and work begun. Local laborers worked throughout the winter clearing land for the runway and buildings. Construction of a railroad spur from Fairbanks to the site was one of the first things completed. The "Alaskan Air Base" as it was referred to was officially named Ladd Field in honor of Major Arthur K. Ladd who died when his airplane crashed in South Carolina in 1935 (Bush 1984, Kerns 1991).

Construction of Ladd Field presented challenges for planners and construction crews. General Arnold observed that overseas garrisons were usually constructed in the tropics. He commented, "We have much to learn, and the building of these new air bases brings this out" (Arnold 1940). Clearing and excavating frozen ground to depths of at least two feet and, in some instances 15 feet, proved difficult in winter. Steam had to be utilized to thaw permanently frozen ground and tundra before stripping. Plans had to be revised to accommodate building conditions. It was a cold weather test in itself.

When the Army Corps of Engineers took over construction of Ladd Field from the Quartermaster Corps in January 1941, eighty percent of the construction was complete. "All quarters, with exception of the bachelor officer's [were] completed on the exterior, and interior work [was in progress] (Alaska Air Command Collection 1940)." It was estimated that they would all be completed by the end of January 1941. Steel for the hospital, Hanger #1, and the barracks were being erected and estimated to be completed by August 1941. In December 1940, it was noted that there were eight sets of married officer's quarters, 33 sets of bachelor officers' quarters, and 26 sets of noncommissioned officers' quarters in place (Bacon and Holmes 1979).

Cold Weather Testing

The garrison was activated on April 14, 1940, with the arrival of Major Gaffney and Lieutenant Walseth of the Air Corps, and 15 enlisted men. In July, General

Henry Arnold visited Ladd Field. While visiting he decided to activate the Cold Weather Station earlier by housing men and aircraft in temporary structures while permanent facilities were being completed. Later that month the first men, numbering 50 in all, to form the Cold Weather Detachment arrived at Ladd Field. Two B-17s, two YP-37s, and Major Gaffney's O-38F were assigned to the base the first winter (Cole and Monaghan 1984). In October of 1940, General Arnold observed that in sub-zero temperatures "metal bomb sites, machine guns, and plane controls need special adjustments" (Arnold 1940). The first winter's testing proved this. Starting engines proved to be a formidable task, instruments failed with regularity, and hydraulic systems presented major problems. The electric hydraulic motor, which raised and lowered landing gear, was burdened so much by cold, congealed hydraulic fluid that the hand pump had to be used. Fuel pumps failed, oil filter casings split, and seals broke. Controls became stiff at extremely low temperatures and, in a few cases, failed (Lauer 1944, Cloe and Monaghan 1984).

The Cold Weather Detachment was briefly disbanded in spring 1942 when the Japanese invaded the Aleutians. Discussions with Russian pilots, in preparation for delivery of Land-Lease aircraft, made it clear that fighter aircraft operating at the Eastern Front would have to be capable of operating at temperature as low as -65°F. There was not a cargo or fighter plane in the Air Corps' inventory or under development that could operate well under -25°F (Cloe and Monaghan 1984). The urgent need for cold weather research and development necessitated the reactivation of the Cold Weather Detachment in July (Lauer 1944, Cloe and Monaghan 1984). In order to streamline operations, representatives of aircraft and engine manufacturers, and other agencies were assigned to Ladd Field. This allowed them to experience and witness the effects of cold weather on themselves and the aircraft first hand and better communicate needs to superiors. By 1944, there were 558 people assigned to the Cold Weather Test Detachment (Lauer 1944).

WORLD WAR II, 1941-1945

Air Depot

United States entry into World War II had a significant impact on Ladd Field. After the Japanese attack on Pearl Harbor, Ladd Field was placed on alert status and civilians were evacuated to the Lower 48. The availability of strategic supplies was a continuing problem in Alaska. A limited number of facilities, small capacity, and resupply problems resulted in major logistics problems. To help alleviate this, the Sixth Air Depot Group, consisting of 25 officers and 567 enlisted men, and eight attached units consisting of eight officers and 283 enlisted men, arrived at Ladd Field in July 1942. Its mission was to supply and repair aircraft engaged in the Aleutian campaigns (Lauer 1944).

Activities of Sixth Air Depot Group, the Cold Weather Test Station, and later in

1942, the Air Transport Command resulted in a major expansion of facilities at Ladd Field. This buildup continued almost non-stop throughout the War. Expansions included an extension to the existing runway and construction of a new one, eight hangars, thirty-seven 50,000 gallon fuel storage tanks, a half million square yards of parking area, and 12,000 feet of taxiway. Housing for additional personnel was also constructed.

ALSIB (Alaska-Siberia) Lend-Lease Program

Ladd Field's mission as the North American terminus of the ALSIB route was its best known contribution to the war effort. It was here, from 1942 to 1945, that the Soviet Union received United States' lend-lease aircraft. Soviet pilots received training in U.S. aircraft at Ladd Field before flying them across Siberia to the Eastern Front. Almost 8,000 aircraft were delivered over this route during the three year period it was in operation.

To facilitate delivery of lend-lease aircraft, a unit of the Air Transport Command (ATC) was activated at Ladd Field. The first planes, consisting of five A-20s, arrived at Ladd Field on September 3, 1942. On September 11, a second group of planes, comprised of 22 P-40's, arrived. The first Russian pilots arrived at Ladd Field on September 24 to begin five days of training before flying the new planes to Russia. On October 9, Lieutenant Colonel Nedosekin, of the Soviet Air Force, led the first flight of twelve A-20s (Brandon 1975, Lauer 1944). Only about 150 aircraft were delivered in 1942. This increased to about 2,500 in 1943 and, at its height in 1944, over 3,000 aircraft were transferred.

1946 to Present

Relations between the United States and the Soviet Union deteriorated rapidly after World War II. In response, Ladd Field was maintained and the Strategic Air Command (SAC) established. SAC organized its first unit at Ladd Field in 1946 to begin developing a system of Polar navigation (White 1994). After the formation of the Air Force in 1947, Ladd Field was designated an Air Force Base. Electronic intelligence (ELINT) B-29s, a prototype of the RB-29, began flying electronic reconnaissance missions out of Ladd AFB in 1947. The object of these missions was to map Soviet radar capabilities and develop appropriate countermeasures (Farquhar 1995). Throughout the late 1940s and 1950s, various SAC missions were carried out from Ladd AFB.

The Army's mission at Ladd AFB included anti-aircraft and ground defense, cold weather training, and emergency preparedness for nuclear attack. Anti-aircraft artillery (AAA) batteries were installed around Fairbanks in the early 1950s to support its defense mission. These were replaced by the Nike Missile system in 1959 (Denfield 1994). To support Ladd Air Force Base's dual service missions, a major construction program was initiated in the 1950s. Bassett Army Hospital, housing on South Post, new barracks, and a new communications center were part of this buildup (Midnight Sun 1951).

With the creation of Ladd AFB in 1947, the War Department designated Big Delta, an inactive World War II airfield, an Army post. An Arctic Training Center was established, and cold weather testing and training became the focus of activities at Big Delta. Many new facilities were constructed in the 1950s to support the post's cold weather missions. New housing, warehouses, and the military's first nuclear power plant were part of this program. After numerous name changes, the post was designated Fort Greely in 1955 (Anchorage Daily News 1972).

Ladd AFB was transferred to the Army and renamed Fort Wainwright in 1961. This allowed the Army to enhance its cold weather testing and training program in Alaska. An example of this expansion was the establishment of the Cold Regions Research and Engineering Laboratory (CRREL) that same year. Throughout the late 1960s and early 1970s military resources were directed towards the war in Vietnam. Improvements came in the form of equipment modernization. Arctic training was again emphasized in the 1970s, with exercises being conducted annually. With the activation of the 6th Infantry Division (Light) at Fort Wainwright in 1986, a major construction program was undertaken to build support facilities. A new post exchange, gymnasium, medical center, and battalion headquarters building were part of this program (Denfield 1994).

After the closure of Clark Air Force base in the Philippines in 1992, the Air Force's COPE THUNDER program, a Major Flying Exercise, was moved to Alaska. Through cooperation with the Army, the Air Force developed training areas on Forts Wainwright and Greely. Those include mock enemy air bases on the Fort Wainwright Maneuver Area and Fort Greely Training Area and a variety of equipment designed to test pilots' skills and give feedback. Four COPE THUNDER exercises are flown annually and generally involve about 1,200 people.

In the post Cold War period, Forts Wainwright and Greely have been the focus of significant military drawdown. Instead of stationing a division at Fort Wainwright as planned, a brigade was activated. As part of the Base Realignment and Closure (BRAC), Fort Greely began realigning under the command of Fort Wainwright in 1995. This has resulted in a significant troop reduction for the post, with most of the housing empty and in the process of being surplus.

Appendix 3.18.B
Alaska State Historic Preservation Office
Consultation Letter

DEPARTMENT OF NATURAL RESOURCES

**DIVISION OF PARKS AND OUTDOOR RECREATION
OFFICE OF HISTORY AND ARCHAEOLOGY**

3601 C STREET, SUITE 1278
ANCHORAGE, ALASKA 99503-5921
PHONE: (907) 269-5721
FAX: (907) 269-6906

September 23, 1998

File No.: 3130-1R Army

Subject: Renewal of Land Withdrawals

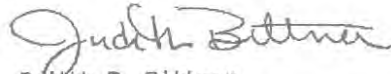
LT COL Mark Nelson
Public Works
Headquarters, U.S. Army Alaska
600 Richardson Drive, #5000
Fort Richardson, AK 99505-5000

Dear LT COL Nelson;

Thank you for your letter on the referenced subject. Generally, an undertaking as defined in 36 CFR 800, the implementing regulations for Section 106, includes activities that have the potential to affect historic properties. The proposed activity would only continue the existing management practices, so we agree that this is not an undertaking for Section 106 purposes.

Please contact me at 269-8715 if there are any questions or if we can be of further assistance.

Sincerely,



Judith E. Bittner
State Historic Preservation Officer

JEB:tas

APPENDIX 3.19

Socioeconomics

3.19.A Economic History of Wainwright and Greely Area	APP-239
3.19.B Socioeconomics	APP-247
3.19.C Fort Wainwright Voluntary Expenditure Survey.	APP-253
3.19.D Cost of Fighting Fires on Withdrawal Lands	APP-259

**Appendix 3.19.A
Economic History of
Wainwright and Greely Area**

Economic History of the Fort Wainwright and Fort Greely Area

Interior Alaska's economy is best understood by reviewing its history of development. The military has had an extensive influence in the area for many years, and has, to a large degree, shaped the development of interior Alaska by affecting the location of towns, transportation corridors, and other economic infrastructure.

Archaeological evidence from Healy Lake has indicated more than 10,000 years of human habitation in interior Alaska. An Indian freight trail ran through Northway, Tetlin, Tanacross, and Dot Lake and on north to the Yukon River. A trading route also ran south through the Copper River region and out to the Prince William Sound. Dot Lake was used as a seasonal hunting camp for residents of George Lake and Tanacross. The mouth of the Chena River at its confluence with the Tanana River had a semi-permanent camp prior to the gold rush (U.S. Dept. of Interior and U.S. Dept. of Defense 1994a).

Census data cannot reveal economic history for several reasons, and caution should be taken with zero census figures cited in the Socioeconomic Section. Alaska is still largely wilderness, not having acquired territorial status until 1912, or statehood until 1958. Indigenous people were not made citizens until the 1920s. Even so, the remoteness of many villages and the seasonal nature of the subsistence lifestyle made a census count after that point difficult. Finally, the gold rush forever changed the social, economic, and political structure of interior Alaska; villages were abandoned, the old ways were left behind. Gold rush towns also came and went.

Fairbanks started as a gold mining town at the turn of the century. As such, it was a boom-bust economy from the start. Interior Alaska had little more than small Athapaskan villages and camps when Felix Pedro discovered gold near Cleary Summit in 1900. Soon thousands flooded into the Interior, and Fairbanks was quickly established as a center of commerce, government, and education. By 1910, the population of Fairbanks was 3,541, with over 7,000 in area mining camps.

In 1903, an overland trail had been established between Fairbanks and Valdez. The following year, the U.S. Signal Corps built a telegraph line from Valdez to Eagle. Rika's Roadhouse was established in 1910 near the junction of the Delta and Tanana Rivers; it still operates today in the Delta Junction area. Mining occurred north of the Delta River during this period in the Tenderfoot area and also to the south in the Chisana area.

The initial placer mining gold boom faded somewhat after 1910. World War I

interrupted production, but mining resumed after the war. Throughout the 1920s and 1930s, annual production more than doubled. When the military arrived in the late 1930s, Fairbanks and interior Alaska were still dominated by the gold mining industry. Mining technology had evolved to large-scale bucket dredge operations throughout interior Alaska, and Fairbanks continued to be the center of economic activity, with a rail link established in 1923.

In the early developments of World War II, Alaska became important as a Pacific defense theater. After the attack on Pearl Harbor, construction of the Alaska Highway was ordered in conjunction with extensive development of Naval, Army, and Air Force bases of operations in Alaska. Between 1939 and 1943, troop deployment in Alaska went from 311 to over 150,000 individuals. Ultimately, the only battles of World War II on American soil were fought in the Aleutian Islands of Alaska.

The Alaska Highway initially opened for defense purposes. It still provides Alaska with the only road link to the continental United States. It was constructed in 1942 and totals 1,400 miles, with 1,200 miles of it through Canada. Over 11,000 troops were employed during construction. The Alaska Highway construction terminated at its junction with the Richardson Highway, built in 1920, at Delta Junction. The Richardson Highway continues on to Fairbanks. The traffic count on this highway is still a primary economic indicator for interior Alaska.

Fort Wainwright began as Ladd Field with construction of administration and housing for 561 officers and men beginning in 1938. When the first troops arrived in 1940, the value of the base approximated \$12 million. In that year, 1,200 men were recruited from all parts of Alaska and the U.S. to complete work on the runway. The census for that year indicated a total population of 3,400 in Fairbanks. Thus, Fort Wainwright was a large economic enterprise. In 1941 it was expanded, adding a garrison camp for 280 more officers and enlisted men.

During World War II, the base was used as a staging area for the Lend-Lease program. In 1943, the Air Transport Command assumed responsibility for the installation, retaining control throughout the war. Also during 1943, construction began on Eielson Air Force Base. Initial construction consisted of housing for 108 officers and 330 enlisted men. During the Lend-Lease program, it was used as a satellite installation of Ladd Field, housing additional Lend-Lease aircraft. It expanded to over 2,000 men.

Additional Army posts were constructed in Galena, Big Delta, Tanacross, and Northway. The Civil Aeronautics Administration airstrip near Delta Junction was taken over by the Air Transportation Command. This field eventually became Allen Army Air Field. In the winter of 1947-1948, this post was the site for the first post-war cold weather maneuver, Exercise Yukon. Construction of permanent buildings began in 1954, and the post took on its present name of Fort Greely in 1955.

Census data reveal no population counts for these years in the Fort Greely area. Fort Greely was constructed in an area surrounded by wilderness with no more than a few roadhouses and unincorporated subsistence communities. Census data showed no population in any of the existing local communities of Big Delta, Delta Junction, Fort Greely, and Healy Lake until 1950, when Big Delta had a resident population of 155. Existing local towns grew with the installation and the Alaska Highway.

The interior mining industry was interrupted by World War II. Requisition of material and equipment was required for the war, as well as drafting of men. Mining rebounded on a lesser scale in 1946, but never regained its prominence. The military economy had come to dominate Fairbanks and interior Alaska by this time. All subsequent economic literature emphasizes this point, right up to the construction of the Trans-Alaska oil pipeline.

After World War II, Fort Wainwright continued to grow, adding a hospital and housing quarters through the 1950s. The scope of military operations increased through the 1960s. Eielson's manpower also increased and its mission was updated with the onset of the Cold War. Distant Early Warning line stations were installed throughout Arctic Canada and the United States for detection of enemy aircraft, with obvious strategic response provided by the Eielson-Wainwright military complex.

Over the same two decades, the mining industry was on the decline as inflation decreased the profit margin on gold, which was fixed at \$35 an ounce. Prior to World War I, production stood at nearly 800,000 ounces. After the war, production initially hovered around 300,000 ounces. Production steadily declined over the next 20 years, and was almost nonexistent by 1970 (Alaska State Division of Geological and Geophysical Surveys 1996). Most of the dredges had ceased operations and were abandoned by the 1960s. The national defense industry took over as the main economic force in interior Alaska during this period, accounting for 75% of the direct purchases. Coal mining activity increased substantially.

In the late 1960s, Fort Wainwright and Eielson Air Force Base accounted for 62.4% of the Fairbanks area economy (Jones 1968). This figure included direct plus induced (multiplier effect) activity. The study period included the years 1965-1967. The troop strength of Fort Wainwright averaged 4,666 over those years; Department of Army civilian employees averaged 702. Eielson military personnel averaged 3,313, with 429 Department of Air Force civilians. These total 9,110 in direct employment.

Considering that the Fairbanks North Star Borough census averaged 37,000 between 1960 and 1970 (as the Borough had not formed until 1964, the 1960 figure refers to the greater Fairbanks census area) (State Department of Community and Regional Affairs 1990), it is understandable why the impact was estimated to be so high. Today the total direct employment of the military

installations is at 9,688. The population of the Borough is over 80,000. Thus military employment has fallen in relative size by half.

Oil was discovered at Prudhoe Bay in 1968. It was the largest discovery of oil on the continent and was on state property. This single field eventually produced nearly 25% of the nation's oil supply, with the pipeline transporting up to two million barrels of oil a day (Department of Revenue website).

The economic transition began with oil revenues skyrocketing from \$112 million to over \$1 billion in fiscal year 1970 due to nearly \$1 billion in Prudhoe Bay cash bonus lease sales. Oil related state revenues went from 31% to 88% of the total. Revenues dropped, awaiting the completion of the pipeline and royalties on the state's share.

However, in the early 1970s, the economic times were not favorable in Fairbanks primarily due to military downsizing. In 1971, Congress settled long-standing claims brought by the indigenous people of Alaska against the federal government through the Alaska Native Claims Settlement Act (ANCSA). The settlement provided nearly 1 billion dollars and over 40 million acres of land. Native (for profit) Corporations were established by law to oversee the land and money. The lands under military withdrawal were reserved from selection. The local Alaska regional native corporation is Doyon, which operates successfully as an oilfield service contractor. In addition to the regional and village ANCSA corporations, a village may have a separate federally recognized council, and may or may not have a municipal government.

In 1971 Fort Wainwright experienced a downsizing of about 1,500 military personnel with deactivation of the 171st Brigade. The military personnel payroll for 1973 was about \$1 million, down from about \$3 million in 1965. Fairbanks North Star Borough census data showed a population decline relative to the previous decade, although the population in the city of Fairbanks itself was up slightly.

When the pipeline reached Fairbanks, it could not have arrived at a better time. With preliminary work beginning in 1973, employment eventually increased to over 30,000 direct pipeline workers in 1976. The boom was particularly explosive in Fairbanks, as it was the transportation hub for the construction of the road to Prudhoe Bay, along with the pipeline. Fort Wainwright and Eielson Air Force Base were useful as a storage and freight terminal facility during the pipeline construction.

The effects of the pipeline were enormous, with population skyrocketing, schools operating on split shifts, and wages and rents tripling. Between January 1973 and January 1976, food stamp recipients went from over 3,000 to about 300. Nearly everyone was working on, or because of, the pipeline.

After 1976 the construction boom subsided, with the first oil production out of

Prudhoe Bay in 1977. Oil revenues gained quickly to over \$2 billion in 1980; ten times what they were in 1973. Revenues exceeded \$3 billion each year until the crash of 1987. After the flood of oil dollars, the federal government retained its position as the number one employer in the State of Alaska. However, the Alaska state government increased its relative share.

Oil wealth is still the primary component of the Alaska economy. State spending, particularly for education, is often the largest single source of a local community's economy (Alaska Economic Trends 1988). Initially, schools were constructed throughout the state in virtually every human settlement. State funding for the operation of schools increased from just over \$250 million in 1980 to over half a billion by 1986. The State of Alaska typically leads the nation in operating expenditures, currently averaging over \$7,500 per student.

Alaska abolished its income tax and has no state sales tax. The Alaska Permanent Fund was established as a savings account from the oil revenues. Each year Alaskans receive a check from a portion of the earnings on this fund. This dividend was approximately \$1,300 per person in 1997. Military personnel have the same eligibility requirements as Alaskans, and may therefore receive the permanent fund dividend.

Despite the oil wealth, the military continued to exert a strong influence on the economy and provided a stabilizing influence in the oil crash of the mid 1980s (Fried and Huff 1987). The State's population grew rapidly as the oil industry took off. The military share of the Alaska population fluctuated from 15.7% in 1980 to 12.5% in 1985, and up to 13.4% in 1987.

From 1980 to 1983, the Institute for Social and Economic Research estimated that the military accounted for 15% to 17% of all jobs in Alaska. The Air Force was the largest employer, and its share of military employment in Alaska had increased to 44% by 1986, given the Army's decline in absolute numbers. The share of National Guard and Army Corps of Engineers also increased. Alaska ranked second behind Hawaii in military personnel per citizen population.

Of particular note was the change in the relative size of the civilian military work force over the 1980s. The ratio of active duty per civilian employee fell from 3.4 to 2.8, from 1980 to 1986. The civilian military work force is paid higher in general, and also lives off-base. The multiplier is higher as more goods and services are purchased directly from the local economy.

The 6th Infantry Division Light was re-activated at Fort Wainwright in 1986. This brought an increase in military personnel of 570 the next year. The full deployment was not scheduled until 1992, with an additional 3,564 soldiers and 300 civil service jobs at Fort Wainwright. The Fairbanks North Star Borough Community Research Center estimated that an additional 1,490 direct and indirect nonmilitary jobs were created from the deployment of the division. The construction phase provided between 585 and 755 jobs between 1988 and 1989.

Fort Greely was still the third largest Army post in Alaska in 1987, based on population. The military population remained steady through the 1980s. In 1987, the military accounted for nearly 2,000 people in the area; about 32% of the area's population.

Appendix 3.19.B Socioeconomics

Military Employment and Payroll of Fort Wainwright, Fort Greely, and Eielson Air Force Base

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
Fort Wainwright											
Military Personnel	3360	4100	4430	4494	4792	5003	5085	4490	4576	4585	4525
Family Members	5160	5030	5570	6356	7359	6709	6691	6301	6029	5639	5431
Civilian Employment	860	920	1030	1120	1058	1157	1277	1222	1197	1225	1257
Payroll Military	68.4	82.3	88.3	100.3	115.2	139.9	194.9	143.7	136.8	136.4	137.3
Civilian	25.5	30.7	33.1	33.5	35.0	39.5	44.2	45.6	48.0	46.7	51.3
Total	93.1	113.0	121.4	133.8	150.2	179.4	239.1	189.3	182.8	183.1	186.6
Non-Personnel Expend	101.0	140.1	103.9	115.3	91.4	89.7	103.6	126.9	146.7	112.0	101.9
Eielson Air Force Base											
Military Personnel	3460	3261	3299	3356	3465	2981	2771	2730	2741	2725	2992
Family Members	5009	4819	5088	5109	5483	4439	4284	4230	4483	4477	4441
Civilian Employment	838	783	773	908	873	908	1076	605	785	759	1014
Payroll Military	81.6	83.6	87.3	89.0	100.1	89.7	90.5	92.6	92.7	91.5	93.1
Civilian	21.6	22.5	22.4	30.1	34.9	31.5	29.6	23.3	25.5	26.0	25.8
Total	103.2	106.1	109.7	119.1	135.0	121.2	120.1	115.9	118.2	117.5	122.9
Non-Personnel Expend	61.9	64.3	58.1	70.5	53.7	95.0	61.3	60.4	67.6	95.9	71.0
Fort Greely											
Military Personnel	610	600	580	444	437	426	417	390	402	299	298
Family Members	1000	980	950	748	724	672	708	612	641	474	467
Civilian Employment	380	330	330	377	365	370	370	368	345	330	320
Payroll Military	12.8	12.8	12.4	10.7	8.8	8.2	8.7	8.7	8.0	6.9	6.9
Civilian	9.5	10.0	10.5	11.0	12.0	12.9	12.9	12.4	13.3	13.5	13.3
Total	22.3	22.8	24.6	21.7	20.8	21.1	21.6	22.1	21.3	20.4	20.2
Non-Personnel Expend	1.0	5.6	0.6	17.1	20.6	18.6	19.9	18.1	14.8	8.3	12.8

Note on information for employment/payroll data on bases: Greely data is from the annual "command information card", whereas the Wainwright/Eielson numbers do not include BLM positions or contract civilians. The Greely numbers had no BLM component and include all civilian positions. Information on additional expenditures for Greely are scant for '87-'89. Over 700 Air National Guard at Eielson appears to be left out of the FNSB Research Quarterly data.

Employment and Payroll Attributed To the military in the Fairbanks North Star Borough and Delta area.

		1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
Total FNSB	Employ- ment	25490	25471	26545	26869	27613	29122	29255	29998	30404	31360	32100
Wainwright and Eielson	Troops	6820	7361	7729	7850	8257	7984	7856	7220	7317	7310	7517
	Sum	32310	32832	34274	34719	35870	37106	37111	37218	37721	38670	39617
	Percent	0.237806	0.24898	0.24902	0.25321 ₉	0.25550	0.24070	0.241874	0.211473	0.21600	0.20987	0.216632
Total FNSB	Payroll	709.8	683.4	729.5	748.0	779.0	853.0	854.0	874.6	904.6	893.4	--
Wainwright and Eielson	Soldier Pay	150.0	165.9	175.6	189.3	215.3	229.6	285.4	236.3	229.5	227.9	230.4
	Sum	859.8	849.3	905.1	937.3	994.3	1082.6	1139.4	1110.9	1134.1	1121.3	230.4
	Percent	0.229239	0.25797	0.25533	0.26981 ₈	0.28683	0.27766	0.315254	0.274732	0.26540	0.26808	
	Employ- ment	0.237806	0.24898	0.24902	0.25321 ₉	0.25550	0.24070	0.241874	0.211473	0.21600	0.20987	--
	Payroll	0.229239	0.25797	0.25533	0.26981 ₈	0.28683	0.27766	0.315254	0.274732	0.26540	0.26808	--
Delta	Employ- ment	820	748	790	795	890	912	948	943	--	--	--
	Troops	610	600	580	444	437	426	417	390	--	--	--
	Sum	1430	1348	1370	1239	1327	1338	1365	1333	--	--	--
	Percent	0.692308	0.68991	0.66423	0.66263 ₁	0.60437	0.59491	0.576557	0.568642	--	--	--
	Aggre- gate Employ- ment	32920	33432	34854	35163	36307	37532	37528	37608	--	--	--

Employment and Payroll Attributed To the military in the Fairbanks North Star Borough and Delta area.

		1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
	Percent	0.288821	0.298893	0.29959	0.30426 ₉	0.30269	0.28895	0.293008	0.260716	--	--	--

Alaska Wildlife Harvest, 1994-1995. Harvest reporting is not required for some species in some Game Management Units. GMU = Game Management Unit.

GMU	Area (mi ²)	Bison	Black Bear	Brown Bear	Caribou	Deer	Elk	Moose	Mt. Goat	Musk Ox	Sheep
1	18,500	--	137	34	--	1,755	--	96	121	--	--
2	3,620	--	237	--	--	2,824	--	--	--	--	--
3	2,970	--	217	1	--	850	--	19	--	--	--
4	5,820	--	--	118	--	10,836	--	--	52	--	--
5	5,770	--	14	28	--	5	--	69	12	--	--
6	10,140	--	205	30	--	2,687	--	149	56	--	--
7	3,520	--	86	4	28	--	--	68	80	--	4
8	5,100	--	--	177	--	10,400	85	--	42	--	--
9	33,639	--	0	25	573	--	--	236	--	--	4
10	9,680	--	--	7	77	--	--	--	--	--	--
11	12,780	0	18	6	--	--	--	36	14	--	114
12	9,980	--	34	16	--	--	--	88	--	--	195
13	23,380	--	101	102	3,579	--	--	955	2	--	172
14	6,625	--	94	10	--	--	--	723	32	--	112
15	6,630	--	170	16	--	--	--	636	68	--	33
16	4,880	--	112	50	57	--	--	243	--	--	12
17	18,770	--	13	50	--	--	--	297	--	--	0
18	41,160	--	0	6	47	--	--	87	--	25	--
19	36,490	22	7	48	--	--	--	604	--	--	116
20	50,400	38	328	44	312	--	--	1,286	--	--	95
21	43,925	--	6	13	--	--	--	658	--	--	--
22	25,230	--	--	44	--	--	--	211	--	--	--
23	43,420	--	--	33	1,130	--	--	133	--	--	28
24	26,060	--	4	16	--	--	--	155	--	--	15
25	53,120	--	1	18	175	--	--	154	--	--	137
26	79,250	--	--	36	341	--	--	84	--	7	3
Total	570,833	60	1,787	933	8,884	29,628	85	7,116	479	32	1,040

Appendix 3.19.C
Fort Wainwright Voluntary Expenditure Survey

Fort Wainwright Voluntary Expenditure Survey

Methods and Application

The following work assumes that there is a significant channel by which money moves from Fort Wainwright into the North Star Borough. This channel is defined by analyzing the yearly total personal spending by Fort Wainwright personnel and their families.

The summation of dollars spent by Fort Wainwright personnel (and their families) will determine the magnitude of Fort Wainwright's contribution to the economic well being of the North Star Borough.

To quantify the significance of Fort Wainwright to the North Star Borough's economy, a survey of Fort Wainwright personnel was taken in the summer of 1998. Two thousand (2000) voluntary surveys were distributed by unit heads (between June 24th and July 10th, 1998) upon being issued through Fort Wainwright's Public Affairs Department (FWPAD).

Survey questions pertained to purchases made in the 1997 tax year. Categories under Section I are considered those goods and services purchased frequently (i.e. on a daily, weekly, or monthly basis).

Section II purchases encompass yearly durable and other yearly expenses. Section III allows calculation of a survey respondent's total taxes paid and disposable income in interpretations of survey. Section IV may give closer insight to Fort Wainwright's economic contribution to Alaska tourism.

Multiplying the sum of a respondent's answers to "\$ Off-Post" in Survey Section I (not including "Loans/Credit payments" responses *by twelve* (12) yields total yearly family expenditures on non-durable goods in the North Star Borough (TFE_{nd}). The summation of "\$ OFF-Post" answers in Section II yields total yearly family expenditure on durable and miscellaneous goods and services (TFE_{dm}). "Miscellaneous goods and services" include education, health care, and recreation. The calculation of total yearly expenses in the North Star Borough by each respondent is demonstrated through Equation #1. These survey answers will be supported by comparisons with respondent-supplied tax information.

Equation #1:

$$\text{Total Yearly Expenses (per family)} = TFE_{nd} + TFE_{dm}$$

The summation of all survey respondent's Total Yearly North Star Borough Off-Post Expenditures ($TOPE$), *divided* by the number of voluntary surveys returned,

will yield the average Off-Post yearly expenditure (See Equation #2) per survey respondent (AYE_{family}). *Multiplying* this average by current post personnel population will give a significant estimation of Fort Wainwright's dollar contribution to the North Star Borough's economy (See Equation #3).

Equation #2:

$$AYE_{family} = TOPE / \text{number of voluntary surveys received.}$$

Equation #3:

$$\text{\$ Ft. Wainwright contributes to FBNSB} = AYE_{family} * \text{Current population of post personnel}$$

According to FWPAD, approximately 4,600 personnel were engaging in post activities on June 19, 1998. Ninety-three percent of the personnel on post at this time were randomly sampled. Seventy-eight percent of post population lie within the 172nd Brigade. 172nd Brigade received 84% of the surveys (1,678). Headquarters Company (USAG) represented 7% of post personnel and were given 7.5% of the distributed surveys (150). 4/123D AVN represented 8% of the post personnel and were given 8.6% of the distributed surveys (172). [Note: 1,678 + 172 + 150 = 2,000].

Results

This expenditure survey of Fort Wainwright personnel had 95 returned and completed surveys, yielding a 4.75% response rate. Over 2% of the post was surveyed.

The average age of respondents was twenty-nine (29). Personnel had lived an average of two (2) years in Alaska and had been enlisted in the military for eight (8) years.

Seventy percent of the respondents were married and/or had children, and approximately 35% lived Off-post.

It was found that respondents spent 69% of their disposable income in the North Star Borough. The table below provides the descriptive statistics of expenditures by personnel and their families in 1997:

Descriptive Statistics

	On-Post Expenditures	Off-Post Expenditures		
	TFE_{nd}	TFE_{dm}	TFE_{nd}	TFE_{dm}
Average	\$5,278.60	\$872.00	\$7,027.67	\$6,215.28
Minimum	\$0.00	\$0.00	\$0.00	\$0.00

	On-Post Expenditures	Off-Post Expenditures		
	TFE _{nd}	TFE _{dm}	TFE _{nd}	TFE _{dm}
Maximum	\$26,620.00	\$16,355.00	\$41,640.00	\$54,808.00
Standard Deviation	\$4,784.00	\$2,428.39	\$9,501.20	\$10,869.64

Note: OFF-Post refers to goods and services purchased by the respondent (and his or her family) in the North Star Borough.

TFE = Total Family Expenditures

nd = non-durable goods

dm = durable goods; miscellaneous goods and services

The addition of On-post TFE_{nd} and TFE_{dm} yielded average 1997 On-post purchases by individual military personnel and their families (i.e. AYE_{family}) of \$6,150.60. Similarly, the addition of Off-post TFE_{nd} and TFE_{dm} yielded an average 1997 Off-post AYE_{family} of \$13,242.95. Total yearly family expenditures (i.e. On and Off-post) were \$19,393.55.

Multiplying average Off-post AYE_{family} by the current estimate of 4,600 personnel, Fort Wainwright personnel and their families purchased an estimated 61 million dollars worth of goods and services from the North Star Borough in 1997. An estimated \$28 million was spent On-post by military families.

Respondents disclosed an average of \$27,021.52 when asked to provide 1997 wage income before taxes, and an average of \$2,708.21 in additional income. Since Federal, State, and property taxes averaged to equal \$4,814.19 average disposal income was calculated to be \$24,915.54. Subtracting disposable income by total yearly family expenditures (\$19,393.55) yields a difference of \$5,521.99.

The difference between the summation of On/Off-post total family expenditures and tax information may be partially explained by each respondent's auto and credit card debt payments. On average, yearly debt payments equaled \$6,136.84, yielding average monthly payments of \$511.40. As a result, survey questions may have overestimated total yearly family expenditures by an average of \$614.85.

Thirty-five of the 95 respondents (37%) had visitors from outside of Alaska. On average, each respondent had 1.14 visitors, each staying 7.5 days.

This survey estimates Fort Wainwright to account for over 5,200 visitors (not specifically to the North Star Borough). If each visitor stayed the average number of days, more than 39,000 "visitor days" may be attributed to Fort Wainwright's personnel.

Appendix 3.19.D
Cost of Fighting Fires on Withdrawal Lands

The dollar cost of fires was provided by the Alaska Fire Service:

Cost of Fires Caused by Military Activity

Year	Yukon Training Area	Fort Greely West Training Area	Fort Greely East Training Area	Total Cost
1987	\$1,370.00	\$31,008.00	\$2,592,007.00	\$2,624,385.00
1988	\$17,288.43	\$25,858.33	N/F	\$43,146.76
1989	\$7,257.36	\$25,858.33	N/F	\$22,589.21
1990	\$22,179.78	\$98,430.93	N/F	\$120,610.71
1991	\$185,648.25	\$14,886.43	N/F	\$200,534.68
1992	\$738.51	\$45,331.65	N/F	\$46,070.16
1993	\$7,459.61	\$9,595.41	\$80,790.15	\$97,845.17
1994	\$8,876.15	\$770.77	\$131.30	\$9,778.22
1995	N/F	\$770.77	\$5,680.98	\$5,680.98
1996	\$4,799.16	N/F	\$1,748.66	\$678,512.75
1997	\$1,239.37	N/F	N/F	\$1,239.37
1998	\$1,118.14	\$388.15	N/F	\$1,506.29
Total	\$257,974.76	\$913,566.45	\$2,680,358.09	\$3,851,899.30
Average/Year	\$23,452.25	\$83,051.50	\$243,668.92	\$3,851,899.30

N/F = No Fire

The above figures demonstrate that the costs of fighting fires are low relative to operations. Total base and post expenditures exceed \$500 million per year. So firefighting costs on the withdrawal lands themselves average less than \$.0007 per dollar of total expenditure in the local economy.

BLM pays for the costs of fighting fires on military lands. The Alaska Fire Service provides those firefighting services, and is housed without charge on Fort Wainwright. It is the most efficient arrangement for fighting fires in interior Alaska. Were each land management unit to pay the cost of independent operations, expenses would be higher.

APPENDIX 3.20
Subsistence

Case File No: FF-035872
Date: 9/86

CASE DATA

PROPOSED ACTION: Renewal of Land Withdrawal for the 172d Infantry Brigade (Alaska)
at Fort Greely for Military Training and Cold Regions Test Center.

SECTION 810 FINDING FOR PROPOSED ACTION

A reasonably foreseeable and significant decrease in the abundance of _____, or a significant alternation in the distribution of _____, or significant restrictions on the access of subsistence harvestors from the village(s) of _____ are foreseen and the Authorized Officer has concluded that a significant restriction of subsistence uses would result from implementation of this action.

SOURCES

Terry Haines, Alaska Dept. of Fish and Game, Subsistence Coordinator (Phone Conversation, 8/26/86). Jr. Kearns, U.S.Army NRS/Wildlife Biologist (Personal Contact, 8/26/86).

Specific Points of 810 Evaluation

Provide information or data which fully addresses the points outlined below. When making an evaluation, state the reasons supporting your evaluation or provide adequate background information including specific sources which led to your conclusions. Use additional sheets of paper if needed. Do not write "irrelevant" or "not applicable" without an explanation. Cite sources of information where appropriate. Note: Appropriate specialists should sign under specific information sections or their names should be listed if they were otherwise coordinated with, such as by phone.

1. The effect of the proposed action on subsistence uses and needs:

FISHERIES

-Expected reduction, if any, in harvestable resources: _____
NONE.

-Expected reduction, if any, in availability of resources due to alterations in resource distribution, migration, or location.
NONE.

Signed: _____

Joseph F. Webb, Fisheries Biologist

Date: 8/27/86

WILDLIFE

-Expected reduction, if any, in harvestable resources: _____
No direct reduction in resources is anticipated. However, indirect reduction may occur if access for trapping and hunting is further restricted due to changes in policy, regulation, enforcement or expansion of "off limits" areas.

-Expected reduction, if any, in availability of resources due to alterations in resource distribution, migration, or location.
No reduction due to alteration of wildlife distribution, migration or location is anticipated.

Signed: _____

Bruce M. Durtsche, Wildlife Biologist

Date: 8/27/86

OTHER

Other Renewable Resources (including drinking water, wood, berries, etc.)

-Expected reduction, if any, in harvestable resources:

Reductions of these harvestable resources would be minimal and short-term.

-Expected reduction, if any, in availability of resources due to alterations in resource distribution, migration, or location.

This reduction would be minimal and/or none.

Signed:

Jerry W. McGee
Jerry McGee, Natural Resource Specialist

Date:

8/26/86

ACCESS

-Expected limitations, if any, in the access of subsistence users resulting from the proposed action.

NONE. Land is accessible to subsistence users under a noncost army permit designed to make users aware of unsafe or contaminated areas and military policies. Land is subject to Alaska Fish and Game Regulations (Jr. Kearns, U.S. Army NRS). No new limitations to access as land has been military for over 30 years.

Signed:

Jerry W. McGee
Jerry McGee, Natural Resource Specialist

Date:

8/26/86

2. The availability of other lands, if any, for the purposes sought to be achieved:

Other suitable lands are developed or selected by various interests and thus are not readily available for military purposes.

3. Other alternatives, if any, which would reduce or eliminate the use, occupancy, or disposition of Public Lands needed for subsistence purposes: Other alternatives for military purposes were considered, including nonrenewal of the withdrawal (See EIS). The proposed renewal of the withdrawal is the preferred alternative. [No alternatives relating directly to subsistence purposes were considered. Subsistence is not mentioned in the EIS. No subsistence studies were completed, there is no mention of who, where, or when subsistence use has taken place in the withdrawal (Susan M. Will, BLM Archeologist).]

FF-035871
FF-035872

Misc. other factors relevant to subsistence 810 evaluation:

Most users of the area (other than military) are from Delta or Fairbanks North Star Borough and are classified by Alaska State Fish and Game as "urban" users. Some rural users in surrounding area of Delta are classified as subsistence users. No subsistence villages are recognized as affected. Subsistence use is low. (Source; Terry Haines, Subsistence Coordinator for Alaska Fish and Game, ph. conversation 8/26/86.)

Public hearings were held and steps to minimize adverse effects were considered. Multiple Use to the extent compatible with military use is advocated in the proposed legislation. ANILCA was passed Dec. 2, 1980; The US Army Final Environmental Impact Statement was signed Nov. 1980 prior to the existence of "810" subsistence review. BLM policy for subsistence "810" evaluation was not developed when the 1981 land report was written. The land report recognizes historic subsistence uses of the area prior to the 1950's. (JWM)

There is no mention of subsistence use in the EIS and insufficient information on hunting, trapping, and fishing, etc. to make an adequate "810" assessment at this time. (Source; Susan Will BLM Archeologist 9/9/86)

Prepared by: Jerry W. McGee Date: 9/30/86
Jerry McGee, Natural Resource Specialist

Reviewed by: Donald E. Runberg Date: 11-21-86
Don Runberg, Steese-White Mountains
District Manager

Attachments:

- Figure 1-1 Project Location
- Figure 1-2 Land Status of Study Area
- Summary Sheet for Environmental Impact Statement US Army

COMPLIANCE WITH ANILCA

SECTION 810

Evaluation and Finding

Case File No.: F-02014-1

Date: 8/29/88

Instructions

Provide information or data which fully addresses the points outlined below. When making an evaluation, state the reasons supporting your evaluation or provide adequate background information which led to your conclusions. Use additional sheets of paper if needed. Do not simply use "irrelevant" or "not applicable" without an explanation.

Evaluation of Effects on Subsistence Uses and NeedsFisheries

1. Expected reduction, if any, in harvestable resources:

No reduction in harvestable fish resources that could be used for subsistence purposes is anticipated from this action.

2. Expected reduction, if any, in availability of resources due to alterations in resource distribution, migration, or location.

No alteration in fish distribution/migration that could be used for subsistence purposes is anticipated from this action.

Signed:

Louis H. Campbell

Date:

8/29/88

Wildlife

1. Expected reduction, if any, in harvestable resources:

No reduction in potential harvestable subsistence is expected.

2. Expected reduction, if any, in availability of resources due to alterations in resource distribution, migration, or location.

Resource availability is expected to remain the same as a result of this action.

Signed:

Winston Holzner

Date:

8/29/88

Other Renewable Resources (e.g., Drinking Water, Wood, Berries)

1. Expected reduction, if any, in harvestable resources:

No reduction in any harvestable resource is expected as a result of this action.

Case File No.: F-026174

2. Expected reduction, if any, in availability of resources due to alterations in resource distribution, migration, or location.

This action will not alter resource distribution, migration, or location, therefore there is no expected reduction.

R. Everett 8/31/88

Access

3. Expected limitations, in any, in the access of subsistence users resulting from the proposed action.

No limitations or restrictions on access will occur as a result of this action.

4. Availability of other lands, if any, for the purpose sought to be achieved.

No other lands are available for this purpose. Action is administrative.

5. Other alternatives, if any, which would reduce or eliminate the use, occupancy, or disposition of Public Lands needed for subsistence purposes.

The subject lands are not used for subsistence purposes. Proposed action is to convey to the State.

R. Everett, 8/31/88

Finding



This proposed action will not significantly restrict subsistence uses. No reasonably foreseeable and significant decrease in the abundance of harvestable resources, no reasonably foreseeable alteration in the distribution of harvestable resources, and no reasonably foreseeable limitations on harvester access will result from the proposed action.



A reasonably foreseeable and significant decrease in the abundance of _____, or a significant alteration in the distribution of _____, or significant restrictions on the access of subsistence harvesters from the village(s) of _____ are foreseen and the Authorized Officer has concluded that a significant restriction of subsistence uses would result from implementation of this action.

6. Rationale and supporting statement for the finding:

No limitation, reduction in harvestable resources or significant alteration in the distribution of harvestable subsistence resources through transfer. Land not used for subsistence resources.

Prepared By:

Rodney J. Everett
Donna M. Mc

Date:

8/31/88

Reviewed By:

Date:

9/01/88

