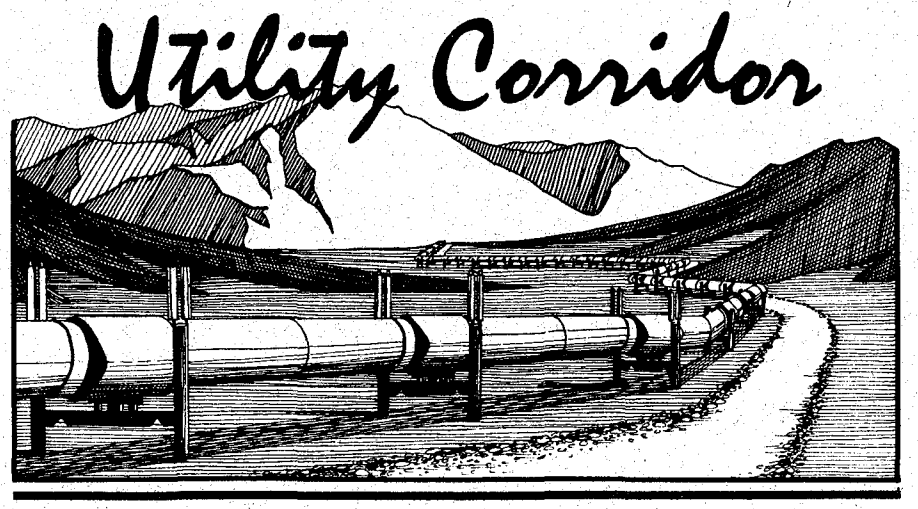

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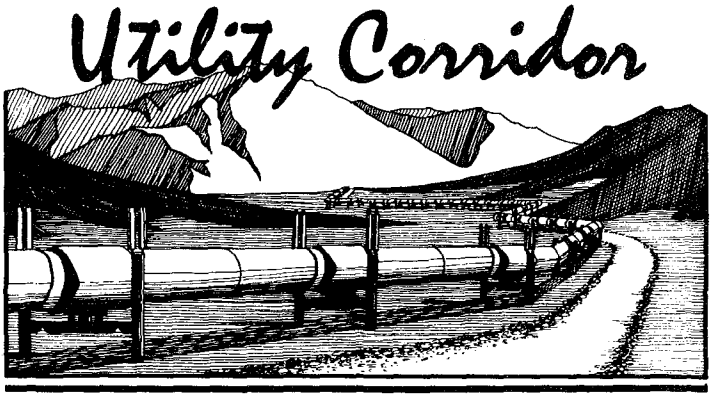


Chapter 3:

AFFECTED ENVIRONMENT

Introduction

PREFACE

Chapter 3 provides descriptions of the environmental factors which characterize the planning area. These descriptions form a body of information for a more thorough understanding of the proposed plan presented in Chapter 2 and the environmental impacts described in Chapter 4. This chapter is essentially the same as was printed in the draft RMP, but some material has been updated and/or revised as a result of new information, most notably, oil and gas potential north of the Brooks Range (i.e., CAMA).

The discussions of environmental factors are illustrated by maps at the end of the chapter. The northern and southern portions of the planning area are displayed on separate maps because: 1) the size of the planning area necessitated a scale of 1:1,000,000 for proper illustration; 2) the northern half of the planning area is a Wilderness Study Area requiring a separate study, facilitated by a discrete map; and 3) the areas north and south of the Brooks Range are dramatically different ecological regions.

GENERAL DESCRIPTION

On its southern end, the planning area begins within the Utility Corridor just south of the Yukon River (folded map at end of chapter). Continuing north, it passes through the Brooks Range at Atigun Pass and widens into the Central Arctic Management Area (CAMA) extending as far north as the Beaufort Sea. The entire area is composed of two connected but ecologically distinct parts. The southern portion, representative of Interior Alaska, includes the Utility Corridor and the Venetie Block between the Yukon River and the boundary of the North Slope Borough, approximately along the Brooks Range Continental Divide. The northern portion, representative of the North Slope, extends north of the Borough boundary and includes the Corridor to approximately 60 miles south of Prudhoe Bay and a scattered collection of BLM managed lands east of the National Petroleum Reserve-Alaska. There are approximately 6,080,000 acres of BLM managed federal lands in the planning area.

Lands

OWNERSHIP

Lands within the southern portion of the planning area (i.e., lands south of 68° N latitude) are predominantly public lands managed by the Bureau of Land Management (BLM). There are a few scattered parcels of private land within this area, some patented, and some pending patent. Nearly all of these parcels are approved Native allotments. There are also a number of unpatented mining claims in the area. This area is not within the boundaries of any organized local government. Approximately 30 percent (650,000 acres) of the southern portion is available for state selection; the remainder was withdrawn from state selection as a utility and transportation corridor in 1971. The State of Alaska has expressed interest in selecting much of the area currently closed to selection by "top-filing" under provisions of Section 906(e) of the Alaska National Interest Lands Conservation Act (ANILCA). The ownership of lands adjacent to the southern portion of the planning area includes Native regional and village corporations, the State of Alaska, and federal agencies, such as the National Park Service and the U.S. Fish and Wildlife Service.

All lands within the planning boundaries north of 68° N latitude, known as the Central Arctic Management Area (CAMA), are in the North Slope Borough. Land ownership in CAMA is a changing patchwork of federal, state, and private holdings. Most of this land is owned by the State of Alaska and

the Arctic Slope Regional Corporation (ASRC) with a few parcels surrounding the Native villages of Anaktuvuk Pass and Nuiqsut owned by the village corporations. Very few private interests such as Native allotments or mining claims exist in this area. Remaining lands are scattered and are managed by BLM. The subsurface mineral estate of some BLM managed lands has been conveyed to ASRC. Much of the BLM managed land has been selected for conveyance by the state and/or ASRC. On some lands currently closed to state selection, the state has "top-filed" under Section 906(e) of ANILCA.

Land ownership adjacent to the planning area boundaries is largely consolidated. Adjacent landowners and managers include Native regional and village corporations, the State of Alaska and federal agencies, including the National Park Service, the U.S. Fish and Wildlife Service, and the BLM. Oil and gas exploration and development, subsistence and recreation activities are the main uses occurring on adjacent lands. A detailed description of land status is shown on Land Status Maps at the end of the Chapter. Acreages are provided in Appendix C.

LAND WITHDRAWALS

Public lands within the Utility Corridor, withdrawn by Public Land Order (PLO) 5150, as amended, are currently closed to all forms of appropriation including selection by the State of Alaska and Native Corporations and from mineral leasing under mineral laws. A portion, referred to as the "inner Corridor" due to its "inner" position along the length of the Corridor withdrawal is also withdrawn from location and entry under mining laws. Public lands within the Venetie Block are currently open to selection by the State of Alaska, but are closed to all other forms of appropriation, including location and entry under mining laws and selection by Native corporations.

Most unselected federal lands within CAMA outside the Utility Corridor withdrawal (PLO 5150, as amended) are open to selection by the State of Alaska but closed to all other forms of appropriation under the public land laws. Lands other than the Utility Corridor currently closed to state selection in CAMA are: lands described by ANILCA-1431(j), lands described by ANILCA 1431(e), lands withdrawn by PLO 5182 and PLO 5860, and lands within the Nigu-Iteriak area formerly considered to be within the National Petroleum Reserve-Alaska.

ACCESS

Access to public and private lands and interests within and adjacent to the planning area is provided primarily by rights-of-way, ANCSA 17(b) easements, mining operations (43 CFR 3809), and traditional ways. The most common means of access is by motor vehicle along the Dalton Highway, a 28-foot wide all weather gravel highway, which runs north-south, to connect Livengood with Prudhoe Bay on the Arctic Ocean. The Dalton Highway is managed by the State of Alaska Department of Transportation and Public Facilities.

At present, travel along the highway into the North Slope Borough, north of Disaster Creek, is restricted by the State of Alaska. The most significant roads leaving the highway to lands inside and outside the planning area are located at Prospect Creek (Bettles Road), Coldfoot (Slate Creek/Venetie Trail) and Wiseman (Nolan Road). Roads have also been built in some areas to provide access to mining operations. The state has airports under lease at Prospect Creek, Coldfoot, Dietrich Camp (not maintained), Chandalar Camp and Galbraith Lake, all of which are adjacent to the Dalton Highway. At 5-Mile Camp near the Yukon River Alyeska Pipeline Service Company maintains a "semi-private" airport which the public is allowed to use with prior permission from Alyeska.

Other than lands adjacent to the highway system, the most of the land within the planning area are remote, and reached using traditional means of transportation, including travel by foot, dogsled, and snowmachine, travel on navigable waterways by boat, and aircraft landings on land and water. The Yukon River is a major transportation route for boats. Many remote airstrips exist within the planning area, some of which are major airstrips. Access by all-terrain vehicles may be occurring on and off established roads and trails.

Section 17(b) of the Alaska Native Claims Settlement Act (ANCSA) provided for public easements on Native corporation lands so the public could legally cross private lands to get to public lands. Accordingly, BLM has reserved in conveyance documents various types of easements to provide access ranging from 25-foot wide trails and 60-foot wide roads to one acre site easements along rivers. The

locations and restrictions of each easement can be found in the appropriate conveyance document available to the public at the BLM Support Center in Fairbanks and at the Federal Building in Anchorage.

RIGHTS-OF-WAY

The majority of granted rights-of-way within the planning area are located along the Dalton Highway and Trans-Alaska Pipeline System (TAPS). They include rights-of-way for: the Dalton Highway; Wiseman-Nolan and Wiseman-Hammond River roads; highway maintenance camps; the TAPS oil pipeline; the Alaska Natural Gas Transportation System (ANGTS) and Trans-Alaska Gas System (TAGS) pipelines, including related access roads, pump and compressor stations; Alascom, Inc. and BLM communications sites; federal and state administrative sites; barge landing sites; private access; and other uses. At present, there are no designated rights-of-way avoidance or exclusion areas within the planning area.

The Dalton Highway is a state highway with a 200 foot wide right-of-way granted under the authority of the Trans-Alaska Pipeline Authorization Act of November 16, 1973. The highway has since been placed in the federal aid highway system. The highway maintenance camps are also in the federal aid highway system and are located at 5-Mile, Prospect Creek, Coldfoot, Chandalar Camp, and near Oksrukuyik (near Pump Station 3). The Trans-Alaska Pipeline System (TAPS) is managed by Alyeska Pipeline Service Company and occupies a 54-foot wide right-of-way also granted under the authority of the TAPS Act. The Alaska Natural Gas Transportation System is a proposed chilled gas pipeline that would be managed by Northwest Alaskan Pipeline Company. It would be built on a 54-foot wide right-of-way granted under the authority of the Alaska Natural Gas Transportation System Act. The Trans-Alaska Gas System (TAGS) is a proposed chilled gas pipeline that would be built by Yukon Pacific Corporation. It would be built on a 54-foot wide right-of-way granted under the authority of Section 28 of the Mineral Leasing Act of 1920, as amended. The Wiseman-Nolan and Wiseman-Hammond River Roads, which do not connect to the Dalton Highway, are 100-foot wide rights-of-way conveyed to the state by the Omnibus Act Quit Claim Deed (page 44, route number 6270). The remaining rights-of-way were granted under the authority of FLPMA. There are also several pending applications for rights-of-way.

Additionally, there may be highway rights-of-way within and adjacent to the planning area granted under the authority of Revised Statute 2477 (RS 2477). However, no claims to any RS 2477 rights-of-way within or adjacent to the planning area have been formally asserted. Many potential RS 2477 rights-of-way may be found in the *Alaska Existing Trail System, 1973*. This document is not to be considered a complete listing of these potential rights-of-way nor a validation that these trails are RS 2477 rights-of-way.

There are three federally designated corridors within the planning area to accommodate rights-of-way. The "Alaska Utility Corridor" which is a strip of land six to 24 miles wide that runs north-south through most of the planning area. It consists of an inner and outer Corridor. The inner Corridor is closed to mining, while the outer Corridor is open to mining. The Utility Corridor is reserved for utility and transportation purposes and currently serves the Dalton Highway, TAPS, and two proposed gas pipeline projects. Another corridor was implied by Section 201(4)(b) of ANILCA to provide surface access for transportation purposes across public lands from the Ambler Mining District to the Dalton Highway. The third right-of-way corridor was established across CAMA by Section 1431(j) of ANILCA in order to provide the Arctic Slope Regional Corporation access, including pipelines, across public lands from the Kurupa Lake and Killik River areas east to the Utility Corridor. This corridor, six to twelve miles wide, was specifically described in ANILCA.

SALES/EXCHANGES

No public lands within the planning area are currently open or classified for FLPMA sale. However, in the mining community of Wiseman proposals are pending for noncompetitive purchase of 23 parcels of public land by the occupants (U.S. Survey 5276). Future land exchanges and negotiations are taking place in CAMA. Section 1431 of ANILCA authorized a number of land exchanges involving Arctic Slope Regional Corporation lands and federal lands in CAMA.

LAND USE AUTHORIZATIONS

All federal lands within the planning area are potentially available for most public uses. BLM has few or no restrictions on casual use of these lands, including access. Casual use is defined as any short-term,

noncommercial activity which does not cause appreciable damage or disturbance to the lands, their resources, or improvements, and which is not prohibited by specific closure. These uses within the planning area include driving on established roads, short-term camping, hiking, boating, fishing, hunting, trapping, snowmobiling (outside the restricted area), and dog sledding. Limitations and restrictions are imposed when use becomes more intensive, and require a land use authorization, as permits and leases, from BLM.

Permits of various types are usually issued for low intensity, low capital investment, and short-term activities, including long-term camping by the public, cross-country moves with heavy equipment, incidental uses related to rights-of-way, temporary camps for research projects, seasonal camps for outfitting guides, bore hole drilling to test soils and geologic structures, and other seasonal noncasual uses. Temporary use permits were also issued to Alyeska Pipeline Service Company under the authority of the Trans-Alaska Pipeline System Act for temporary camps used during construction. These camps are now in the process of being dismantled, leaving vacant gravel pads and, in some cases, airstrips. Special use permits have also been issued to Northwest Alaska Pipeline Company under special legislative authority for their "fly camps," used for reconnaissance of a route for a gas pipeline right-of-way, but are now dismantled, leaving gravel pads and airstrips. It is anticipated that there will be more requests in the future for permits of these types relating to energy transportation.

Leases are issued at the discretion of the BLM for long-term, capital intensive use of the lands, including public airports, occupancy, and agricultural and commercial developments that are appropriate for a lease. Five public airport leases have been issued within the planning area to the State of Alaska at Prospect Creek, Coldfoot, Dietrich Camp, Chandalar Camp, and Galbraith Lake. At present, two FLPMA leases have been issued within the planning area to individual commercial operators, one at the Yukon River bridge and the other at Coldfoot to provide fuel, food, lodging and vehicle repair services along the Dalton Highway.

Soil, Water, Air, and Vegetation

SOILS

Soils vary due to differences in location on the landscape, drainage, aspect, elevation, parent material, soil temperatures, fire history, and climate. Soils within the planning area have developed under a cold temperature regime in which biological and chemical transformations are slow, and in which soil horizons or layers are subject to physical dislocations as a result of the freeze-thaw processes. Permafrost, generally at depths less than 20 inches, acts to retard internal drainage, which, combined with low soil temperatures has resulted in soils with wet, shallow, poorly differentiated profiles and significant organic components that are only minimally decomposed. These soils are highly susceptible to erosion or other soil movement caused by disturbance of the ground-covering vegetation and subsequent thawing of the permafrost. The processes of frost heaving and sorting, ice lens and wedge formation, and thawing, solifluction and stream erosion have developed these soils into a complex mosaic of polygons, ice-cored mounds (pingos), terraces, and remnant oxbows. A few soils, especially those in depressions, have a sufficient thickness of organic materials (peat) to be termed organic soils.

Within the planning area south of the Brooks Range continental divide (approximately 68° N latitude) soils vary with topography and generally have thicker organic horizons and deeper active layers (still less than 30 inches) than soils north of the continental divide. In the Kokrine-Hodzana Highlands, an area covering much of the planning area between the Brooks Range and the Yukon River, the soils are almost neutral pH silt loams. The moderately well drained soil on slopes usually has fine textured upper horizons over gravelly subhorizons. Gravelly, granite derived materials are commonly found in the uplands. Loess is also a significant part of the highland profiles. Organic or mineral soils with thick organic horizons occur in tussock meadows.

On spruce-covered, lower slopes in the northern portion of the Kokrine-Hodzana Highlands, multiple soil associations are found composed of poorly drained, gray mineral soils with thin organic horizons and poorly drained soils with thick, acid, slightly decomposed organic horizons. Broad valley bottoms, commonly occupied by sedge or sedge-tussock meadows with scattered to heavy stands of willow, are found to have organic or very poorly drained mineral soils with thick organic horizons.

In the mountainous areas on steep forested slopes, mass movement of soils produces complexes of poorly drained, gray mottled silt loams, gravelly textured acid soils with relatively thin organic horizons and similar poorly drained soils with thick organic horizons. The seasonal thaw layer is usually less than 20 inches except on ridge crests and coarse textured terraces where deeper thawing permits development of well drained soils with oxidized horizons.

The majority of the soils north of the Brooks Range have developed on fine textured materials, such as the silt loams and silty clay loams found on low rolling hills, at the foot of slopes, on valley bottoms and on the coastal plain.

WATER RESOURCES

Major Watersheds

In general, the headwaters of all the major watersheds in the planning area are located in the Brooks Range or its foothills. Exceptions to this are those rivers in the southern portion of the planning area with headwaters located in the Kokrine-Hodzana Highlands. Drainages north of the continental divide flow north into the Beaufort Sea (Arctic Ocean). Those south of the continental divide flow into the Yukon River and eventually the Bering Sea. Table 3-1 lists the major rivers found, at least partially, within the boundaries of BLM managed lands within the planning area.

Table 3-1
Major Rivers in the Planning Area

South of the Continental Divide (Drain into the Yukon River)	North of the Continental Divide (Drain into the Beaufort Sea)	
Yukon	Anaktuvuk	Killik
Ray	Atigun	Kurupa
Jim	Canning	Kuparuk
Dall	Colville	Nanushuk
Kanuti	Chandler	Oolamnagavik
Fish Creek	Ivishak	Sagavanirktok
South Fork Koyukuk	Itkillik	Shaviovik
Middle Fork Koyukuk	Kadleroshilik	Toolik
Chandalar	Kavik	

Watershed Condition

Watershed condition in the planning area is good to excellent. Erosion is not a problem except for human disturbance of the vegetation cover or altered stream channel morphology. When the vegetation cover is disturbed and the ground ice melts, many of the fine grained, ice rich soils are highly erodible, resulting in silt pollution of nearby streams and/or lakes. However, this condition usually occurs only along roads and trails, at construction sites, and mining operations.

Surface water quantity and quality varies with the season. Generally, maximum discharge occurs during spring breakup which usually happens during the latter part of May south of the Brooks Range and during the middle of June north of the Brooks Range. Stream discharge rates peak during snow melt and summer rains. The presence of permafrost decreases infiltration, increasing runoff peaks but reducing base flow rates. In the fall and winter much of the precipitation and runoff are in a frozen state, and stream flows decline. Seasonal snowpack is the most important annual water storage component in the hydrologic cycle. River icings (aufeis) also store considerable quantities of water.

Water quality is generally good except during high water events and downstream from some construction projects and placer mining operations. Total dissolved solids vary considerably with the flows. Chemical quality tends to be better during the summer when the flows are higher and the impurities are diluted. Smaller streams usually have better quality than larger rivers.

Waters south of the continental divide are of the calcium bicarbonate type. In the Koyukuk River total dissolved solids have been found to vary from 50 to 200 milligrams per liter (mg/l). North of the divide,

at the mouth of the Sagavanirktok River, total dissolved solids vary from 500 to 2000 mg/l with calcium and magnesium constituting over 80% and sulfates 10 to 20% of the dissolved solids.

Consumptive Water Use

Consumptive water use is probably greatest in the Sagavanirktok watershed and is estimated at less than 100,000 gallons per day. Water use here is primarily from surface water due to the difficulties maintaining wells in permafrost materials. Elsewhere in the planning area water use is unknown but is probably minimal due to the small number of users.

Only one hot spring is known to occur on BLM administered land within the planning area. This is Kanuti Hot Springs, approximately five miles southwest of Caribou Mountain along the Kanuti River. The spring temperature has been reported by some sources to be about 150° F and to have a strong sulphur dioxide odor. However, in December of 1988, BLM personnel measured the spring temperature at 125° F.

AIR QUALITY

Overall the air quality is considered excellent except along the Dalton Highway and at human habitations where fugitive dust and exhaust gases from truck traffic and heating plants create both visual and physical impacts.

South of the Brooks Range, forest fires in the summer months increase the airborne particulates, a natural condition and usually of short duration. Smoke from forest fires has been known to drift in from as far away as Siberia. The greatest effect of smoke is restriction of visibility, although it may be thick enough to cause discomfort for individuals with respiratory problems. In localized situations, heavy smoke from nearby fires may restrict aircraft operations for short periods.

VEGETATION

Major Vegetation Types

The flora within the planning area is typical of Alaska's Interior and North Slope and includes a wide variety of plant communities

Bottomland mixed forest is a tall, relatively dense forest which occurs along major streams. Primary species are white spruce (*Picea glauca*) and balsam poplar (*Populus balsamifera*). Meadows of tall grass with willows occur in periodically flooded areas. Undergrowth is usually dense scrub, including alder (*Alnus* spp.), willow (*Salix* spp.), prickly rose (*Rosa acicularis*), labrador tea (*Ledum* spp.), and blueberries (*Vaccinium* spp.). Bluejoint grass (*Calamagrostis* spp.), fireweed (*Epilobium* spp.), horsetails (*Equisetum* spp.), and other herbs, lichens ferns and mosses cover the forest floor. This forest occurs on level floodplains, low river terraces, and more deeply thawed south facing slopes of major rivers in the Interior.

Upland mixed forest is composed of white spruce with scattered paper birch (*Betula papyrifera*) and aspen (*Populus tremuloides*) on moderate south facing slopes, while northern exposures and poorly drained flat areas are mostly black spruce (*Picea mariana*). The understory consists of moss and low shrubs, with prickly rose, currants (*Ribes* spp.), labrador tea, and blueberries on the cool moist slopes, grass on dry slopes, and willows, alders and dwarf or resin birch (*Betula nana* or *glandulosa*) in the high open forests near tree line. Paper birch and aspen dominate the well drained southern slopes. This is the most common forest type along the Dalton Highway.

Lowland mixed forest is a mixture of stands of black spruce, paper birch, balsam poplar, and aspen. Species of willow, labrador tea, dwarf birch, blueberries, sedges (*Carex* spp.), mosses, and lichens compose the understory. Bogs and muskegs occur on low ground. These areas occur only in the southernmost portions of the planning area.

Lowland coniferous forest is characterized by almost pure stands of black spruce with occasional small stands of birch, aspen, and alder. The forest floor is covered with a thick mat of mosses, lichens, grasses,

and shrubs such as willow, dwarf birch, blueberries, and labrador tea. The black spruce forest is commonly found on poorly drained soils, including those with permafrost close to the surface, foot hills, valley bottoms, and on north facing slopes.

Tall shrub scrub consists of dense thickets of willow and alder greater than five feet in height with a number of low shrubs, herbs, grasses, ferns, and mosses in the understory.

Low shrub scrub is composed of vegetation communities in which the dominant species are between eight inches and five feet high. In the planning area the most common shrubs are willow, dwarf birch, alder, prickly rose, and labrador tea. Low shrub scrub communities may be intermixed with forest types and are major components of the vegetation association known as tundra when they are located north and west of treeline, or above treeline in elevation.

Shrub bogs and bogs are found over much of the planning area. These communities are dominated by ericaceous shrubs, but stunted black spruce and dwarf birch are also commonly found. Shrub bogs occur on wet sites, have a thick organic mat, and are underlain by permafrost. This community is frequently found as an inclusion in the lowland black spruce forest and low shrub scrub. Shrub cover is greatly reduced on the wetter bog sites, and sphagnum moss dominates.

Herbaceous vegetation types are found throughout the planning area and vary from lowland grass or sedge meadows in the forests and on ridge tops, to patches of alpine sedge - dwarf shrub tundra on ridges and peaks of the Brooks Range.

Threatened And Endangered Plant Species

No federally listed or proposed threatened or endangered plant species occur in Alaska. Several plant species have been classified as "category 2" species by the U.S. Fish and Wildlife Service. BLM has labeled these category 2 plants as "sensitive" and gives them the same protection as threatened and endangered species. Expert botanists have identified other rare plant species (Murray 1980). Table 3.2 list four sensitive and seven rare species known to occur in the planning area.

Table 3.2
Sensitive and Rare Plant Species Found in The Planning Area

Name	Status	Location *
1. *Andreaeobryum macrocarpa*	Rare	Wiehl Mountain
2. *Aster yukonensis*	Sensitive	Oolah Mountain (CAMA)
3. *Burbula corcensis*	Rare	Wiehl Mountain
4. *Cypripedium calcealus (spp. parviflorum)*	Rare	Middle Fork Koyukuk River
5. *Draba macounii*	Rare	Haul Road 215, Atigun (CAMA)
6. *Erigeron muirii*	Sensitive	Sagwon, Shainin Lake, MS117 Anaktuvuk (CAMA)
7. *Melandrium triflorum*	Rare	Near Umiat (CAMA)
8. *Montia bostockii*	Sensitive	Toolik Lake (CAMA)
9. *Orthotrichum diminutivum*	Rare	Sukakpak Mountain
10. *Potentilla stipularis*	Rare	Near Umiat (CAMA)
11. *Oxytropis glaberrima*	Sensitive	Kurupa River (CAMA)

* Location of plants listed is an approximate area of occurrence.

Forestry Resources

Forest resources are limited to areas south of the Brooks Range. The forests may be classified as taiga coniferous and are primarily comprised of black and white spruce with extensive stands of birch and/or aspen. Mixed with this taiga coniferous forest community are "islands" representing other biotic community types. From the Yukon River to milepost 96 the Utility Corridor is forested. From there the forest is intermittent until the "farthest north white spruce" within the Utility Corridor is reached at milepost 236. Forests end as the elevation increases or where one enters the tundra biome.

Along the rivers and streams individual trees can achieve significant size. In the vicinity of the Yukon crossing 12-inch diameter trees can be found. Even as far north as Coldfoot trees of significant size can be seen along the creek bottoms. However, most of the stands are composed of small- to medium-sized trees with large areas of dwarf black spruce dominating.

There are no prospects for commercial timber sales in the planning area in spite of the existence of the Dalton Highway. However, the forests can support some limited use for firewood, house logs, and other forest products for local use. Given the current population level and distribution there should not be a shortage of forest products for local residents within the Utility Corridor.

Terrestrial Wildlife

This section describes only priority species selected for discussion in this plan. These priority species and their significance for management are displayed in Table 3.3.

Table 3.3
Priority Wildlife Species in the Planning Area

Wildlife Species	Human Use			Associated Habitat	
	Subsistence	Sport Hunting	Trapping	Riparian	Wetland
Caribou *(Rangifer tarandus)*	•	•			
Moose *(Alces alces)*	•	•		•	
Dall's sheep *(Ovis dalli)*	•	•			
Bears	•	•		•	•
Furbearers	•		•	•	•
Game birds	•	•		•	
Waterfowl	•	•		•	•
Raptors incl. peregrine falcon				•	•

CARIBOU

Caribou (*Rangifer tarandus*) that currently inhabit the planning area are divided into four herds: the Western Arctic herd, the Porcupine herd, the Central Arctic herd, and the Ray Mountains herd. These herds also inhabit adjacent Conservation System Units (CSUs) during different times of the year. The Western Arctic herd is currently the largest caribou herd in Alaska. Its population declined from an estimated 242,000 animals in 1970 to 75,000 in 1976, but has rebounded to about 230,000 animals. The Porcupine herd was stable near 100,000 animals during the 1960s and early 1970s but has increased to a current estimate of 180,000 caribou. The Central Arctic herd was first recognized as a distinct caribou herd in 1975 and is currently one of the fastest growing herds in Alaska. It has grown from an estimated 5,000 animals in 1975 to 13,000 animals in 1983. The Ray Mountains herd is a much smaller herd (Cameron and Whitten 1979, Davis and Valkenburg 1978, Hemming 1971, Robinson 1985, Skoog 1968).

Caribou is an important source of red meat for subsistence and sport hunters. The average reported harvest of the Western Arctic Herd in recent years is approximately ten times that of either the Porcupine

Herd or the Central Arctic Herd. Increased numbers of hunted Western Arctic Caribou and Central Arctic caribou have been reported in recent years, while hunting of the Porcupine herd caribou has decreased. Most of the reported harvest of Ray Mountain herd caribou occurs near Old Man and Caribou Mountain along the Dalton Highway. Because harvest data is compiled by the Alaska Department of Fish and Game for areas which do not correspond to the planning area boundaries, the number of caribou taken by hunters on BLM land within the planning area is not known.

MOOSE

Moose *(Alces alces)* are widespread throughout the planning area and adjacent land. Population estimates for the Utility Corridor are lacking, but numbers are considered to be stable at low levels. Moose densities outside, but adjacent to the Corridor, range from 0.1 to 0.3 moose per square mile. The lower portion of the Middle Fork Chandalar River had densities of 1.5 moose per square mile in 1980 and 0.4 moose per square mile in 1981. The estimated moose population for the Colville River drainage, approximately 60% of the total moose population of the North Slope, increased from 1,223 animals in 1970 to 1,418 animals in 1984.

Moose inhabit nearly all habitats except high, steep, rocky slopes. Lowland bog habitat is important summer range because all known major calving concentrations in Alaska occur in this habitat type. Calving occurs during the first half of June. Abundant herbaceous vegetation and escape cover can also support large numbers of moose (LeResche et al. 1974). Moose concentrate in riparian habitat along the rivers during late winter. Willow is very important winter forage (Milke 1969, Coady 1976, Wolff 1976, Machida 1979). Some moose spend their entire life cycle along the rivers, while others remain resident in upland areas. Streams such as Hess Creek, Fish Creek, Bonanza Creek, Prospect Creek, Jim River, South Fork Koyukuk River, and Chandalar River support riparian habitat that is important to moose. The highest known wintering densities in CAMA occur along the central Colville River and its tributaries ranging from the Itkillik to the Oolamnagavik Rivers. Lowland bog and willow riparian habitats are crucial habitats for moose.

Like caribou, moose are an important source of red meat for subsistence and sport hunters. The reported harvest of moose appears to be stable, but a growing number of hunters have been using the Dalton Highway for access in recent years. Most of the hunting on the North Slope occurs along the Colville River and its tributaries.

DALL'S SHEEP

Dall's sheep *(Ovis dalli)* inhabit the Brooks Range and adjacent foothills. At present, the number of sheep throughout the Brooks Range is stable at an estimated 30,000 animals, of which an estimated 18,500 are on lands available to hunters. There are about 545 sheep between the Atigun and Sagavanirktok Rivers (Jakimchuk et al., 1984).

Most of the Dall's sheep habitat is either within the Gates of the Arctic National Park or the Arctic National Wildlife Refuge. A 1981 BLM survey identified the following areas as sheep habitat within CAMA: Slope and Notch mountains, Tuktu Bluff, Hat Box Mesa, and "Buteo Ridge." Movements between Slope, Fortress, and Castle mountains and the Brooks Range is suspected. Sheep moved between Tuktu Bluff and Hat Box Mesa during the 1981 summer, but left both areas by October. The extent of movements and migration routes within CAMA is not currently known (Silva 1981, 1982).

Fourteen lambing areas have been identified in the planning area (Daum 1982, Hemming and Morehouse 1976). The lambing season extends from May 14 to June 10. These areas provide important shelter for seclusion, resting, and escape. Nineteen natural mineral licks also have been identified in the planning area (Daum 1982, Finkler 1979, Hemming and Morehouse 1976, Silva 1982). Maximum use of the licks probably occurs from June 12 to June 30. Mineral licks are important to ewes and rams up to two years of age, but older rams appear to be less dependent. Lambing areas and mineral licks are crucial habitats for Dall's sheep.

Dall's sheep are a source of red meat for subsistence hunters as well as a trophy for the sport hunter. The reported harvest of Dall's sheep appears to be stable. However, more hunters have been using the Dalton Highway for access in recent years which may result in a greater harvest.

BEARS

Bears can be found throughout the planning area, and on adjacent lands. Black bear *(Ursus americanus)* populations are currently thought to be either stable or increasing and are lightly hunted relative to population numbers. The current population of grizzly bears in the southern portion of the planning area appears to be stable. The Brooks Range currently has an estimated minimum population of 2,200 to 2,700 grizzly bears *(Ursus arctos)*; the population appears to be increasing.

Polar bears (*Ursus maritimus*) seasonally inhabit onshore areas. The Colville River delta contains suitable habitat for potential denning, but no den sites have been documented in recent years. Female bears den in snowdrifts along river cutbacks, and are not faithful to the same den sites year to year. The young are born in December, but the mother and her cubs do not emerge until spring.

FURBEARERS

Important furbearers inhabiting the planning area are beaver (*Castor canadensis)*, arctic fox (*Alopex lagopus*) red fox (*Vulpes vulpes*), lynx (*Lynx canadensis)*, marten (*Martes americana*), river otter (*Lutra canadensis*), wolverine (*Gula gula*), and wolf (*Canis lupus*). Marten is the "bread and butter" of many trappers in the interior of Alaska, while arctic fox is the most important furbearer in CAMA. Current population densities of beaver, red fox, lynx, otter, and wolverine are low to moderate. Populations of beaver and lynx are currently increasing, while marten, otter, and wolverine are stable. Red fox populations may be decreasing. Arctic fox experienced a low in its three to five year population cycle during the winter of 1982-83; this was less pronounced near the oil fields and along the TAPS pipeline due to alternative food sources. The previous low occurred during the winter of 1977-78.

Wetland and riparian habitat is crucial habitat for beaver, red fox, lynx, marten, and river otter. Protection of crucial habitat for caribou and moose should insure habitat protection for wolves and wolverines. Known den sites for foxes and wolves are also crucial habitat.

The wolf population between Stevens Village and Tanana is currently high relative to the abundance of ungulate prey. The western portion of the Yukon Flats has about 40 to 45 wolves, and the North Slope has from 184 to 365 wolves. Wolves prey mostly on caribou, moose and sheep, while wolverines scavenge the remains of these same species. Wolves and wolverines tend to occupy much of the same habitat as these ungulates.

The reported harvests for beaver, lynx, river otter, wolverine, and wolf are based upon sealing certificates that are required for each of the five species by the Alaska Department of Fish and Game. Most furbearers are trapped in the Yukon Flats and Koyukuk River drainage. The reported lynx harvest appears to be decreasing, wolverine harvest appears to be increasing, and harvest of other furbearers appears to be stable. Additional numbers of wolves and wolverines are harvested but not reported. The number of wolves taken each year is often dependent upon weather and subsequent landing conditions for aircraft.

SMALL GAME SPECIES

Important small game species in the planning area south of 68° N latitude are spruce grouse (*Dendragapus canadensis*), ruffed grouse (*Bonasa umbellus*), and sharp-tailed grouse (*Tympanuchus phasinellus*); willow ptarmigan (*Lagopus lagopus*) and rock ptarmigan (*Lagopus mutus*); and snowshoe hare (*Lepus americanus*). Populations of these animals fluctuate widely; current populations are moderately low. Willow ptarmigan is the only important small game species in CAMA.

WATERFOWL

Scaup (*Aythya* spp.), pintail (*Anas acuta*), and American wigeon (*Anas americana*) are the more abundant nesting ducks south of 68° latitude. The Yukon Flats has an estimated 99.4 breeding ducks per square mile, and the Kanuti Flats has an estimated 32.4 ducks per square mile (King and Lensink 1971). Canada geese (*Branta canadensis*) and white-fronted geese (*Anser albifrons*) as well as trumpeter swans (*Cygnus buccinator*) and tundra swans (*Cygnus columbianus*) are also present. Canada goose populations appear to be stable, while populations of white-fronted goose have been declining.

The North Slope has 15 ducks per square mile, with pintail and oldsquaw (*Clangula hyemalis*) being the more abundant nesters (King and Lensink 1971). Gavin (1972) reported an average of 3.6 pairs per square mile from 1970 to 1972. An average of 40 pairs of tundra swans nested between the Colville and Canning Rivers during this same period. A small colony of snow geese (*Anser caerulescens*) began nesting near the mouth of Sagavanirktok River in 1971.

The ocean coastline provides a major migration route in CAMA (King and Lensink 1971). Birds begin arriving by mid May, and begin nesting soon after arrival (Gavin 1972). The general nesting habitat consists of small pot holes, lake shores, and stream banks. Because important wetland habitat in the lower 48 states has been drained or otherwise destroyed since colonial times all wetland and riparian habitat in the planning area are crucial habitat for waterfowl.

RAPTORS

Nineteen species of hawks, eagles, falcons, and owls are regular inhabitants of the planning area south of 68° N latitude. Seven species are year long residents while the other 12 migrate south for the winter. Eight of these nineteen species also inhabit the CAMA area. Gyrfalcon (*Falco rusticolus*) and snowy owls (*Nyctea scandiaca*) are resident species while the other six are migratory. Populations of these raptors can fluctuate in response to population cycles of their prey.

Many raptor species, including peregrine falcons nest along the rivers. The Colville, Sagavanirktok, and Yukon Rivers are major nesting areas for the peregrine falcon. Some species, such as peregrine falcons, nest on cliff ledges while others use tall trees for nest sites. Snowy owls and short-eared owls (*Asio flammeus*) nest on the open tundra. Golden eagles (*Aquila chrysaetos*) nest on cliffs in the foothills of the Brooks Range.

Threatened and Endangered Wildlife

The arctic peregrine falcon (*Falco peregrinus tundrius*) found in CAMA is classified as "threatened," and the American peregrine falcon (*Falco peregrinus anatum*) found south of 68° is classified as "endangered." The historic breeding population of peregrine falcons along the Colville River was about 100 pairs, but is currently about 30 pairs (Cade 1960, BLM survey data). At least eight additional pairs nest along the Sagavanirktok River. The Yukon River between Fort Hamlin and Tanana may have had 10 nesting pairs, but currently has six (Bente et al. 1985, White and Cade 1975). The Eskimo curlew (*Numenius borealis*) is endangered and may breed on the upland areas of the North Slope. There is a remote possibility this species may yet exist in CAMA. It was once known to nest on the tundra of the Mackenzie Delta of Canada and possibly northeastern Alaska.

Fisheries Resources

The following streams and lakes are considered to contain regionally important fishery values within or adjacent to BLM managed lands: Yukon River, Fish/Bonanza Creek, Jim River, South Fork and Middle Fork Koyukuk River, Grayling Lake, Galbraith Lake, Toolik Lake, unnamed lakes in the vicinity of Toolik Lake, Kuparuk River, Sagavanirktok River and its tributaries, Ivishak River, Itkillik River, Anaktuvuk River and certain tributaries, Chandler River and certain tributaries, and the Colville River. Some of these streams also are anadromous fish habitat, listed in Table 3.4. Twenty-two species of fish are found in the planning area. Table 3.5 lists these species by common and scientific name.

Table 3.4
Anadromous Fish Streams in the Planning Area by Drainage

South of Brooks Range	North of Brooks Range
Yukon River	**Sagavanirktok River**
A. Big Salt River	A. Ivishak River
B. Ray River	1. Echooka River
C. South Fork Koyukuk	2. Flood Creek
1. Fish Creek	3. Saviukviayak River
2. Bonanza Creek	B. Lupine River
D. Jim River	C. Ribdon River
1. Prospect Creek	D. Accomplishment Creek
2. Douglas Creek	
3. Eagle Creek	**Colville River**
4. Bear Creek	A. Itkillik River
E. Middle Fork Koyukuk	B. Anaktuvuk River
1. Rosie Creek	1. Nunushuk River
2. Slate Creek	a. May Creek
3. Minnie Creek	b. Cobblestone Creek
4. Hammond River	2. Kanayut River
	C. Chandler River

SUBSISTENCE FISHERIES

Subsistence fisheries within the planning area occur on the Yukon River where 35,449 salmon and 2,534 whitefish were harvested in 1985 in a 60 mile section between the mouth of Hess Creek and Stevens Village (Anderson, 1986). Subsistence fishing also occurs at scattered locations in CAMA. However, subsistence fishing on BLM lands in CAMA is practically nonexistent. Residents of Anaktuvuk Pass occasionally fish in some of the larger Brooks Range lakes in Gates of the Arctic National Park and in the Anaktuvuk River and its tributaries. Grayling taken in the spring and summer are the most utilized fish in the Anaktuvuk area (Campbell, 1962), with char, lake trout, and burbot being important. Toolik and Galbraith Lakes were fished in the past but are not now fished (Kunz, personal communication 1986). The Colville River is a subsistence fishery for residents of Nuiqsut as far upstream as Ocean Point (Silva, personal communication 1986). Streams within BLM managed lands produce fish utilized in subsistence fisheries elsewhere. The Middle Fork and South Fork Koyukuk rivers and their tributaries produce chum and chinook salmon utilized in downstream communities. The Jim River, a tributary of the South Fork Koyukuk is a significant producer of salmon.

COMMERCIAL FISHERIES

Commercial fishing occurs on the Yukon River. The harvest specific to the Utility Corridor portion of the Yukon River is unknown but the reported harvest between Rampart and Waldron Creek, which enters the Yukon River between the Yukon River Bridge and Stevens Village, was 1,568 chinook salmon and 9,415 chum salmon in 1984 (Alaska Department of Fish and Game 1984). North of BLM managed lands, but also within the planning area, a second commercial fishery exists in the Colville River delta area. In 1985 the following harvest was reported from that area: broad whitefish (401); humpback whitefish (191); Arctic cisco (23,679); and least cisco (17,595) (Anderson, 1986).

SPORT FISHERIES

Sport fishing in the planning area occurs primarily along or close to the Dalton Highway. The most frequently fished locations south of Atigun Pass are Prospect Creek, Jim River and Grayling Lake. North of Atigun Pass, the lakes in the vicinity of Toolik Lake, and the upper Kuparuk and Sagavanirktok Rivers are the most frequently fished. Grayling are the principal species taken along the highway. Lake trout and char are also taken north of the Brooks Range. Fishing pressure is described as light (Bendock and Burr, 1985).

Table 3.5
Species, Human Use, and Location of Fish Found in the Utility Corridor Planning Area.

Common Name	Scientific Name	Human Use			Location[1]	
		Subsistence	Sport	Commercial	North of Brooks Range	South of Brooks Range
Alaska blackfish	*Dallia pectoralis*					L
Arctic char	*Salvelinus alpinus*		•	•		L
Dolly Varden char	*Salvelinus malma*		•			L
Arctic cisco	*Coregonus autumnalis*	•		•	S	
Arctic lamprey	*Lampetra japonica**				S	S
Arctic grayling	*Thymallus arcticus*	•	•		S	S
Broad whitefish	*Coregonus nasus*	•		•	S	S
Burbot	*Lota lota*	•	•		S&L	S&L
Chum salmon	*Oncorhynchus keta*	•	•	•	S	S
Coho salmon	*Oncorhynchus kisutch* *	•	•	•		S
Humpback whitefish	*Coregonus pidschian*	•		•	S&L	S&L
Chinook salmon	*Oncorhynchus tshawytscha* *	•	•	•		S
Lake trout	*Salvelinus namaycush*	•	•		L	L
Lake chub	*Couesius plumbeus* *					S&L
Least cisco	*Coregonus sardinella*	•		•	L	
Pink salmon	*Oncorhynchus gorbuscha*	•	•	•	S	S
Round whitefish	*Prosopium cylindraceum*	•		•	S&L	S&L
Sheefish	*Stenodus leucichthys* *	•	•			S
Slimy sculpin	*Cottus cognatus*					S

1 (S) Species prefers stream or river habitat (L) Species prefers lake habitat
* Species not known to be found north of 68 ° latitude.

Visual Resources

As in many places within the state, the outstanding visual qualities of the planning area are primary attractors for many visitors. A recent publication, *Scenic Byways,* published by the Federal Highway Administration (USDOT 1988) recognized that scenic corridors, or roads which tourists have the opportunity to view "high natural beauty and cultural and scenic value", are one of America's most valuable resources. In the publication, a summary of state and local scenic road programs commented:

"Although Alaska has no scenic highway program, the State indicates that 'all roads in the State, except for local city streets, are heavily used for recreational purposes by residents as well as by tourists.' Further, the State believes 'the great potential for recreation and scenic majesty is what draws many to move to Alaska and is the key to tourist travel."

The Dalton Highway (Pipeline Haul Road) is specifically recognized in *Scenic Byways* for "spectacular mountain and arctic scenery." The Dalton Highway is one of the road corridors recognized in the Nation where recreational opportunities related to scenic values are outstanding. This recognition is supported by analyzing the scenic values utilizing the Bureau's Visual Resource Management (VRM) system. VRM has been developed to help minimize the impacts associated with development activities without unduly hindering development objectives. A visual resource inventory assigns a management classification, considered in project planning, design and construction in an area (Appendix H). The inventory consists of a sensitivity level analysis, a determination of distance zones and a scenic quality evaluation. Table 3.6 provides a summary of the scenic units and their characteristics.

Table 3.6:
Characteristics of Scenic Units in Planning Area

Scenic Quality Unit	Class *	Characteristics
North Slope	C	Low rolling hills, covered with tundra. Uniform color.
Foothills	B	Gently sloped highlands. Color uniform. No unique features.
Brooks Range	A	Highly varied landscape. Wide variety of color. Numerous rivers and lakes. Area is unique.
Dietrich / Koyukuk	A	Predominantly mountainous. Color highly varied. Vegetation varied. Moderately unique.
Koyukuk Drainages	B	Little visual variety. Vegetation varies. Area not unique visually.
Arctic Circle Highlands	C	Rolling hills. Color lacks variety. No significant unique natural features.
Fort Hamlin Hills	B	Small hills and drainages. Marked color variation. Visual variety present.
Yukon River	A	River cuts through canyons. Seasonal color of high diversity. Unique features in Corridor.

* Scenic quality is a measure of the appeal of an area of land. Lands are given a rating based on seven key factors: landform, vegetation, water, color, adjacent scenery, scarcity and the effect (positive or adverse) of human modifications to a landscape. The ratings can be summarized as follows:
1) Scenic Quality Class A - Distinctive landscapes of outstanding visual quality.
2) Scenic Quality Class B - Areas that, although pleasing to the eye, tend to be common throughout a landscape.
3) Scenic Quality Class C - Areas where features offer only minimal variety and lack visual quality. Includes all areas not included in classes A and B.

Recreation

Until recently, certain regions of the planning area, such as the central Brooks Range, have been some of the most remote and inaccessible lands in the world. The construction of the Dalton Highway in the mid-1970s changed, to some extent, the inaccessible character of the region. Human use of this area, in particular recreational use, has changed dramatically since the road was opened to Disaster Creek in 1980

by the State of Alaska. The new road has improved access to hunting and fishing areas along the Utility Corridor and provides automobile access to the scenic grandeur of the Brooks Range.

Visitors to the Utility Corridor and in CAMA are comprised of four main groups:

1. *Tour groups*: Although there have been substantial numbers of tourists visiting Barrow and Prudhoe Bay by air since the late 1970s, regularly scheduled (bus) tours along the Dalton Highway only began in 1987. Bus tour visitation has grown from approximately 300 visitors in 1987 to approximately 4000 in 1988.

2. *Highway tourists:* This group consist of individuals who drive up the highway to sightsee and rarely stray far from their vehicles.

3. *The Alaska resident sportsman (hunter/angler):* These recreationists use areas adjacent to trails or the highway, and rivers and lands accessible by boat, for hunting and fishing.

4. *Backpackers, hikers, and river floaters:* Individuals in this group desire a "wilderness experience" and enter backcountry planning area lands. These individuals often seek access to adjacent conservation units (e.g., Gates of the Arctic National Park).

Although a 1978 survey was conducted for BLM (Duncombe, 1978) which projected future use, only recently has work begun to survey actual recreational use along the Dalton Highway. Although information is sketchy, recent observations by BLM personnel and findings of the 1978 survey have been used here to make assumptions in order to provide an estimate of current visitor use in the planning area.

Estimates of recreational use in the planning area along the Dalton Highway south of the Brooks Range have been made based on the following observations and assumptions:

1. Based on recent observations, approximately 25 private recreational vehicles per day are estimated to travel the Dalton Highway and reach the Yukon River from June 1 to September 30. Approximately three private recreation vehicles per day are estimated to travel the Dalton Highway and reach the Yukon River from October 1 to May 31.

2. Seventy-five percent of the recreational traffic reaching the Yukon River continues on to the Arctic Circle and 50% travels to Coldfoot or beyond.

3. Most users reaching the Yukon River and the Arctic Circle will never leave the highway right-of-way.

4. Visitors traveling past the Arctic Circle would be the principal source of potential recreation related impacts to other resources.

5. Each private recreation vehicle has an average of 2.5 people.

6. Each visitor to the Yukon River Bridge equals 1.0 visitor day; each visitor to the Arctic Circle equals an additional 0.5 visitor days (or 1.5 visitor days), and each visitor to Coldfoot equals an additional 3.0 visitor days (or 4.0 visitor days).

7. Approximately 10% of the users who reach Coldfoot will continue north on the Dalton Highway to the State of Alaska road closure at Disaster Creek or beyond.

Based on these observations and assumptions, approximately 27,000 visitor days (Table 3.7 and Table 3.8) are spent by nonlocal recreationists in the Corridor south of the checkpoint at Disaster Creek. Local resident recreational use of the region is limited since few people reside in the area. Use by local residents in the Corridor south of the checkpoint is estimated to be approximately 3000 visitor days per year. In addition, approximately 4,000 visitors travel the Dalton Highway as part of tour groups.

North of the checkpoint, recreational use is limited due to the area's remoteness, harsh environment, and inaccessibility. Use of guides for hunting and to a lesser degree for float trips on the Colville and other rivers make up the principal recreational activities in CAMA. Use is estimated at 2,000 visitor days per year of which approximately 1,500 visitor days occurs along the Dalton Highway. Local recreational use (differentiating from subsistence activities) in CAMA is virtually nonexistent.

Table 3.7
Total Recreation Vehicles in Utility Corridor (summer and winter seasons)

Season	Estimate	Vehicle Total
June 1 - Sept. 30	25 ADT* x 120 days	3,000
Oct. 1 - May 31	3 ADT* x 240 days	720
Total		3,720

* ADT: Average daily (recreational) traffic based on BLM observations.

Table 3.8
Total Annual Visitors to Selected Areas in the Utility Corridor

Place	Estimate		Visitors		Visitor Days*		Total Visitor Days
Yukon River Bridge	3,720 vehicles x 2.5 people per vehicle	=	9,300	x	1.0	=	9,300
Arctic Circle	3,720 vehicles x 75% x 2.5 people per vehicle	=	6,975	x	0.5**	=	3,488**
Coldfoot	3,720 vehicles x 50% x 2.5 people per vehicle	=	4,650	x	3.0**	=	13,950**
Total Visitor Days							**26,738**

* A visitor day is defined here as a visit by a person for the purpose of engaging in any recreation activity for a period of 12 hours.
** This figure represents additional visitor days from the Yukon River, not total visitor days.

Mineral Resources

LOCATABLE MINERALS

Active Claims

There are approximately 3,600 properly located and maintained mining claims within the planning area. Due to existing withdrawals, resource values and access provided by the Dalton Highway, most of these claims are located within the Utility Corridor south of 68° N latitude. Table 3.9 provides a summary of existing claims in the planning area.

Table 3.9
Lode and Placer Claims in Planning Area*

Areas	Lode	Placer	Total
Corridor North of 68°	0	19	19
Corridor South of 68°	410	3147	3557
CAMA outside of Corridor	0	0	0
Venetie Block	0	14	14
Total	**410**	**3180**	**3590**

*As of December 30, 1986

Mineral Potential

The potential for finding significant new mineral deposits within the planning area is greatest between 67° and 68° N latitude. Several smaller areas within this region exhibit very high potential for locatable mineral occurrence. This evaluation is the result of a study by the State of Alaska, Division of Geological and Geophysical Surveys (ADGGS) using a methodology called ROCKVAL (for a description of ROCKVAL see to *Introduction to ROCKVAL* by Barbara White in Dillon, et al., Draft Report 1985).

In general, the categories of mineral potential found in the planning area may be described as follows:

Low Potential. There are two areas of low potential. One area lies between the Yukon River and the foothills of the Brooks Range (including the Venetie Block). Rocks in this area are not extensively deformed or faulted. Intruded rocks are generally of the type that have not developed mineral deposits of any size or grade. The second area of low potential is the region from the northern flank of the Brooks Range across the foothills to the Arctic Ocean. The area is characterized by thick sedimentary rock, indirect geophysical evidence which suggests a low potential. Only minimal direct evidence suggests that there would be a higher potential for locatable minerals. The mineral potential of both areas is assigned a ranking of "Low/B" (BLM Manual 3031).

Moderate Potential. Planning area lands of moderate mineral potential include a small block of land in the Fort Hamlin Hills (a zone of rocks from Prospect Creek northward through the Brooks Range to the crest of Atigun Pass) and the area known as the Nigu Block, adjacent to NPR-A. These areas are characterized by metamorphic rocks and intruded granitic plutons that have formed favorable areas of mineral deposits. Direct evidence support s the occurrences of these deposits, but not enough evidence to quantify the size of any deposit is available. These areas of moderate potential have been assigned a ranking of "Moderate/C" (BLM Manual 3031).

High Potential. A region of high potential is located within the core of the Brooks Range. Beginning near Coldfoot and extending northward to the crest of the Brooks Range, this region also extends outside the planning area to the east and west for hundreds of miles. There is abundant historical and direct evidence of the existence of minerals through the active mining operations in the region. Areas without active mining in this high potential region have been assigned a ranking of "High/C" while the areas encompassing the active mines are assigned a rank of "High/D" (BLM Manual 3031).

Types of mineral occurrences are not assigned to the above described ranking. In general, the areas rated as having very high mineral potential are favorable for lode and placer gold production. The mineral potential of the other areas depends on the geology and geologic processes present and is highly variable from south to north in the study area. Table 3.10 provides a summary of mineral potential and current availability of planning area lands to mineral location; note the proposed plan would open substantially more lands to mineral location (Chapter 2).

Table 3.10
Areas Currently Open and Closed to Mineral Location*

	Locatable Mineral Potential			
	High	Moderate	Low	**Total***
Open	133,000	214,000	1,332,000	**1,679,000**
Closed	90,000	672,000	3,365,000	**4,127,000**

* The figures do not include the approximately 274,000 acres of low potential split estate lands (mineral estate is owned by ASRC).

As to specific mineral occurrences the ADGGS report states that:

"The Dalton Highway Corridor has known lode gold, copper-molybdenum porphyry, [and] skarn deposits. It also includes areas that are regionally favorable for deposits of syngenetic lead-zinc and barite, volcanigenic massive sulfides, and greisens. The Upper Koyukuk gold district, the most productive gold district in the Brooks Range, lies within the corridor. The [genetically related] Chandalar gold district lies just 40 miles to the east. Lode gold deposits in these districts are the source of spatially associated gold placer deposits.... The copper-rich "schist belt" strikes through the corridor and more Devonian volcanic rocks per unit are found in some parts of the corridor than are found in the Devonian volcanigenic massive - sulfide rich Ambler district. The Ambler District is Alaska's richest and largest massive sulfide district and is one of the most continuous volcanigenic massive sulfide belts in the world. Finally, there are good lithologic and geochemical syngenetic indicators of lead-zinc and barite deposits within the Dalton Highway Corridor." (Dillon et al., draft report, 1985:195.1).

The ADGGS draft report concludes that the following deposit types are likely to occur in the Utility Corridor between 67° and 68° N latitude:

1. Gold placers - silver, gold;
2. Gold lodes and polymetallic vein deposits - gold, silver, antimony;
3. Lead-zinc massive sulfides - lead, zinc, silver, $BaSO_4$ (barite);
4. Tin greisens - tin;
5. Copper skarns - copper, silver, cobalt, lead, zinc;
6. Copper porphyry - copper, molybdenum;
7. Copper-zinc-lead massive sulfides - copper, lead, zinc, silver, gold.

The gross recoverable value of these mineral commodities, as estimated by the ADGGS report, is displayed by Table 3.11.

None of the mineral potential of CAMA has been analytically evaluated. However, based upon the similarity of rocks found within the National Petroleum Reserve - Alaska (Drenchwater Prospect), and further west at the Red Dog and LIK properties, the potential for locatable minerals occurrences along the northern foothills of the Brook Range within CAMA (including the Upper Nigu Block) should be considered moderate. As more geologic exploration of the area occurs these mineral potential evaluations may change.

LEASABLE MINERALS

Hydrocarbons

The hydrocarbon potential within the planning area north of the Brooks Range (i.e., within CAMA) is excellent. There are at least twelve known fields within CAMA and at least three more just west of the study area in the National Petroleum Reserve - Alaska. Figure 3.1 displays the oil fields and exploratory wells on the North Slope. Using BLM's mineral potential classification system (Appendix F), most lands within CAMA are considered to have a high potential for the occurrence of hydrocarbons. Only those lands within the Brooks Range are considered to have a low potential. The "Hydrocarbon Potential" map at the end of this chapter delineates BLM classifications of hydrocarbon potential within the planning area. The following is a brief description of the hydrocarbon potential of CAMA as shown on that map.

Low Potential. An area of low potential lies between the northern base of the Brooks Range and south to 68° N latitude. The area contains intensely deformed, rugged mountains. Although rocks further north in the area have known source and reservoir potential, and areas of the same structural type as the overthrust belt in Wyoming, Idaho and Utah are present, there is no direct evidence of any hydrocarbon potential in this area.

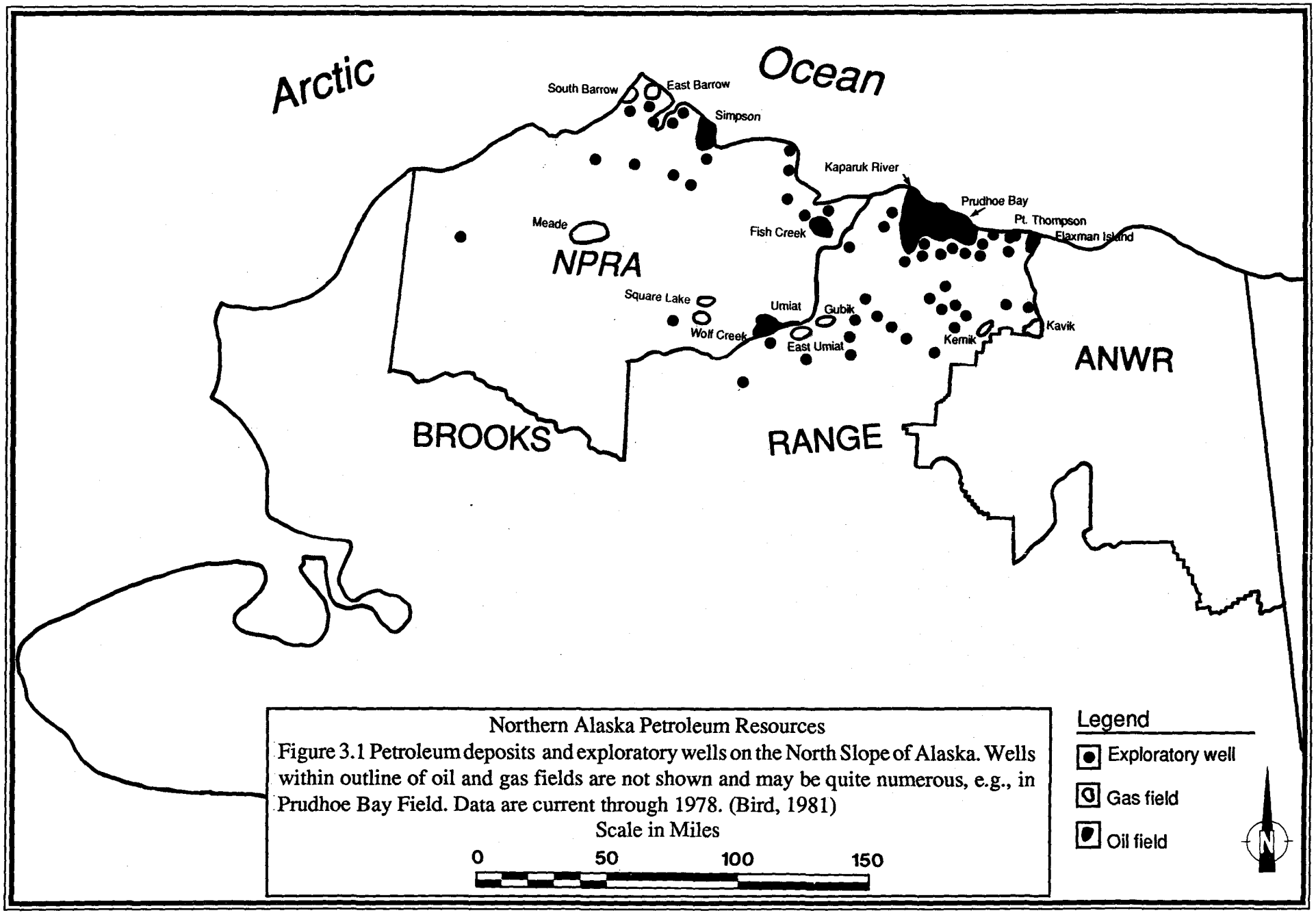
Moderate Potential. At the time the draft RMP/EIS was published, certain lands within CAMA were classified as having a moderate potential for hydrocarbons, the classification of these lands has been changed. These lands are now classified as being of high potential.

High Potential. Just north of the Brooks Range lies an area of high hydrocarbon potential (level of certainty D). This area closely corresponds to the northern Brooks Range foothills. This area

Table 3.11
Summary of the Results of the Dalton Highway Corridor Assessment, Trans-Alaska Pipeline Utility Corridor*

Commodity	Resource Endowment[1] Average	Fractiles 95%	Fractiles 50%	Fractiles 5%	Recoverable Resources[2] Average	Fractiles 95%	Fractiles 50%	Fractiles 5%	Gross Recoverable Value[3]** Average	Fractiles 95%	Fractiles 50%	Fractiles 5%
Gold (10^3 oz)	1,090.0	180.0	690.0	3,300.0	549.0	36.0	260.0	2,200.0	174.0	12.0	81.0	710.0
Silver (10^3 oz)	6,600.0	23.0	240.0	300,000.0	45,500.0	3.9	35.0	220,000.0	305.0	0.0	0.2	1,400.0
Antimony (tons)	16,100.0	0.0	2,700.0	82,000.0	8,300.0	0.0	0.0	54,000.0	20.7	0.0	0.0	130.0
Copper (10^3 tons)	292.0	0.0	32.0	1,506.0	140.0	0.0	0.0	850.0	182.0	0.0	0.0	1,100.0
Molybdenum (10^3 tons)	1.2	0.0	0.0	0.5	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0
Zinc (10^3 tons)	2,050.0	0.0	50.0	10,000.0	1,340.0	0.0	0.0	5,700.0	1,210.0	0.0	0.0	5,100.0
Lead (10^3 tons)	1,110.0	0.0	10.0	4,600.0	668.0	0.0	0.0	2,800.0	254.0	0.0	0.0	1,100.0
$BaSO_4$ (10^3 tons)	10,500.0	0.0	0.0	43,000.0	5,530.0	0.0	0.0	13,000.0	5.5	0.0	0.0	13.0
Cobalt (tons)	97.0	0.0	0.0	250.0	5.7	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Tin (tons)	37.0	0.0	0.0	0.0	5.8	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Coal (10^3 tons)	4,400.0	250.0	3,000.0	15,000.0	--	--	--	--	--	--	--	--
Sand & Gravel	--	--	--	--	--	--	--	--	--	--	--	--
Gross Ore Value	--	--	--	--	--	--	--	--	2,150.0	13.0	130.0	10,000.0

[1]Subject to limitations of mode occurrence set by appraisers.
[2]That portion of the resource endowment amenable to profitable exploration based on 'net-present-value' calculations.
[3]Calculated using 1985 metals prices.
*Source: Dillon et al. draft report (1985)
**In millions of 1985 dollars.



Northern Alaska Petroleum Resources

Figure 3.1 Petroleum deposits and exploratory wells on the North Slope of Alaska. Wells within outline of oil and gas fields are not shown and may be quite numerous, e.g., in Prudhoe Bay Field. Data are current through 1978. (Bird, 1981)

contains known source and reservoir rocks in a structure ranging from simple anticlines to complex thrust faults. There are five known fields within the area and approximately thirty-six wells. Although most of the wells are considered "dry holes," there is abundant direct evidence to indicate a high potential for hydrocarbon occurrence in this area.

Beginning just north of the Brooks Range foothills lies another area having high potential for hydrocarbon occurrence, but with a lower level of certainty (level C) than the adjacent high potential areas to the south and north. At the time the draft RMP/EIS was published this area was classified as having a moderate potential for hydrocarbon occurrence. It extends to approximately 12 to 24 miles south of the coast. The area is known to contain both source and reservoir rocks, with gentle dips and few readily apparent structures to trap hydrocarbons. There is a possibility that stratigraphic traps or subtle structural traps exist in the area. The available data provide direct evidence that the area is of high potential, but are quantitatively minimal.

The remaining area of high potential (certainty level of D) lies along the coast over the Barrow Arch. This area contains at least seven fields, including the giant Prudhoe Bay Field and numerous wells, and known source and reservoir rocks. The rocks either drape over the Barrow Arch, or truncate against it, creating both structural and stratigraphic traps. There is abundant direct evidence that this area has a high potential for hydrocarbons.

The hydrocarbon potential of the southern portion of the planning area is dramatically different from that of the northern portion and ranges from zero to moderate ("Hydrocarbon Potential" map). The following is a brief description of the hydrocarbon potential of the southern portion of the planning area as shown on that map:

Moderate Potential. The areas of moderate hydrocarbon potential correspond closely with the Kanuti Flats and its underlying sedimentary basin. There have been no wells drilled, nor has much exploratory work been done. However, rocks of the types and ages found here are known to produce in other areas. Some geologic mapping in the area (Brosgé et al., 1973; Patton and Miller, 1973) does show structures that could be potential traps. There is both direct and indirect evidence of moderate potential in this area.

Low Potential: The areas of low hydrocarbon potential are comprised of the Brooks Range, those areas between the sedimentary basins, and the igneous and metamorphic rocks in areas with no hydrocarbon potential. There is good indirect evidence, but no direct evidence, of hydrocarbon potential within the Brooks Range; therefore considering the structural complexity of the area, it was assigned a low potential. The other areas of low potential are structurally complex, and lie between the sedimentary basins underlying Kanuti and Yukon Flats, and the igneous and metamorphic rocks of the Yukon-Tanana Uplands. These areas contain both crystalline (igneous and metamorphic) and sedimentary rocks, such as those found in the nearby sedimentary basins. Although there is some indirect evidence of hydrocarbon potential, these areas were assigned a low hydrocarbon potential.

No Potential. The areas of no hydrocarbon potential correspond to areas of igneous and metamorphic rock (Beikman 1980). As long as current theories on hydrocarbon generation are accepted, these rocks must be considered to have no hydrocarbon potential.

Coal

Within the planning area local coal resources have not been identified south of 68° N latitude. On the other hand, CAMA contains significant resources of both subbituminous and bituminous coal. Approximately 2,400 square miles of the Arctic Coastal Plain are underlain by subbituminous coal resources, and approximately 1,000 square miles of the Arctic Coastal Plain and 1,500 square miles of the Arctic Foothills of the Brooks Range are underlain by bituminous coal reserves.

The only reserve calculations for coal in CAMA were done by Chapman, et al. (1964). They calculated the reserves for a two square mile area on the southern bank of the Colville River one mile downstream from the mouth of the Oolamnagavik River to be just over 1 million tons of recoverable coal with overburden not exceeding 100 feet. If this reserve calculation is extrapolated over the bituminous reserves in the southern foothills, the recoverable reserve is over 1.5 billion tons. However, the coal resources of CAMA are considered uneconomic in the foreseeable future.

MINERAL MATERIALS

The planning area is currently open to the operation of the mineral material disposal laws and regulations. The disposal of mineral materials is at the discretion of BLM.

Mineral materials (usually sand and gravel) were used in the construction of the Trans-Alaska Pipeline System (TAPS). This construction project required approximately 40 million cubic yards of materials for the pipeline bed, access roads, pump station pads, and other related facilities. In addition, about 24 million cubic yards of mineral material was used to construct the Dalton Highway paralleling the pipeline. Of the over 100 individual material sites developed to meet this large volume of gravel, only twenty are currently active.

Depending on the location, there are several geologic types of mineral materials available for use as construction and maintenance materials within the planning area. Generally, the amount of material existing in an area is virtually unlimited in quantity, but quality can be marginal. The best quality sand and gravel deposits are found in modern floodplains, terraces, and glacial outwash deposits. Deposits of lower grade material are found in alluvial fans and kame and kettle deposits.

Although mineral material in the planning area appears unlimited, the amount actually available for use is low because of various management constraints such as the prohibition of gravel extraction within an active stream channel, poor quality of suitable material for aggregate, or seasonal restrictions for protecting raptor habitat.

The primary users of mineral material in the planning area are the State of Alaska and Alyeska Pipeline Service Company, who use in excess of 150,000 cubic yards, with an estimated value greater than $50,000 annually, for road and pipeline maintenance within the planning area. Of this total, north of 68° N latitude (i.e., in CAMA), the amount of material used by these two groups is about 35,000 cubic yards of material worth approximately $10,000. Along the Dalton Highway the material sites range from six to twenty miles apart.

For areas outside the Utility Corridor, no requests have been received for mineral materials since 1982, and no active or inactive sites currently exist. The only need for materials outside the Corridor has been in CAMA for facilities associated with oil and gas exploration, such as drill pads and airstrips. The average amount of material requested for each exploration well has been approximately 50,000 cubic yards of material.

Cultural Resources

There are 269 known archeological sites within the Utility Corridor, almost exclusively within the inner Corridor, and an additional 46 known within CAMA. There is only one known archeological site within the Venetie Block. The scarcity of data for the Venetie block is due entirely to insufficient survey in that area. Most of the site discoveries in the planning area are the result of survey work done for the Trans-Alaska Pipeline System. These sites range in age from historic to probably more than 10,000 years old and represent a variety of aboriginal cultures relating to the ebb and flow of cultural boundaries and the development of both Eskimo and Indian cultures within the state. Of the known sites, 127 have either been totally excavated or otherwise destroyed; the records and artifacts are all that remain.

There are several concentrations of prehistoric occupation along the Corridor and in CAMA. To some extent, these concentrations represent survey methodology; some areas were surveyed more thoroughly than others. For instance, in CAMA the only comprehensive survey has been in the Iteriak Creek area to the west. Within the Corridor, only the inner Corridor has been studied. Thus, the Venetie Block, central and eastern CAMA, and the outer Corridor have been only lightly inventoried, if at all.

There are concentrations of cultural resources near the following areas (from south to north using Dalton Highway milepost figures):

1. Old Man Camp (milepost 107

2. Bonanza Creek (milepost 118)
3. Prospect Creek/Jim River (milepost 136-147)
4. South of Cathedral Mountain (milepost 166)
5. Wiseman (milepost 186)
6. Galbraith Lake (milepost 227)
7. Toolik Lake (milepost 284)
8. Slope Mountain (milepost 298)
9. Iteriak Creek (western border of CAMA)

The Old Man sites are primarily small flaking stations associated with bare hill lookouts. Most of them have been excavated, or are of such a scattered nature that they have utility for scientific or interpretive purposes only as a group. They do indicate that further development in the vicinity will reveal more sites, and mitigation may be a concern. Those sites near the road which were not excavated should be collected, or they will be indirectly impacted by casual visitors, already occurring at some sites.

Near Bonanza Creek, the sites are almost all located on finger-like ridges which project into and command good views of the flat valley floor. An exception is BET-022, the Island Site, which is a long-term campsite rather than a game lookout location.

The valley north of Prospect Creek and along the Jim River to Grayling Lake contains some highly significant buried sites. The sites that made up the Girl's Hill locality have been excavated, although there may be an associated base camp in the vicinity. The valley serves as a north-south corridor for animals, and it seems probable that most sites were situated for improved visibility for spotting game; all of the sites are located on slight elevations. The northerly or southerly aspects of the sites probably indicate whether sites were occupied in the spring or all for intercepting caribou herds.

The sites clustered just south of Cathedral Mountain are situated on lateral or terminal moraines or kames scattered through the flats. All of them have good lookout potential and appear to be hunting camps.

A number of prehistoric sites were located along the pipeline route on the east side of the Middle Fork Koyukuk River, opposite the town of Wiseman. These sites are located on the northern and southern margins of the many moraines which served as impediments to the movements of migratory caribou and concentrated them for the prehistoric hunters. Many of the sites are buried and intact, increasing their potential significance. Previous surveys were restricted to the pipeline right-of-way, but there are undoubtedly more sites in the vicinity, possibly including larger base camps.

Several sites in the Galbraith Lake vicinity have been nominated to the National Register. These include the Mosquito Lake, Aniganigaruk, and Atigun sites. The latter still contains much cultural material that could be significant in unraveling the prehistory of Athapaskan occupation of the North Slope. The same is true of the shoreline and low hills immediately around Toolik Lake. A large number of tent ring clusters, some of which have been excavated, may have considerable significance to the comparative study of late Eskimo occupations across the North Slope.

Immediately to the south and east of Slope Mountain are several sites, including the National Historic Landmark site of Gallagher Flint Station, that pertain to earlier phases of the Eskimo culture. Most of these have been excavated and are fully studied. Some, however, are intact, and near enough to the Dalton Highway to be in jeopardy from vandalism or inadvertent disturbance.

The Iteriak Creek area, on the western part of CAMA, contains a large number of sites. Most of these have not been excavated and may have a relatively high significance. One, the Mesa Site, is being nominated to the National Register.

On the basis of the topographic settings of known sites, it can safely be assumed that a considerable number of additional sites are located in areas which have not been surveyed. (These settings are also ideal for gravel or rip-rap material sources; 57 sites or 18% were found within such material sources.)

There are some 25 sites at present known which may be eligible to the National Register. Some definitely are of National Register quality, and nominations have already been prepared. The others are

considered significant, but formal determination procedures have not been implemented. The Gallagher Flint Station has already been listed and is a National Historic Landmark. The Killik Bend site, along the Colville River, is a late Prehistoric Contact Period site, is probably eligible, but is eroding into the river.

Socioeconomic Resources

POPULATION AND EMPLOYMENT

A population of approximately 7,500 lives within or near the boundaries of the planning area. About 62 percent of this population is considered residential. The remaining 38% of the population is divided among Alaska Department of Transportation facilities, pump stations operated by Alyeska Pipeline Service Company and the Prudhoe Bay complexes, and are housed in these development facilities. Most of the residential communities in the area are isolated from the more transient populations by distance and limited accessibility.

These populations are not only divided by location and degree of residency, but also by cultural distinctions. The Native population, which is 81% of total permanent population, may be further categorized into 88% Inupiat Eskimo located within the North Slope Borough and 12% Athapaskan Indian located within the Doyon Region. These two cultural groups have different employment and development experiences.

North Slope Borough

Within the North Slope Borough village population is primarily Alaskan Native with Inupiat comprising 94 percent of the Anaktuvuk Pass population, 90 percent of the Kaktovik population, 87 percent of the Nuiqsut population and 78 percent of Barrow's population. Barrow is the only area to show consistent changes in the Native proportion of the population. In 1970, 90 percent of Barrow's population was Native compared to 78 percent in 1980. A special census conducted by the North Slope Borough in 1986 (North Slope Borough 1986) found that the Native population was 60 percent of the total population. The North Slope Borough's *Draft Comprehensive Plan* (1981) assumes a population growth from 3 percent to 5 percent a year for Barrow, and 2 percent to 3 percent a year for Anaktuvuk Pass, Kaktovik and Nuiqsut. With the lower growth assumption, the population would be 4,453 in 1990, 5,115 in 1995 and 5,878 at the end of the century. Table 3.12 summarizes population changes in selected North Slope Borough villages.

Overall, the North Slope Borough's economy is dominated by an oil production industrial base. The Prudhoe Bay oil field, which began producing a projected 9.6 billion barrels of recoverable crude oil in 1977 (Wickersham and Flavin 1983), is the major underpinning of the Borough's economy. By 1985, 45 percent of the 9,234 workers employed in the borough were employed in mineral development, followed by 15 percent in local government, 14 percent in construction, and 12 percent in services. Total aggregate employment showed an almost constant increase until 1983, growing from about 2,000 workers in 1970 to 11,217 in 1983 (North Slope Borough 1985). Since 1983, employment has fallen to a little over 9,000 in 1985.

Permanent residents typically work in other than oil related occupations. In 1980, only 3.7 percent of the 4,874 North Slope employees at oil-related work sites in the Borough were permanent residents (Swanson 1983). Employment opportunities for permanent residents, particularly Inupiats, in the North Slope Borough have been augmented by increases in local government hire. The Borough is the dominant force in the local cash economy. It collects substantial taxes on oil industry properties at Prudhoe Bay (Institute of Social and Economic Research 1983), and borough revenue has risen from $528 thousand in 1973 (Wickersham and Flavin 1983) to $369 million projected for the 1986 fiscal year (North Slope Borough 1986). To illustrate that employment changes correlated to borough revenues and expenditures, the Borough employed 19 workers in 1972 (Wickersham and Flavin 1983), which rose to 1,579 by 1985.

Table 3.12
Population Summary for Selected Villages in the North Slope Borough 1980-1985

Community	1980	1981	(%)	1982	(%)	1983	(%)	1984	(%)	(1985	(%)
Anaktuvuk Pass	203	235	(15.7)	250	(6.4)	228	(-8.8)	232	(1.7)	278	(19.8)
Kaktovik	165	201	(21.8)	214	(6.5)	203	(-5.1)	208	(2.3)	220	(5.8)
Nuiqsut	208	270	(29.8)	287	(6.3)	324	(12.9)	309	(-4.6)	332	(7.4)
Barrow	2207	2539	(15.0)	2882	(13.5)	2938	(1.9)	2930	**	3075	(4.9)
Village Totals	2783	3245	(16.6)	3633	(11.9)	3693	(1.7)	3679	**	3905	(6.1)

SOURCE: Alaska Department of Community and Regional Affairs, Division of Local Government Assistance, Juneau (personal communication 1985).
* Figure represent the percent change in population during the previous interval.
** Less than 1/2 of one percent change.

Between 1970 and 1977 median Native household income increased 60 percent from $6,923 to $17,347 (Wickersham and Flavin 1983). Median income for all households was $31,378 in 1979 (U.S. Census Bureau 1983). In 1979, 12 percent of all borough households received some public assistance income.

North Slope unemployment was 8.4% in April 1986, the second highest unemployment rate recorded for any April since 1981. Generally, the unemployment rate falls below the Alaska statewide average, which was 11.4% in April 1986. Alaska Department of Labor methodology may underestimate some unemployment since research methods include workers who are considered residents living at Prudhoe Bay and Deadhorse.

Planning Area South of the North Slope Borough

The total population south of the North Slope Borough boundary within or near the planning area was 806 in 1984. Most of this population lives in six scattered, principally Athapaskan, communities. Access to area villages is primarily limited to either air or water traffic, although Evansville/Bettles maintains a winter road and Wiseman is adjacent to the Dalton Highway. Within development areas, only Coldfoot can be considered a potential community, primarily because of the population resurgence at Wiseman and continuing small populations at Nolan, Linda Creek, Emma Creek, and Tramway Bar mining sites.

Most of the village populations have remained stable between 1980 and 1984, growing only 1.5 percent per year, very similar to the growth between 1970 and 1980 (Bureau of the Census 1983). Only Allakaket displayed significant growth, growing from 133 individuals in 1980 to 175 in 1984. The recent population increase in Wiseman, however, is attributed to the development of Coldfoot. Many of the Wiseman residents were at one time employed in Coldfoot. Thus, the Wiseman population has grown from about 10 individuals in 1980 to 30 permanent and 4 seasonal residents in 1986.

The size of development node populations is dependent upon the amount of vehicular traffic moving up and down the Dalton Highway. Table 3.13 provides a summary of village and development area populations.

Table 3.13
Baseline Population for Planning Area South of the North Slope Borough

Native Villages[1]	Pop #	Other Villages/ Communities	Pop #	Development Areas[2]	Pop #
Rampart	50	Wiseman	34	Pump Station	–
Stevens Village	96	Nolan	11	Pump Station	–
Bettles/Evansville	94	Linda Creek	3	Coldfoot DOT	6
Venetie	132	Emma Creek	4	Coldfoot Node	9
Alatna	30	Tramway Bar (seasonal)	8	7-Mile DOT	10
Allakaket	133				
Total	**712**		**60**		**34**

Sources: U.S. Department of Commerce, Bureau of the Census, *American Indian Areas and Alaska Native Villages 1980* (Washington D.C.). Marie Mead, Wiseman, Alaska 1986 (personal communication).
1Estimated 1984 village resident population includes all of the villages except Alatna. The Alatna population is based on the 1980 U.S. Census materials.
2The U.S. Census Bureau and the Alaska Department of Labor only provide data for designated places. Thus, Wiseman, Nolan, Coldfoot, Yukon Crossing and other development areas have no recorded population for either 1980 or 1984. The populations used for these areas are based upon data gathered during the summer of 1986.

Evansville/Bettles, located 190 miles north of Fairbanks on the Koyukuk River outside the planning area, serves as the transportation hub and service center for Allakaket/Alatna, Wiseman, Anaktuvuk Pass, and several mining operations. The major source of income in Evansville is the Federal Aviation Administration. This area contains the largest non-Native population (71 percent) in the vicinity of the planning area (U.S. Bureau of the Census 1983).

Venetie is located within the region allocated to the former Venetie Reservation. Venetie is totally dependent upon air transport for supplies. Like many of the smaller isolated communities, Venetie is dependent on subsistence activities and some tourism. Venetie is 98 percent Native Alaskan.

Stevens Village is a small community located on the Yukon River, close to the Yukon Crossing. Employment opportunities are limited to local construction activity and to the operation of the local school. Some residents engage in trapping and two families operate a commercial fishing business. There is an airport, a fuel supply business, and two small stores.

The economy along the Dalton Highway focuses on servicing the vehicular traffic that moves tourists and recreationists to spots terminating at Disaster Creek or trucks that carry supplies to and from Prudhoe Bay. Recreational and tourist travel in this area is limited. It has been estimated that only 20 to 30 private (recreational) vehicles travel the road per day for a three-month summer season, or 1,800 to 2,700 vehicles during this period. About one-quarter of these tourists end their journey at the Yukon River, another one-quarter end their journey at the Arctic Circle and the remainder continue to Coldfoot or points beyond. Because Coldfoot only hosts one-half of this tourist/recreationist traffic, it has been more dependent upon the trucking business than Yukon Crossing. However, recently Coldfoot has become part of a tour package offered out of Fairbanks. This package includes a bus tour that travels the Dalton Highway, stops at Coldfoot, and continues to Deadhorse. In 1988 approximately 4,000 people participated in this tour.

Mining is also a major economic activity in this area. There are about 13 active mining operations in the vicinity of Wiseman. This region produced about 14,400 ounces of gold in 1985 (Alaska Division of Ecological and Geophysical Surveys 1985). Since the average price of gold was about $325 an ounce during 1985, the product value approximated $4.7 million. The Department of Transportation facility sites located at Coldfoot and the Yukon Crossing employ sixteen people. There are two hunting guide businesses that operate out of Wiseman, and a small store that caters primarily to the Wiseman community.

It is estimated that unemployment in rural Interior villages ranges from 30 to 50 percent in the summer season and higher during the winter months (Tanana Chiefs Conference 1985). Median family income in the Interior villages is low. Family income in 1979 ranged from a low of $6,250 in Stevens Village to $11,000 in Allakaket (U.S. Bureau of the Census, 1983). Only Evansville/Bettles showed a marked difference with a median family income of $29,000.

DEVELOPMENT NODES

The development node concept originated during the planning process for the Utility Corridor Management Framework Plan (BLM, 1979) to overcome scattered or random development of facilities needed to maintain the Dalton Highway, to provide services to the road users, and to provide housing and storage needed by governmental agencies managing land on or near the Dalton Highway. The needs of the general public were not considered because the road was closed to the public north of the Yukon River when the plan was completed in 1979.

The five node areas currently within the Planning Area are:

1) The Yukon Crossing/Five Mile area extending from the Yukon River north for about five miles;
2) Prospect, located about 80 miles north of the Yukon River at the intersection of the trail to Bettles;
3) Coldfoot, located about 40 miles north of Prospect at the intersection of the Slate Creek Trail;
4) Chandalar, located about 62 miles north of Coldfoot, just inside the North Slope Borough boundary and about seven miles south of Atigun Pass; and
5) Pump Station No. 3, located about 75 miles north of Chandalar camp and about 100 miles south of Deadhorse/Prudhoe Bay.

Current Activities

Two primary land uses are currently permitted in these nodes: (1) necessary governmental facilities (e.g., highway maintenance camps), and (2) commercial development related to road use.

Yukon Crossing/5-Mile Node: There are several commercial and governmental facilities within this area. The commercial operator, under lease from BLM, provides services for road travelers with fuel, wrecker and repair service, food, and lodging. A barge landing on the Yukon River is operated under a sublease from Alaska Department of Transportation and Public Facilities.

Alyeska operates an airstrip close by 5-Mile Camp under a temporary use permit from BLM. Also nearby is the (dismantled) 7-Mile construction camp, the AK DOT/PF road maintenance camp and a Northwest Alaska Pipeline Company "fly camp."

Prospect Node: Pump Station 5 is located within the Prospect node, and the State of Alaska has a lease on an adjacent airstrip. Nearby is the Jim River AK DOT/PF road maintenance camp built under a temporary use permit from BLM. The AK DOT/PF was not successful in finding another site more suitable for a permanent maintenance camp and has made a substantial commitment to remaining at the Jim River site. If this area is not opened to state selection, BLM may grant a right-of-way for the present site.

Coldfoot Node: Coldfoot has the greatest concentration and diversity of development within any node. Both BLM and the National Park Service (NPS) have administrative and housing sites in Coldfoot; the NPS site is open during the summer, and the BLM site is used intermittently by employees working in the area. A United States Post Office has been opened in Coldfoot. The BLM site at the intersection of the Dalton Highway and the Slate Creek Trail contains an old cemetery with potential for National Historic Site registration. A commercial operator, under lease from BLM, provides fuel, food, vehicle repair services and lodging for travelers. The State of Alaska maintains a public airstrip within the node and also has a highway maintenance camp here.

Chandalar Node: Only government facilities are located within this node. BLM has a building to house employees working in the area, and the State of Alaska has an airport lease and a road maintenance camp. The state also has relocated its highway permit checkpoint station from Disaster

Creek to Chandalar (note: the road remains closed at Disaster Creek south of the actual checkpoint station).

Pump Station 3 Area Node: The state's Slope Mountain road maintenance camp is at material site 119-4 about six miles south of Pump Station No. 3.

Subsistence

GENERAL DESCRIPTION

The major types of subsistence activities occurring in or near the planning area include the following:

1) hunting of moose, caribou, brown and grizzly bear, Dall's sheep, hare, and a variety of waterfowl;

2) fishing for salmon, char, cisco, grayling, and other varieties of fish;

3) trapping of various furbearers, including beaver, marten, fox, wolf, wolverine, marmot, etc.;

4) collecting of various plant resources for food and other needs, including berries, roots, seeds, fuel wood and construction materials; and

5) utilization of water resources for drinking and food processing needs.

Subsistence activities usually occur within 50 miles of local villages although some individuals, particularly trappers, may exceed this distance. Certain fish and wildlife resources, such as migratory caribou, salmon, and waterfowl, used for subsistence are drawn from a larger area. Other species, such as moose and smaller animals, are more localized.

Human access to subsistence resources varies by season and location. Year-round access methods include foot transportation, use of scheduled and chartered airlines services, and use of all-terrain vehicles and other forms of mechanized travel. The Dalton Highway is open year round and facilitates access to areas used by both subsistence and sports users. Seasonal access methods include the use of boats with motors in the summer and the use of snow machines in the winter. Since the 1970s, dog sleds are rare to nonexistent as a form of winter transportation for subsistence purposes.

CURRENT SUBSISTENCE RESOURCE USES

Rampart:

The majority of subsistence uses by residents of Rampart occur outside the planning area. Some trapping and moose hunting may take place along the portion of Hess Creek at the southern most portion of the planning area. Similar use is likely for portions of Isom Creek and the Yukon River valley about 20 to 30 miles northeast of Rampart. On the north side of the Yukon River, hunting and trapping may extend into the lower reaches of the Big Salt River (based on general statements made in a BLM meeting held in Rampart in December, 1983).

Yukon Crossing:

Known subsistence use of the Corridor area at Yukon Crossing in 1981 included some trapping and two or three permanent fish camps utilizing fish wheels. The temporary fueling station currently located at Yukon Crossing provides fuel for riverboats of some subsistence users (USDOI, BLM 1981).

Fish harvest statistics maintained by the State of Alaska Division of Commercial Fisheries include data on reported salmon and white fish catches between the mouth of Hess Creek and Stevens Village, a 60-mile area which includes the Yukon Crossing. In 1985, this region had harvest totals of 35,449 salmon and 2,534 white fish (Alaska Department of Fish and Game, Division of Commercial Fisheries 1985). Statistics for commercial fishing in 1984 on a larger stretch of the Yukon River from Rampart upstream to Waldron Creek, which enters the Yukon River between the Yukon River Bridge and

Stevens Village, report harvests of 9,415 chum salmon and 1,568 chinook salmon (Alaska Department of Fish and Game, Division of Commercial Fisheries 1984). While most subsistence users of Yukon River fish are distinct from commercial users, there is some overlap. Depending on the season, certain individuals may fish from the same location as first one category of user and then the other. Also, summer sports fishing occurs to some extent near the Yukon Crossing by visitors accessing the area via the Dalton Highway.

Stevens Village:

Residents of Stevens Village travel in all directions for a variety of subsistence activities. The Ray River watershed has been "traditionally used, occupied, and governed by the Native Alaskan members of Stevens Village" for hunting, trapping and other purposes (USDOI, BLM, 1986:138-375). This area extends northward from the Yukon River 25 or more miles through the Fort Hamlin Hills. Residents of Stevens Village are also documented to have used portions of the Fort Hamlin Hills around and south of the West Fork Dall River for trapping and moose hunting during the period 1974 to 1984 (Sumida and Alexander, 1985; Sumida 1988). Additionally, trapping has traditionally occurred within the Corridor northward to the vicinity of Old Man although present day use is not frequent (based on general statement made in a BLM meeting held in Stevens Village on May 13, 1986). Further, localized berry picking and wood use by residents of Stevens Village occurs along the Yukon River, particularly in the vicinity of several Native allotments and fish camps on the north side of the Yukon River.

Allakaket/Alatna:

The villages of Allakaket and Alatna are located on opposite sides of the Koyukuk River near the mouth of the Alatna River, approximately 45 miles west of the planning area. While most subsistence activities by residents take place on lands west of the planning area, some reported uses do occur within the Utility Corridor. In 1981, residents were reported to travel up the Kanuti River for trapping and caribou hunting in the spring and for moose hunting in the fall (USDOI, BLM, 1981). In particular, the area around Olson's Lake, about five miles south of Old Man near the Kanuti River, is utilized for beaver trapping (Nelson, Mauntner, and Bane 1982, Map B-10).

Additional trapping, fishing and limited moose, bear, and waterfowl hunting occurs along portions of Fish and Bonanza Creeks, and northwest of Old Man near Hulgothen Bluffs (McGee, McIntosh and Strong 1985, figures 6 and 9). Furbearers trapped in this vicinity include wolf, wolverine, marten, mink and beaver (BLM meeting in Allakaket, May 13, 1986).

Elsewhere, other subsistence activities, such as fishing, trapping and moose hunting up the South Fork of Koyukuk River, extend somewhat into the planning area from the intensively used Kanuti Flats area west of the Corridor (Marcotte and Haynes, 1985; Nelson, Mauntner, and Bane 1982, Map B-13; McGee, McIntosh and Strong 1985, figure 4; USDOI, BLM, 1981).

Prospect Creek:

Approximately seven households are reported established in the vicinity of Pump Station 5 at Prospect Creek/Jim River. Residents are AKDOT/PF employees involved with highway maintenance. Their subsistence uses include localized fishing in Jim River and Prospect Creek, plus localized hunting and trapping in the area (Personal Communication, B.J. Strong February 18, 1986 and May 13, 1986). Otherwise, use of the area of Prospect Creek is reported for people of Bettles and Evansville, as noted in the next section.

Bettles/Evansville:

Local residents of Bettles and Evansville are recorded as trapping in portions of the planning area east of their villages, including areas of the Jim River, South Fork Koyukuk River, and a portion of the Middle Fork Koyukuk River to near Chapman Bar (McGee, McIntosh and Strong 1985; Marcotte and Haynes, 1985). At least three residents have traplines up the South Fork Koyukuk River, including one line to the vicinity of John R. Creek through the White Range Mountains (May 14, 1986 BLM meeting in Evansville). Reportedly, the area around Prospect also was used by Bettles residents in winter for trapping although residents at Jim Creek currently utilize this area. Existing traplines extended almost to the Dalton Highway in 1981 (USDOI, BLM, 1981).

Venetie:

The majority of the subsistence activities by inhabitants of Venetie occur either on the former Venetie Indian Reservation or on the Yukon Flats National Wildlife Refuge; however, there is limited use in the Venetie block. Furbearer trapping is recorded in the eastern part of the block, from approximately Schilling Creek eastward. The portion of the Chandalar River Valley which passes through the easternmost part is noted for fishing, trapping, caribou and bear hunting, and use of vegetative resources (Caulfield, 1983: 181-183; USDOI, USFWS, 1987).

Coldfoot:

Coldfoot existed as a temporary campsite for Alyeska during pipeline construction in the 1970s and then as a AKDOT camp. About 1980, BLM issued a lease to establish a service center for highway traffic along the Dalton Highway. Subsistence activities by employees at the new facility include fishing, wood use, and possibly hunting or trapping. Reportedly, people trap out of Coldfoot with some traveling into the Gates of the Arctic National Park and Preserve, and others to Chandalar Shelf. Otherwise, reported known uses of the Coldfoot area include use of the valley of the Middle Fork Koyukuk River for hunting and fishing by the residents of Wiseman, and some residents of Bettles who use this area in the fall for moose hunting (USDOI, BLM, 1981).

Wiseman/Nolan:

Wiseman, an historic mining community, lies within the Corridor along the Koyukuk River. About six families reside in the area while two families plus four individuals reportedly live near the old mining area of Nolan to the northwest of Wiseman. Subsistence uses of the area include trapping along the Koyukuk River and its tributaries, from the Coldfoot area northward (USDOI, BLM, 1981). Reportedly, current subsistence trapping by local residents extends northward to Chandalar Shelf and southward to the vicinity of the old cat trail which goes to Bettles (about 25 miles south of Wiseman) (personal communication, Rick Reakoff, Aug. 2, 1986). Trapping also occurs both east and west of the Nolan/Wiseman vicinity.

Most caribou hunting by area residents occurs outside the Corridor. Reportedly, some people hunt in the Gates of the Arctic National Park and Preserve while others go north of the Brooks Range toward Prudhoe Bay (personal communication, Marie Mead, Aug. 2, 1986). Most moose hunting is done in the vicinity of the road between Nolan and Wiseman (personal communication, John Holland, Aug. 2, 1986). Currently, most residents rely on oil stoves for heat, but some still obtain firewood in the local area, particularly in the vicinity of Marion Creek campground (personal communication, Marie Mead, Aug. 2, 1986). Local subsistence fishing includes grayling from the Koyukuk River in the Wiseman area. Salmon are infrequently seen in this region due to the extreme upriver location.

Anaktuvuk Pass:

The people of Anaktuvuk Pass use an extensive area of northern Alaska in their pursuit of subsistence activities, including portions of the Gates of the Arctic National Park and Preserve to the south and west, the Colville River in the north, and across to the Corridor area on the east (Pedersen 1979). A 1985 map of the total lifetime subsistence territories of 21 Anaktuvuk Pass residents expands the area even farther due in part to the recording of past subsistence use areas (Hall, Gerlach and Blackman April 1985, Vol II. pocket 4).

Specific subsistence use of the Corridor by Anaktuvuk Pass residents has declined from the past. Traditionally, the area around Galbraith Lake and Atigun Gorge served as a location for various fishing, hunting, trapping, and camping activities, but in recent years, with the construction of the Dalton Highway, use is infrequent. The same is true for earlier use of the area south of Pump Station 3.

CAMA, besides receiving generalized, sporadic travel by Anaktuvuk Pass hunters primarily in search of caribou or moose, contains documented subsistence use sites. Among the specific sites are the following:

1) Pingaluligit Mountain - about 20 miles south of the Killik Bend of the Colville River; noted for hunting, camping, moose, and marmots (North Slope Borough, 1977, Anaktuvuk Pass TLUI, site 76).

2) Qiruktagiaq - a hunting area near Horseshoe Mountain, north of the isolated portion of the Gates of the Arctic National Park and Preserve (Ibid., TLUI site 46).

3) Ayiyak River area - a hunting area about 30 miles south of Umiat.

4) Aninagnauraq and Quunnut - two localities near the Anaktuvuk River and Banded Mountain; noted for fishing, fox trapping, hunting, camping, and salmon berry picking.

5) Irgnyivik Lake - about 25 miles northwest of Anaktuvuk Pass; noted as a caribou hunting area (Ibid., TLUI site 15).

6) Nanushuk Lake and Nanushuk River - about 35 miles northeast of Anaktuvuk Pass:; noted as area of fishing and wolf trapping (Ibid., TLUI site 23; Inupiat of the Arctic Slope et al., 1974-75).

7) Itkillik River sites - east of Galbraith Lake; noted for fishing, hunting, trapping, and camping (North Slope Borough, 1977, Anaktuvuk Pass TLUI Site 104, 108).

The residents of Anaktuvuk Pass also have been documented to utilize portions of the Colville River for trapping, hunting, and fishing from near the confluence of the Awuna River upstream to the confluence of the Anaktuvuk River (Inupiat of the Arctic Slope et al. 1974-75). Use of the north-south area along the Colville formerly part of the National Petroleum Reserve-Alaska is minimal to nonexistent.

Nuiqsut:

Residents of Nuiqsut have no documented subsistence use of the Corridor but do utilize portions of the BLM lands extending up the eastern side of the Colville River from below its confluence with the Anaktuvuk River northward to the Beaufort Sea (Pedersen 1979). Such documented uses include: trapping; collecting fuel, berries, roots, and seeds; and hunting caribou, moose, and waterfowl (Inupiat of the Arctic Slope et al. 1974-75; North Slope Borough, 1976; North Slope Borough Geophysical Services Incorporated maps May 1985). These lands, however, represent only a small portion of the total subsistence use area for Nuiqsut. A new report is in preparation by the Alaska Department of Fish and Game, Subsistence Division (Pedersen and Shishido 1986) which provides a current assessment of subsistence harvest and use patterns.

Kaktovik:

In the past, people of Kaktovik ranged west of the Colville River for subsistence activities (Pedersen 1979; Pedersen and Coffing 1984; Pedersen, Coffing, and Thompson 1985). However, most of the land used today is on the eastern side of the Canning River. In the early 1970s, one fishing and camping area was recorded as near or on BLM land along the Canning River in the area of Ikiakpaurak Valley (Inupiat of the Arctic Slope et al. 1974-75). Some use of BLM land involving fishing along the Ivishak River, about 25 miles northeast of Happy Valley, was also indicated in the *Traditional Land Use Inventory for the Beaufort Sea* (North Slope Borough 1977). Similarly, subsistence fishing was noted in the same document for an area on the Sagavanirktok River, about 15 miles down river from Happy Valley. Today, such uses are rare or may not occur at all.

Resource Maps

Errata

1. All resource maps of the northern portion of the planning area should show the Dalton Highway ending approximately 15 miles further south. The highway ends at Deadhorse (not shown).

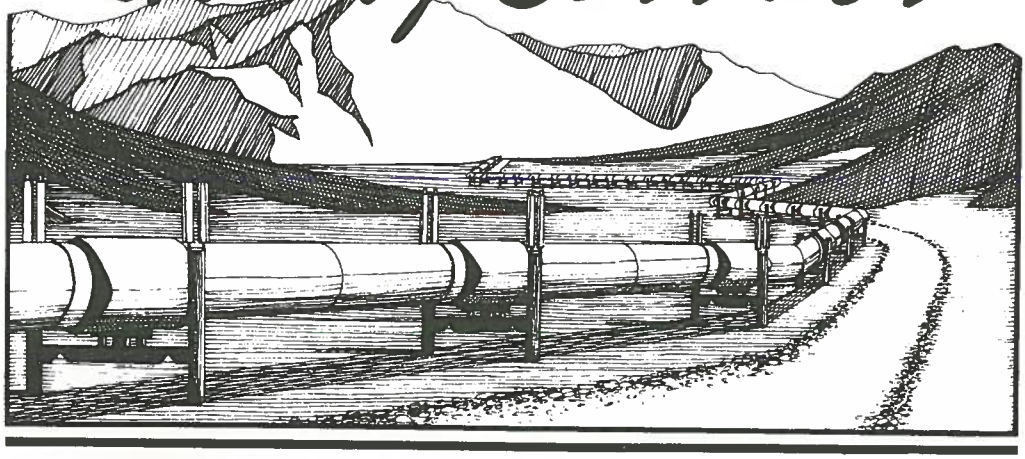
2. Threatened and Endangered Species map sheet 2 shows potential habitat for sensitive and rare plants within T. 17 N., R. 15 W., Fairbanks Meridian. The correct location is one township to the north in T. 18 N., R. 15 W., FM.

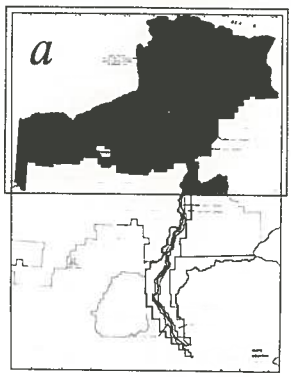
3. The Existing Access map sheet 1 of 2 incorrectly shows the Nuiqsut airstrip on the east side of the Colville River. The airstrip in on the west side of the Colville River within the village.

4. On Existing Access map sheet 2 of 2, the highway near Nolan-Wiseman depicted in blue-green is a state highway.

5. The key for Scenic Quality Classes on Recreation Opportunities Scenic Quality Classes Map, sheet 1 is incorrect. Scenic Quality Class B should be a lighter gray; see map sheet 2 for correct key color.

Utility Corridor





Area Map

1 of 2

LEGEND

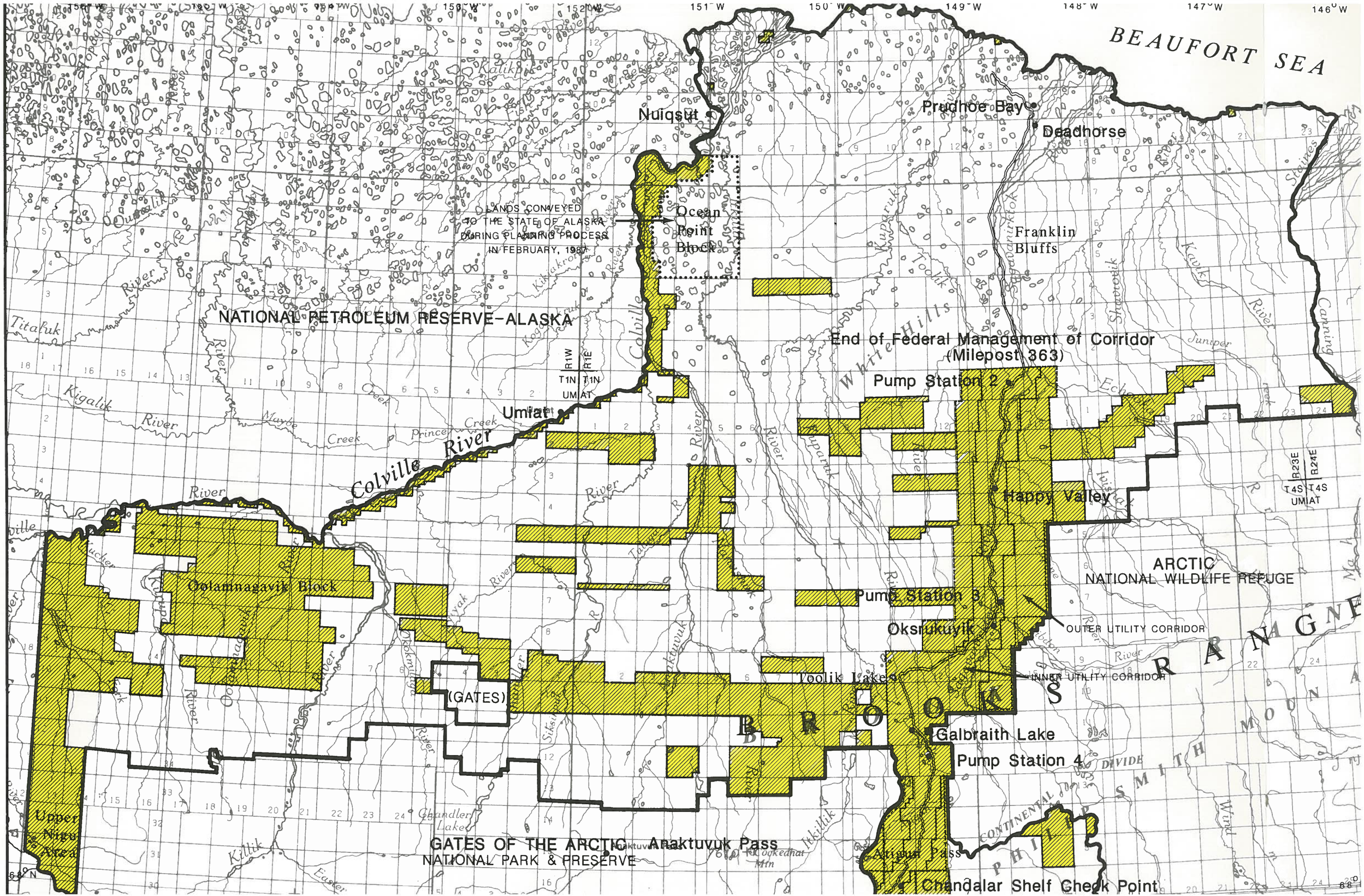
BLM Administered Public Lands

which includes unselected, state top filed, surface management, state selected, native selected, and other Federal land.

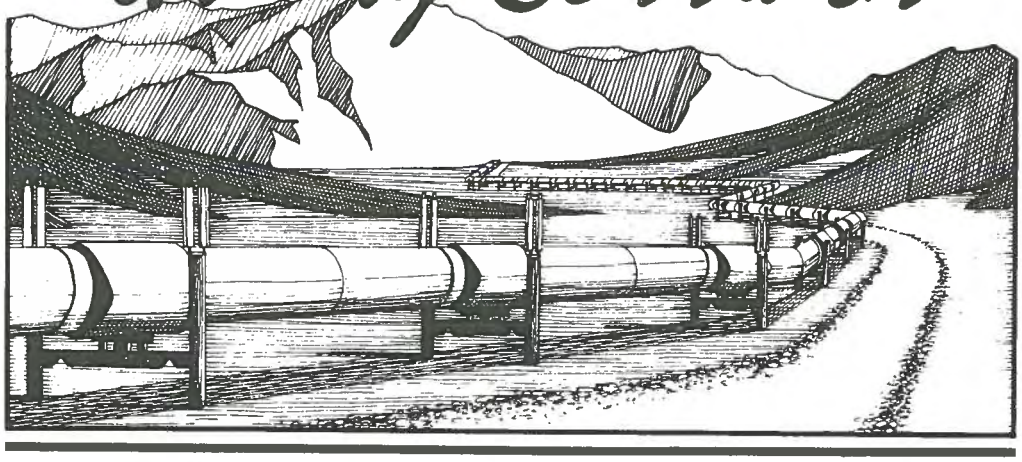
N

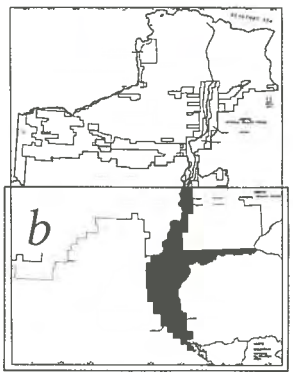
SCALE

10 0 20 40 MILES 60


BEAUFORT SEA
Nuiqsut
Prudhoe Bay
Deadhorse
LANDS CONVEYED
TO THE STATE OF ALASKA
DURING PLANNING PROCESS
IN FEBRUARY, 1987
Ocean
Point
Block
Franklin
Bluffs
NATIONAL PETROLEUM RESERVE-ALASKA
End of Federal Management of Corridor
(Milepost 363)
Pump Station 2
Umiat
Happy Valley
ARCTIC
NATIONAL WILDLIFE REFUGE
Oolamnagavik Block
Pump Station 3
Oksrukuyik
OUTER UTILITY CORRIDOR
INNER UTILITY CORRIDOR
Toolik Lakes
(GATES)
Galbraith Lake
Pump Station 4
Upper
Nigu
Area
GATES OF THE ARCTIC
NATIONAL PARK & PRESERVE
Anaktuvuk Pass
Atigun Pass
Chandalar Shelf Check Point
Colville
River
Titaluk
Kigalik
Kikiakrorak
Kuparuk
Toolik
White Hills
Sagavanirktok
Shaviovik
Kavik
Staines
Canning
Echooka
Juniper
Prince Creek
Maybe Creek
Killik
Easter
Chandler
Chandler Lake
Ikkillik
Tamayariak
Anaktuvuk
Sitsumuk
Okokmilaga
Ootoldnagavik
Ootoldnagavik
Kiligwa
Tucker
Lookednat Mtn
CONTINENTAL DIVIDE
PHILIP SMITH MOUNTAINS
BROOKS RANGE
R1W R1E
T1N T1N
UMIAT
R23E R24E
T4S T4S
UMIAT
151° W
150° W
149° W
148° W
147° W
146° W
69° N
68°

Utility Corridor





Area Map

2 of 2

LEGEND

BLM Administered Public Lands

which includes unselected, state top filed, surface management, state selected, native selected, and other Federal land.

N

SCALE

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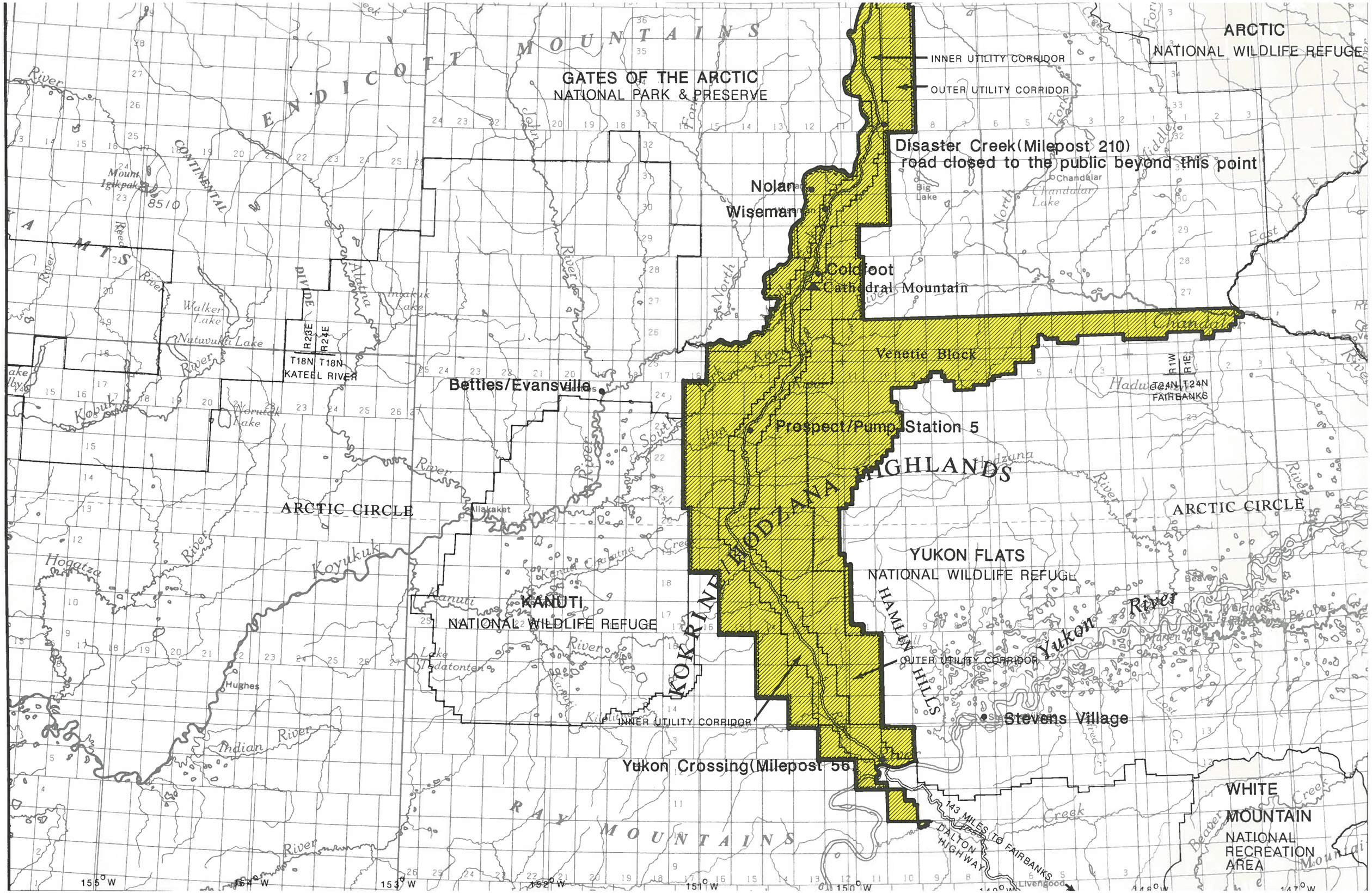
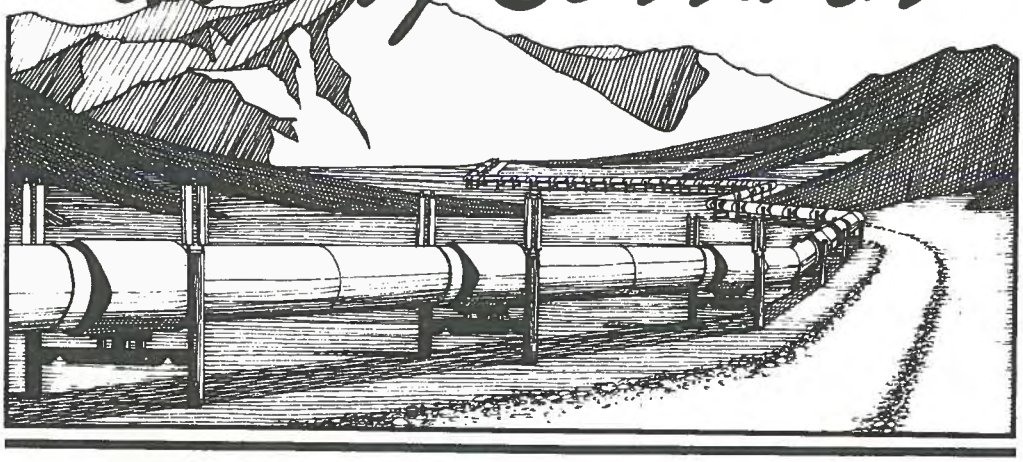
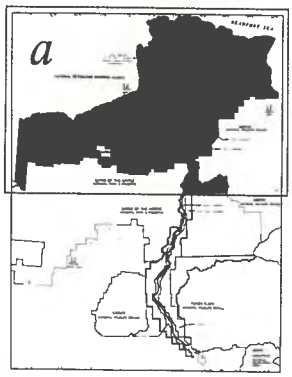

ARCTIC
NATIONAL WILDLIFE REFUGE
INNER UTILITY CORRIDOR
OUTER UTILITY CORRIDOR
GATES OF THE ARCTIC
NATIONAL PARK & PRESERVE
ENDICOTT MOUNTAINS
Disaster Creek(Milepost 210)
road closed to the public beyond this point
Nolan
Wiseman
Coldfoot
Cathedral Mountain
Venetie Block
Bettles/Evansville
Prospect/Pump Station 5
KOKRINE-HODZANA HIGHLANDS
ARCTIC CIRCLE
YUKON FLATS
NATIONAL WILDLIFE REFUGE
KANUTI
NATIONAL WILDLIFE REFUGE
HAMLIN HILLS
OUTER UTILITY CORRIDOR
INNER UTILITY CORRIDOR
Stevens Village
Yukon Crossing(Milepost 56)
RAY MOUNTAINS
143 MILES TO FAIRBANKS
DALTON HIGHWAY
WHITE MOUNTAIN
NATIONAL RECREATION AREA
KATEEL RIVER
FAIRBANKS
Hughes
Allakaket
Livengood
Koyukuk
Yukon River
Chandalar
Hogatza
Indian River
Kobuk
Alatna
Nutuvukti Lake
Walker Lake
Inakuk Lake
Worutch Lake
Big Lake
Chandalar Lake
Lake Tedatonten
Mount Igikpak
8510
155° W
154° W
153° W
152° W
151° W
150° W
148° W
147° W

Utility Corridor





Land Status

1 of 2

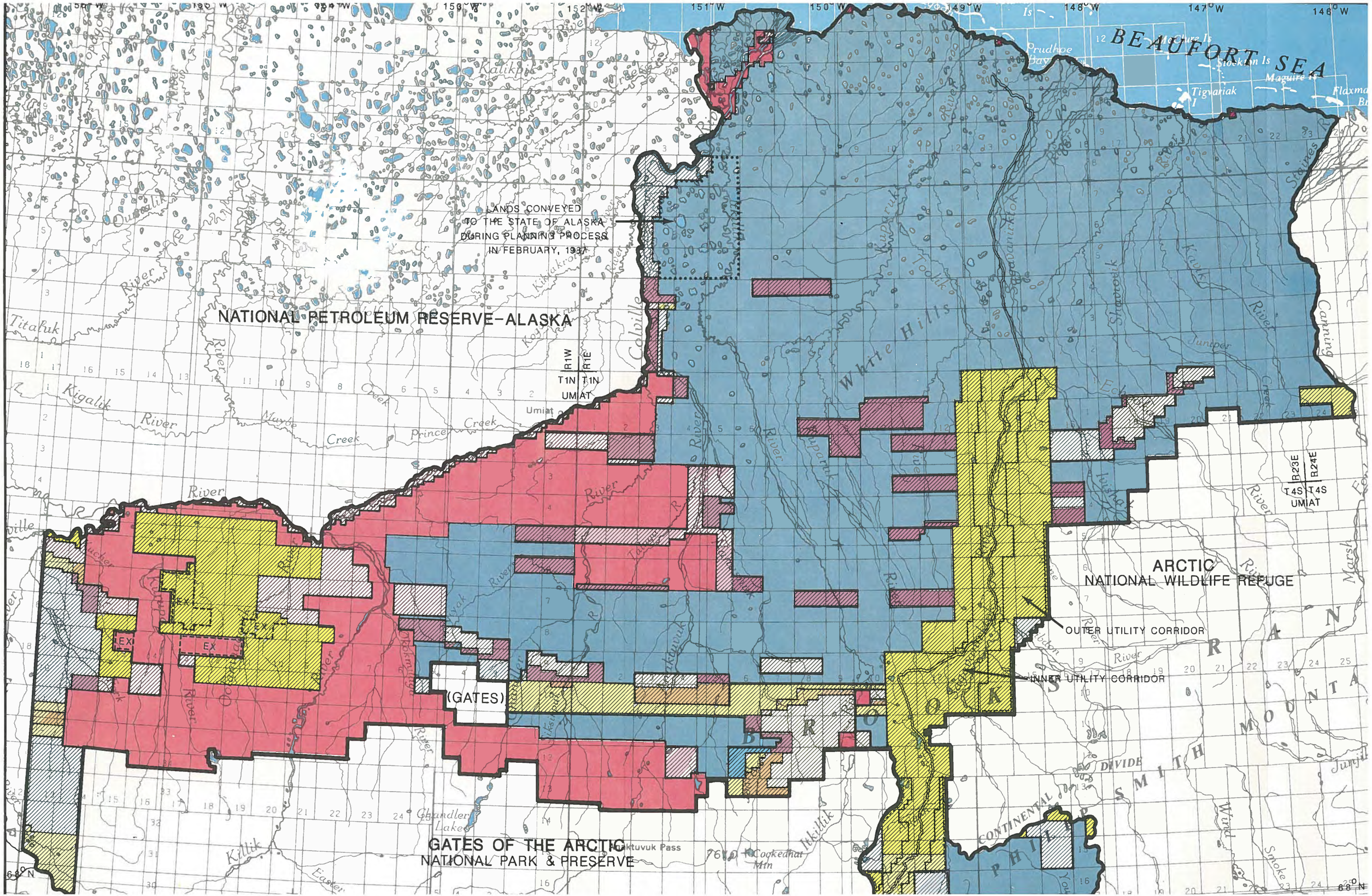
LEGEND

- Public Land –Unselected
- Public Land –State top–filed
- Public Land –Surface Only
- State Selected Land
- Native Selected Land
- State & Native Selected Land
- Native Selected Land –State top–filed
- State Owned Land
- Native Owned Land
- EX Land Involved in Exchange Agreement–dated 10–15–86
- Military Withdrawals
- BLM Administered Public Lands

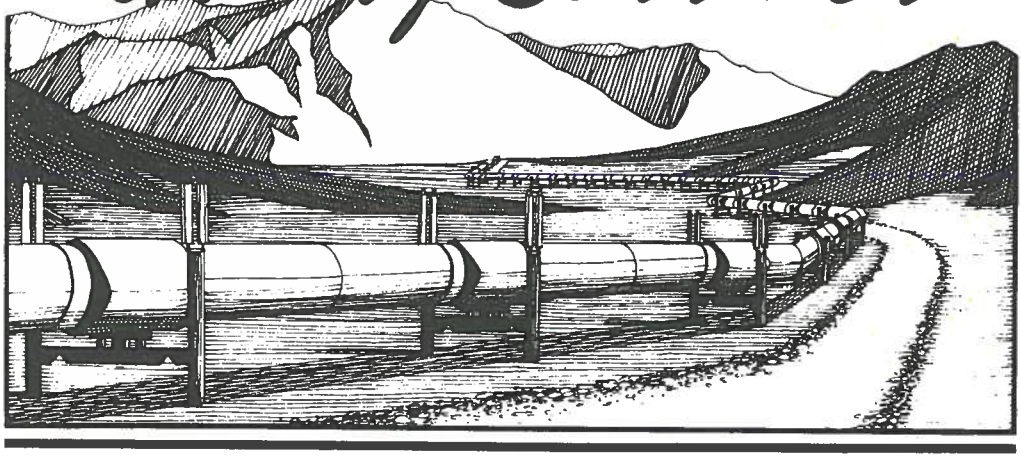
N

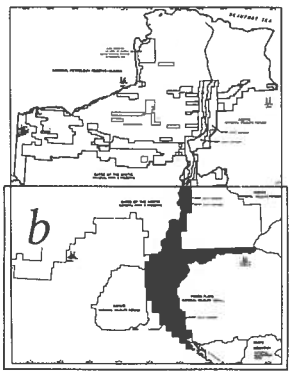
SCALE

10 0 20 40 MILES 60


BEAUFORT SEA
Prudhoe Bay
Stockton Is
Maguire Is
Tigvariak I
Flaxman Is
LANDS CONVEYED
TO THE STATE OF ALASKA
DURING PLANNING PROCESS
IN FEBRUARY, 1987
NATIONAL PETROLEUM RESERVE–ALASKA
R1W
R1E
T1N
T1N
UMIAT
Umiat
Titaluk
Kigalik
River
Colville
Kikakrotik
Kuparuk
Ipnavik
Sagavanirktok
Shaviovik
Kavik
Junjer
Canning
Staines
White Hills
Prince Creek
Maybe Creek
Kalikpik
Ivishak
Chandler
Killik
Easter
Ikkillik
Ikkiliktuvuk
Lake
Chandler Lake
Aktuvuk Pass
Cockednat Mtn
Wind
Snowy
Smith
Marsh
R23E
R24E
T4S
T4S
UMIAT
EX
(GATES)
ARCTIC
NATIONAL WILDLIFE REFUGE
OUTER UTILITY CORRIDOR
INNER UTILITY CORRIDOR
BROOKS RANGE
SMITH MOUNTAIN
CONTINENTAL DIVIDE
GATES OF THE ARCTIC
NATIONAL PARK & PRESERVE
68° N

Utility Corridor





Land Status

2 of 2

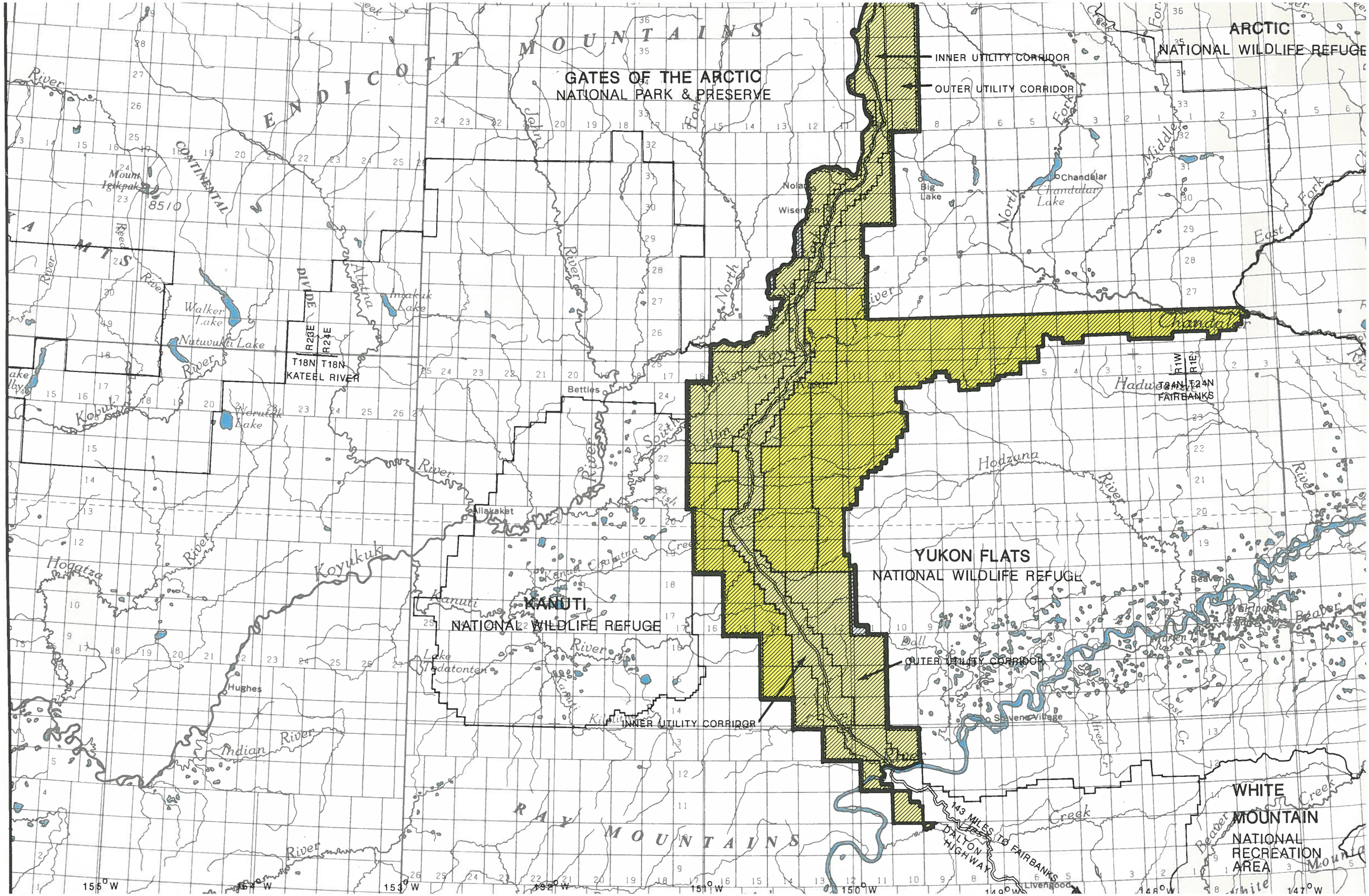
LEGEND

- Public Land–Unselected
- Public Land–State top–filed
- State Selected Land
- BLM Administered Public Lands

SCALE

10 0 20 40 MILES 60

N


GATES OF THE ARCTIC
NATIONAL PARK & PRESERVE
ARCTIC
NATIONAL WILDLIFE REFUGE
INNER UTILITY CORRIDOR
OUTER UTILITY CORRIDOR
YUKON FLATS
NATIONAL WILDLIFE REFUGE
KANUTI
NATIONAL WILDLIFE REFUGE
WHITE
MOUNTAIN
NATIONAL
RECREATION
AREA
ENDICOTT MOUNTAINS
RAY MOUNTAINS
CONTINENTAL DIVIDE
Mount Igikpak
8510
Walker Lake
Natuvuktuk Lake
Ingakuk Lake
Woruto Lake
Chandalar Lake
Big Lake
Nolan
Wiseman
Bettles
Allakaket
Hughes
Livengood
Stevens Village
Beaver
Chandalar
Hadwanakk
Hodzana
Koyukuk
Kobuk
Hogatza
Indian
Dall
Alatna
Kanuti
Lake Todatonten
Koyukuk
Chandalar
Yukon
T18N
R23E
R24E
KATEEL RIVER
T24N
R1W
R1E
FAIRBANKS
143 MILES TO FAIRBANKS
DALTON HIGHWAY
155° W
154° W
153° W
152° W
151° W
150° W
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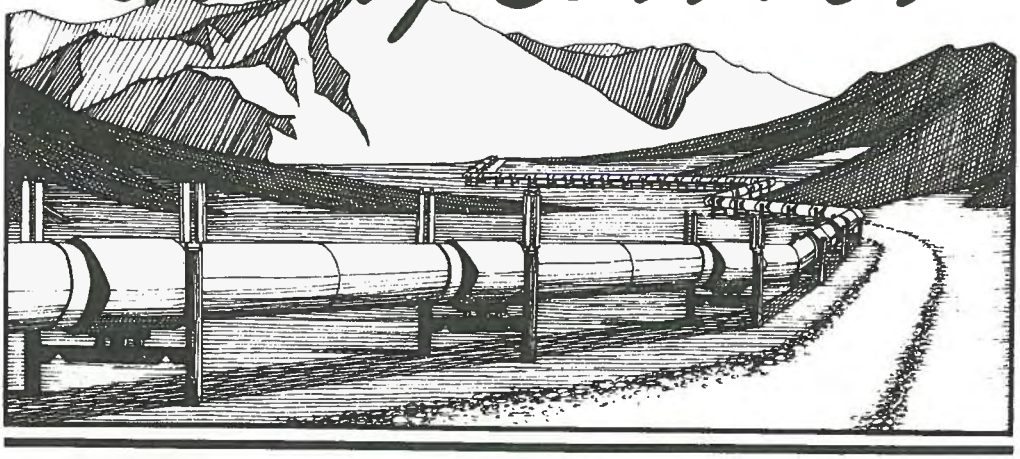
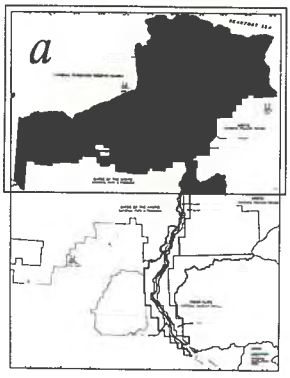
148° W
147° W

Utility Corridor





Locatable Mineral Potential

e.g. gold, silver, lead, zinc, copper

Number of Mining Claims Per Township

1 of 2

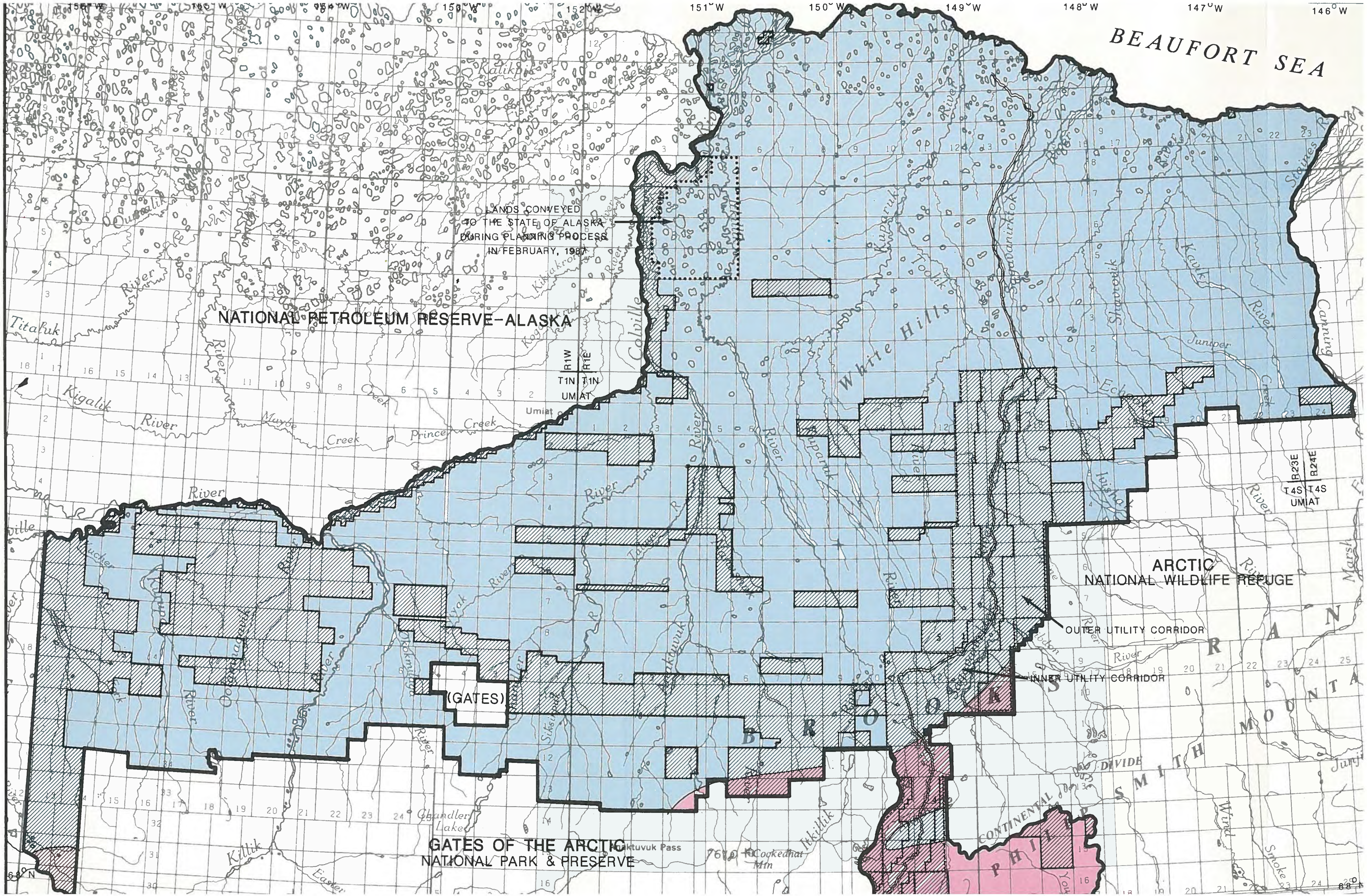
LEGEND

- Moderate Potential BLM Classification M/C
- Low Potential BLM Classification L/B
- 1 Placer Claims as of 1/1/87
- BLM Administered Public Lands

N

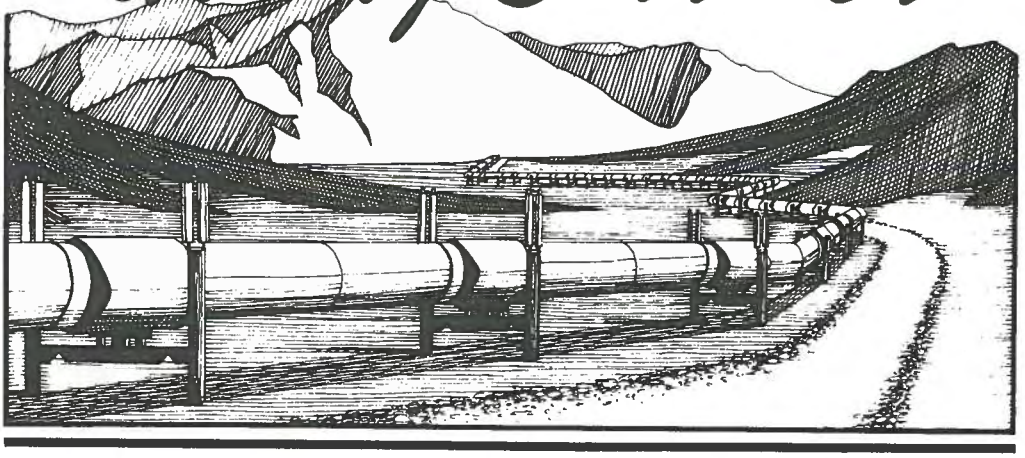
SCALE

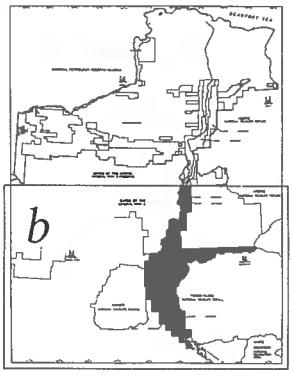
10 0 20 40 MILES 60



151° W
150° W
149° W
148° W
147° W
146° W
BEAUFORT SEA
LANDS CONVEYED
TO THE STATE OF ALASKA
DURING PLANNING PROCESS
IN FEBRUARY, 1987
NATIONAL PETROLEUM RESERVE-ALASKA
R1W
R1E
T1N
T1N
UMIAT
Umiat
White Hills
R23E
R24E
T4S
T4S
UMIAT
ARCTIC
NATIONAL WILDLIFE REFUGE
OUTER UTILITY CORRIDOR
INNER UTILITY CORRIDOR
(GATES)
GATES OF THE ARCTIC
NATIONAL PARK & PRESERVE
Anaktuvuk Pass
Cookedhat Mtn
Chandler Lake
CONTINENTAL DIVIDE
BROOKS RANGE
PHILIP SMITH MOUNTAINS
Colville
Kuparuk
Toolik
Sagavanirktok
Kavik River
Canning
Staines R
Juniper Creek
Echooka
Itkillik
Titaluk
Kigalik River
Maybe Creek
Prince Creek
Killik
Wind
Smoke
68° N

Utility Corridor





Locatable Mineral Potential

e.g. gold, silver, lead, zinc, copper

Number of Mining Claims Per Township

2 of 2

LEGEND

- High Potential BLM Classification H/D
- High Potential BLM Classification H/C
- Moderate Potential BLM Classification M/C
- Low Potential BLM Classification L/B
- 1 Placer Claims as of 1/1/87
- (1) Lode Claims as of 1/1/87
- BLM Administered Public Lands

N

SCALE

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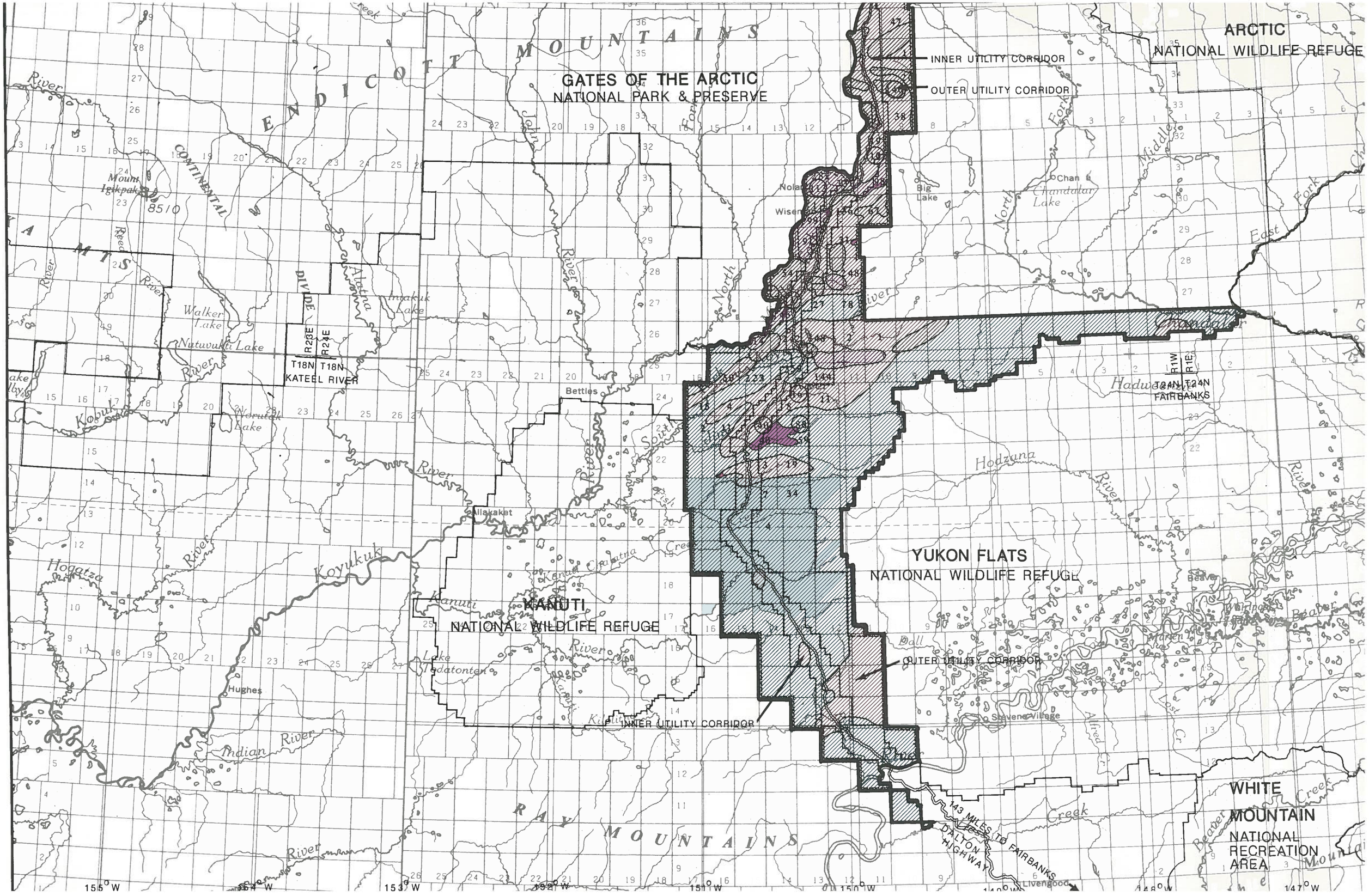
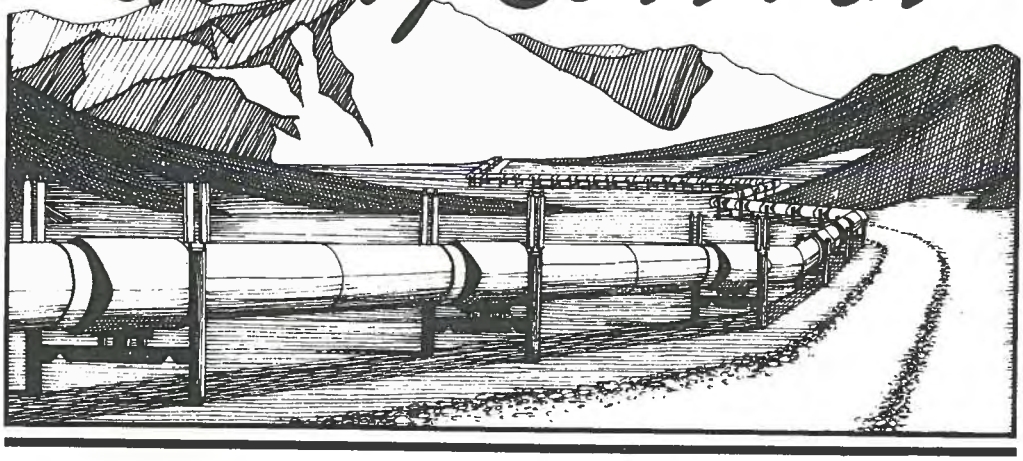
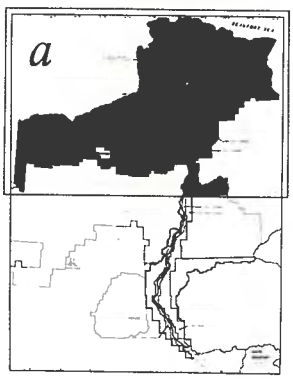

ARCTIC
NATIONAL WILDLIFE REFUGE
INNER UTILITY CORRIDOR
OUTER UTILITY CORRIDOR
GATES OF THE ARCTIC
NATIONAL PARK & PRESERVE
ENDICOTT MOUNTAINS
CONTINENTAL DIVIDE
Mount Igikpak
8510
Walker Lake
Nutuvukti Lake
Inakuk Lake
Alatna
R28E
R24E
T18N
T18N
KATEEL RIVER
Kobuk
Koyukuk
Hogatza
Hughes
Indian River
Bettles
Allakaket
Nolan
Wiseman
Big Lake
Chandalar Lake
Chandalar
Hadwatana
T24N
T24N
R1W
R1E
FAIRBANKS
Hodzana
YUKON FLATS
NATIONAL WILDLIFE REFUGE
Beaver
Stevens Village
Dall
OUTER UTILITY CORRIDOR
INNER UTILITY CORRIDOR
KANUTI
NATIONAL WILDLIFE REFUGE
Kanuti
Lake Tedatonten
RAY MOUNTAINS
143 MILES TO FAIRBANKS
DALTON HIGHWAY
Livengood
WHITE MOUNTAIN
NATIONAL RECREATION AREA
155° W
154° W
153° W
152° W
151° W
150° W
149° W
148° W
147° W

Utility Corridor





Hydrocarbon Potential

1 of 2

LEGEND

- High Potential BLM Classification H/D
- High Potential BLM Classification H/D
- High Potential BLM Classification H/C

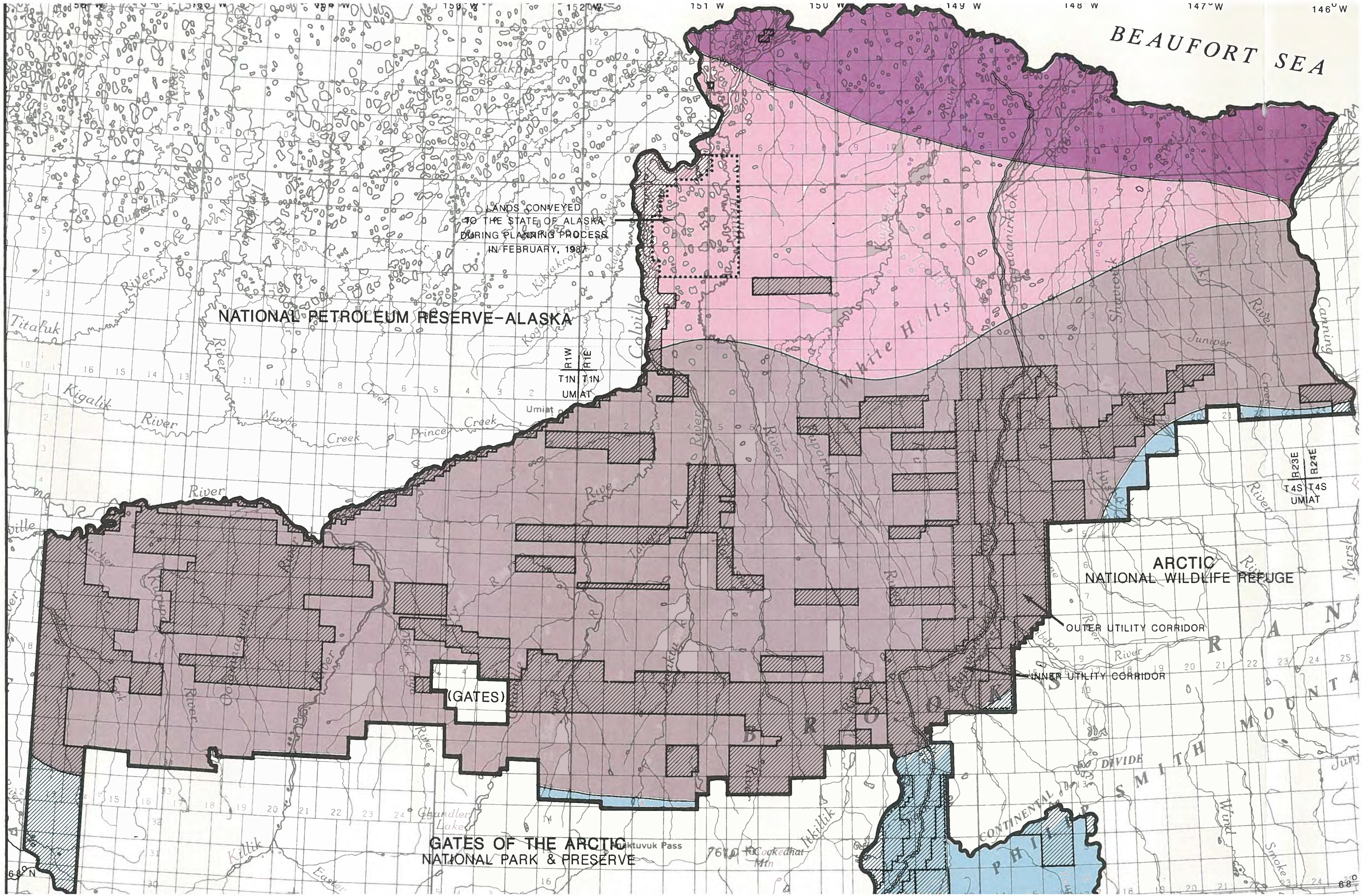
Areas upgraded in Classification since printing of map. Corrected as shown.

- Low Potential BLM Classification L/B
- BLM Administered Public Lands

N

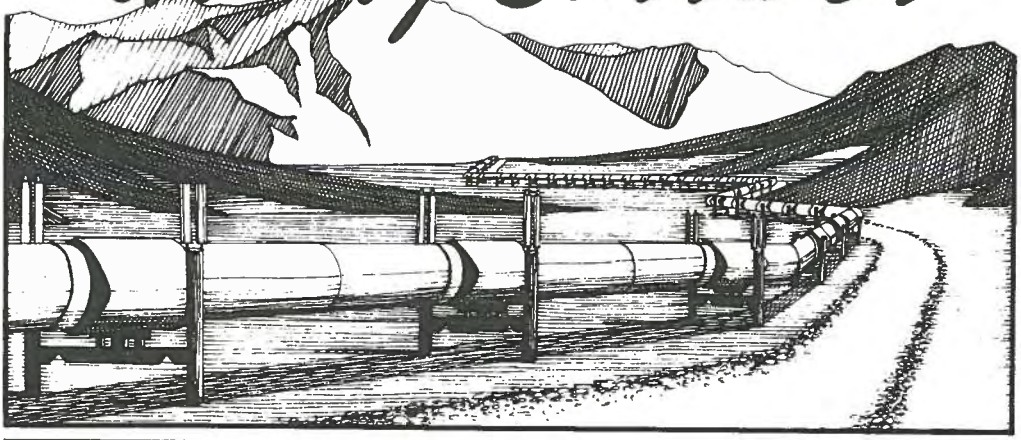
SCALE

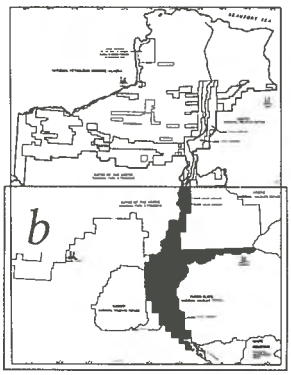
10 0 20 40 MILES 60



151 W
150 W
149 W
148 W
147 W
146 W
BEAUFORT SEA
LANDS CONVEYED TO THE STATE OF ALASKA DURING PLANNING PROCESS IN FEBRUARY, 1987
NATIONAL PETROLEUM RESERVE-ALASKA
R1W R1E T1N T1N UMIAT
Umiat
R23E R24E T4S T4S UMIAT
ARCTIC
NATIONAL WILDLIFE REFUGE
OUTER UTILITY CORRIDOR
INNER UTILITY CORRIDOR
(GATES)
GATES OF THE ARCTIC
NATIONAL PARK & PRESERVE
Anaktuvuk Pass
Colville
Kigalik River
Titaluk
Prince Creek
White Hills
Sagavanirktok
Canning
Juniper
Chandler Lake
Killik
Itkillik
CONTINENTAL DIVIDE
PHILIP SMITH MOUNTAINS
BROOKS RANGE
68° N

Utility Corridor





Hydrocarbon Potential

2 of 2

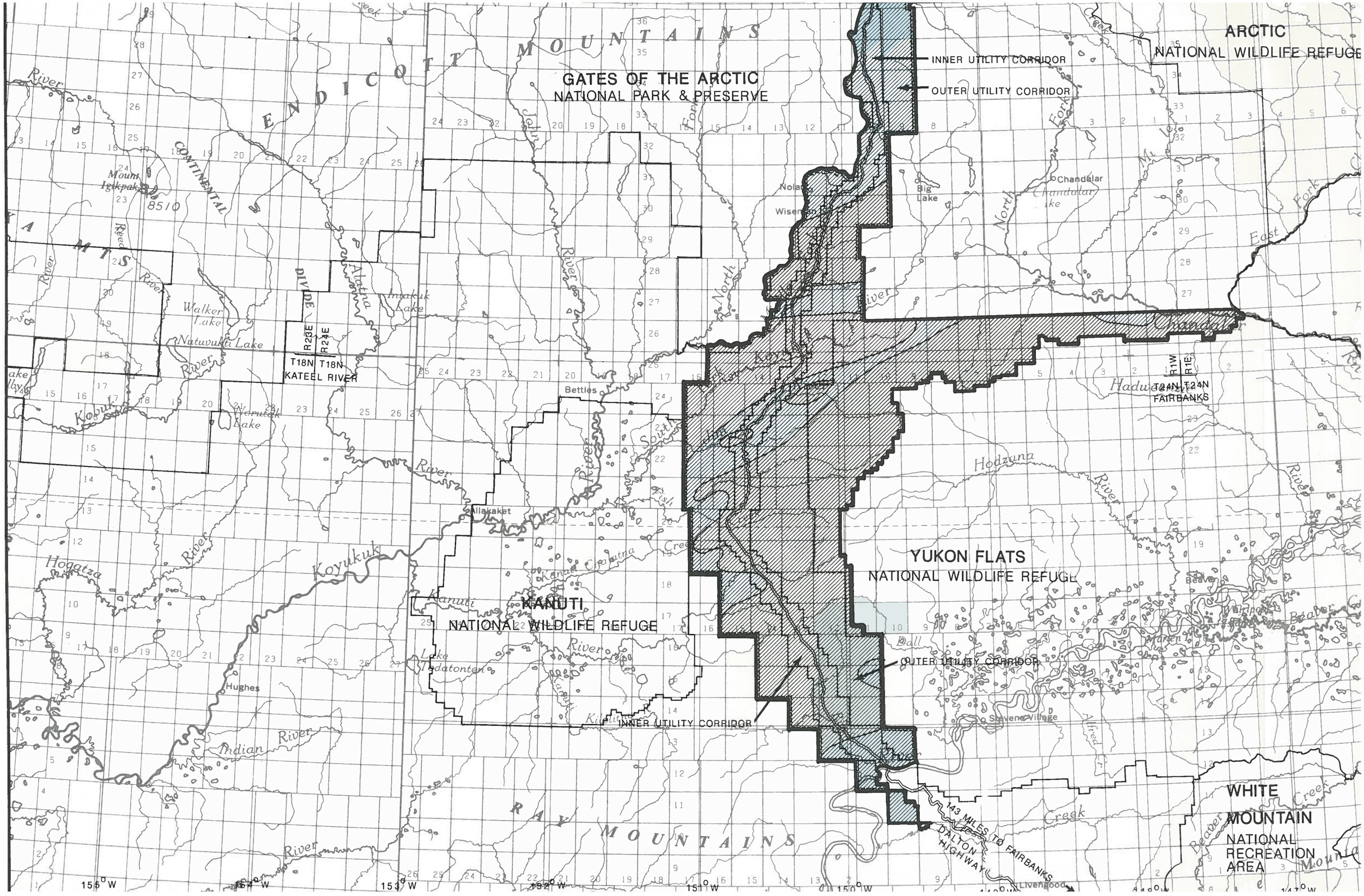
LEGEND

- Moderate Potential BLM Classification M/BC
- Low Potential BLM Classification L/B
- No Potential BLM Classification O/C
- BLM Administered Public Lands

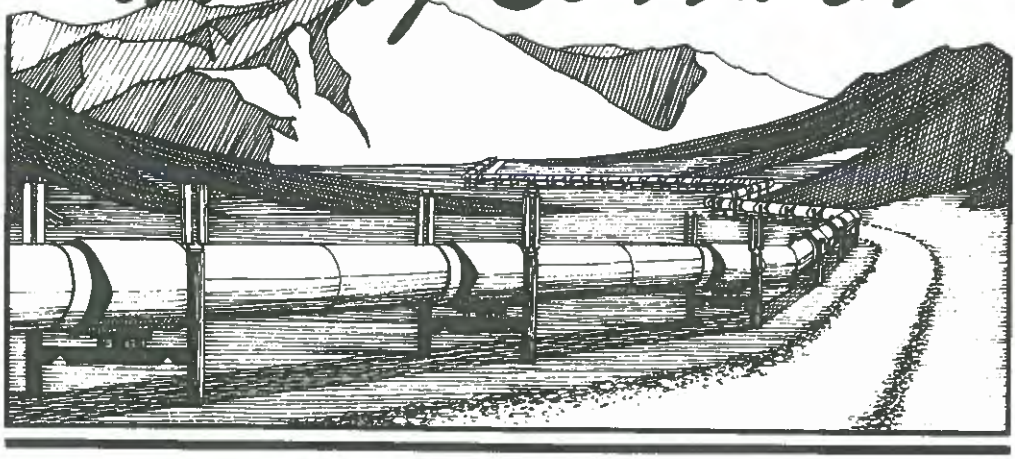
SCALE

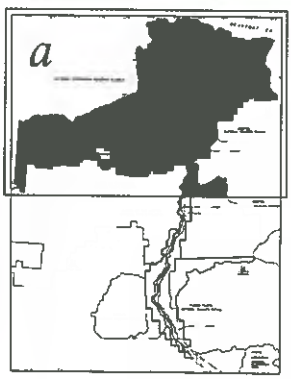
N

10 0 20 40 MILES 60


GATES OF THE ARCTIC
NATIONAL PARK & PRESERVE
ARCTIC
NATIONAL WILDLIFE REFUGE
INNER UTILITY CORRIDOR
OUTER UTILITY CORRIDOR
YUKON FLATS
NATIONAL WILDLIFE REFUGE
KANUTI
NATIONAL WILDLIFE REFUGE
WHITE
MOUNTAIN
NATIONAL
RECREATION
AREA
ENDICOTT MOUNTAINS
RAY MOUNTAINS
CONTINENTAL DIVIDE
Mount Igikpak
8510
Walker Lake
Natuvuktuli Lake
Inaccessible Lake
Noluck Lake
Wiseman
Big Lake
Chandalar
Chandalar Lake
Bettles
Allakaket
Hughes
Koyukuk
Kobuk
Hogatza
Indian River
Hodzuna
Beaver
Livengood
Stevens Village
Chandalar
Hadweenzic
T18N T18N
R23E R24E
KATEEL RIVER
T24N T24N
R1W R1E
FAIRBANKS
143 MILES TO FAIRBANKS
DALTON HIGHWAY
155° W
154° W
153° W
152° W
151° W
150° W
147° W

Utility Corridor





Wildlife Habitat

1 of 2

LEGEND

- Dall's Sheep Habitat
- Known Dall's Sheep Lambing Areas
- Waterfowl Habitat
- Known Caribou Calving Areas
- Known Moose Concentration Areas
- Known Grizzly Bear Concentration Areas
- Polar Bear Coastal Denning
- Known Mineral Licks
- BLM Administered Public Lands

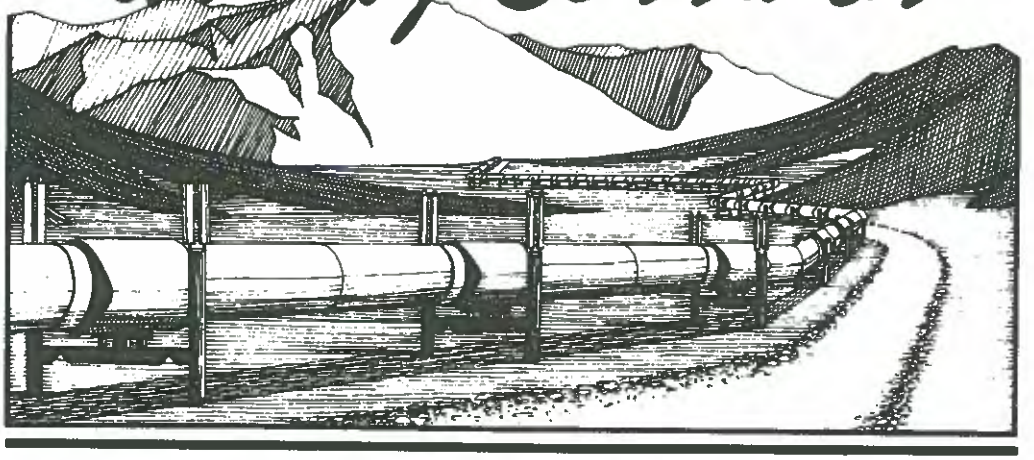
N

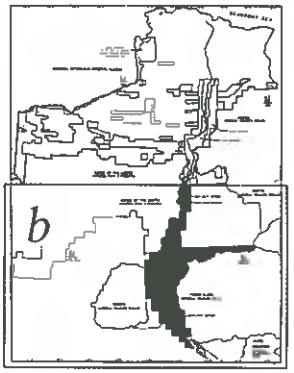
SCALE

10 0 20 40 MILES 60

BEAUFORT SEA
LANDS CONVEYED
TO THE STATE OF ALASKA
DURING PLANNING PROCESS
IN FEBRUARY, 1984
NATIONAL PETROLEUM RESERVE–ALASKA
White Hills
ARCTIC
NATIONAL WILDLIFE REFUGE
OUTER UTILITY CORRIDOR
INNER UTILITY CORRIDOR
(GATES)
BROOKS RANGE
SMITH MOUNTAIN
DIVIDE
CONTINENTAL
GATES OF THE ARCTIC
NATIONAL PARK & PRESERVE
Titaluk
Kigaluk
River
Colville
Umiat
R1W
R1E
T1N
T1N
UMIAT
R23E
R24E
T4S
T4S
UMIAT
Grandler Lake
Killik
Easter
Creek
Prince
Kalikpik
Sagavanirktok
Toolik
Slurpuk
Kuparuk
Ikpikpuk
Chandler
Cookeenat Mtn
Anaktuvuk Pass
Smoke
Jurji
Marsh
Canning
Sluice
Jimmer
Ublik
Ikkillik
Ketik
Ocotoruk
Nuka
Nigu
Nanushuk
Kikakrorak
Kogosukruk
Tuktu
Ivisaruk
Itkillik
Tigvariak
Maguire
Flaxman
Prudhoe
Bay
Akkut In Is
Pingok
Sikrikak
Ikpikpuk
Ublik
Ketik
Ocotoruk
Nuka
Nigu
Nanushuk
Kikakrorak
Kogosukruk
Tuktu
Ivisaruk
Itkillik
Tigvariak
Maguire
Flaxman
Prudhoe
Bay
Akkut In Is
Pingok
Sikrikak

Utility Corridor





Wildlife Habitat

2 of 2

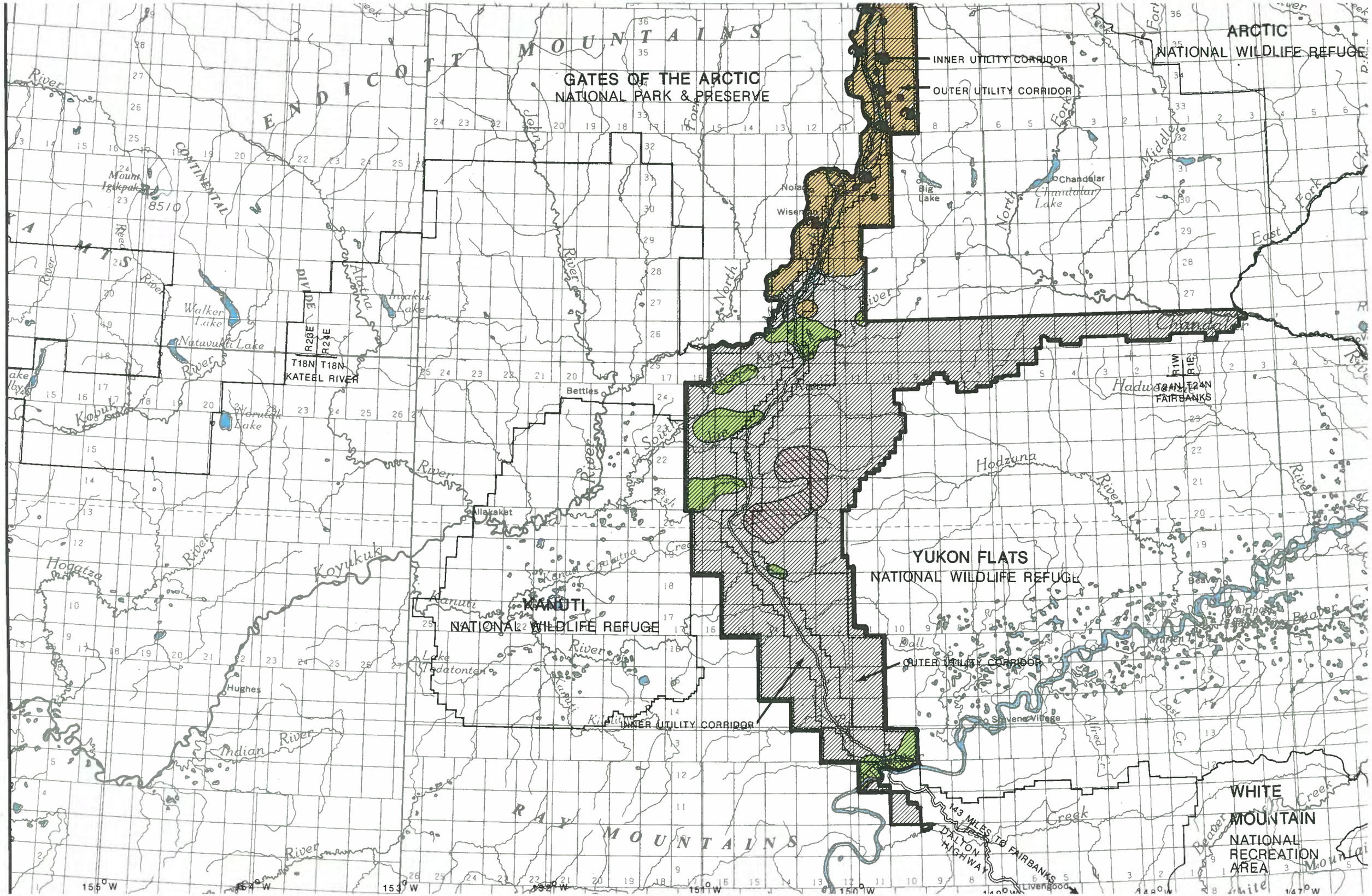
LEGEND

- Dall's Sheep Habitat
- Known Dall's Sheep Lambing Areas
- Waterfowl Habitat
- Known Moose Concentration Areas
- Known Grizzly Bear Concentration Areas
- Known Mineral Licks
- BLM Administered Public Lands

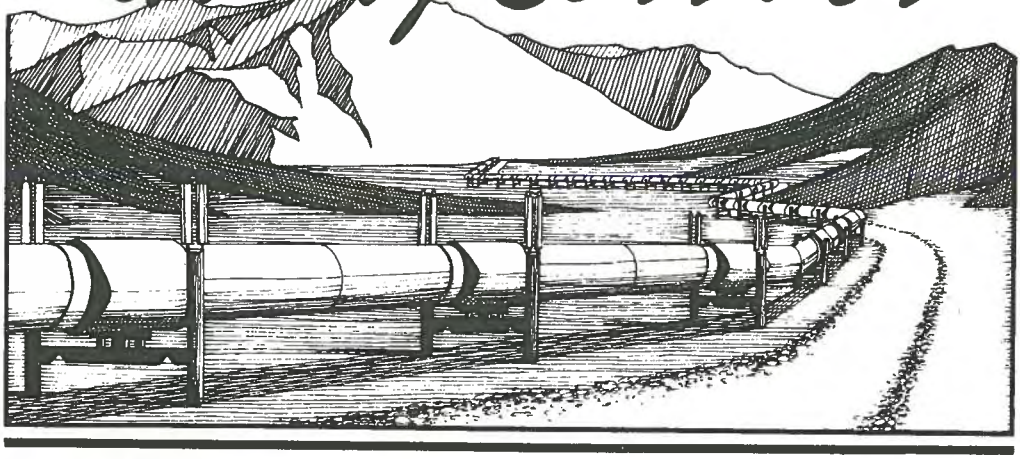
N

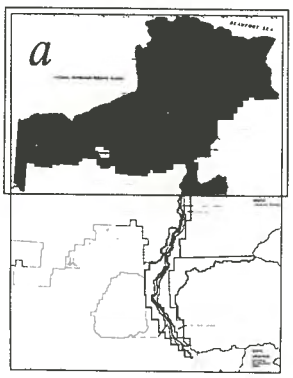
SCALE

10 0 20 40 MILES 60


ARCTIC
NATIONAL WILDLIFE REFUGE
GATES OF THE ARCTIC
NATIONAL PARK & PRESERVE
INNER UTILITY CORRIDOR
OUTER UTILITY CORRIDOR
BROOKS RANGE
CONTINENTAL DIVIDE
Mount Igikpak
8510
Walker Lake
Nutuvukti Lake
Imaikuk Lake
Worutak Lake
Kobuk River
Alatna River
Koyukuk River
Hogatza River
Indian River
Hodzana River
Chandalar Lake
Big Lake
Nolan
Wiseman
Bettles
Allakaket
Hughes
Koyukuk
Chandalar
Hadweenzic
Fort Yukon
Beaver
Stevens Village
Livengood
T18N
R23E
R24E
KATEEL RIVER
R1W
R1E
T24N
FAIRBANKS
YUKON FLATS
NATIONAL WILDLIFE REFUGE
KANUTI
NATIONAL WILDLIFE REFUGE
Lake Teedatonten
Kanuti River
Kanuti Creek
Dall River
Dall Creek
Lost Cr.
Beaver Creek
Beaver Mountain
Marten
Wolf Point
Fried
143 MILES TO FAIRBANKS
DALTON HIGHWAY
RAY MOUNTAINS
WHITE MOUNTAIN
NATIONAL RECREATION AREA
155° W
154° W
153° W
152° W
151° W
150° W
149° W
148° W
147° W

Utility Corridor





Fisheries Habitat

1 of 2

LEGEND

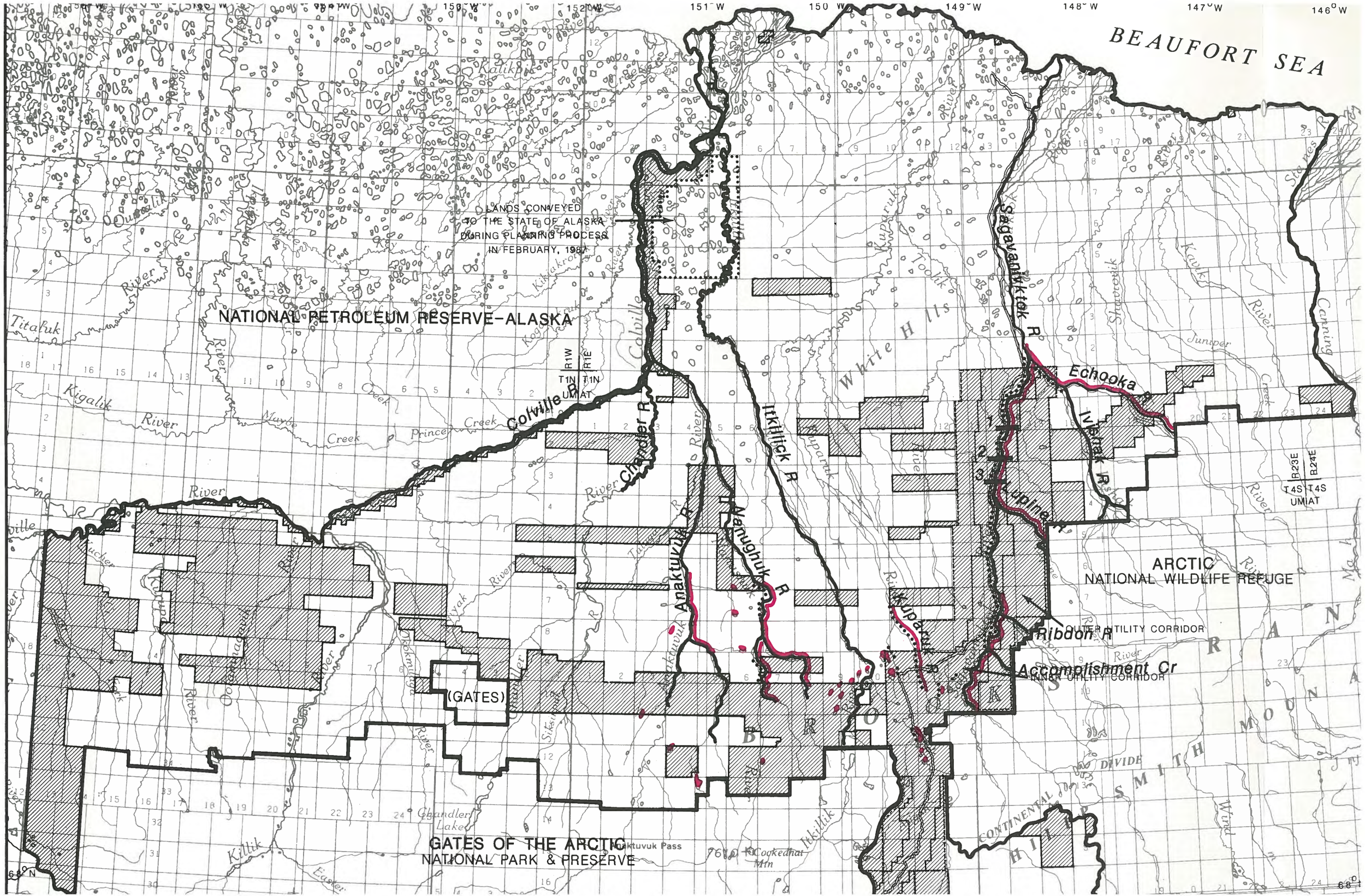
- Anadromous Fish Stream
- Crucial Habitat– Spawning and/or overwintering streams/lakes
- Fisheries Use Areas– existing or potential
- Road/Pipeline Impact Locations*
  1. Dan Creek–Improper bridge location
  2. Milke Creek– Improper culvert
  3. Stout Creek – Improper culvert
- BLM Administered Public Lands

*source ADF&G Habitat Division;
Also see Chapter 4

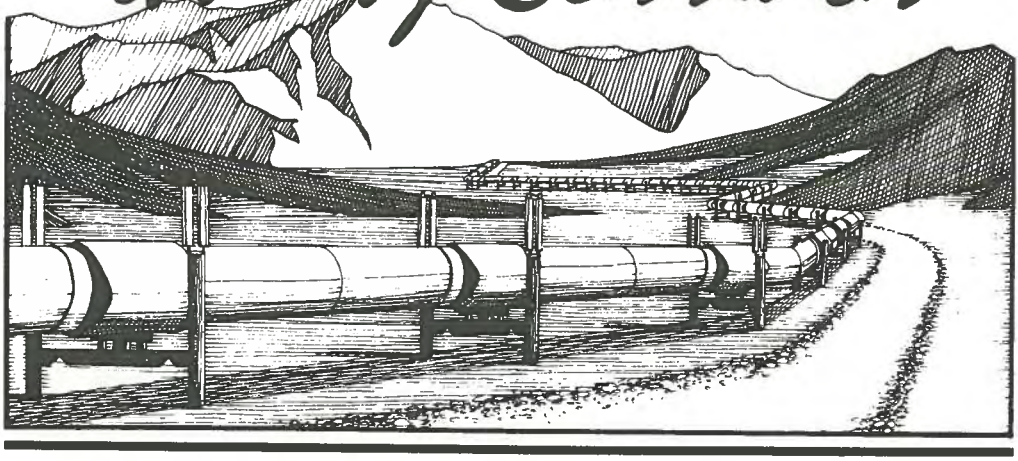
N

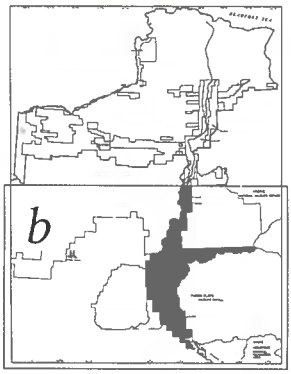
SCALE

10 0 20 40 MILES 60


BEAUFORT SEA
LANDS CONVEYED
TO THE STATE OF ALASKA
DURING PLANNING PROCESS
IN FEBRUARY, 1987
NATIONAL PETROLEUM RESERVE–ALASKA
ARCTIC
NATIONAL WILDLIFE REFUGE
GATES OF THE ARCTIC
NATIONAL PARK & PRESERVE
(GATES)
Echooka
Ribbon R
Accomplishment Cr
OUTER UTILITY CORRIDOR
INNER UTILITY CORRIDOR
Colville R
Chandler R
Anaktuvuk R
Ikpikpuk R
Itkillik R
Meguchuk R
Sagavanirktok R
Ivishak R
Upper
Kuparuk R
Titaluk
Kigalik
Killik
Easter
Chandler Lake
Anaktuvuk Pass
Cockedna Mtn
White Hills
SMITH MOUNTAINS
CONTINENTAL DIVIDE
R1W
R1E
T1N
T1N
UMIAT
R23E
R24E
T4S
T4S
UMIAT
151°W
150°W
149°W
148°W
147°W
146°W
69°N
68°N

Utility Corridor





Fisheries Habitat

2 of 2

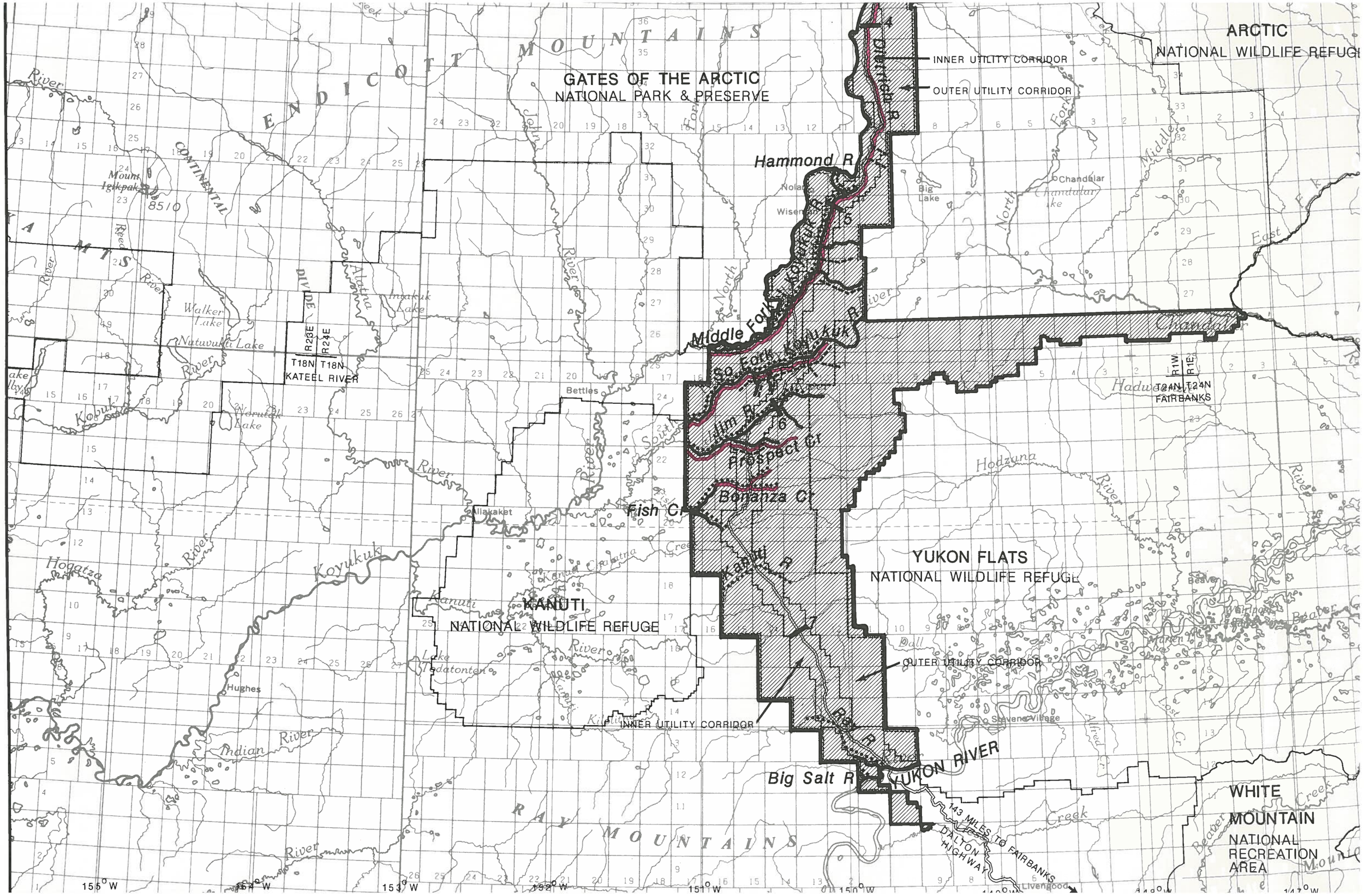
LEGEND

- Anadromous Fish Stream
- Crucial Habitat – Spawning and/or overwintering streams/lakes
- Fisheries Use Areas – existing or potential
- Potential Gold Mining Impact Areas *
- Road/Pipeline Impact Locations *
  4. Nutirwik Creek – Perched culvert
  5. Unnamed–Road cut soil slide
  6. Douglas Creek – Excessive aufeis
  7. Dall River – Collapsed culvert
- BLM Administered Public Lands

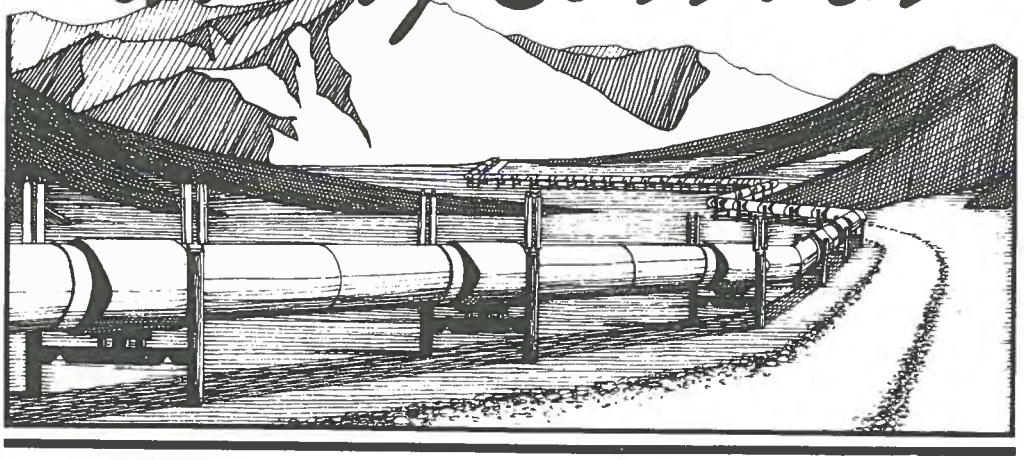
* source ADF&G Habitat Division; Also see Chapter 4

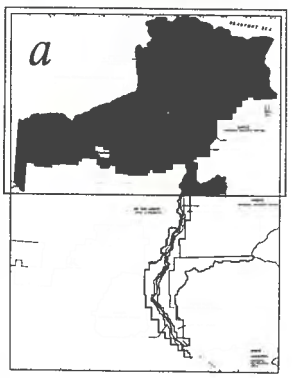
SCALE

N 10 0 20 40 MILES 60


ARCTIC
NATIONAL WILDLIFE REFUGE
GATES OF THE ARCTIC
NATIONAL PARK & PRESERVE
INNER UTILITY CORRIDOR
OUTER UTILITY CORRIDOR
ENDICOTT MOUNTAINS
CONTINUENTAL DIVIDE
Mount Igikpak
8510
Hammond R
Nolan
Wiseman
Chandalar
Big Lake
Chandalar Lake
Walker Lake
Nutuvukti Lake
Imaiuk Lake
Alatna
R23E
R24E
T18N
T18N
KATEEL RIVER
Kobuk
Koyukuk
Middle Fork
Hilm R
Prospect Cr
Bettles
Fish Cr
Bonanza Cr
Allakaket
Kanuti R
YUKON FLATS
NATIONAL WILDLIFE REFUGE
KANUTI
NATIONAL WILDLIFE REFUGE
Hogatza
Hughes
Indian River
Big Salt R
YUKON RIVER
Stevens Village
Hadweenzic
R1W
R1E
T24N
T24N
FAIRBANKS
Hodzana
Chandalar
143 MILES TO FAIRBANKS
DALTON HIGHWAY
Livengood
RAY MOUNTAINS
WHITE MOUNTAIN
NATIONAL RECREATION AREA
155° W
154° W
153° W
152° W
151° W
150° W
149° W
148° W
147° W

Utility Corridor





Threatened/Endangered Animals Habitat

Rare/Sensitive Plants Locations

1 of 2

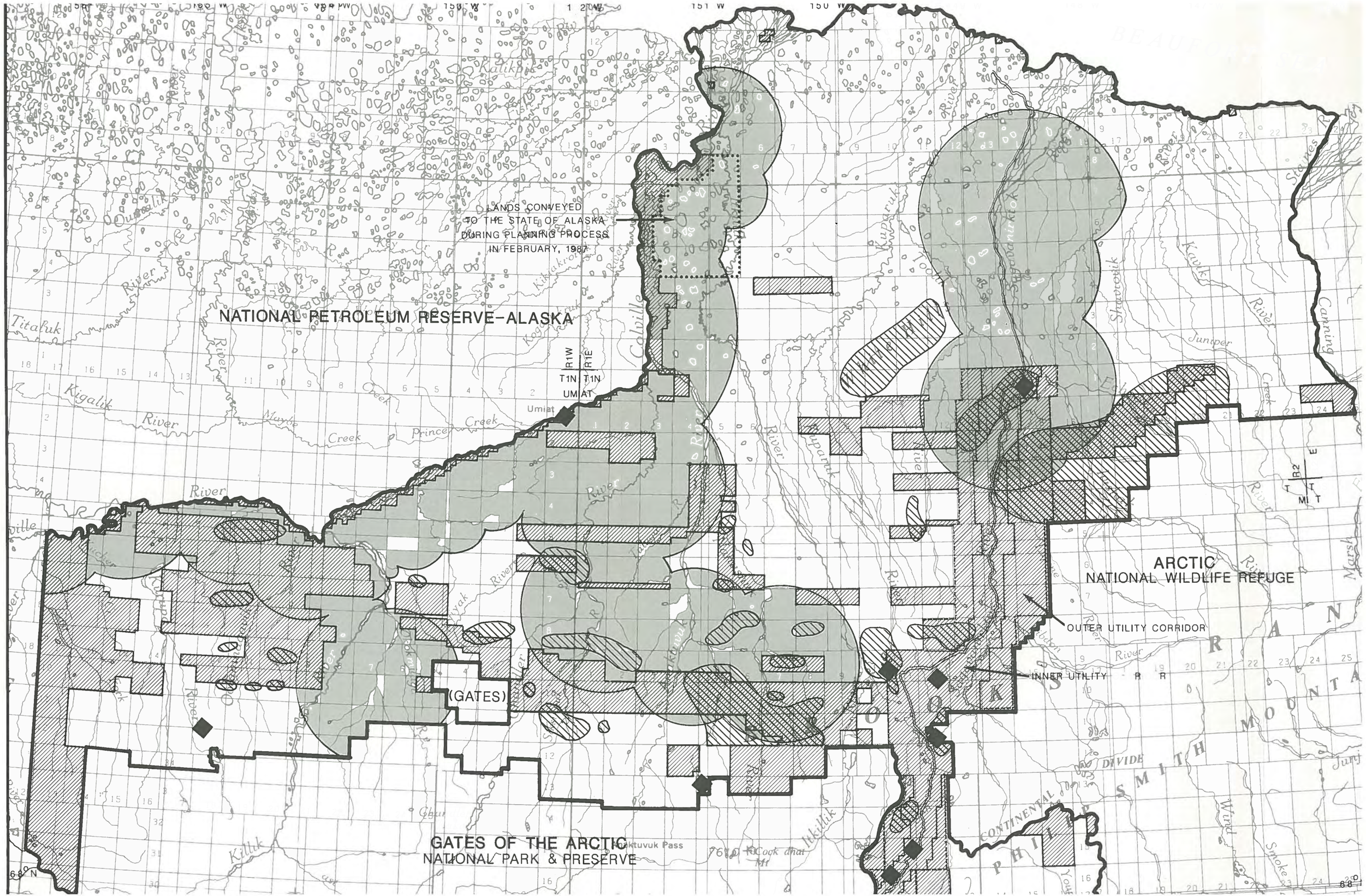
LEGEND

- Peregrine Falcon Nesting and Foraging Habitat
- Known Locations for Sensitive and Rare Plants
- Potential Habitat for Sensitive and Rare Plants
- BLM Administered Public Lands

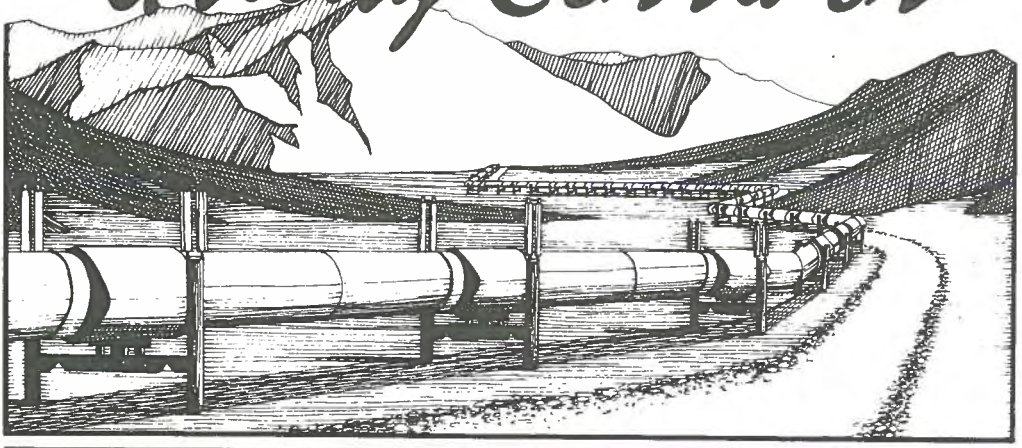
N

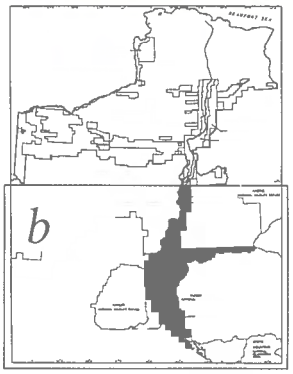
SCALE

10 0 20 40 MILES 60


LANDS CONVEYED
TO THE STATE OF ALASKA
DURING PLANNING PROCESS
IN FEBRUARY, 1987
NATIONAL PETROLEUM RESERVE–ALASKA
R1W
R1E
T1N
T1N
UMIAT
Umiat
ARCTIC
NATIONAL WILDLIFE REFUGE
OUTER UTILITY CORRIDOR
INNER UTILITY
(GATES)
GATES OF THE ARCTIC
NATIONAL PARK & PRESERVE
Caribou
Kalikpik
Kigalik
River
Titaluk
Prince
Creek
Kuparuk
Sagavanirktok
Shaviovik
Kavik
Juniper
Canning
Staines
Killik
Ikkillik
Alatna
Koyukuk
Marsh
Smoke
Wind
CONTINENTAL DIVIDE
PHILIP SMITH MOUNTAINS
Cook Mt
Aktuvuk Pass
151 W
150 W
68°N

Utility Corridor





Threatened/Endangered Animals Habitat

Rare/Sensitive Plants Locations

2 of 2

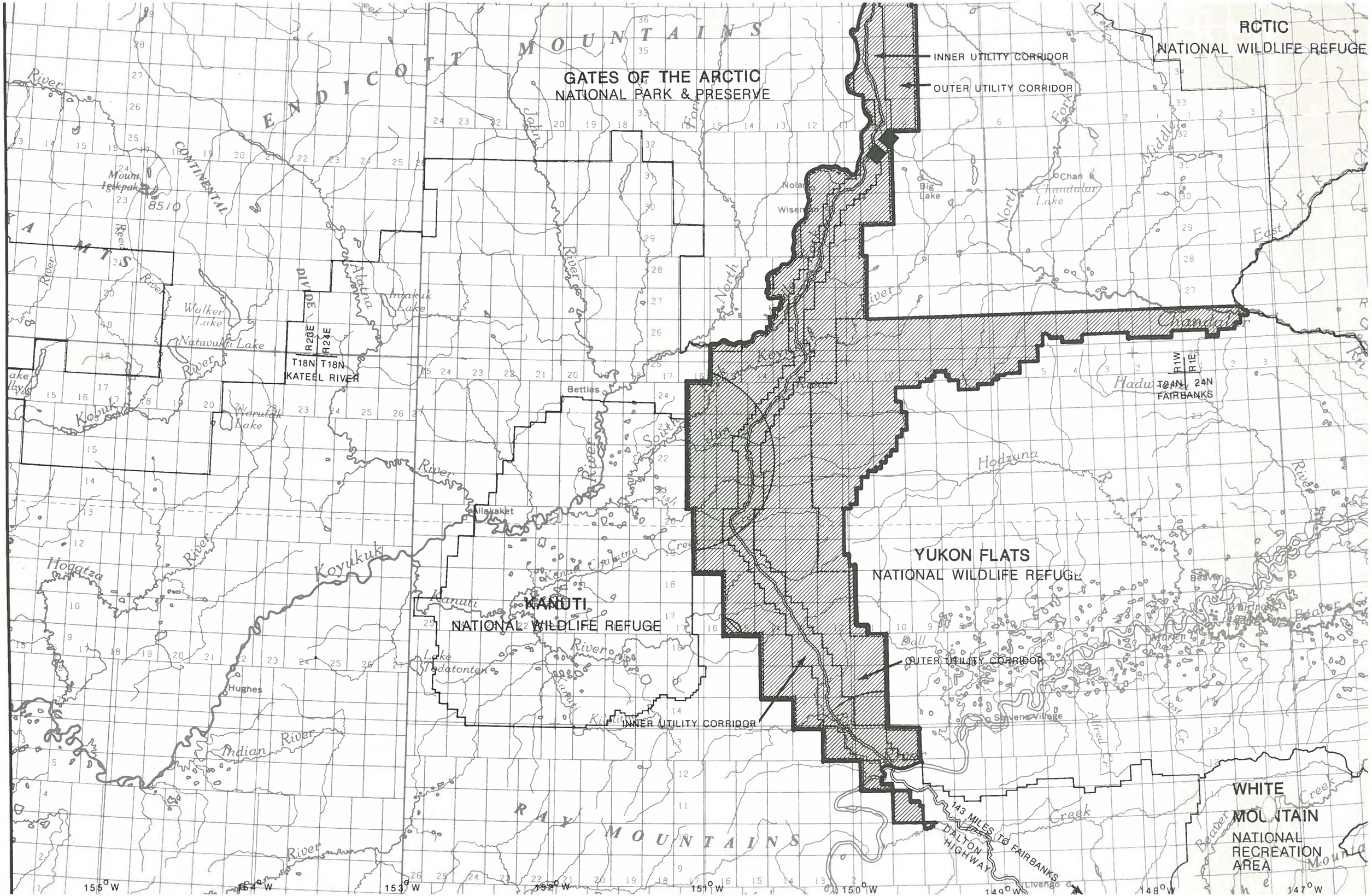
LEGEND

- Peregrine Falcon Nesting and Foraging Habitat
- Known Locations for Sensitive and Rare Plants
- Potential Habitat for Sensitive and Rare Plants
- BLM Administered Public Lands

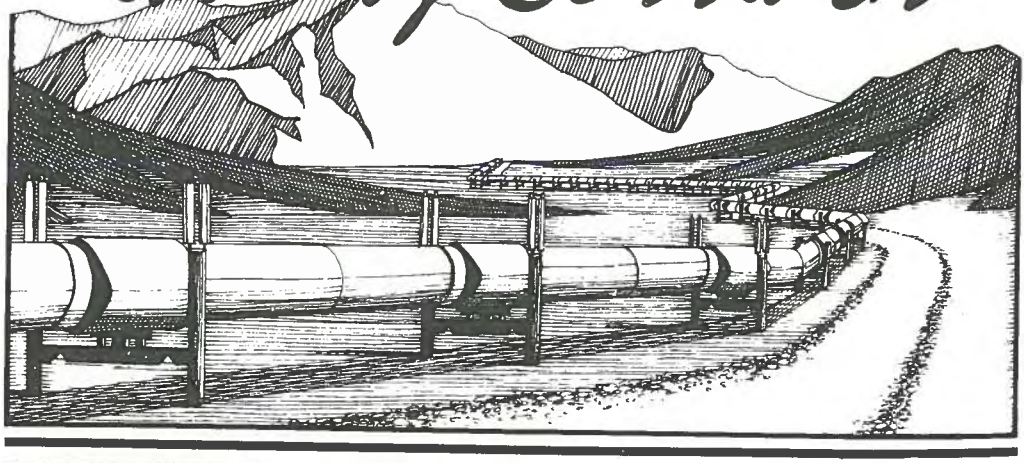
N

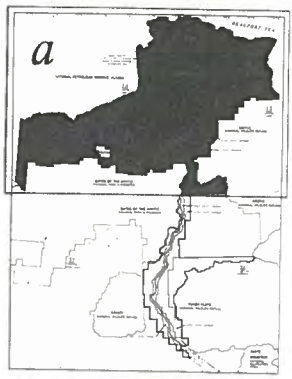
SCALE

10 0 20 40 MILES 60


GATES OF THE ARCTIC
NATIONAL PARK & PRESERVE
INNER UTILITY CORRIDOR
OUTER UTILITY CORRIDOR
ARCTIC
NATIONAL WILDLIFE REFUGE
YUKON FLATS
NATIONAL WILDLIFE REFUGE
KANUTI
NATIONAL WILDLIFE REFUGE
WHITE
MOUNTAIN
NATIONAL
RECREATION
AREA
ENDICOTT MOUNTAINS
RAY MOUNTAINS
CONTINENTAL DIVIDE
Mount Igikpak
8510
Walker Lake
Natuvakti Lake
Imaikuk Lake
Woruto Lake
Chandalar Lake
Big Lake
Nolan
Wiseman
Bettles
Allakaket
Hughes
Hadu
Hodzuna
Hogatza
Koyukuk
Kobuk
Kanuti
Lake Todatonten
Indian River
Dall
Beaver
Stevens Village
Livengood
T18N T18N
R23E R24E
KATEEL RIVER
T24N 24N
R1W R1E
FAIRBANKS
143 MILES TO FAIRBANKS
DALTON HIGHWAY
155° W
154° W
153° W
152° W
151° W
150° W
149° W
148° W
147° W

Utility Corridor





Subsistence Use Areas

1 of 2

LEGEND

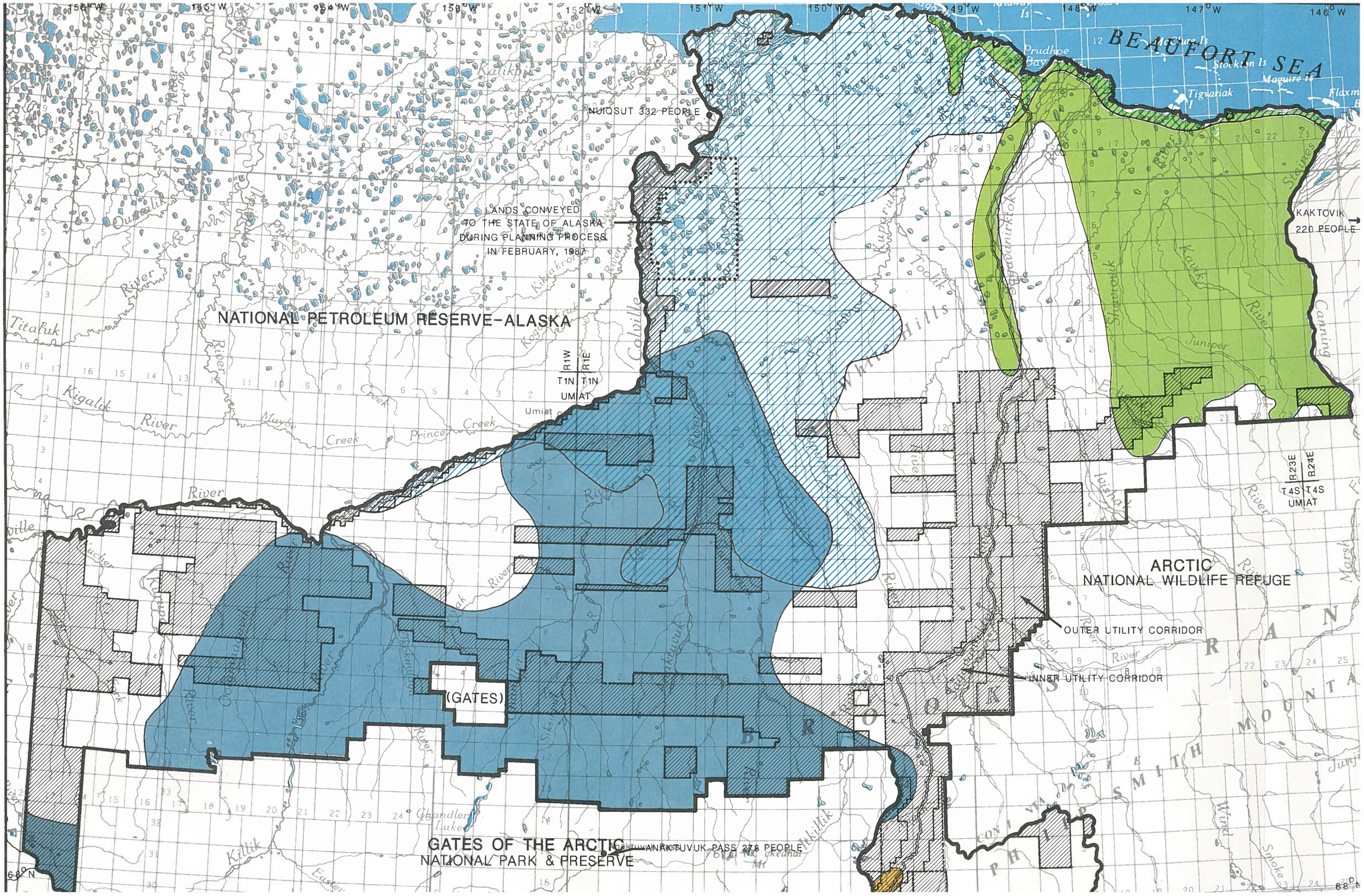
- Anaktuvuk Pass (Pedersen, 1979;Nelson et all, 1982)
- Nuiqsut (Pedersen & Shishido, 1986;Pedersen 1979)
- Kaktovik (Pedersen et al, 1985)
- Nolan/Wiseman/Coldfoot/and vicinity (BLM, 1986)
- BLM Administered Public Lands

NOTE ON MAP SOURCES AND ACCURACY: See bibliography for complete references to sources used in constructing this map. Data for most of the communities came from the Alaska Department of Fish and Game, Division of Subsistence, which qualifies such maps by stating: 1) subsistence use areas depicted are based on information obtained from a sample of community households; 2) subsistence patterns of household resource use may change from year to year while data are collected for specific periods; 3) therefore, all maps can be considered potentially only a partial representation of areas important to local village residents.

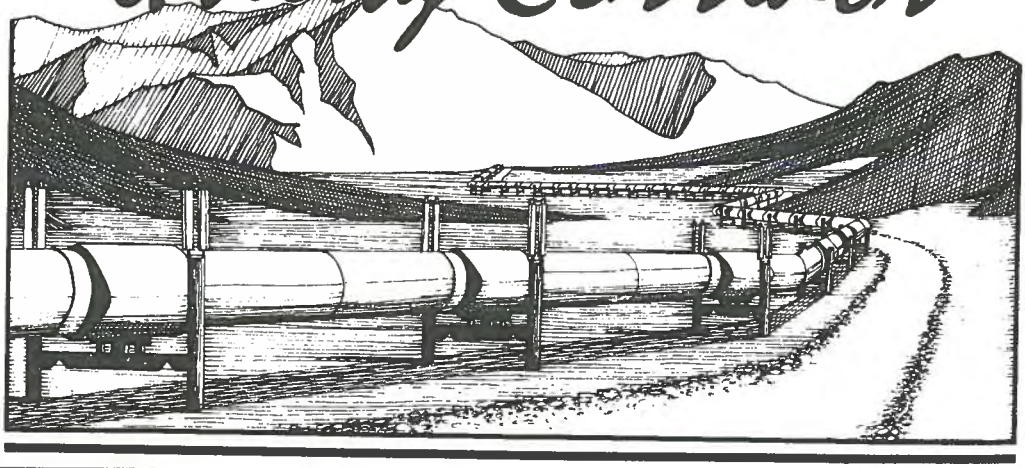
N

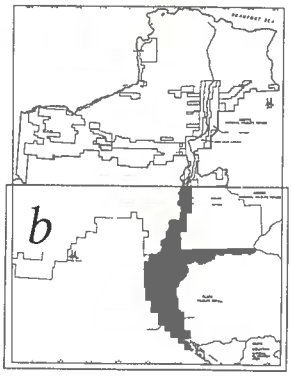
SCALE

10 0 20 40 MILES 60


BEAUFORT SEA
Prudhoe Bay
Stockton Is
Maguire Is
Tigvariak I
NUIQSUT 332 PEOPLE
LANDS CONVEYED
TO THE STATE OF ALASKA
DURING PLANNING PROCESS
IN FEBRUARY, 1987
NATIONAL PETROLEUM RESERVE-ALASKA
KAKTOVIK
220 PEOPLE
R1W
R1E
T1N
T1N
UMIAT
R23E
R24E
T4S
T4S
UMIAT
ARCTIC
NATIONAL WILDLIFE REFUGE
OUTER UTILITY CORRIDOR
INNER UTILITY CORRIDOR
(GATES)
GATES OF THE ARCTIC
NATIONAL PARK & PRESERVE
ANAKTUVUK PASS 278 PEOPLE
Chandler Lake
Killik
Colville
Titaluk
Kigalik
Kalikpik
Ivishak
Sagavanirktok
Kavik
Staines
Canning
Junjer
Jago
Marsh
Smoke
Wind
Kuparuk
Toolik
White Hills
Umiat
Prince Creek
Maybe Creek
Ketik
Easel
Okokmilaga
Sikrelurak
Ikpikpuk
Chipp
Ikiklik
Okokmilaga
Mt Greenhall
PHILIP SMITH MOUNTAINS
BROOKS RANGE
CONTINENTAL DIVIDE
156°W
155°W
154°W
153°W
152°W
151°W
150°W
149°W
148°W
147°W
146°W
68°N
68°N

Utility Corridor





Subsistence Use Areas

2 of 2

LEGEND

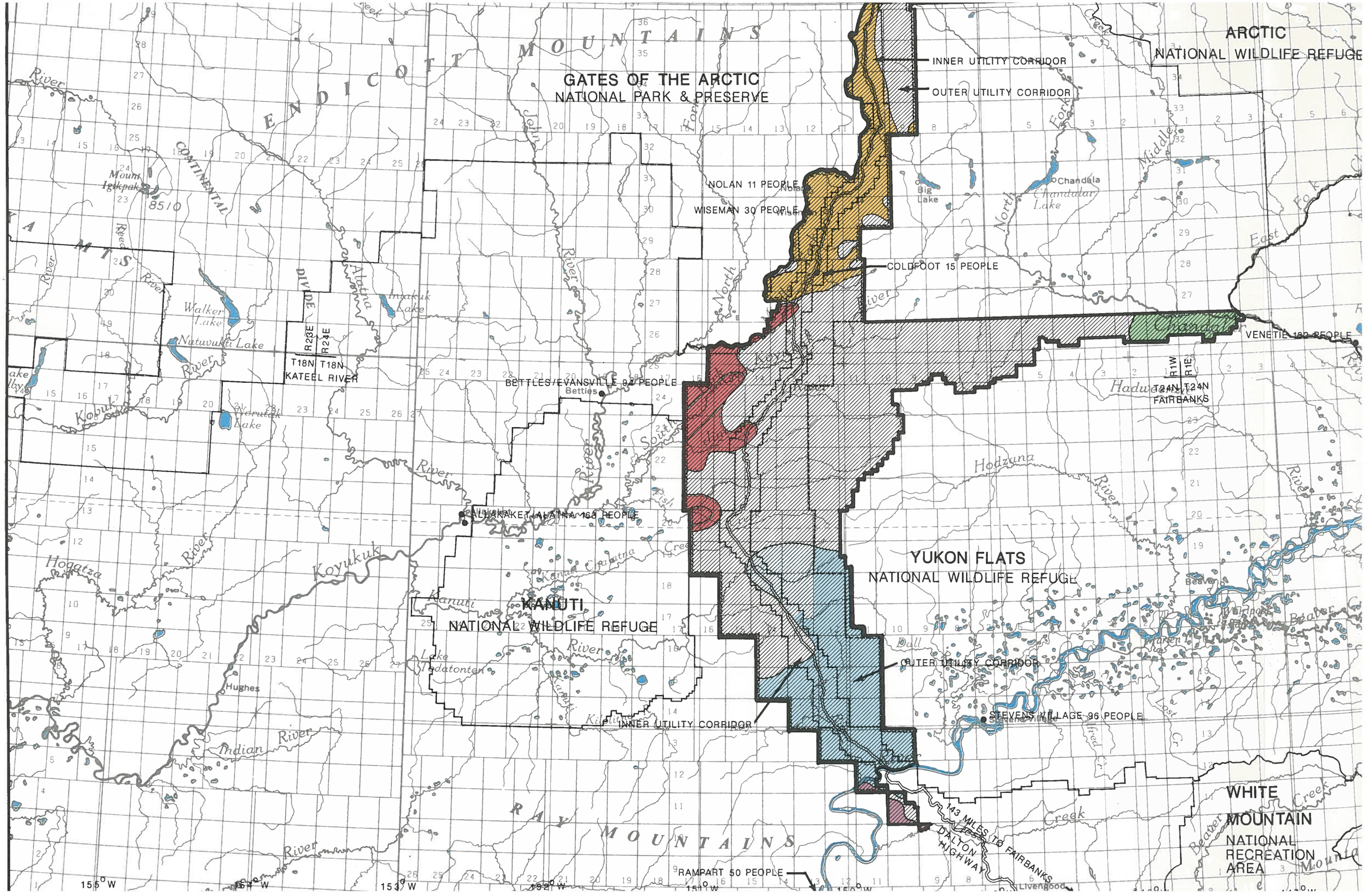
- Stevens Village (Sumida & Alexander, 1986;BLM,1986)
- Venetie (Caulfield, 1983;USFWS, 1985)
- Bettles/Evansville (Marcotte & Haynes, 1985;McGee et al, 1985;BLM, 1986)
- Nolan/Wiseman/Coldfoot/and vicinity (BLM, 1986)
- Allakaket/Alatna (Marcotte & Haynes, 1985;BLM, 1986)
- Rampart (BLM, 1983 & 1986)
- BLM Administered Public Lands

NOTE ON MAP SOURCES AND ACCURACY: See bibliography for complete references to sources used in constructing this map. Data for most of the communities came from the Alaska Department of Fish and Game, Division of Subsistence, which qualifies such maps by stating: 1) subsistence use areas depicted are based on information obtained from a sample of community households; 2) subsistence patterns of household resource use may change from year to year while data are collected for specific periods; 3) therefore, all maps can be considered potentially only a partial representation of areas important to local village residents.

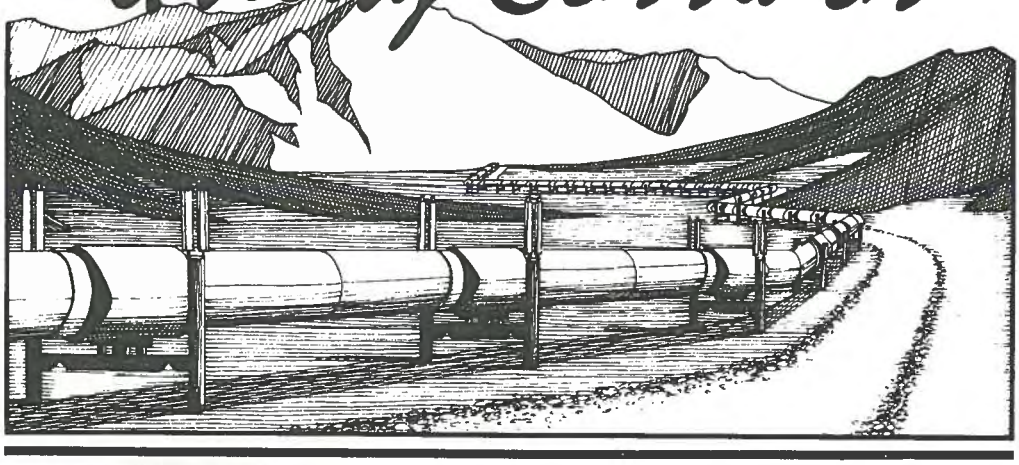
Errata: The reference above for Sumida & Alexander should read 1985 instead of 1986.

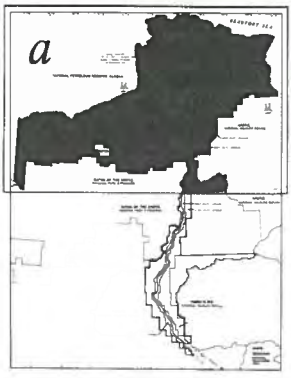
SCALE

N 10 0 20 40 MILES 60


ARCTIC
NATIONAL WILDLIFE REFUGE
INNER UTILITY CORRIDOR
OUTER UTILITY CORRIDOR
GATES OF THE ARCTIC
NATIONAL PARK & PRESERVE
ENDICOTT MOUNTAINS
CONTINENTAL DIVIDE
Mount Igikpak
8510
NOLAN 11 PEOPLE
WISEMAN 30 PEOPLE
COLDFOOT 15 PEOPLE
Big Lake
Chandala
Chandalar Lake
Walker Lake
Natuvuktuk Lake
Inaktuk Lake
Koyukuk Lake
R28E
R24E
T18N T18N
KATEEL RIVER
BETTLES/EVANSVILLE 92 PEOPLE
Bettles
VENETIE 180 PEOPLE
R1W
R1E
T24N T24N
FAIRBANKS
ALLAKAKET/ALATNA 163 PEOPLE
YUKON FLATS
NATIONAL WILDLIFE REFUGE
KANUTI
NATIONAL WILDLIFE REFUGE
Lake Todatonten
Hughes
OUTER UTILITY CORRIDOR
INNER UTILITY CORRIDOR
STEVENS VILLAGE 96 PEOPLE
Stevens Village
143 MILES TO FAIRBANKS
DALTON HIGHWAY
Livengood
RAY MOUNTAINS
RAMPART 50 PEOPLE
WHITE MOUNTAIN
NATIONAL RECREATION AREA
Koyukuk River
Hogatza River
Indian River
Hodzana River
Beaver Creek
155° W
154° W
153° W
152° W
151° W
150° W

Utility Corridor





Existing Access

LEGEND

- State Highway
- State 1974 Trails Inventory — The majority of these trails are winter use only, current condition and use (if any) is unknown.
- ANCSA 17 (b) Easement
- ANILCA 1431 (j) Corridor
- BLM Administered Public Lands

Airstrips

- State maintained public
- Others located on Federal Land
- Others located on State and private land

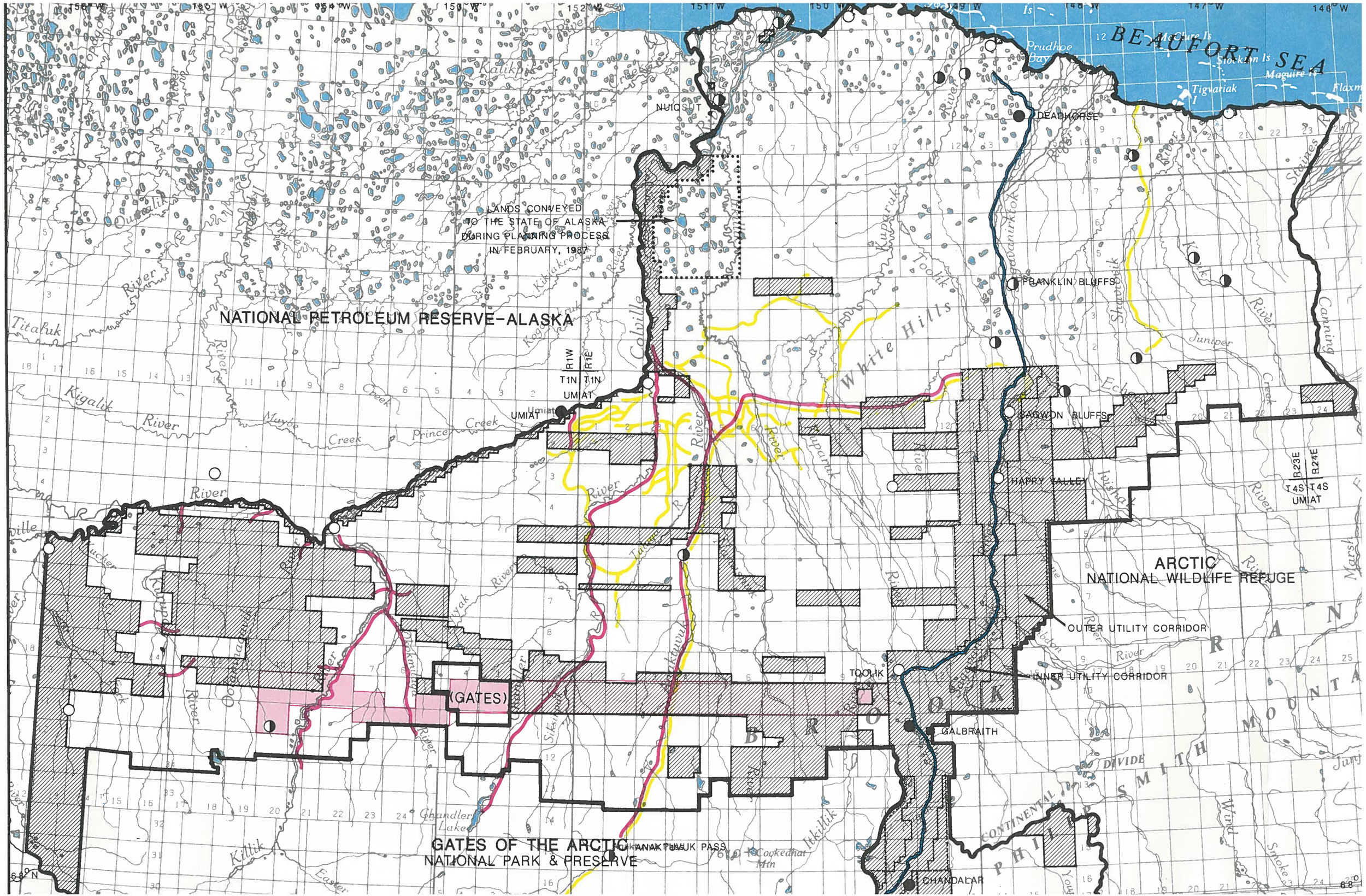
Landing areas are shown on this map for the purpose of identifying existing access opportunities, which is based on limited available data.
No representation of physical conditions or proprietorship is intended.
Users should consult the current aeronautical charts.

N

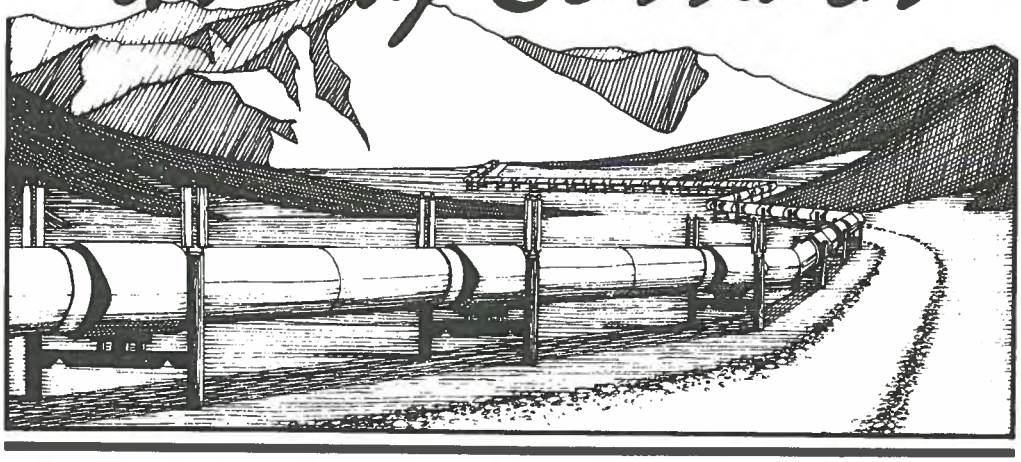
SCALE

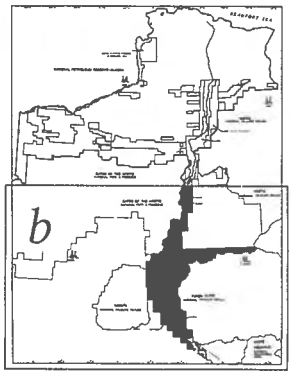
10 0 20 40 MILES 60

10 0 50 KILOMETERS 100


BEAUFORT SEA
Prudhoe Bay
Stockton Is
Maguire Is
Tigvariak I
NUIQSUT
DEADHORSE
LANDS CONVEYED
TO THE STATE OF ALASKA
DURING PLANNING PROCESS
IN FEBRUARY, 1987
NATIONAL PETROLEUM RESERVE-ALASKA
FRANKLIN BLUFFS
SAGWON BLUFFS
HAPPY VALLEY
R1W
R1E
T1N
T1N
UMIAT
UMIAT
R23E
R24E
T4S
T4S
UMIAT
ARCTIC
NATIONAL WILDLIFE REFUGE
OUTER UTILITY CORRIDOR
INNER UTILITY CORRIDOR
TOOLIK
GALBRAITH
(GATES)
GATES OF THE ARCTIC
NATIONAL PARK & PRESERVE
ANAKTUVUK PASS
CHANDALAR
Chandler Lake
Cockedhat Mtn
White Hills
Colville
Titaluk
Kigalik
Kuparuk
Sagavanirktok
Dalton
Atigun
Chandler
Killik
Ikpikpuk
Ivishak
Shaviovik
Kalikpik
Ublutuoch
Kikiakrorak
Kogosukruk
Itkillik
Anaktuvuk
Tinayguk
Nanushuk
Okokmilaga
Ootoldlemiut
Ootanagavik
Kuna
Maybe Creek
Prince Creek
Juniper Creek
Echooka
Sadlerochit
Staines
Canning
Marsh
Smoke
Easter
Yo
Jago
Junjik
Jurassic
CONTINENTAL DIVIDE
PHILIP SMITH MOUNTAINS
BROOKS RANGE
68°N
68°

Utility Corridor





Existing Access

2 of 2

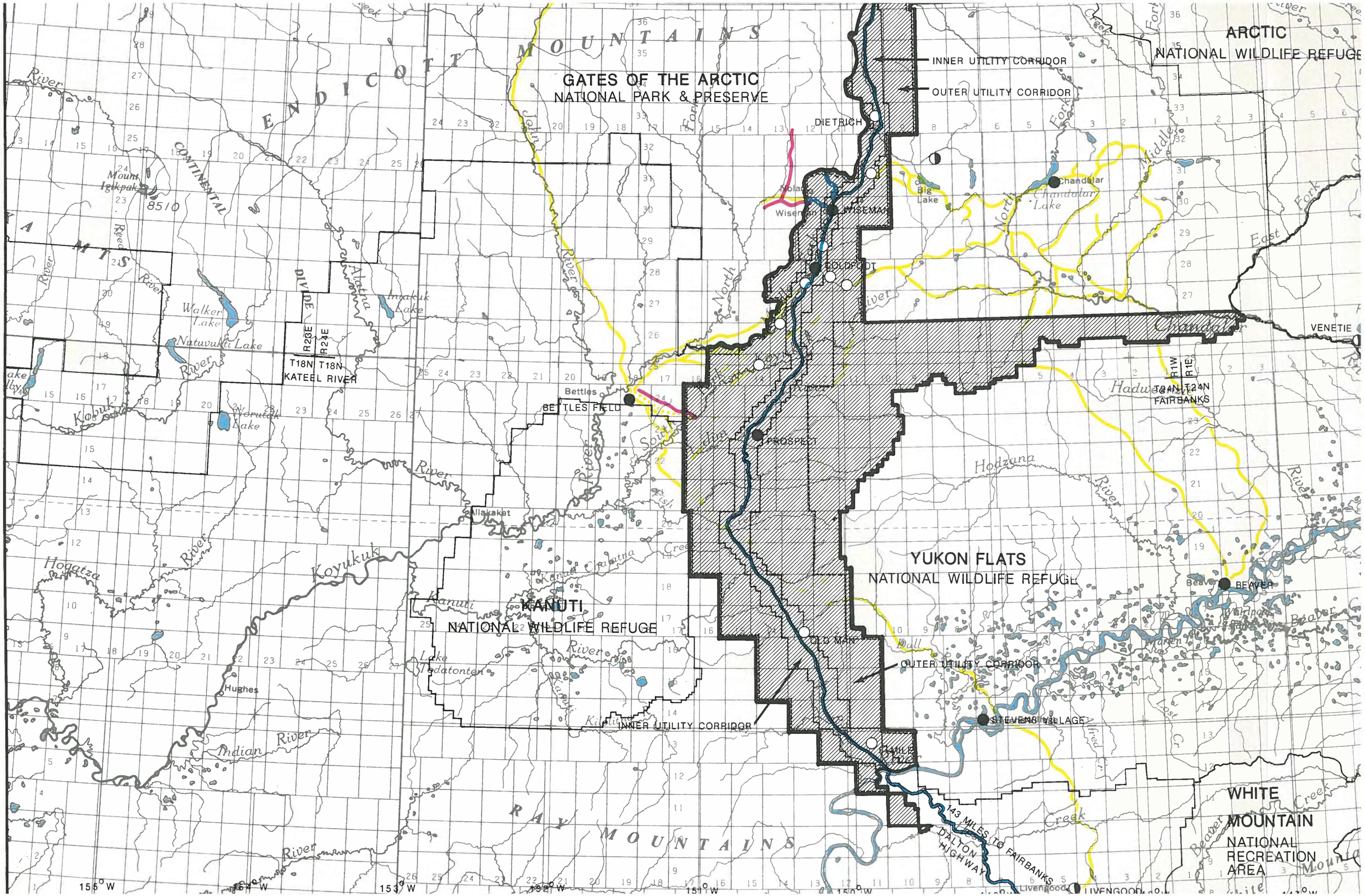
LEGEND

- State Highway
- State 1974 Trails Inventory — The majority of these trails are winter use only, current condition and use (if any) is unknown.
- ANCSA 17 (b) Easement
- Bettles Trail
- BLM Administered Public Lands
- Airstrips
  - State maintained public
  - Others located on Federal Land
  - Others located on State and private land

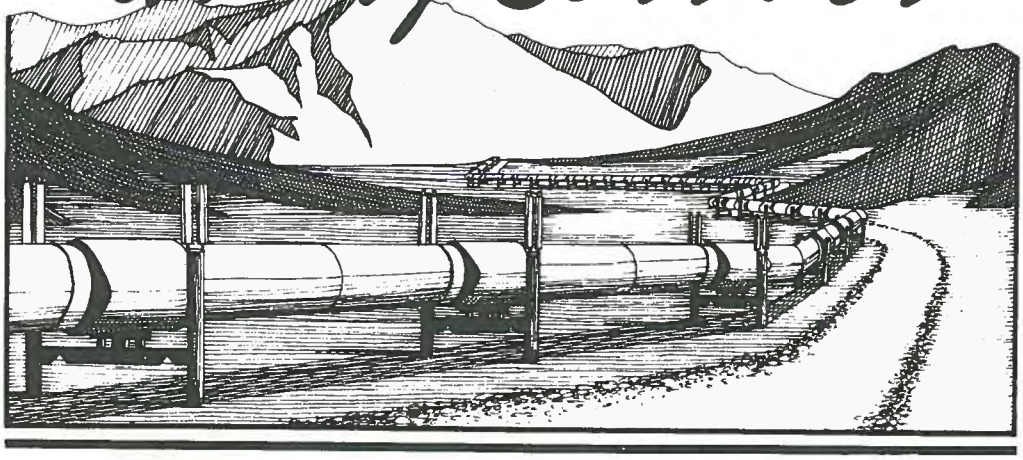
Landing areas are shown on this map for the purpose of identifying existing access opportunities, which is based on limited available data.
No representation of physical conditions or proprietorship is intended.
Users should consult the current aeronautical charts.

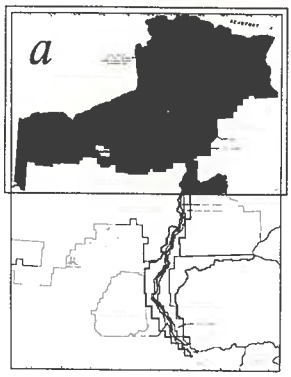
SCALE

10 0 20 40 MILES 60


ARCTIC
NATIONAL WILDLIFE REFUGE
GATES OF THE ARCTIC
NATIONAL PARK & PRESERVE
INNER UTILITY CORRIDOR
OUTER UTILITY CORRIDOR
DIETRICH
WISEMAN
COLDFOOT
PROSPECT
Bettles
BETTLES FIELD
Allakaket
Hughes
OLD MAN
STEVENS VILLAGE
STANLEY
Livengood
LIVENGOOD
143 MILES TO FAIRBANKS
DALTON HIGHWAY
YUKON FLATS
NATIONAL WILDLIFE REFUGE
KANUTI
NATIONAL WILDLIFE REFUGE
WHITE
MOUNTAIN
NATIONAL
RECREATION
AREA
VENETIE
Chandalar
Big Lake
Walker Lake
Natuvukti Lake
Imaklik Lake
Werutek Lake
Mount Igikpak
8510
T18N T18N
KATEEL RIVER
R23E R24E
T24N T24N
FAIRBANKS
R1W R1E
BEAVER
Koyukuk
Hogatza
Indian River
Hodzana
Dall
Beaver
Creek
Chandalar
Kanuti
Lake Todatonten
Kilolitna
Alatna
Reed
Kobuk
Nolan
Wiseman
Fort Yukon
155° W
154° W
153° W
152° W
151° W
150° W
149° W

Utility Corridor





Recreation Opportunities

Scenery Quality Classes

1 of 2

LEGEND

- Unimproved Camping
- Fishing
- Boating
- Unimproved Hiking
- Access to Hunting
- Wildlife Viewing
- Scenic View
- Guide Services
- Cultural/Historic Site
- Airstrip

Scenic quality is a measure of the appeal of an area of land. Through the scenic quality rating process, lands are given a rating based on seven key factors: landform, vegetation, water, color, adjacent scenery, scarcity, and the affect(whether positive or adverse)of man caused modifications to a landscape. The ratings can be generally summarized as follows:

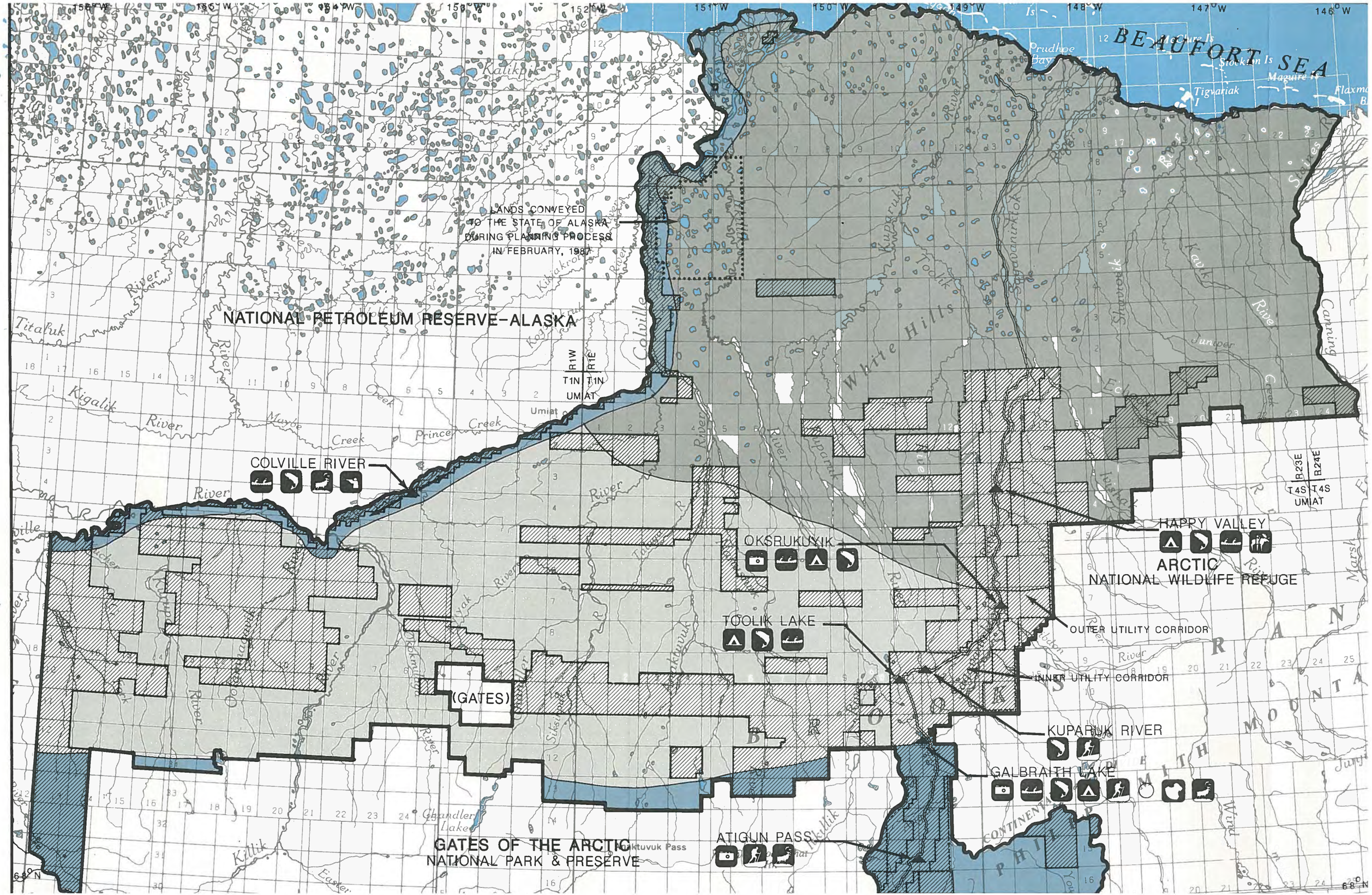
- SCENIC QUALITY CLASS A - Distinctive landscapes of outstanding visual quality.
- SCENIC QUALITY CLASS B - Areas that, although pleasing to the eye, tend to be common throughout a landscape.
- SCENIC QUALITY CLASS C - Areas whose features offer only minimal variety and lacking in visual quality. Includes all areas not included in Classes A and B.

BLM Administered Public Lands

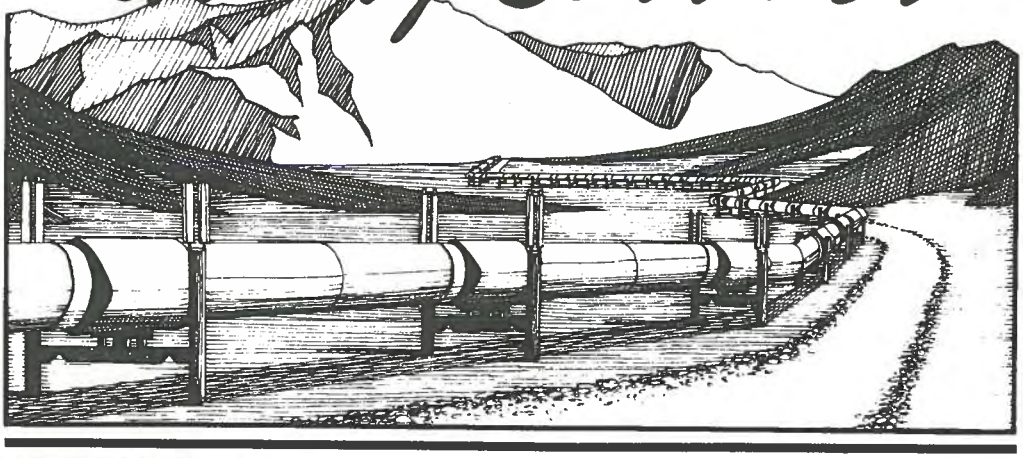
N

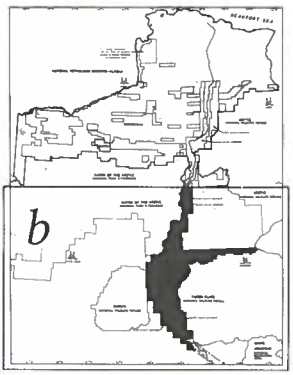
SCALE

10 0 20 40 MILES 60


BEAUFORT SEA
Prudhoe Bay
Stockton Is
Maguire Is
Tigvariak I
Flaxman
LANDS CONVEYED
TO THE STATE OF ALASKA
DURING PLANNING PROCESS
IN FEBRUARY, 1987
NATIONAL PETROLEUM RESERVE-ALASKA
Titaluk River
Kigalik River
Maybe Creek
Prince Creek
Umiat
R1W
R1E
T1N
T1N
UMIAT
Colville River
White Hills
Kuparuk River
Toolik River
Sagavanirktok River
Shainok River
Hawk River
Dunver Creek
Canning River
Staines River
R23E
R24E
T4S
T4S
UMIAT
COLVILLE RIVER
OKSRUKUYIK
HAPPY VALLEY
ARCTIC
NATIONAL WILDLIFE REFUGE
TOOLIK LAKE
OUTER UTILITY CORRIDOR
INNER UTILITY CORRIDOR
(GATES)
KUPARUK RIVER
GALBRAITH LAKE
ATIGUN PASS
GATES OF THE ARCTIC
NATIONAL PARK & PRESERVE
Chandler Lake
Killik River
Easter
Ootokmagauk River
Tinayguk River
Sikrelurak River
Chandler River
Anaktuvuk Pass
BROOKS RANGE
PHILIP SMITH MOUNTAINS
CONTINENTAL DIVIDE
Marsh
Junjik
Wind
68° N
68° N

Utility Corridor





Recreation Opportunities

Scenery Quality Classes

2 of 2

LEGEND

- Unimproved Camping
- Fishing
- Boating
- Unimproved Hiking
- Access to Hunting
- Wildlife Viewing
- Food
- Lodging
- Mechanic
- Fuel
- Scenic View
- Cultural/Historic Site
- Nature Study
- Airstrip
- Wildflower/Vegetation
- BLM Administered Public Lands

Scenic quality is a measure of the appeal of an area of land. Through the scenic quality rating process, lands are given a rating based on seven key factors: landform, vegetation, water, color, adjacent scenery, scarcity, and the affect(whether positive or adverse)of man caused modifications to a landscape. The ratings can be generally summarized as follows:

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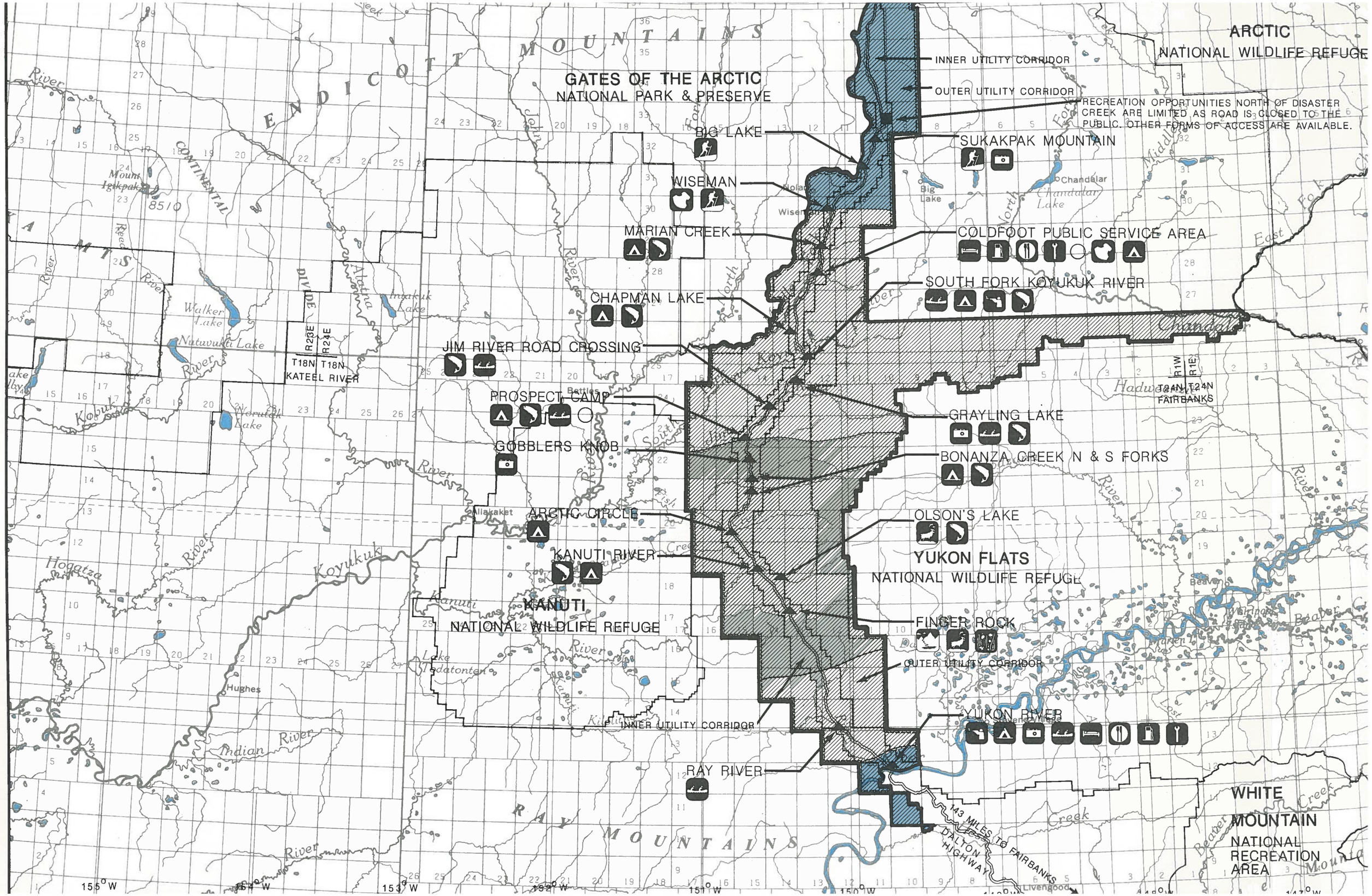
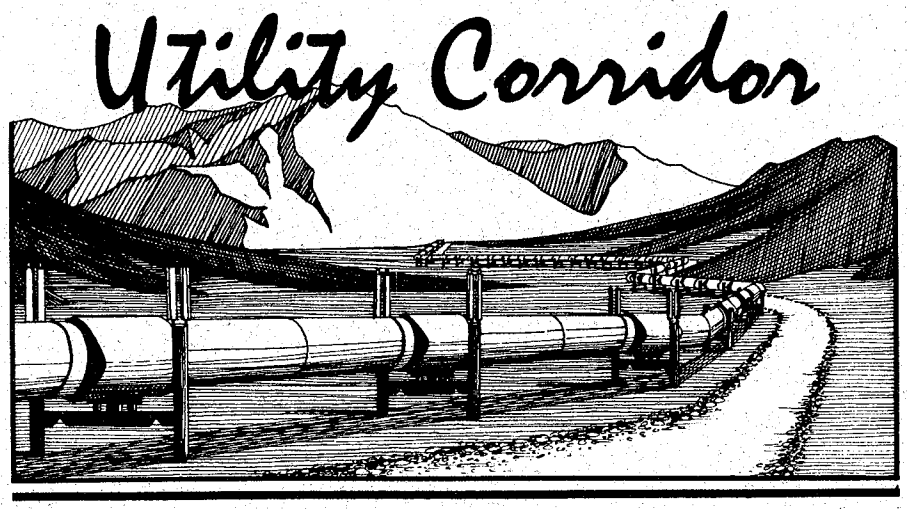
SCENIC QUALITY CLASS C - Areas whose features offer only minimal variety and lacking in visual quality. Includes all areas not included in Classes A and B.

SCALE

N

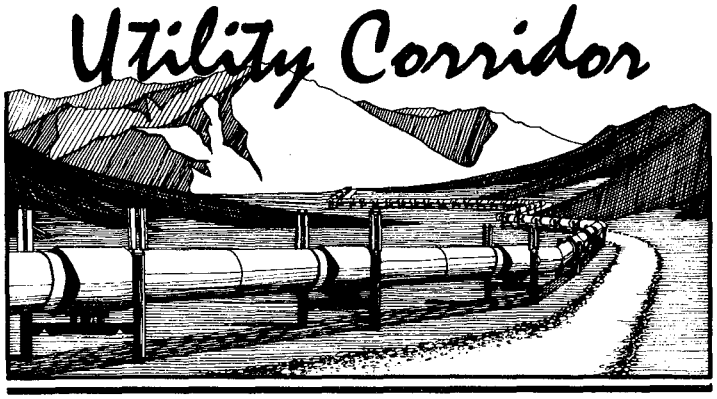
10 0 20 40 MILES 60


ARCTIC
NATIONAL WILDLIFE REFUGE
INNER UTILITY CORRIDOR
OUTER UTILITY CORRIDOR
RECREATION OPPORTUNITIES NORTH OF DISASTER CREEK ARE LIMITED AS ROAD IS CLOSED TO THE PUBLIC. OTHER FORMS OF ACCESS ARE AVAILABLE.
GATES OF THE ARCTIC
NATIONAL PARK & PRESERVE
BIG LAKE
SUKAKPAK MOUNTAIN
WISEMAN
MARIAN CREEK
COLDFOOT PUBLIC SERVICE AREA
SOUTH FORK KOYUKUK RIVER
CHAPMAN LAKE
JIM RIVER ROAD CROSSING
PROSPECT CAMP
GRAYLING LAKE
GOBBLERS KNOB
BONANZA CREEK N & S FORKS
ARCTIC CIRCLE
OLSON'S LAKE
KANUTI RIVER
YUKON FLATS
NATIONAL WILDLIFE REFUGE
KANUTI
NATIONAL WILDLIFE REFUGE
FINGER ROCK
OUTER UTILITY CORRIDOR
YUKON RIVER
INNER UTILITY CORRIDOR
RAY RIVER
WHITE
MOUNTAIN
NATIONAL
RECREATION
AREA
143 MILES TO FAIRBANKS
DALTON HIGHWAY
ENDICOTT MOUNTAINS
RAY MOUNTAINS
CONTINENTAL DIVIDE
Mount Igikpak
8510
Walker Lake
Nutuvukti Lake
Imaikuk Lake
Norutak Lake
Chandalar Lake
Big Lake
Hadwin Creek
T18N T18N
R23E R24E
KATEEL RIVER
T24N T24N
R1W R1E
FAIRBANKS
Hogatza
Koyukuk
Indian
Hughes
Allakaket
Wiseman
Bettles
Chandalar
Beaver
Livengood
Kanuti
Lake Teedatonten
155° W
154° W
153° W
152° W
151° W
150° W
149° W
147° W



Chapter 4: The Proposed Plan - Environmental Consequences

Introduction 4-1
Wildlife 4-1
Fisheries 4-6
Soil, Water, Air, and Vegetation 4-10
Visual Resources 4-14
Cultural Resource 4-15
Socioeconomic Impacts 4-17
Subsistence 4-18
Unavoidable Adverse Effects of the Proposed Action 4-20
Irreversible and Irretrievable Commitment of Resources 4-21
Short-term Uses Versus Long-term Productivity 4-21
Cumulative Impacts 4-22



Chapter 4:

THE PROPOSED PLAN - ENVIRONMENTAL CONSEQUENCES

Introduction

This chapter considers the management actions and activity scenarios presented in Chapter 2 and assesses environmental impacts anticipated as a result of those actions and activities. This chapter is organized by "impact topics." Impact topics are environmental or social concerns identified by the public at meetings and through mailings, by other agency personnel through interagency workshops, and by BLM staff during development of this Proposed Plan and the associated *Central Arctic Management Area Wilderness Recommendations and Final Environmental Impact Statement* (CAMA Wilderness EIS; USDOI, BLM; 1988). Under each impact topic is a brief summary of the potentially impacting activities described in Chapter 2 followed by a discussion of anticipated consequences.

Unlike the *Draft Utility Corridor Resource Management Plan and Environmental Impact Statement* (USDOI, BLM, 1987), which discussed in detail impacts of several alternatives, including a preferred alternative, this, the final plan and EIS, discusses in detail only the impacts of the proposed plan. This assessment is similar to that which appeared in the draft document for the preferred alternative but considers those changes that have been made to the preferred alternative in development of the proposed plan. Also, activity scenarios (in Chapter 2) and impact assessments have been developed and refined as a result of public comment, new information, and development of the associated CAMA Wilderness EIS (USDOI, BLM; 1988). Table 4.2 at the end of this chapter summarizes the impacts of the various alternatives as presented in the draft RMP/EIS. The reader should refer to the draft document if more detailed information is desired.

Wildlife

IMPACTING ACTIVITIES

In the planning area as a result of the proposed plan, activities associated with exploration and development of leasable (oil and gas) and locatable (gold) minerals have the greatest potential for significant impacts on wildlife populations and/or their habitats. Within the planning area, surface disturbance from gravel pits, placer mining, and the construction of roads, airstrips, and drilling pads would remove or alter habitats for many wildlife species. If development takes place, any newly constructed facilities and associated human activities could displace caribou, moose, sheep, denning bears (grizzly and polar), furbearers, waterfowl, and raptors, including peregrine falcons.

The designation of the proposed upper Nigu River area (approximately 41,000 acres) as wilderness would provide protection for the wildlife species within the designated area, especially caribou, grizzly bear, and Dall's sheep. By designating this area as wilderness, the lands would continue undisturbed, eliminating the possibility of habitats being altered through mineral extraction and/or oil and gas exploration and development.

On the 3,639,000 acres within the planning area north of the Brooks Range (CAMA) not proposed as wilderness, the greatest potential impacts to terrestrial wildlife populations and their habitats would

result from oil and gas development activities on the approximately 3,300,000 acres with high potential for oil and gas occurrence. During the life of this plan no actual oil and gas development is expected to occur; however, development could occur in the future as a direct result of leasing under this proposed plan. Wildlife populations and their habitats could be impacted by construction of production facilities, roads, and pipelines, traffic, human habitation and use, noise, and pollution (both air and water). The significance of effects on wildlife and their habitat would depend on the location, timing and size of the development field and required facilities. Because of the area's remoteness and restrictions on the use of the Dalton Highway, impacts resulting from recreation and commercial development are not expected to be significant in this portion of the planning area.

On the approximately 2,400,000 acres within the planning area south of the Brooks Range, the greatest potential for disturbance to terrestrial wildlife populations and their habitats would be locatable mineral extraction. Mineral extraction operations would disturb wildlife habitat as a result of the construction of buildings, stripping, processing, and tailings disposal. Impacts resulting from recreation and commercial development are also possible in this portion of the planning area.

ANTICIPATED CONSEQUENCES

In analyzing impacts of oil and gas development, mineral extraction, recreation, commercial development, and other human activities on wildlife populations and their habitats, it is impossible to give precise demographic or population change predictions based on generalized development scenarios. The significance of effects on wildlife and their habitat would depend on many very specific factors, including, but not limited to, exact location, duration, and the scheduling and extent of the development activities. In permitting development activities, the protection of crucial and limited habitat (e.g., riparian areas, mineral licks, lambing and denning areas, etc.) is very important to maintaining healthy wildlife populations.

Big Game

Impacts from Oil and Gas Activities

Geophysical (seismic) operations within CAMA will almost certainly occur in the future. Although these operations would be episodic in nature, it is predicted that on the average approximately 500 miles of seismic line would be run across CAMA lands annually. Geophysical operations would be authorized and conducted only during the winter months (November through May) when conditions allow for ground vehicles to cross the tundra with minimal impact to the vegetative mat (12 inches of frozen ground and 6 inches of snow). In addition only vibroseis techniques would be used, which eliminates surface disturbance caused by explosives used in earlier operations (pre-1980).

The effects of geophysical activities on wildlife species would be the disturbance of animals within the immediate vicinity of the operation. However, this disturbance is temporary in nature (1 to 2 days in most locations), and most animals will move away from the area until the operation moves on, then return to their normal activities.

It is projected that over the next 30 years, beginning in about 10 years, approximately 30 exploratory wells would be drilled (winter only) on federal CAMA lands. Disturbance would occur to the animals in the immediate vicinity of any exploratory well operation. However, this disturbance is localized in nature, and most animals will move away from the area until the operation is completed, then return to their normal activities.

Exploratory drilling would result in 10 acres of direct habitat loss (e.g., gravel pads, roads) per well for a maximum total of 300 acres of disturbance over the period of exploratory drilling operations. The most recent drilling operation within the Arctic District was successful in using ice pad construction instead of gravel, eliminating any permanent gravel pad remaining after the operation. If this method proves to be effective for future wells, then the direct loss of 10 acres of wildlife habitat per well would be reduced or eliminated. In addition to the direct loss of habitat, an additional 640 acres (1/2 mile from well) would be indirectly affected by human activities (e.g., noise, lights, smoke). However, because of the localized impact and timing of exploratory

drilling, it is not anticipated that exploratory wells will cause any long-term effects to the overall vegetation cover or wildlife populations within CAMA.

The likelihood of discovering economically recoverable oil resources in CAMA is considered to be less than that of the nearby ANWR 1002 area, or less than 19%. Should it occur, actual oil and gas development and production activities, pose the greatest potential threat to big game populations and habitat within CAMA. It is impossible at this time to predict exactly where development fields, pipelines, or other oil and gas activities might occur; consequently, no precise estimate of impacts to crucial wildlife habitats or animal populations resulting from these activities can be made. However, by using the activity scenarios developed in Chapter 2 a generalized assessment of potential impacts has been developed. The primary effect on big game (e.g., caribou, moose, Dall's sheep and grizzly bear) would be the direct loss of 2,420 acres of habitat for production facilities, roads, gravel pits, and 870 acres for pipelines (Table 2.6). In addition, there would be an indirect habitat loss of approximately 6,400 acres (1/2 mile from anticipated facilities) associated with disturbance from camp facilities (e.g., noise, lights), and approximately 55,000 acres (1/4 mile from pipelines) along 174 miles of pipeline routes, primarily due to disturbance from vehicular traffic. Direct and indirect loss of habitat would cause a disruption of the levels and distribution of resident and migratory populations within the immediate vicinity of the development facility or pipeline. Some of the animals that remain within the immediate development area or along the pipeline routes (within 1-2 miles) may be lost to vehicle collisions or hunting/poaching, or could become nuisance animals (e.g., bears) and have to be destroyed. In addition, east-west pipelines could potentially hinder migratory patterns of big game animals (particularly caribou) within CAMA.

Within CAMA, riparian zones (crucial habitat for moose and grizzly bear) generally run in a north-south direction, while Dall's sheep crucial habitat (mineral licks, lambing areas) is generally located in mountainous regions. The anticipated production facilities and human habitation areas are not likely to be located to any great extent on these crucial wildlife habitats. Furthermore, the anticipated east-west roads and pipelines to the Trans-Alaska Pipeline (TAPS) would cross crucial riparian habitats perpendicularly, minimizing impacts on these areas. Therefore, because of the amount of available habitat and the anticipated location of the development activities in relationship to crucial habitat, the direct loss of 3,290 acres (0.09% of federal CAMA lands and 0.026% of all CAMA lands) and the indirect loss of 61,400 acres (1.7% of federal CAMA lands and 0.49% of all CAMA lands) within CAMA to wildlife populations and their habitats would be a minimal impact. If the development activities and/or pipelines change to other locations and the 3,290 acres of direct loss and 61,400 acres of indirect loss were to occur within crucial wildlife use areas (e.g., riparian zones, mineral licks, denning sites) impacts could become more significant.

Perhaps a greater threat to big game animals (particularly caribou) would be the potential disruption of migratory patterns from east-west pipelines, roads, and associated human activities. Approximately 30,000 caribou (12% of the Western Arctic Herd) migrate through CAMA each year and interaction with the proposed pipelines and would be expected. It is uncertain what impacts this might have, studies relating to impacts on caribou migration resulting from the existing TAPS are inconclusive.

Within CAMA the greatest threat to bears would be human induced mortality. Chance encounters between bears and people will increase as more people use the planning area. Bears may become nuisance animals near development nodes and in field camps, where garbage is not properly disposed of, and may have to be destroyed. Sport and subsistence hunting of grizzly bears would increase as new access routes are developed.

Impacts from Locatable Mineral Development

Although the proposed plan opens most of CAMA to locatable mineral development, no mining operations are anticipated in the near future due to the areas remoteness, limited access, lack of infrastructure and lack of known resource values.

Within the planning area south of the Brooks Range, mining operations, primarily placer gold mining, are anticipated to disturb wildlife habitats as a result of building construction, stripping, processing, and tailing disposal. During the life of this plan, three or four new mining operations

are anticipated to begin. This would bring the number of mining operations in the planning area to a total of 36 or 37. Direct disturbance from placer mining operations would generally be limited to five to ten acres per operation per year, with reclamation being accomplished on an annual basis. Reclamation efforts to recontour the land and revegetate the surface would not completely restore the land to its natural state. During the life of this plan, it is anticipated that for all placer mining operations approximately 1,800 acres of onsite surface disturbance (in various stages of recovery) and 360 acres of access roads would result. In addition, indirect disturbances to wildlife populations from human activities (e.g., noise, aircraft, lights, traffic, smoke) would occur on an additional approximately 600 acres around each operation (1/2 mile from disturbance site). This would result in an additional 2,400 acres of disturbance above current levels or as much as approximately 22,000 acres for all operations. These indirect impacts would be very short-term, confined primarily to periods of actual activity.

Dall's sheep and moose populations and their habitats would be most affected by these direct and indirect disturbances. Given the available habitat and the limited area of disturbance at any point in time it is not anticipated that any significant impacts from these operations would occur. If the development activity were to occur within crucial habitat areas (e.g., lambing areas, mineral licks) impacts could become significant. However, the designation of ACECs and closing of mineral licks to surface disturbing activities will provide a measure of protection for these crucial habitats.

Impacts from Recreational Activities

Development of recreational facilities under the proposed plan would encourage additional hunters to travel the Dalton Highway at least as far as the road closure at Disaster Creek. This would result in a greater number of big game animals being harvested within the planning area. Sport and subsistence hunting of big game animals in remote areas of CAMA would also increase if pipelines are constructed into areas where access is currently limited and the roads were opened to the public or if use restrictions were not properly enforced. Traffic accidents and poaching would also result in additional animals being killed. Aggressive management of the harvest by the Alaska Department of Fish and Game would help minimize this impact, especially since firearm discharge 5 miles on either side of the Dalton Highway is prohibited. The greatest threat to moose and Dall's sheep throughout the planning area would be human induced mortality through increases in sport hunting.

ORV use of the Utility Corridor and CAMA lands is currently minimal, largely because of the state restrictions, and does not cause any appreciable impact to wildlife populations or their habitats. ORV use is not expected to change to any significant degree as a result of the proposed plan.

Impacts From New Access to Ambler Mining District (Bettles)

BLM is directed to allow for access from the Ambler Mining District to the Dalton Highway by Sec. 201 (4)(b-e) of ANILCA. Although not anticipated to occur during the life of this plan, it is anticipated that at some point in the future, an all-season access route to the Ambler Mining District and Bettles will be constructed. The most likely route for such access is anticipated to be within the area identified in the Draft RMP/EIS as the "Ambler Mining District Transportation Corridor." Under the proposed plan, this land would be opened to state selection as part of the "Prospect Unit" and will likely be transferred to the State of Alaska. If a road is built at Prospect, and if anticipated increased use by recreational or subsistence hunters occurs, the state could restrict access, increase enforcement presence, or impose additional hunting regulations in the area. The state already manages the Dalton Highway right-of-way, and would manage the anticipated right-of-way to the Ambler Mining District (and Bettles) even if the lands remained in federal ownership. Further, the state provides the law enforcement presence on the Dalton Highway, and would continue to do so on any additional state route built in the planning area regardless of ownership.

Impacts under State Management

The Alaska Department of Fish and Game manages animal populations and sets and enforces hunting regulations and bag limits even on federal lands. Anticipated activities and management under state ownership, as discussed in Chapter 2, would not vary significantly from that anticipated

under federal management. Thus, if the identified four areas within the Utility Corridor are transferred to the state, impacts from state authorized activities on those lands and resources would not significantly change from those expected under federal management. If a road is built at Prospect, and if as anticipated increased use by recreational or subsistence hunters occurs the state could restrict access, increase enforcement presence, or impose additional hunting regulations in the area. No long-term or permanent effects to wildlife are expected.

Furbearers

Increased human presence along the Dalton Highway and in new oil fields would displace lynx, wolves, and wolverines as it has between Nenana and Healy, and in Goldstream Valley near Fairbanks. Wolves abandon dens that are within 0.6 miles of human disturbance, but continue to use dens within 1.4 miles of roads and campgrounds in some areas, e.g., Denali National Park. Wolves and wolverines would be particularly threatened by human pursuit with snowmobile and aircraft. It has been assumed that human harvest of the wolverine populations on the North Slope has only minor or local impacts, but this may not be accurate since improved transportation, increased human population, and growing affluence on the North Slope could reduce populations in or near developed areas.

The ACEC designation for some riparian areas, such as the Nigu-Iteriak ACEC is likely to provide additional protection to habitat and have beneficial effects on furbearers. Restrictions or closures of the Jim and the Kanuti river streambeds west of the inner Corridor would also result in prevention of habitat destruction resulting from mining operations and mineral material extraction. However, the net effects of these protective measures may not be great since much of the Jim River drainage has valid existing mining claims in place.

Waterfowl, Shorebirds, and Seabirds

Within CAMA, construction of oil field camps and associated transportation systems, would cause impacts to waterfowl, shorebirds, and seabirds resulting from a loss of wetland habitats. Due to the limited acres of disturbance over the lifetime of the proposed plan, it is not anticipated that any significant impacts from these operations would occur, based on the overall habitat available to bird populations. However, if the development activity were to occur within crucial use areas (e.g., nesting, staging, and feeding areas) the impacts could become more significant due to the limited acres of crucial habitat available.

Aircraft activity associated with exploration and development of leasable minerals near remote nest sites will increase. This can greatly disturb waterfowl and shorebirds during nesting and increase their chances of reproductive failure.

Within the Utility Corridor, impacts from valid existing mining claims and active gravel material sites would be minimal. The projections for increases in mining activity is low, an additional three to four operations, and the resulting removal of riparian habitat should not be significant. Closing mineral licks to locatable minerals would ensure protection of these sites from future modification.

Threatened and Endangered Species

The arctic peregrine falcon (*Falco peregrinus tundrius*) is classified as "threatened," and is found throughout the planning area north of the Brooks Range but primarily along the Colville and Sagavanirktok Rivers. The American peregrine falcon (*Falco peregrinus anatum)* is classified as "endangered" and is found along the Yukon River within the planning area.

Development activities such as construction of roads, material sites, airstrips, and drilling pads, could cause a direct loss of habitat for the peregrine falcon in nesting or foraging areas. A further indirect loss of critical habitat could occur if an oil and gas field, pipeline transportation system, or active mineral extraction operation were developed immediately adjacent to these nesting and foraging habitats. Aircraft operations associated with development activities near nest sites can significantly disturb nesting peregrine falcons, causing the loss of eggs or young, depending on the particular weather conditions and duration of disturbance. Activities that affect habitats or

populations of waterfowl, shorebirds, and passerine birds can indirectly affect peregrine falcons through a reduction of prey species.

The peregrine falcon is protected by the Endangered Species Act, which is binding on all federal agencies. Stipulations as outlined in the *Peregrine Falcon Recovery Plan - Alaskan Population* are currently being used to protect the peregrine falcon population. Additionally, under the proposed plan, Sagwon Bluffs is designated as an ACEC for the protection of peregrine falcon. Consequently, under federal management it is not expected that any significant impacts to the peregrine falcon population would occur within the planning area.

However, under the proposed plan, certain lands within the Utility Corridor would be opened to state selection through revocation of the existing withdrawal, and conveyance of these lands to the State of Alaska would be anticipated. One of these areas, the "Sagavanirktok unit" (approximately 600,000 acres) includes the Utility Corridor from Slope Mountain north to Alyeska Pump Station #2 and encompasses prime nesting habitat for the arctic peregrine falcon.

In evaluating impacts resulting from state management of the area, it is assumed that potentially impacting activities under state management would be the same as those anticipated under federal management, i.e., oil and gas activities and gravel extraction would be the principal impacting activities. It is impossible to predict with any certainty precise population or habitat changes occurring as a result of differences between federal and state management of these activities. Therefore, an assessment of potential impacts is limited to how the State of Alaska policy on endangered species compares with BLM policy.

Evaluation of the State of Alaska's policy and actions on endangered species supports a conclusion that the state would provide a degree of protection to endangered species comparable to that provided by the BLM. Current state policy calls for the protection of endangered species, and the State of Alaska is applying the stipulations outlined in the *Peregrine Falcon Recovery Plan - Alaskan Population* as developed by BLM and the U.S. Fish & Wildlife Service. In consideration of actions to date, and the State of Alaska's current policies concerning endangered species, it is not anticipated that any significant impacts to the peregrine falcon population would occur as a result of conveyance of these lands to the State of Alaska.

CONCLUSION

There would be no additional impacts to wildlife populations or their habitats within the proposed 41,000 acre wilderness area (the upper Nigu River). Impacts to wildlife habitat on the areas not designated as wilderness would occur. Considering both current and anticipated mining operations and foreseeable oil and gas activities, approximately 5,500 acres of direct loss of habitat as well as 83,000 acres of indirect disturbance would occur within the planning area. Most indirect disturbance would be of a short-term nature. Because of the overall size of the area and expected location of the development activities in relationship to crucial wildlife habitat, impacts to wildlife populations and their habitats would be minimal.

Fisheries

IMPACTING ACTIVITIES

Within the planning area north of the Brooks Range (CAMA), the activities with the greatest potential for impacts to fisheries resources would be a result of oil and gas exploration and development on the approximately 3,300,000 acres with high potential for oil and gas occurrence, and gravel extraction operations for pipeline and highway maintenance and construction. During the life of this plan no actual oil and gas development is expected to occur; however, development could occur in the future as a direct result of leasing under this proposed plan. Oil and gas activities could include geological and geophysical (principally seismic) exploration, exploratory drilling, development drilling, construction of all-season roads, oil transmission pipelines and production facilities, and eventual abandonment and reclamation. Because of the area's remoteness and restrictions on the use of the Dalton Highway,

impacts resulting from recreation and commercial development are not expected to be significant in this portion of the planning area.

On the approximately 2,400,000 acres within the planning area south of the Brooks Range, the activities with the greatest potential for impacts to fisheries resources would be associated with locatable mineral development and gravel extraction operations for highway and pipeline maintenance and construction. Recreation and commercial development activities would also have a potential for impacts on fisheries resources in this portion of the planning area. However, activity levels are not anticipated to reach levels significant to fisheries resources during the life of this plan. Furthermore, recreational fishing is regulated and enforced by the Alaska Department of Fish and Game and impacts can be controlled through appropriate state regulations and enforcement.

ANTICIPATED CONSEQUENCES

Impacts from Mineral Material Extraction

The greatest potential for impacts to fisheries resources from mineral material (gravel) extraction within the planning area would be in the inner Corridor where gravel is needed for maintenance and future construction of roads and energy transportation systems. Under the proposed plan use of existing material sites throughout the inner Corridor would be encouraged. No new sites would be permitted in environmentally sensitive areas, such as the Jim and Ivishak river and Prospect Creek floodplains, unless no economically feasible alternatives are available. As a result of these protective measures, impacts to fisheries within the planning area are not expected to occur because of mineral materials extraction.

Impacts from Locatable Mineral Development

Currently there are 33 placer mines operating in the planning area south of the Brooks Range. No placer operations occur north of the Brooks Range, and no lode deposit mines occur in the planning area. During the life of this plan it is anticipated that an additional three placer mines and one lode mine would begin operation in the planning area south of the Brooks Range. Impacts resulting from these additional operations are not expected to increase significantly from the current situation. Current mining operations impact 17 streams located primarily in the watersheds of the South Fork Koyukuk, the Middle Fork Koyukuk, and the Jim rivers (Table 4.1).

Generally, impacts resulting from placer mining activities are highly turbid water, siltation of stream bottoms, physical disturbance and damage to streambed and riparian areas, and the introduction of toxic metals and chemicals into streams. These changes in habitat can cause direct loss of fish and other aquatic life. In some cases impacts to certain stream areas may occur over such an extended period of time, and recovery to natural conditions may take so long that mining can be an irretrievable commitment of resources. This occurs in certain areas of Alaska where mining has been ongoing for almost 100 years with the same ground being disturbed several times. Individual mines often may not have a significant impact but cumulative impacts of many mines within the same drainage system may have significant, long-term impacts through the destruction of stream productivity. Recent baseline water studies in the Koyukuk Mining District (see "Impacts to Soil, Water, Air and Vegetation" below) do not indicate a significant cumulative impact on sampled streams; however, data have been collected for only the last two years.

Impacts from Oil and Gas Activities

Impacts associated with oil and gas exploration activities can generally be avoided or mitigated using appropriate seasonal and location stipulations (Appendix L). Exploration activities usually do not require road building. In some cases, ice drilling pads have been used instead of conventional gravel pads. Where these methods are employed, effects on fisheries resources are minimized. The potential for contaminating a watershed with spilled fuel, drilling muds, crude oil and various other chemicals still exists, but impacts associated with gravel removal from streambeds or soils disturbances is significantly reduced or eliminated.

In situations where gravel sources are necessary to construct drilling pads, major alterations or loss of crucial habitat can result, particularly because crucial habitat is not well defined throughout

most of the study area. Alterations, loss, and contamination of aquatic habitat and direct mortality are major effects associated with oil and gas development, production, and transportation. The degree of impact will depend on the extent of development and the care with which it is executed. The larger the development project, the greater the risk to aquatic resources.

Table 4.1
Locations of Known Impacts to Fish Habitat

Stream Name	Tributary of:	Activity	Specific Impact
1. Prospect Creek	Jim River	Placer Mining	Turbid effluent
2. Hungarian Creek	S. Fork Koyukuk River	"	Turbidity/in-stream vehicle use
3. Hidden Creek	"	"	"
4. Wilson Creek	"	"	"
5. Frizby Creek	"	"	"
6. Bear Creek	"	"	"
7. Davis Creek	"	"	"
8. John River Creek	"	"	"
9. S. Fork Koyukuk River	Koyukuk River	"	Effluent/tailings in river/ in-stream equipment use
10. Middle Fork Koyukuk River	"	"	Turbid effluent
11. Twelve-Mile Creek	Middle Fork Koyukuk River	"	"
12. Slate Creek	"	"	Effluent
13. Clara Creek	"	"	Effluent/streambed destruction
14. Wiseman Creek	"	"	"
15. Sheep Creek	"	"	Streambed destruction
16. Gold Creek	"	"	Effluent
17. Vermont Creek	Hammond River	"	"
18. S. Fork/West Fork Dall River	Dall River	Road Maintenance	Collapsed culvert
19. Douglas Creek	Jim River	Pipeline Pad	Excessive aufeis
20. Stout Creek	Sagavanirktok River	Road Maintenance	Improper culverts
21. Milke Creek	"	"	"
22. Dan Creek	"	"	Improper bridge location

Source: Alaska Department of Fish and Game.

Activities associated with oil and gas development, production, and transportation will reduce or alter aquatic habitat within the planning area to some extent, depending on the degree of development. Due to limited fisheries inventories within the planning area, crucial aquatic habitat used for migration, spawning, rearing, and overwintering has not been specifically identified in most of the planning area, nor are exact areas of oil and gas development known at this time. Therefore, reliable estimates of fisheries habitat impacts can not be determined. However, information is available on the types of effects associated with certain development activities.

The most obvious impacts to fisheries from oil and gas development would result when extensive gravel is removed from streambeds. Gravel is required for construction of roads, drilling pads, and airstrips within an oil field. Stream crossings of roads and pipelines cause stream flow and channel modifications. These activities will have both direct and indirect effects on fishery habitat, possibly crucial spawning and overwintering habitat, and migration routes (USDOI, BLM and US Army Corps of Engineers 1987). Expected effects from gravel removal from streambeds include:

1. direct alteration and loss of crucial habitat where crucial habitat has not been identified before removal of gravel from streambeds;

2. blockage and rerouting of stream channels resulting in changes of flow regimes, dewatering of crucial habitat areas, and creation of possible migration barriers such as improperly placed culverts;

3. high silt concentrations resulting in reduced primary production, reduced numbers and diversity of benthic organisms, mortality of fish eggs and larvae, and disruption of fish dependent on sight feeding; and,

4. heavy sediment deposition resulting in barriers to migrating fish and the filling in of crucial overwintering habitat (deep holes) in streams.

In addition to alteration or loss, habitat contamination can result from oil and gas activities particularly during construction periods. Contamination of any type can be a significant problem for fisheries, particularly when fish are concentrated in limited areas for spawning or overwintering. Contamination of a hydrologic system within the planning area by oil, drilling mud additives, fuels, hazardous chemicals or heavy metals could be significant, depending on the degree and location of the spill (USDOI, USFWS 1987). Contamination of isolated small lakes with no outlets could result in a localized reduction in population, but the effect would not be significant to the study area as a whole (USDOI 1985). However, contamination of the Colville or Sagavanirktok Rivers, one of their tributaries, or any major stream could cause significant effects to the overall fishery population within the planning area.

Spills are usually small and controlled in a relatively short time, but impacts still occur, including reduced numbers and diversity of benthic organisms, mortality of fish in sensitive life stages, reduced water quality, and the potential for contaminating terrestrial organisms. Animals using the spill area can suffer from a variety of physical, physiological, and ecological problems as the result of contamination (USDOI 1985). Natural recovery usually occurs fairly quickly; human assistance can speed the process. Most impacts are short-term.

Large spills are more environmentally devastating and resulting impacts require extended periods of recovery in the arctic. Because of extremely slow rates of productivity in both terrestrial and aquatic arctic ecosystems, recovery can require decades. Aquatic impacts may include elimination throughout the watershed of all but the most tolerant aquatic life forms, degraded water quality, and mortality of terrestrial organisms, especially vegetation and waterfowl. Cleanup would require extensive human involvement and funding; natural recovery is generally not possible in the short-term.

Activities such as seismic surveys, drilling, and water withdrawal from lakes and rivers during the winter months have the potential for direct mortality of fish. Although explosives used in seismic activities can significantly reduce a localized fishery population, most seismic exploration since the early 1980s has been by vibroseis (USDOI, USFWS 1987). Drilling operations require large amounts of water that is relatively scarce during the winter months. Because of limited water quantities during the winter, potential for impacts from pollution and possible dewatering of lakes and streams is increased dramatically (USDOI, USFWS, 1987).

Complete removal of water beneath ice-covered lakes would eradicate a fishery population. Fish kills can also result from only partial water removal, due to the build up of waste products and the decreased dissolved oxygen content caused by crowding fish into a confined volume of water. Dewatering of gravels along lake shores and river bottoms could cause further fishery reductions due to the loss of incubating fish eggs deposited in the fall of the year (USDOI, USFWS 1987).

Moreover, the simple presence of people and improved access will impact fishery resources as fishing pressure is exerted where none previously existed. This impact will result from additional subsistence and sport fishing within the study area, and it should increase proportionally to the extent of oil and gas development. In arctic habitats where fish are very slow growing and have reduced reproductive capacity rates, a significant impact could result in reduced fishery resources in the absence of proper management.

In summary, the more oil and gas development undertaken the greater the opportunity for major aquatic impacts. Generally, longer pipelines cross more streams and therefore present more

opportunities for contamination of a watershed. For example, the hypothetical pipelines described in Section 2 of Chapter 2 under the activity scenarios for "Leasable Mineral Exploration and Development" vary in length and the number of streams and rivers that will be crossed:

Route A: Approximately eight high value fishery streams would be crossed including the Colville River. A high potential exists for disruption of fish migration, stream flow and degradation of water quality without the application of mitigating measures;

Route B: Approximately 15 high value fishery streams would be crossed by this route. A very high potential exists for disruption of fish migration, stream flow and degradation of water quality without the application of mitigating measures;

Route C: One high value fishery stream would be crossed by this route. A moderate potential exists for disruption of fish migration, stream flow and degradation of water quality without the application of mitigating measures.

Gravel requirements would also have proportional potential impacts, since the more gravel taken from streambeds, the greater the aquatic effects. When individual streams are affected by gravel removal, similar impacts may be significant for the entire watershed. If more than one stream in a watershed is used as a gravel source (likely within the Colville River watershed) synergistic impacts could occur.

CONCLUSION

Potential contamination, alteration, or loss of habitat and a reduced fish population could occur from placer mining, oil and gas development, and mineral materials (gravel) extraction. Restrictions on gravel extraction from the floodplains of Prospect Creek and the Jim and Ivishak rivers should alleviate impacts to those streams. Mitigation of impacts through water quality and reclamation stipulations would help manage fisheries in areas of mining claims. Effects to fisheries from oil and gas development could be managed through appropriate stipulations. It would appear that most potential impacts can be mitigated without causing serious, long-term effects.

Soil, Water, Air and Vegetation

IMPACTING ACTIVITIES

The proposed plan allows for 5.8 million acres within the planning area to be available for oil and gas leasing and 4.7 million acres to be open to locatable mineral development. Also, transportation of energy resources remains the primary function of the Utility Corridor. Within the Utility Corridor is located the existing TAPS and Dalton Highway as well as two issued rights-of-way for future gas pipelines. A total of 36 placer mining operations and one lode deposit mine are anticipated in the planning area south of the Brooks Range. Increased use of the Dalton Highway and Corridor lands for recreation would be expected as a result of the proposed plan. Soil, water, air, and vegetation resources would be affected to some extent by these activities.

ANTICIPATED CONSEQUENCES

Impacts from Road Construction and Use

Road construction provides a long-term, direct effect on soils and vegetation. Depending on the width, roads necessary for anticipated oil and gas development would occupy 3 to 5 acres per lineal mile and impact soil and vegetation productivity on those acres. Because of this, roads are frequently a direct, long-term source of water pollution, from water that runs off the surface as well as from materials that are spilled on or along roadsides. The greatest effects from silt occur during the first few years following construction of a road, but continue in varying levels as long as the road exists.

In areas adjacent to roads there is an amount of dust, depending in part on the type of road surface material, frequency of precipitation, and the speed and number of vehicles using the road. Products of combustion from various types of engines and fires add to the particulate load and alter the chemical makeup of the otherwise clean air. Significant impacts can also result from fire suppression activities such as fire lines cut by heavy equipment which can expose soil to erosive forces and encourage permafrost degradation. The dust from roads has long-term effects on the soils and plant life adjacent to the road. Effects of dust have been known to occur up to 320 feet (100 meters) on either side of frequently used roads. The effects may ultimately reach twice that far. Two types of effects have been observed. First, the leaves of plants collect a coating of dust which can interfere with the photosynthetic process. Wind and rain usually cleans the surfaces of trees, shrubs and herbaceous plants. However, low growing mosses and lichens are rarely cleaned by rain, so the dust continually collects on the photosynthetic tissues, reducing the plant's ability to maintain itself.

Second, a change in the plant chemistry occurs when soluble calcium in the dust that settles on the plants is immediately available to the plant. The impact is potentially negative to the mosses, especially the acidophilic *Sphagnum* species. Plant communities growing in alkaline areas are not as strongly affected by dust since they are already adapted to the alkaline conditions. Studies (U.S. Army Corps of Engineers, 1980) indicate that four-angled cassiope (*Cassiope tetragona*), and sphagnum mosses and lichens, especially those in the family *Cladoniacae*, appear to be particularly sensitive to road dust. In the Prudhoe Bay area, where road dust has occurred for approximately 15 years, many plants have been eliminated from road side communities within several hundred yards of the roads. We can assume similar results will occur along new development roads. The long-term effects of the changes in the plant community on other organisms is unknown.

Road dust also causes snow to melt along roadsides 2 to 3 weeks earlier than isolated areas. The effects vary from 100 to 330 feet on either side of the road. This exposure of the vegetation attracts animals in search of early greens. Continued early spring grazing usually weakens, and can eventually result in the death of, these plants, contributing to a further change in plant species composition.

Impacts from Oil and Gas Activities

Under the proposed plan, the entire planning area, with the exception of the southern portion of the proposed Nigu-Iteriak ACEC (the proposed Nigu Wilderness Area), would be open to oil and gas development. Due to the lack of resource values, no oil and gas development would be expected in the planning area south of 68° N latitude. Oil and gas exploration and development activities north of 68° could include the construction of two pipelines from the National Petroleum Reserve-Alaska (NPR-A) to the Trans-Alaska Pipeline System (TAPS), one pipeline within the existing Utility Corridor, and development of two or three oil/gas fields. Assuming that the same or greater care would be used in construction and reclamation as was used in the construction of the TAPS line, there would be relatively few long-term impacts other than the actual loss of soil and natural vegetation for the area covered by the material sites, access roads, and work/facility pads. The directly impacted areas could comprise up to 3,290 acres (Table 2.6) within the development fields and along routes of newly constructed pipelines/roads to TAPS. In addition, if development were to occur there would be impacts resulting from dust generation and gravel spray along the required access/service roads. Assuming that larger dust particles and gravel would settle within 100 feet of these roads, an additional surface disturbance of approximately 7,890 acres (see Table 2.6) would occur adjacent to the roadways. Smaller dust particles would not settle out as quickly and could impact a considerably larger area, perhaps affecting vegetation and soils on about 200 acres per mile along the access/service roads. In total, fugitive dust could affect 35,000 acres of vegetation and soils. Construction sites can also contribute to water quality problems due to runoff from pads and access roads, chemical and petroleum spills. It is not possible to pinpoint the location of lands and resources likely to be affected because discovery locations cannot be predicted.

The effects of (vibroseis) geophysical activities on vegetation would include: green trails caused by the compaction of snow on the tundra, pollution (small fuel leaks from equipment), and occasional surface disturbance from blades or tracks of vehicles breaking through the snow layer. Green trails, generally visible from 1 to 2 years after an operation, are caused by compacted snow providing

additional moisture, and resulting in vegetation growing slightly more vigorously than on surrounding areas. However, because BLM monitors these operations closely and allows operations to proceed only when the conditions provide adequate protection to the vegetative surface, such disturbance is short-term and sporadic.

Impacts from Locatable Mineral Development

There would be an estimated 36 placer mines in the planning area, directly disturbing approximately 1,800 acres (onsite) over the 10 year life of this plan. Most of this acreage would have been reclaimed within ten years and would be in various stages of recovery. At any one time, unreclaimed onsite disturbance is expected to be no more than 280 acres. In addition to onsite disturbance, there would be about 360 acres directly impacted as a result of about 180 miles of access road construction. Lands disturbed as a result of road construction would not be reclaimed until operations ceased and access to the area was no longer required. It is also anticipated that one lode mining operation would occur within the planning area, directly disturbing about 14 acres including access roads. In total, locatable mineral mining operations (lode and placer) would result in direct loss or disturbance to approximately 2,170 acres of vegetation and soil resources. Most would be reclaimed in time, but perhaps never to a completely natural state.

In addition to vegetation and soil disturbance there would be adverse effects on water quality in some areas as a result of mining activities. The mining operations would affect at least the following drainages: Middle Fork and South Fork of the Koyukuk River, Nolan Creek, Sheep Creek, Prospect Creek, Jim River, Slate Creek, Hammond River, and Nugget Creek. Confining mineral material extraction to existing sites when possible, and prescribing nonoccupancy stipulations along streams and in sensitive areas would reduce impacts from exploration and mining. The requirement that a mining plan of operations be approved for work in ACECs before activity begins should also serve to reduce these impacts. An unknown amount of silt and clay fractions will flow into the natural waterways as a result of runoff from denuded ground and from mine operations. However, because various state and federal agencies have recently initiated programs to improve this situation, the impacts to waterways should not be as great as they have been in the past.

As part of the effort to reduce impacts to waterways in the region, BLM Arctic District began base line water studies in the Koyukuk Mining District. The purpose of the study was to assess the cumulative impacts caused by mining activities on the overall water quality of the South Fork and Middle Fork Koyukuk Rivers. Water samples were collected from the waters above current mining operations on Prospect Creek, South Fork Koyukuk River, Middle Fork Koyukuk River and Slate Creek. Samples were collected below the mining operations in the South Fork and Middle Fork Koyukuk Rivers near the boundary of the Kanuti National Wildlife Refuge. Additional samples were collected along the Middle Fork Koyukuk at Tramway Bar, Wiseman, Slate Creek, the mouth of the Hammond River, and above the canyon of the Hammond River in Gates of the Arctic National Park. Results of the sampling from 1987 and 1988 indicate the water quality is very good and consistent from year to year. The turbidity levels are all less than 25 NTUs except during flood events and spring break-up. Total suspended solids measured during 1987 were all less than the Alaska Department of Environmental Conservation standard of 0.1 mg/l. The samples from the same locations in 1988 were mostly above 0.1 mg/l, perhaps due to extremely low water flow and precipitation rates. More data must be collected to determine water quality trends.

Impacts from Recreational Activities

Managing the Utility Corridor with an emphasis on recreation would result in an increase in recreational use, perhaps doubling in 10 years. If the Dalton Highway is opened to public use to the Arctic Ocean, use could double within 5 years, contributing to the degradation of vegetation, soil erosion, and water quality in concentrated use areas and campgrounds (10 to 15 acres per campground). Dust generated along the Dalton Highway would result from increases in traffic. Providing adequate facilities such as solid and human waste disposal facilities, campsites with level pads and parking areas, trails, interpretive displays, and boat launching ramps for travelers and campers at concentration areas would help ease these problems.

Current BLM policy limiting ORV use to frozen ground with adequate snow cover and controlling the use of ORVs through a permit system would have a long-term, beneficial effect by reducing potential impacts to soil, water and vegetation. Completion of the proposed ORV use study and identifying trails for use with all terrain vehicles would also have direct, long-term beneficial effects by reducing future disturbance of soil and vegetation and water pollution.

Impacts from Development Node Activity

Detrimental effects on soil, water, air and vegetation would occur in the vicinity of each node and human population area as suspended particulates and airborne gases continued to increase. These effects would be most noticeable at the proposed Yukon Crossing and Coldfoot nodes (and Wiseman), and is manifested by increased dust suspended in the air and ice fog in the winter. Generally, impacts from nodal development would be direct, long-term, and irreversible (over the next 10 years). However, the concentrated impacts at node sites would be less damaging overall than the impacts which would occur if development were to be allowed to spread out along the road.

Impacts from Other Activities

The wilderness status proposed for the Nigu River lands would have little effect on soil, water, air and vegetation because there would be little or no human caused disturbance of these resources.

The reduced fire suppression effort permitted under the Alaska Interagency Fire Management Plan will reduce the number of suppression actions and result in a greater number of acres burned. The result will be a more natural fire regime which would allow rapid nutrient cycling in affected areas. The burning will result in a changed vegetation cover as a result of the deeper thaw layers and greater availability of nutrients for plant growth. Another benefit would be a greater variety of plant life and a different mosaic of vegetation types in these areas. The productivity of the ecosystems should be at peak levels more frequently and would provide more usable products for animal and subsistence users.

There are some fire dependent ecosystems in the planning unit which are in the fire plan's full suppression option. Beginning to show signs of decadence, vegetation types in these ecosystems will continue to show modification if the lack of fire continues. The vegetation mat will continue to thicken, and permafrost will occur closer to the surface. More and more of the available nutrients will be in frozen organics; productivity of forage plants will drop off, and these plants will become a minor part of the vegetation composition. If allowed to go to the extreme, this vegetation will be uniform ground cover. This trend could be reversed with the use of prescribed fire.

CONCLUSION

The high percentage of fine grained materials in the soils of the planning area and the presence of shallow permafrost makes it highly probable that the disturbance or removal of vegetation resulting from activities such as mining, road building, and recreational facility development would result in some soil erosion. If the eroding material is transported into a water body there will be sedimentation and water quality degradation. Once bladed, eroded, and carried away, the soil can only be replaced by long years of development. Generally, such impacts would be long-term (at least 10 years), and there would be an irretrievable commitment of the affected soil resource. The extent of impacts would depend on the steepness of slope, aspect, amount of ice, the severity of the disturbance to the vegetative cover, and the type of mitigation applied. Overall the proposed plan would provide for an acceptable level of protection and enhancement of the soil, water, air and vegetation resources without unduly restricting impacting activities.

Visual Resources

IMPACTING ACTIVITIES

Because most visitors to the planning area remain within the Dalton Highway right-of-way, the area of greatest visual sensitivity within the planning area is the viewshed of the Dalton Highway (approximately 800,000 acres). Within this area, new pipeline construction, road related commercial development and recreational facility development are the activities with the greatest potential to impact natural visual quality. Within the remaining portions of the planning area, activities associated with locatable and leasable mineral development have the greatest potential to impact visual quality.

ANTICIPATED CONSEQUENCES

Impacts from Mineral Development Activities

Under the proposed plan, certain proposals would lessen impacts to visual quality in the Dalton Highway viewshed resulting from mineral development. The inner Corridor would remain closed to mineral entry, and oil and gas development would be permitted only with nonsurface occupancy stipulations. Also, mining operations within the Jim River ACEC (and other ACECs) would require plans of operation. This would provide BLM the opportunity to closely review planned operations and to impose appropriate stipulations prior to commencement of on-the-ground activities. Gravel extraction within the Sukakpak Mountain ACEC would be prohibited. These actions reduce the potential for impacting activities to occur in the Dalton Highway viewshed. However, along the entire length of the inner Corridor new pipeline construction is a possibility. To the extent feasible every attempt would be made to minimize resulting impacts to scenic quality, however, the primary purpose of the Utility Corridor is transportation of energy resources.

Impacts to visual resources outside of the Dalton Highway viewshed north of the Brooks Range, in CAMA, would probably be a result of oil and gas development (should it occur). Because of the relatively flat terrain found on the North Slope, visual impacts would be assumed to occur from four to five miles in any direction of pipelines and development field facilities. Based on the oil and gas development scenario presented in Chapter 2, visual quality could be affected on up to 1.1 million acres. These impacts would be greatest from roads and above ground pipelines since linear disturbances on the viewshed traverse large expanses of the landscape and are more difficult to mitigate than site development. Lands most likely impacted by roads and pipelines are primarily scenic class C and are remote and relatively inaccessible. Recreational use of the area is expected to remain light and widely dispersed. Until Congress acts on the wilderness recommendation no permanently impacting activities would be allowed. Areas ultimately designated wilderness (the upper Nigu River area has been recommended) would be permanently protected from activities impairing scenic quality.

South of the Brooks Range, impacts to visual resources would primarily be a result of locatable mineral development. Under the proposed plan three new operations, for a total of 36 operations, are anticipated. Over the life of this plan, it is expected that each of these operations would include three claims extending about three-quarters of a mile along a stream. Depending on the terrain, visual impacts would extend about 1.5 miles on either side of the stream. Thus visual quality may be affected on approximately 1,440 acres per operation or an additional 4,320 acres from the current situation. Annual reclamation efforts conducted on disturbed areas would mitigate the long-term impacts from these operations. Within the inner Corridor (i.e., roughly the Dalton Highway viewshed) new operations could occur only on valid existing claims as this area remains closed to mineral location.

Impacts from Recreational Activities

Visual impacts resulting from ORV use results from the creation of new trails in an otherwise natural landscape. Use of established trails is generally acceptable except when this results in additional surface disturbance. As a result, established trails may need to be relocated, rehabilitated, or closed to prevent further damage. Impacts from use of ORVs should be minimal given state and BLM restrictions on use of ORVs, especially along the Dalton Highway, and the remoteness of other planning area lands.

Recreation may impact scenic quality through development of recreational facilities and trails. Even well located and well designed recreational facilities may impact scenic quality in some primitive areas. Long-term commitments of the existing visual and wilderness values may result. Under the proposed plan, recreational facility development would be confined to the lands within the Dalton Highway Recreation Management Area (i.e., roughly the inner Corridor) and would probably occur on previously disturbed sites, minimizing impacts to visual resources.

Impacts from Authorized Land Uses

Visual impacts resulting from a variety of authorized land uses are expected to occur primarily within the inner Corridor. Communication sites, utility lines, or temporary and permanent commercial facilities would cause visual degradation. Impacts from these site developments are generally mitigated by proper location, design, and construction. Impacts from utility lines and other linear disturbances are far more difficult to mitigate since they affect large areas of the viewshed. Site specific impacts from construction and mining camps, pump stations, and production facilities would be lessened through proper site design and rehabilitation. Linear disturbances on the viewshed from roads and pipelines would be more difficult to mitigate since they would traverse large expanses of the current landscape.

Other Considerations

Fire is generally considered to have a long-term positive effect on scenic quality as it ultimately adds to the diversity of the overall landscape. Short term negative effects would result from areas blackened by fire, especially with a large, multi-thousand acre burn.

Indirect effects on scenic quality are most likely to occur as cumulative impacts. An individual project may be satisfactorily mitigated through project planning and site rehabilitation, but several similar activities occurring in a given area could have cumulative effects with long-term consequences for visual resources. Cumulative impacts are most likely to occur in the inner Corridor.

CONCLUSION

Under the proposed plan, the greatest foreseeable negative impact to visual resources would occur within the inner Corridor as a result of new pipeline construction and development of new roads and/or pipelines from the Dalton Highway and TAPS to outlying areas. The degree of impacts from other activities would be minimal. The inner Corridor and selected areas of the outer Corridor would be closed to mineral entry and location, reducing the potential for impacts from mineral development. Also nonsurface occupancy stipulations would be applied to oil and gas activities. Additional recreational facility development (after completion of the recreation activity management plan) would increase under the plan, but impacts would be minimized through proper location and design. In some situations, by locating facilities on previously disturbed sites, scenic quality could actually be enhanced through the rehabilitation of these areas.

Cultural Resources

IMPACTING ACTIVITIES

As presented in the activity scenarios in Chapter 2, a variety of activities including those associated with mineral, recreational, and commercial development, are anticipated to increase during the life of this plan. Consequently, there may be serious impacts upon cultural resources, particularly along the Dalton Highway. Even for scientific research projects, the road will prove to be extremely inviting in the light of declining academic budgets and the need to minimize logistic costs. The impact could be particularly strong on those sites that are considered to be of high scientific value.

ANTICIPATED CONSEQUENCES

Impacts from Recreational Activities

The proposed emphasis on enhancement of recreational opportunities will have a direct impact on any cultural resources. Camping areas or RV parking at scenic overlooks are frequently placed at archeological sites for the same reason that the sites are there - a good camp location, a game lookout, or a combination of both. Consequently, there may be conflict with any cultural resources present. One solution may be in selecting those locations where the archeological site has already been excavated. On the positive side, archeological sites have an added attraction in that some cultural interpretive material is available, and could perhaps enhance the recreation experience and would certainly contribute to the understanding of cultural resources.

Other forms of recreation away from the road, such as hunting, floating and hiking, may also have an impact on cultural resources when someone sees and picks up an artifact, or builds a firepit for a camp. These impacts, obviously, cannot be controlled unless recreation is restricted to a narrow range of opportunities, contrary to the kind of recreation desired in the planning area. The only realistic way to reduce this kind of impact on cultural resources is through public education discouraging "pothunting" or even actively recruiting people to report any such sites or artifacts located. Where recreation is on an organized basis, such as guided float trips, hunts, or bird watching forays, the organizer or guide may be held responsible for protecting the resources through stipulations on permits.

Impacts from Mineral Development

Gravel extraction, placer mining, and related temporary use permitting may be in conflict with cultural resources through surface disturbing activities. The greatest potential for this type of impact is the development of a mining claim. However, BLM has worked closely with mining operators in the past to minimize these impacts. In fact, placer mining has contributed to a wider location of site by removing overburden.

Oil and gas exploration in the CAMA lands north of 68° N latitude can be expected in the next ten years as a result of leasing action proposed under this plan; actual development would probably not take place during the life of this plan. Extraction of gravel from streambeds and construction of gravel pads could potentially damage or destroy cultural resources; however, this impact would be lessened if winter drilling on ice pads occurred. Current laws protecting cultural resources would require mitigation of adverse impacts to those resources prior to disturbance.

Other Considerations

Those lands opened for state selection under the proposed plan contain a number of cultural resources, some of which are significant. In March, 1989, BLM and the Alaska State Historic Preservation Officer (SHPO) began consultation pursuant to 36 CFR 800, on significant cultural resources that may be transferred to the State of Alaska following the revocation of PLO 5150, selection of an area, and conveyance. This agreement is under development and will be presented to the Advisory Council on Historic Preservation upon completion of a draft agreement. The draft agreement anticipates recognizing existing state laws, regulations, and policies which substantially parallel those required under federal laws for cultural resources. The effect of such an agreement would be that no adverse impact would occur to cultural resources transferred from federal to state ownership under state selection procedures.

CONCLUSION

Due to the emphasis on recreational and mineral development there may be considerable impact to cultural resources, particularly along the highway. However, use of any cultural resources that occur in the same locations as recreational facilities could enhance interpretive efforts, adding to the recreational experience and the public appreciation of cultural resources. Stipulations would be applied to authorized ground disturbing activities prior to disturbance to protect cultural resources. Consideration for cultural resources on lands selected by the state under the proposed action would be managed substantively like cultural resource remaining under Federal ownership

is an agreement between BLM, the Alaska SHPO, the State of Alaska, and the Advisory Council on Historic Preservation is adopted.

Socioeconomic Impacts

IMPACTING ACTIVITIES

Oil and gas exploration and development are the most likely activities to affect socioeconomic conditions in the planning area. Anticipated oil and gas exploration and development would occur only in CAMA, i.e., lands north of 68° N latitude; lands south of 68° have a very low to moderate potential for oil and gas resources and development is not expected. Only a minor increase is expected in placer mining during the life of this plan, all of this occurring south of CAMA. Little or no socioeconomic effect is expected within the planning area as a result of mining as most of the population connected with mining is present in the area only during the summer with most of the benefits accruing in Fairbanks or Anchorage, not in the planning area. Some additional socioeconomic benefit may be expected from increased tourism along the Dalton Highway. Effects from more visitors would likely be confined to the development nodes at Yukon Crossing and Coldfoot.

ANTICIPATED CONSEQUENCES

Under the proposed plan the majority of the planning area is to be opened to oil and gas leasing. With increases in exploration additional employment could potentially reach 50 to 60 workers in a 3 year exploration phase. A development phase is possible, but is highly dependent on the price of oil and the quantities discovered. A development phase could employ between 1,500 to 2,000 workers for a period of 4 to 8 years. Additionally, should a pipeline(s) be constructed from NPR-A 600 to 750 people could be employed over one to three winters. On-line operation of production facilities etc., could require 150 - 300 workers for 8 to 30 years.

Although it is anticipated that approximately 2,300 to 3,100 oil development related jobs could occur under the proposed plan, most of this employment would not directly affect local rural residents. In 1982 for example, a special census conducted by the Alaska Department of Labor found only 178 resident workers (Native and non-Native) out of 6,306 oil industry workers (Minerals Management Service, 1986). If this proportion of resident to nonresident hire holds for future development, it is anticipated that only 2.8% of new employment, or 65 to 88 jobs created under a development scenario would accrue to local rural resident workers.

The reasons for limited rural resident involvement in the oil related work force are:

1. Current oil production activities call for proportionally more specialized labor.

2. Much of the labor demand is met by unions with hiring halls in Fairbanks and Anchorage.

3. The number of people required is large enough to guarantee that rural resident workers will be a small minority of the labor force.

4. Existing work schedules provide for time off, but only according to a rigid pattern that does not fit well with Inupiat desires to mix wage employment with hunting, fishing, and village social activities (Kruse 1984). It is anticipated that employment opportunities within the villages will decline making oil industry employment more important. At the same time, nonresident competition for oil related jobs will also increase.

The largest economic impact of oil development would be on North Slope Borough revenues. Current revenue grew from $6.2 million in 1974 to $328.6 million in 1986. Most of this current revenue ($199 million) is restricted to debt service. It is the oil industry property tax base that has provided most of this revenue increase. Assessed property values rose from $203 million in 1974 to $12.3 billion in 1985 and they are anticipated to peak at about $16 billion in 1990. After 1990 property values will fall to $3.7 billion by 2010. (This may be an optimistic scenario because current low oil prices may curtail projected development leading to lower projected property values.) Additional development in CAMA would mean a continuing growth trend in these local revenue sources.

Any increases in development work in CAMA would affect the size of the nodes and the types of services they provide. Increases in exploration and development activities would necessitate year-round trucking support. Increased truck traffic would place greater pressures on the Yukon Crossing and Coldfoot nodes and would increase year round employment numbers at these nodes. Plans to emphasize development of recreational facilities would draw more visitors to the area and would also place additional pressures on the nodes at Yukon Crossing and Coldfoot. If the highway is opened all the way to Prudhoe Bay a dramatic increase in visitation could occur. If this should occur there would be additional pressure for visitor services at the Chandalar Shelf and Happy Valley nodes generating at least some seasonal employment.

CONCLUSION

The proposed plan would not prevent potential future employment, income, population, and public revenues associated with mineral development.

Subsistence

IMPACTING ACTIVITIES

Subsistence uses and needs are affected by many changes in land use. Generally, any action which disturbs the number or location of animals, surface cover, quality and quantity of water resources, the location or number of plant species, access routes, or the distribution of human population would have an effect on subsistence uses, resources, and needs. Thus, any of the activities anticipated under the proposed plan could have an effect on subsistence.

ANTICIPATED CONSEQUENCES

Impacts from Recreational Activities

The emphasis on recreation in the proposed plan, including the establishment of campgrounds, waysides, trails, and interpretive displays, would increase the number of people using the entire Corridor, including areas which previously had little or no use. Some of the impacts could be:

1. displacement of some animal species in affected areas, thus interrupting prior subsistence harvest patterns;

2. degradation of certain plant and animal habitat, depending upon the locations of facilities and access routes; and

3. displacement of subsistence users as a consequence of ORV noise or competition for resources by nonlocal users on new access routes. However, new access routes might also allow current local subsistence users better access into more remote areas.

Prior to the construction of any recreational facilities, an ANILCA Section 810(a) evaluation of the effects on the subsistence resources, uses, and access would occur. The effects of any actions that could cause significant restrictions to subsistence will either be mitigated or be modified accordingly.

Impacts from Placer Mining

Placer mining could potentially impact subsistence uses, needs, and resources in two major ways: 1) through a reduction in the potable water quality of a stream used as a source of drinking water; and 2) through disturbance of fisheries habitats which support subsistence fishing. It is anticipated that there would be 36 active placer mines in the planning area; each of these mines has had or will have an ANILCA Section 810 (a) subsistence evaluation performed prior to commencement of operations. Section 810 (a) evaluations are repeated whenever changes in area mined or mining methods occur. Since the Alaska Department of Fish and Game issues permits to those mines affecting anadromous fish habitat, and applies stipulations to protect that habitat, potential damage to subsistence fisheries is minimized.

Because of protective stipulations, individual mines seldom have even the potential to restrict subsistence uses and needs significantly. However, cumulative impacts can occur downstream when a number of mines exist in one drainage. In the planning area, there has been no indication of cumulative impacts from placer mining, and none are expected during the life of this plan.

Impacts from Mineral Material (Gravel) Extraction

BLM has discretionary control over the locations of gravel extraction on public lands. The required permits undergo an environmental evaluation under NEPA and Section 810. As a result, any potential impacts to subsistence uses or resources, such as gravel extraction from spawning beds, can be mitigated or the permit denied. Under the proposed plan, gravel extraction will be limited to existing sites where possible, but it would be prohibited in the eight identified mineral lick areas, the Kanuti Hot Springs, Nigu-Iteriak, and Sukakpak Mountain ACECs, and in designated wilderness areas. Extraction would be allowed in the Jim River and Prospect Creek floodplains and streambeds, and the Ivishak River ACEC only if no other economically feasible locations for material minerals can be found.

Impacts from Oil and Gas Activities

Any oil and gas development in the planning area is expected to occur in the CAMA lands north of 68° N latitude. Effects on subsistence by these actions has been covered in detail in the CAMA Wilderness Recommendations and Final EIS (USDOI, BLM, 1988). There is no oil and gas activity expected to occur in the planning area south of 68° during the life of this plan and due to a lack of resource values no development is anticipated in the foreseeable future. In neither area would significant restrictions to subsistence be expected from oil and gas activity during the life of this plan. The Bureau leasing laws allow examination of plans of operation and designation of mitigation measures prior to any activity beginning on the ground. In cases of significant restrictions to subsistence, the proposed activity could be denied.

Impacts from Nodal Activities

The four areas proposed as development nodes (Yukon Crossing, Coldfoot, Chandalar Shelf, and Happy Valley) would cause impacts to subsistence uses and needs similar to those described for recreation above. Additionally, node developments have the potential to increase the permanent populations of areas thus increasing the pressures on subsistence resources. However, development activities on these nodes require a Section 810 evaluation prior to approval, and appropriate mitigation can be stipulated.

Impacts from Access to Ambler Mining District Corridor

BLM is directed to allow for access from the Ambler Mining District to the Dalton Highway by Sec. 201 (4)(b-e) of ANILCA. Although not anticipated to occur during the life of this plan, it is anticipated that at some point in the future, an all-season access route to the Ambler Mining District and Bettles will be constructed. The most likely route for such access was identified in the Draft RMP/EIS as the "Ambler Mining District Transportation Corridor." Under the proposed plan, this land would be opened to state selection as part of the "Prospect unit" and will likely be transferred to the State of Alaska. If a road is built at Prospect, and if anticipated increased use by recreational or subsistence hunters occurs, the state could restrict access, increase enforcement presence, or impose additional hunting regulations in the area. While Section 810 requirements will no longer apply to lands selected by the state within the Ambler Mining District Corridor, subsistence users will continue to influence state subsistence management policies. The existing system of local advisory committees and Regional Councils present views that are considered by the State Boards of Fisheries and Game in establishing local fish and game regulations. Thus, revocation of the withdrawal, and the subsequent anticipated activities should cause no significant restrictions to subsistence uses, needs, or resources in the planning area.

Other Considerations

ANILCA Section 810 evaluation requirements apply only to federal lands. Thus, after transfer of those lands in Utility Corridor to be opened to state selection through revocation of the existing withdrawal (PLO 5150), ANILCA Section 810 requirements would no longer apply. However,

the state too is sensitive to subsistence issues and is bound by its own statutes protecting subsistence resources, e.g., the prohibition of recreational ORV use within five miles of the Dalton Highway. Furthermore, management of many resources directly affecting subsistence resources is already a state responsibility. The state already manages the Dalton Highway right-of-way, and would manage the anticipated right-of-way to the Ambler Mining District (and Bettles) even if the lands remained in federal ownership. Further, the state provides the law enforcement presence on the Dalton Highway, and would continue to do so on any additional state route built in the planning area regardless of ownership. The Alaska Department of Fish and Game manages animal populations and sets and enforces hunting regulations and bag limits even on federal lands. Furthermore, anticipated activities and management under state ownership, as discussed in Chapter 2, would not vary significantly from that anticipated under federal management. Thus, if the identified four areas within the Utility Corridor are transferred to the state, impacts from state authorized activities on those lands and resources would not significantly change from that expected under federal management.

Furthermore, Section 802 (3) of ANILCA states:

> except as otherwise provided by this Act or other Federal laws, Federal land managing agencies, in managing subsistence activities on the public lands and in protecting the continued viability of all wild renewable resources in Alaska, shall cooperate with adjacent landowners and land managers, including Native Corporations, appropriate State and Federal agencies, and other nations.

In addition, Section 810 (c) provides:

> "(c) Nothing herein shall be construed to prohibit or impair the ability of the State or any Native Corporation to make land selections and receive land conveyances pursuant to the Alaska Statehood Act or the Alaska Native Claims Settlement Act." This statutory provision clearly demonstrates Congressional intent to provide for unimpeded selection of land pursuant to the Alaska Statehood Act. (*Dinyee* [Dinyea] *Corporation, 90 IBLA 167, 1986).*

CONCLUSION

The proposed plan would cause no significant restriction to subsistence uses, needs, resources, or access.

Section 810(a) Finding for the Proposed Action.

The proposed action could cause some effects to subsistence uses, needs, and resources. However, it is assumed that appropriate mitigation of those effects would reduce their impact. Under no conditions would such impacts appear to cause a significant restriction to subsistence uses or resources in the planning area.

Unavoidable Adverse Effects of the Proposed Action

Soil and Vegetation Resources. Since traffic will increase under the proposed action, there will be an unavoidable impact from increases in fugitive dust which affects vegetation nearest the roadway, and which could cause an imbalance in the thermal regime, species diversity and health, and photosynthetic processes. Soil disturbance from ORV use when frozen ground and snow cover are not adequate would also cause an unavoidable impact to soils and vegetation.

Continual placer mining, primarily in the area south of the Brooks Range, would cause unavoidable adverse impacts to soil and vegetation resources at mine sites because of overburden being removed to reach mineral ores. Reshaping the terrain results in unavoidable, short-term erosion.

Water. Suspended sediments resulting from mining, road building, and some oil and gas development will produce an unavoidable impact on the water resources in the planning area. The drainages most affected are shown in Table 4.1.

Air Quality. Air quality would be unavoidably affected by increased traffic on the Dalton Highway, in areas of oil and gas development north of 68° N latitude, increased recreation use, and by various activities in the development nodes. However, air quality would be minimally affected in the majority of the planning area.

Wildlife. Opening new areas to exploration and development of leasable minerals would cause several unavoidable impacts. New gravel material sites and the construction of roads, airstrips, and drilling pads would remove or alter habitats for caribou, moose, sheep, grizzly bear, some furbearers, waterfowl, and peregrine falcon. Pipeline construction in CAMA could affect migration routes of caribou, and could increase hunting pressures.

Fisheries. In-stream placer mining unavoidably results in loss of habitat for fish and other aquatic life within the active mine site. Downstream increases of sediment loads could affect fish breeding, spawning, and rearing habitat. Gravel extraction from streambeds could disturb or destroy spawning habitat. Stream barriers from mining or road and pipeline construction could affect migration routes. Affected drainages are under the Fisheries Section in this chapter.

The assumed increase in recreation use of the planning area would produce unavoidable impacts to sport fishing along the Dalton Highway. Overharvest in localized areas is a concern, but the Alaska Department of Fish and Game regulations of sport and commercial fishing should provide a level of control.

Cultural Resources. The only unavoidable impact to cultural resources would result from increases in the recreational use of the Corridor. More visitors could result in casual collection of artifacts from archaeological sites.

Visual Resources. The major unavoidable impact to visual resources is a result of the primary energy transportation function of the Corridor. New pipeline construction would unavoidably impact visual resources in areas where existing and new rights-of-way occur within the 800,000 acre viewshed of the highway. An additional 4,320 acres would be affected by placer mining, primarily south of the Brooks Range.

Subsistence. Increased recreational use of the Corridor and leasable mineral development will provide unavoidable increases in the need for public and commercial services, resulting in more employment in the development nodes. Localized unavoidable impacts to subsistence resources would result from any activity which increases local populations utilizing those resources. No significant restriction would occur as a result of opening lands to state selection or as a result of any development proposed in this plan.

Irreversible and Irretrievable Commitment of Resources

Placer mining would cause wilderness values to be degraded or lost on up to 2,160 acres; of this unreclaimed mining areas and roads would be about 640 acres. Total direct disturbance from oil and gas development could occur on 11,180 acres. However, total wilderness values affected could reach 1.1 million acres of federal and over 500,000 acres of state and ASRC lands.

Short-term Uses Versus Long-term Productivity

Wilderness designation of the Nigu Block would provide long-term protection of the natural environment and solitude on 41,000 acres. Potential oil and gas or mining development and production within the planning area (CAMA) would not be affected. Wilderness values would be lost or degraded by anticipated oil and gas development, mining, increased recreation, and development nodes on 1.1 million acres.

Wildlife habitat would be a long-term loss from oil and gas development, pipeline construction, and placer mining on approximately 15,000 acres.

Anticipated oil and gas development would involve the long-term production of at least 675 million barrels of economically recoverable oil. If exploration did not locate economically recoverable resources, no impacts would occur.

Development of the nodes would result in long-term modification of those areas, including increased employment opportunities and available services. Other long-term effects would be an increase in suspended gases, dust, and other particulates in the air, and perhaps ice fog in the winter.

Increased recreational facilities and access routes, including the Ambler Mining District Transportation Corridor, would result in increased traffic, greater ease of access from the Bettles area, and more recreational use of the planning area.

Cumulative Impacts

Cumulative impacts result from the incremental addition of past, present, and reasonably foreseeable actions. Each action may be individually minor by itself, but when added to others becomes significant over a period of time (40 CFR 1508.7). In the foreseeable future (the next 10 years), cumulative impacts in the Utility Corridor would probably be the result of oil and gas exploration and development, mining activities, gravel extraction, recreational use (including hunting), and related facility development. The cumulative impacts from these events, or a combination of them, would likely cause changes in air and water quality, plant and animal communities (vitality, population, and distribution), wilderness resources, socioeconomic conditions, and visual resources. In turn, to the degree these resources are related to subsistence resources, those resources, uses, and users would be affected.

Assessment of cumulative impacts must consider all actions on federal and adjacent lands. A significant difference exists in the planning area north or south of 68° N latitude. The two portions differ ecologically, in patterns of land ownership and administration, and in existing resources, especially minerals. The potential for cumulative impacts resulting from the proposed plan is discussed separately for the planning area north and south. Potential cumulative impacts from other alternatives were discussed in the draft plan (USDOI, BLM, 1987).

CAMA

North of 68° in CAMA, the study area encompasses 12,850,000 acres, 3,680,000 acres of which are federal. Of the federal land the subsurface estate of 274,000 acres has been conveyed to the Arctic Slope Regional Corporation (ASRC). The majority of the remaining nonfederal CAMA lands (9,170,000 acres) are either State of Alaska or ASRC lands. Adjacent to the CAMA region is the National Petroleum Reserve - Alaska (NPR-A) and the Arctic National Wildlife Refuge.

Most of CAMA and portions of both the NPR-A and ANWR have a high potential for oil and gas resources. Oil and gas exploration throughout CAMA and on adjacent lands is sure to take place. Recreational activity north of 68° would primarily be limited to use of the Dalton Highway, and then, only if the highway is opened to the general public. Any recreational facility development would be limited to that portion of CAMA adjacent to the highway. Recreational activity away from the highway would most likely be low impact and sporadic. Locatable mineral development north of 68° is not likely to occur in the foreseeable future because of low mineral potential and inaccessible lands. The 19 existing mining claims in CAMA are not in production at present, nor is any future production expected. Thus, under the proposed plan, any cumulative impacts within CAMA would most likely occur only as a result of the cumulative effects of oil and gas activities in CAMA and on adjacent lands.

On federal lands oil and gas exploration activities would be closely controlled through lease stipulations. Most adverse impacts would be short-term and localized. Well sites, gravel and reserve pits, and road construction would result in long-term but localized loss of wildlife habitat and wilderness values. Exploration on adjacent state or ASRC lands would be assumed to be similar in nature and impacts. Given protective stipulations, the large size of the CAMA, and the localized nature of exploratory activities, cumulative impacts would be expected to be low.

More serious, long-term cumulative impacts could result from actual oil and gas development and production; additional development outside the Prudhoe Bay area is dependent on the discovery of economically recoverable resources. Hypothetical scenarios for such development in CAMA or on adjacent lands are discussed in Chapter 2 of this plan. If a field is developed in either CAMA or NPR-A, a high potential for impacts could result from increased human activity and from pipelines and roads between the field and the Trans-Alaska Pipeline System and the Dalton Highway. Such an east-west transportation system could disrupt caribou migration and/or daily movements, but proper design and construction could alleviate these impacts. The need for large quantities of gravel, found primarily in streambeds, could affect water quality and fisheries; plans would be developed to mitigate these impacts. It should be noted, however, that the potential for oil and gas development in CAMA is highly speculative, and since the potential for the greatest impacts could be mitigated, the actual potential for significant cumulative impacts from oil and gas development should be considered low to moderate.

South of CAMA

South of 68°, the planning area is a contiguous block of 2,400,000 acres of federal land bounded by federal conservation units, i.e., parks and wildlife refuges. Locatable mineral potential is high in the southern portion, but oil and gas potential is generally low. Foreseeable actions do not appear to create serious cumulative impacts in this portion of the planning area or in downstream areas.

The main potentially impacting activities occurring in the southern portion of the planning area are recreation use and locatable mineral development. The Dalton Highway is open to the public to Disaster Creek, and recreation use is increasing annually. Most recreational activity is in the inner Corridor, nearest the highway, and occurs primarily during the summer. ORV use is prohibited within 5 miles of either side of the Dalton Highway; this plan proposes an additional ORV use study for other portions of the planning area. Once the ORV study is complete, appropriate limitations would prevent significant cumulative impacts from occurring.

South of the Arctic Circle, recreational activity is primarily sightseeing, or use of the Yukon River at Yukon Crossing. Because of the development node at Yukon Crossing, activity would be confined to the node, and cumulative impacts would be low. From Yukon Crossing north to Disaster Creek, a number of recreation activities do occur. The Jim River is a focal point for camping, fishing, and hiking. This plan proposes recreational facilities such as campgrounds, waysides, and trailheads that would increase visitor use. However, each facility will be designed to minimize potential impacts, and once in place, will be monitored and appropriate action taken if necessary.

Under the proposed plan, the inner Corridor is closed to placer mining or other locatable mineral development. There are currently 33 placer claims operating between the Arctic Circle and Disaster Creek. These mines occur in the South and Middle Fork Koyukuk River and the Jim River drainage systems. The number of mines is expected to increase by 3 to 4 over the life of the plan. State and EPA water quality regulations allow for no degradation of water quality, and for the protection of resident fisheries and anadromous fish spawning, rearing, and migration habitat. BLM requires compliance with water quality standards on all permitted activities. No evidence of cumulative impacts is apparent in any of the drainages in the area; ongoing water monitoring studies would be conducted under this plan.

Additional protection to the Jim River, an anadromous fish stream, would occur under designation of 200,000 acres as an ACEC (see Chapter 2). Under ACEC management, plans of operation would be required on all mining claims prior to any activity. Both the Jim River and Prospect Creek have been closed to new mining claims as far upstream as salmon spawning occurs. Gravel extraction will be limited to existing sites where possible, and it would be prohibited in identified mineral licks, the Kanuti Hot Springs and Sukakpak Mountain ACECs. Gravel extraction would be allowed in the Jim River and Prospect Creek streambeds and floodplains only if no other economically feasible locations can be found. The combination of these measures and the enforcement of compliance with existing regulations should prevent significant cumulative impacts from occurring in the planning area as well as downstream.

Opening the Prospect and Coldfoot areas to state selection is not expected to create any additional cumulative impacts that cannot be mitigated. If the Ambler Mining District Corridor road is built

through the Prospect area, impacts created by the road itself, and increased transportation can be alleviated by appropriate construction methods and by state regulation.

Activities in the Venetie Block are expected to be widely dispersed and of low impact, due to the lack of access. No potential for cumulative impacts is expected in this portion of the planning area.

Summary Table of the Estimation of Effects of the Proposed Plan and Each Alternative

Table 4.2:
Summary of the Estimation of Effects of the Proposed Plan and Each Alternative

Environmental Issues	Proposed Plan	Alternative A	Alternative B	Alternative C	Alternative D
Soil Resources	Increases in road traffic, mining and oil and gas development would result in increases in fugitive dust, soil disturbance and soil erosion. Impacts would occur to a greater extent than under alternatives A and B, but less than under Alternative D. The actual level of impacts would be dependent on many site specific factors such as slope, presence of ice, mitigation, etc.	Gradual increases in road traffic and mining would result in increases in fugitive dust, soil disturbance and soil erosion near access routes and mining activities. Anticipated impacts would be less than under Proposed Plan, and greater than under alternative B.	Impacts would be less than those described for Alternative A since a large portion of the planning area (i.e., most of CAMA) would be designated wilderness and mineral development south of CAMA would be more restrictive than under other alternatives.	The greatest potential for adverse impacts to soil resources exists under this alternative since the greatest amount of planning area lands are open to surface disturbing activities; these activities are primarily associated with mineral development.	Impacts would depend largely on the land use priorities established through State of Alaska planning efforts. Management is anticipated to be similar to the Proposed Plan.
Water Resources	Some increase in impacts to water quality are anticipated due to additional areas being opened to mineral location and oil and gas development. Proposed Jim River ACEC and restrictions on mineral development or extraction activities on Jim, Kanuti and Ivishak rivers would reduce potential for impacts on water quality. Also, compliance with EPA, AKDEC standards are required in all alternatives.	Continuation of the current impacts to water quality from increased road use and construction activity and from mining in areas currently open to mineral location.	Most protective of water resources due to mineral closures, wilderness recommendations.	Greatest potential for impacts to water resources since most of the planning area, including inner Corridor, would be opened to mineral development.	Impacts would depend largely on the land use priorities established through State of Alaska planning efforts. But management is anticipated to be similar to the Proposed Plan.

Table 4.2 cont.:
Summary of the Estimation of Effects of the Proposed Plan and Each Alternative

	Proposed Plan	Alternative A (Current Management)	Alternative B	Alternative C	Alternative D
Air Quality	Reduction in the number of development nodes could have a positive affect on air quality but oil and gas activities and resulting increases in road traffic may offset these effects. Nevertheless, overall air quality within the planning area will remain pristine. Fugitive dust will be a concern near the Dalton Highway.	Potential impacts to air quality would be less than under the Proposed Plan. Only along the Dalton Highway due to slight increases in traffic over the next few years would any impacts to air quality.be expected. Overall air quality within the planning area will remain pristine.	Potential impacts to air quality are minimized under this alternative. Developmental activity within the planning area south of CAMA is restricted in important habitat areas and most of CAMA is recommended for wilderness designation.	The greatest potential for impacts to air quality exist under this alternative since most of the planning area, including the inner Corridor, would be opened to mineral development. This could result in additional traffic and support facilities along the road and elsewhere.	Impacts would depend largely on the land use priorities established through State of Alaska planning efforts. But management is anticipated to be similar to the Proposed Plan.
Vegetation	Increased recreational use and development is expected to have a greater impact on vegetative resources relative to the current situation. Increases in road traffic, mining and oil and gas development will also result in increases in fugitive dust, soil disturbance and soil erosion impacting nearby vegetation. Overall impacts would be greater than under alternatives A and B, but less than under Alternative C. Establishment of ACECs and appropriate mitigation would reduce impacts.	Current levels of impact to vegetative resources would continue and largely be confined to lands immediately adjacent to the Dalton Highway. These impacts are largely a result of fugitive dust from road traffic, and from activities near nodes. Also, lands south of the Brooks Range are impacted by the approximately 30 mining operations.	Current levels of impact to vegetative resources could diminish since locatable mineral development is expected to drop under this alternative. Establishment of ACECs also will serve to lessen impacts to these resources.	Under this alternative most planning area lands, including the inner Corridor are open to mineral leasing and location. Also this alternative allows for commercial development outside of nodes and maintains the existing 5 nodes Therefore, an increase in impacts to vegetation above current levels and greater than under the Proposed plan would be expected	Impacts would depend largely on the land use priorities established through State of Alaska planning efforts. But management is anticipated to be similar to the Proposed Plan.

Table 4.2 cont.:
Summary of the Estimation of Effects of the Proposed Plan and Each Alternative

	Proposed Plan	Alternative A (Current Management)	Alternative B	Alternative C	Alternative D
Direct Surface Disturbance from Projected Development Activities	1) Approximately 2,200 acres of direct surface disturbance from mining operations and 180 miles of access roads. 2) Approximately 11,180 acres of direct surface disturbance from oil and gas development activities resulting from approximately 174 miles of improved gravel roads and associated gravel spray, oil drilling pads, production facilities pipelines, etc.	1) Approximately 2,000 acres of direct surface disturbance from mining operations with 165 miles of access roads. 2) No impacts from mineral leasing.	1) Approximately 1,800 acres of direct surface disturbance from mining operations with 150 miles of access roads. 2) No impacts from mineral leasing.	1) Approximately 2,500 acres of direct surface disturbance from mining operations with 200 miles of access roads. 2) Impacts from mineral leasing expected to be similar to that described for the Proposed Plan..	Impacts would depend largely on the land use priorities established through State of Alaska planning efforts. But management is anticipated to be similar to the Proposed Plan.
Cultural Resources	Direct impact to cultural resources is anticipated due to increases in recreational activity. "Pothunting" may increase due to greater number of recreationists in the area. Also direct impact to sites from placement of recreational development facilities.	Only a slight increase in recreational use of the Corridor is expected. No significant increase in impacts would be anticipated.	Impacts similar to those described for Alternative A.	Impacts both negative and positive due to the expected increase in mining activity. Mining may, in some cases, destroy resources but miners can help to inventory newly discovered sites to increase data base for this resource.	Impacts would depend largely on the land use priorities established through State of Alaska planning efforts. But management is anticipated to be similar to the Proposed Plan.

Table 4.2 cont.:
Summary of the Estimation of Effects of the Proposed Plan and Each Alternative

	Proposed Plan	Alternative A (Current Management)	Alternative B	Alternative C	Alternative D
Terrestrial Wildlife	The greatest potential impact to terrestrial wildlife would be possible displacement of caribou from future pipeline construction. The greatest threat to moose, Dall's sheep and bears would be from increases in human and animal interaction due to increased recreation and development activities. Establishment of several ACECs to protect lambing areas, and other important habitat will mitigate overall impacts to wildlife and habitat.	No ACECs are currently designated. However, CAMA is now managed under interim wilderness guidance and no activities permanently impacting wilderness values are allowed. Oil and gas leasing is not possible anywhere in the planning area. Impacts from human and animal interaction would be less under this alternative than under the Proposed Plan since recreational development is not emphasized. Greatest impact to wildlife populations under this alternative would be from hunting pressures. The greatest potential impact to wildlife habitat would be from mining activities south of 68° north latitude (i.e., south of CAMA) and gravel extraction within the inner Corridor.	Under this alternative, relative to the the current situation and the Proposed Plan, there would be a decrease in potential adverse impacts on terrestrial wildlife and an overall reduction in impacts to riparian habitat. Most of CAMA would be designated as wilderness and south of CAMA crucial habitats for moose, caribou and Dall's sheep are closed to mineral development. The greatest potential impacts would continue to be from hunting pressure.	Impacts to wildlife populations and habitat would be similar to that anticipated under the Proposed Plan. However, because the inner Corridor is opened to leasing under this alternative somewhat greater impacts than that expected under the Proposed Plan could occur.	Impacts would depend largely on the land use priorities established through State of Alaska planning efforts. But management is anticipated to be similar to the Proposed Plan.

Table 4.2 cont.:
Summary of the Estimation of Effects of the Proposed Plan and Each Alternative

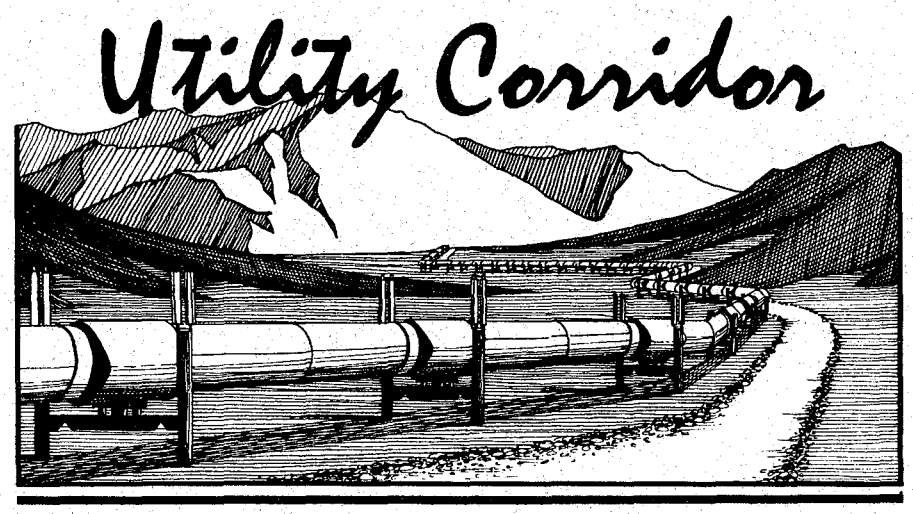
	Proposed Plan	Alternative A (Current Management)	Alternative B	Alternative C	Alternative D
Fisheries Resources	Increase in sport fishing expected but no significant impacts to fisheries expected as a result of this activity. Anticipated impacts to Jim River fishery low due to the restrictions on gravel extraction and establishment of Jim River ACEC. Also closure of portions of Kanuti River and inner Corridor to mineral location and restrictions on gravel extraction within the Ivishak River ACEC reduce potential impacts on fisheries.	Continuation of current management will see a slight increase in sport fishing but no significant impacts to fisheries are expected. Jim and Ivishak river areas are more vulnerable to negative impacts than under the Proposed Plan due to the greater possibility of mineral extraction within these floodplains.	Under this alternative, the greatest protection of planning area fisheries resources exists. The northern portion of the planning area i.e., CAMA, would be designated wilderness and south of CAMA extensive drainage areas are closed to mineral location. No significant impact from sport fishing is expected.	Under this alternative, because the inner Corridor would be opened to mineral leasing and location, the greatest potential for adverse impacts to planning area fisheries exists.	Impacts would depend largely on the land use priorities established through State of Alaska planning efforts. But management is anticipated to be similar to the Proposed Plan.
Visual Resources	Slight increase in potential impacts to visual resources when compared with current management. This would be due primarily to increases in oil and gas activity in CAMA. Along the Dalton Highway NSO stipulations on oil and gas activities and protection of specific areas e.g., Sukakpak Mountain, should help limit potential impacts.	Given the current management situation (e.g., interim wilderness management of CAMA, no oil and gas leasing), potential impacts to visual resources are minimized under this alternative. Impacts to visual qualities of the planning area would be limited to the inner Corridor and mining operations south of CAMA.	Expected impacts would be similar to those described for Alternative A.	The greatest potential for impacts to visual resources exists under this alternative. Opening the inner Corridor to mineral location and leasing (without NSO stipulations) could significantly impact the visual resources of the area.	Impacts would depend largely on the land use priorities established through State of Alaska planning efforts. But management is anticipated to be similar to the Proposed Plan.

Table 4.2 cont.:
Summary of the Estimation of Effects of the Proposed Plan and Each Alternative

	Proposed Plan	Alternative A (Current Management)	Alternative B	Alternative C	Alternative D
Wilderness	See *Central Arctic Management Area Wilderness Recommendations and Final Environmental Impact Statement* (USDOI, BLM, 1988)	See *Central Arctic Management Area Wilderness Recommendations and Final Environmental Impact Statement* (USDOI, BLM, 1988)	See *Central Arctic Management Area Wilderness Recommendations and Final Environmental Impact Statement* (USDOI, BLM, 1988)	See *Central Arctic Management Area Wilderness Recommendations and Final Environmental Impact Statement* (USDOI, BLM, 1988)	See *Central Arctic Management Area Wilderness Recommendations and Final Environmentai Impact Statement* (USDOI, BLM, 1988)
Socioeconomic Resources	The potential exists for substantial increases in employment opportunities due to possible increases in oil and gas exploration and development on the North Slope. However, local rural resident employment is expected to be only about 2.8% of total increase. Total increase in employment could reach 50-60 jobs during a three year exploration phase, 1,500 to 3,000 jobs during development phase. Also, an increase in seasonal employment from small increases in mining activity south of the Brooks Range could occur.	Current socioeconomic conditions within the planning area would be maintained for the near future with few or no increases in employment opportunities.	Closure of additional lands to mineral entry could result in a loss of some employment opportunities in the local area, perhaps 25 jobs, over the next few years.	Opening inner and outer Corridor to mineral development could result in a gain of about 150 seasonal job opportunities south of CAMA over the next 10 years and potential additional employment in nodal areas in support of new minerals development.	Impacts would depend largely on the land use priorities established through State of Alaska planning efforts. But management is anticipated to be similar to the Proposed Plan.

Table 4.2 cont.:
Summary of the Estimation of Effects of the Proposed Plan and Each Alternative

	Proposed Plan	Alternative A (Current Management)	Alternative B	Alternative C	Alternative D
Subsistence	Additional population in the area, particularly in CAMA, is expected as oil and gas development occurs, increasing hunting pressure on subsistence resources. If state selection of the Prospect Unit occurs, and the road is built to Bettles, additional access could increase pressure on subsistence resources in that area. ANILCA 810(a) evaluations would no longer occur on lands transferred to the state. However, it is assumed that protection of subsistence uses and resources by the state would occur, and no significant restriction to subsistence would result.	No significant restriction to subsistence use and needs occurring under the current management.	No significant restriction to subsistence use and needs due to the protective measures for wildlife habitat.	Same as Proposed Plan.	Impacts would depend largely on the land use priorities established through State of Alaska planning efforts. But management is anticipated to be similar to the Proposed Plan. ANILCA 810 subsistence evaluations on discretionary actions would no longer apply on lands transferred to the state.



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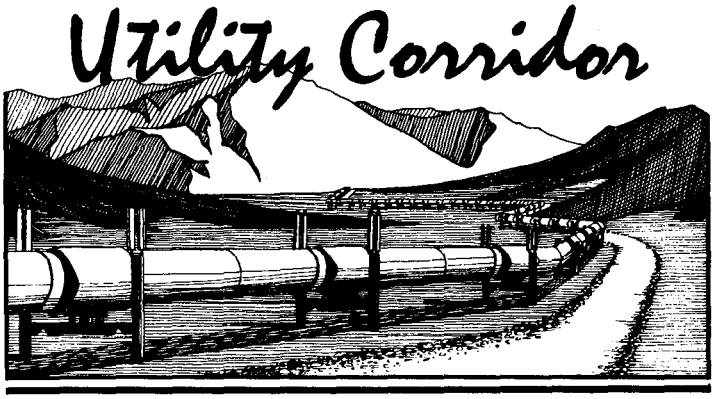

Chapter 5: CONSULTATION AND COORDINATION

Introduction

Consultation, coordination and public involvement have occurred throughout the planning process. This has been achieved through meetings with various interest groups, state and other federal agencies; workshops with local, state, and federal agency representatives; and, public meetings in Fairbanks, Anchorage, Barrow, and rural villages in and near the planning area. Additionally, Utility Corridor planning issues have been discussed at meetings of the Northern Alaska Advisory Council and the Alaska Land Use Council.

Opportunities for Public Participation

A public participation plan was prepared at the outset of the project to ensure that the public would have numerous opportunities to become actively involved in the planning process. Both formal and informal comments have been encouraged and considered.

A Federal Register notice of intent to prepare a plan was published in January, 1986. News releases in Anchorage and Fairbanks announced the beginning of the planning process as well as the time and place of public "scoping" meetings. Newsletters were issued by the Arctic District Office to encourage additional public comments and to keep the public informed of the plan's progress. A mailing list of over 500 organizations and individuals was compiled and used to distribute these newsletters.

SCOPING

Public "scoping" meetings to discuss and define planning issues and criteria, and to explain the planning process were held at several locations. Most of the public scoping meetings were relatively well attended, see Table 5.1. In addition to the public meetings, workshops were held with other federal, state and local government agency representatives to define issues, criteria and plan alternatives.

Table 5.1
Public Scoping Meetings

Place	Attendance
Fairbanks	44
Stevens Village	22
Allakaket	13
Barrow	3
Bettles/Evansville	12
Total	**94**

THE DRAFT RMP/EIS

On August 18, 1987, the Utility Corridor Draft Resource Management Plan and Environmental Impact Statement and the attached Central Arctic Management Area Draft Wilderness Recommendations and Environmental Impact Statement (WEIS) were made available for public review and comment. More than 450 copies of the draft RMP/EIS and associated draft WEIS were mailed. Copies were sent to federal, state, and local agencies; to conservation organizations, Native Alaskan organizations, the oil and gas industry, selected libraries, the media, and others who expressed interest. The BLM published a notice of availability for the draft RMP/EIS and WEIS and a schedule for wilderness hearings in the Federal Register on August 27, 1987. The Environmental Protection Agency published a notice of availability on August 28, 1987.

A 90 day public comment period officially ended November 30, 1987. Comments were accepted through December 18, 1987. During this period, 97 letters commenting on the draft RMP/EIS and/or the draft Wilderness EIS [see *Central Arctic Management Area Wilderness Recommendations and Final Environmental Statement* (USDOI, BLM, 1988)] were received. Some individuals wrote more than once, and some letters were signed by more than one individual or represented the position of more than one organization. Of the letters received, thirty (30) were from private or public organizations, state/local government agencies, or from individuals serving a larger constituency. The other letters were from individuals with no claimed constituency although thirty-two (32) of these appeared to be the result of mail-in campaigns inspired by conservation groups. Also, resolutions concerning RMP issues were reported from three federal advisory councils.

A number of public meetings, wilderness hearings, and subsistence hearings were also held during the public comment period. The meetings focused on all the resource management issues addressed in the draft RMP/EIS and draft WEIS. A total of 134 people attended these meetings, see Table 5.2. Formal subsistence hearings were held in conjunction with all the public meetings and wilderness hearings were held at three locations: Barrow, Fairbanks, and Anchorage. A total of 34 individuals gave testimony at the subsistence hearings and ten during the wilderness hearings. Individuals giving testimony during the formal subsistence and wilderness hearings are listed in Table 5.3. For more information on public participation and comments specific to the wilderness recommendation see the *CAMA Wilderness Recommendations and Final EIS* (USDOI, BLM, 1988).

Table 5.2
Public Meetings on Draft RMP/EIS and Subsistence Hearings

Place	Date	Attendance
Barrow*	September 29, 1987	9
Nuiqsut	September 30, 1987	19
Fairbanks*	October 7, 1987	31
Anchorage*	October 9, 1987	15
Coldfoot	October 13, 1987	29
Bettles/Evansville	October 14, 1987	9
Anaktuvuk Pass	October 14, 1987	8
Stevens Village	October 15, 1987	14
Total		**134**

* Also site of wilderness hearing

Table 5.3
Individuals Making Comments at Hearings
- • Indicates testimony given at subsistence hearing.
- •• Indicates testimony given at wilderness hearing.
- ••• Indicates testimony given at both subsistence and wilderness hearing.

Individual	Location	Representing
•• Billy Adams	Barrow	NSB, Dept. of Wildlife Management
••• Tom Albert	Barrow	NSB, Dept. of Wildlife Management
• Tom Barnes	Barrow	NSB, Planning Dept
••• Ben Nayeak	Barrow	NSB, Dept. of Wildlife Management
• Frank Long	Nuiqsut	Self
• Bernice Pausanna	Nuiqsut	Self
• Isaac ? (last name unknown)	Nuiqsut	Self
• Joseph ? (last name unknown)	Nuiqsut	Self
• Phillip ? (last name unknown)	Nuiqsut	Self
•• Don Ellingson	Fairbanks	Self
• Oscar Frank	Fairbanks	Alfred Stevens
• Oscar Frank	Fairbanks	Self
• Harold Gillam	Fairbanks	Self
• Kenneth Housley	Fairbanks	Self
•• Pat Isaacson	Fairbanks	Self
••• Dave Lacey	Fairbanks	Self
••• Mick Manns	Fairbanks	Self
• Cheryl Mayo	Fairbanks	Self
• Marjorie Mayo	Fairbanks	Self
••• Vern Miller	Fairbanks	Self
••• Rick Reakoff	Fairbanks	Self
• Don Stevens	Fairbanks	Self
• Mike Walleri	Fairbanks	Self
•• Susan Alexander	Anchorage	Wilderness Society
• Paul Dionne	Coldfoot	Self
• Dick Mackey	Coldfoot	Self
• Jack Reakoff	Coldfoot	Self
• Myrtle Beham	Evansville	Self
• Oscar Frank	Evansville	Evansville Village Council
• Wallace Nictune	Evansville	Self
• Doris Hugo	Anaktuvuk Pass	Self
• Raymond Paneak	Anaktuvuk Pass	Self
• Rachel Riley	Anaktuvuk Pass	Self
• Lazarus Rolland	Anaktuvuk Pass	Self
• Oscar Frank	Stevens Village	Dinyee
• Robert Joseph	Stevens Village	Self
• Harold Simon	Stevens Village	Self
• Horace Smoke, Sr.	Stevens Village	Self

Table 5.5 at the end of the Comments and Responses section of this chapter contains a list of the specific agencies, organizations, businesses, and individuals who submitted written comments on the Draft RMP/EIS and the Supplement to the Draft RMP (see discussion below). Behind each name appearing in that table is a list of topics addressed by the respondent. Those who made oral comments at the public meetings have not been listed because individual speakers seldom identified themselves. Their comments, however, were considered.

All letters and transcripts of oral comments are available for public review at the BLM Arctic District Office in Fairbanks, Alaska. A copy of the letters and transcripts can be obtained by writing to:

M. Thomas Dean, District Manager,
Arctic District Office, AK 060,
1150 University Avenue,
Fairbanks, Alaska 99709-3844.

THE SUPPLEMENT TO THE DRAFT RMP/EIS

After publication of the Draft RMP/EIS the State of Alaska requested that the BLM reconsider the state selection opportunities outlined in the preferred alternative. In early 1988, personnel from the State of Alaska Department of Natural Resources and the BLM met to consider new options which would allow the state to select lands within the Utility Corridor. As a result of those meetings an option was chosen which proposed a modification of the preferred alternative to allow partial revocation of PLO 5150 (the public land order which prevents state selection within the Corridor). Since the proposed change to the previously published preferred alternative would allow an additional 1.1 million acres of land within the Utility Corridor to be opened to state selection, it was decided to publish a supplement to the draft plan to allow public comment. No other issues were addressed in the Supplement.

In April of 1988 the supplement and addendum to the Draft RMP/EIS (Appendix J) were made available for public review and comment. More than 550 copies of the Supplement and Addendum to the draft RMP/EIS were mailed. Copies were sent to federal, state, and local agencies; to conservation organizations, Native Alaskan organizations, the oil and gas industry, selected libraries, the media, and others who expressed interest during the development of the draft. The BLM published a notice of availability for the Supplement in the Federal Register on April 18, 1988. The Environmental Protection Agency published a notice of availability for the Supplement and Addendum on May 6, 1988.

The official public comment period on the proposed change to the preferred alternative presented in the Supplement and Addendum was originally scheduled to end June 8, 1988; it was extended to June 20. Ultimately, comments were accepted for consideration through July 1988. In response to the proposed change to the preferred alternative, 46 written comments (including telegrams) were received. Of the comments received, 23 were from private or public organizations, or state/local government agencies. The remaining written comments were from individuals with no claimed constituency. Also, see Comments and Responses section and Table 5.5 in this chapter.

During the public comment period four public meetings were also held to discuss the state selection proposal. The meetings were held in Barrow, Stevens Village, Fairbanks and Anchorage. A total of 37 people attended these meetings (Table 5.4).

Table 5.4
Public Meetings on Supplement to Draft RMP/EIS

Place	Date	Attendance
Stevens Village	May 16, 1988	14
Fairbanks	May 18, 1988	12
Barrow	May 19, 1988	3
Anchorage	May 20, 1988	8
Total		**37**

Consultation with the U.S. Fish and Wildlife Service on Threatened and Endangered Species

On April 24, 1989, the BLM wrote to the U.S fish and Wildlife Service (F&WS) concerning potential impacts to arctic and American peregrine falcons as a result of certain lands in northern and interior Alaska being made available for state selection. Response to that letter was received June 21, 1989. The F&WS response stated "...although we can assume that the [state] Department of Fish and Game will recommend the same protection measures now in use by federal agencies in Alaska, we cannot be sure that all state agencies will abide by those recommendation unless federal funds or permits are involved.... In order to insure that protection measures for arctic and American peregrine falcons are incorporated in management of lands transferred to the State, the Bureau of Land Management should consider including the protection measures as a condition of the land transfer.... These protection measures need only remain in effect while the species is listed as endangered or threatened, and both the arctic and American peregrine falcon will probably be proposed for delisting in the next five years."

Comments and Responses

Contained in the written and oral statements received during the two draft public comment periods are over 300 individual comments. Approximately 40 percent of the comments are considered to be substantive comments on the content of the Draft RMP/EIS, i.e., they 1) address the adequacy, inaccuracies, and discrepancies in the analysis, 2) identify what are considered to be either new impacts, alternatives, and mitigation measures, or 3) disagree with significant determinations. The remainder of the comments are considered to be expressions of personal preference or opinion.

Comments received on the Draft RMP/EIS and the Supplement to the Draft have been grouped below by major topic or issue. Some comments could have been placed under more than one issue; however, they were placed only under the issue considered to be most appropriate, and not listed under more than one issue. For example, the comment that campgrounds, waysides, and trails draw too many people and would interfere with subsistence and wilderness values is only listed under the recreation issue, but could have been listed under either subsistence or wilderness.

Those comments considered to be substantive appear first under each issue topic heading. Appropriate discussion or responses to substantive comments appears next under each issue topic. Often text revisions to the final RMP were considered to be the appropriate response; this is noted where appropriate. Expressions of personal preference and opinions are listed following the responses to the substantive comments. Behind nonsubstantive comments which were received more than once a number appears to indicate how many respondents made the comment. Although no specific response is made to these statements of personal preference and opinion, they have been considered in the RMP

development and have been carefully considered along with the environmental analysis in the decision making process.

ACCESS

Substantive Comments:

1. Page 3-3 should mention the Wiseman-Nolan and Wiseman-Hammond River road rights-of-way.
2. Preferred Action 15 should direct that access plans from the haul road to NPS and US F&WS land be done in conjunction with DOT/PF and Native interests, since access will thereby be provided to or near to state and Native lands.
3. Additional access to park lands adjacent to the corridor would alter the current use of the parks and significantly complicate management and visitor protection.

Responses:

Since additional access to park land adjacent to the corridor could alter current use of the parks and complicate management and visitor protection, development of access trails to adjacent federal land will involve consultation with both the other managing agency and the state.
Text revisions were made in the Final RMP to answer questions or correct misunderstandings, discrepancies, and inaccuracies. These revisions were made in response to comments concerning:

- the Wiseman-Nolan and Wiseman-Hammond River road rights-of-way connecting with the Dalton Highway, and
- access to NPS and US Fish and Wildlife land.

Preferences and Opinions:

1. Preferred Action 15 to work cooperatively with the NPS and the F&WS to identify access corridors to CSUs was endorsed.
2. The BLM should not accept the state's position on RS2477s as portrayed in the *Alaska Existing Trail System, 1973*, unless they are determined valid by a court of competent jurisdiction.
3. There should be no all-season road to Evansville; a winter road would be appropriate.
4. BLM should delay planning for other transportation corridors until they are necessary.
5. No transportation corridor to Bettles should be designated until the state establishes a need and commits to upgrade the existing road to an all-weather road.
6. The plan should designate a transportation corridor to access Bettles, Evansville, and the Ambler Mining District.
7. The BLM should consider alternatives to the Ambler transportation corridor.
8. The plan should establish an access corridor to Ambler mining district
9. There should be more analysis of impacts to all resources resulting from increased access
10. Transportation should be the primary purpose of the Utility Corridor.

ACECs

Substantive Comments:

1. Despite assurances in the plan, development and energy transportation could be administratively blocked; the excessive number of ACECs should be reexamined to assure that they do not block future development.
2. ACEC designations are an unnecessary administrative burden for BLM and may hinder the primary function of the corridor as a transportation route.
3. There is inadequate documentation of need for ACECs at mineral licks. The plan needs to establish that the timing of sheep visitation to the licks would conflict with other activities.
4. The draft plan does not document that mining in the Jim River area affects salmon spawning; in fact, salmon do not spawn in the upper reaches of the drainage.
5. The boundaries for the Jim River ACEC far exceed the area in which salmon spawn.
6. The plan does not justify closure of the Galbraith Lake ACEC to guiding and outfitting. These activities are not normally considered "surface disturbing," and adequate stipulations can be imposed to prevent damage to resources.
7. The boundary should be adjusted for Toolik Lake ACEC to include important portions of Toolik Lake watershed.

8. The plan should consider ways to protect experiments currently underway at Toolik Lake.
9. The plan should expand the boundary of the Nugget Creek ACEC along the west side of the Middle Fork to the mouth of the Dietrich River to protect a lambing area; this area is more crucial than that now slated as part of the ACEC.
10. There is inadequate justification for the Kanuti ACEC; there are no wildlife values and the hot springs can be protected without ACEC status.
11. The plan supplement does not address the impacts of state conveyance of lands containing the Sagwon Bluffs, Ivishak River, Slope Mountain, and Kanuti Hot Springs ACECs.
12. ORV access was requested to support research in Toolik Lake (ACEC) area.
13. Protect the stream draining Toolik and Itigaknit lakes by routing any future pipeline from the west to a point downstream from where it drains into the Kuparuk River.

Responses:

Many comments revealed a misunderstanding about the reasons for designating an area an ACEC. Among the criteria for determining whether an area should be managed as an ACEC is consideration of whether it contains unique resources and values that, singly or in combination with other resources or values, make this area special. ACEC designation alone does not indicate a particular type of management for an area; rather the designation results in management emphasis and in priority for the funding of management requirements of the ACEC. The management practices for a particular ACEC usually are prescribed in detail in a site-specific activity plan for the ACEC which is prepared following the RMP.

An overriding assumption throughout the RMP is the primacy of the energy transportation function of the Utility Corridor. No action or alternatives should be interpreted as preventing the construction of new or continued operation of existing transportation in such a way as to prevent the primary transportation function. Within this context, ACEC designations highlight areas where special management attention is needed to protect, and prevent irreparable damage to, important historic, cultural, and scenic values, fish or wildlife resources, or other natural systems or processes; or to protect human life and safety from natural hazards. The ACEC designation indicates BLM recognizes that an area has significant values and has established special management measures to protect those values. For example, the ACECs surrounding withdrawn mineral lick sites would not arbitrarily preclude energy transportation activities or other activities from occurring. These other activities would be evaluated during the normal permitting process, and seasonal restrictions would be placed on activities only during those times that are critical to the wildlife species being protected by the ACEC (See Chapter 2).

The management, size, boundaries, and configuration of some of the proposed ACECs have been modified in response to comments. For example, Toolik Lake ACEC increased in size from about 10,000 acres at the Draft RMP stage to about 80,000 acres in the Final RMP stage, and use limitations have been clarified. The size of other ACECs has decreased. The combined total area considered for ACEC designation increased from about 441,000 acres at the draft RMP stage to the present approximately 505,000 acres.

In some cases comments were considered but no change resulted in ACEC use limitations or boundaries; e.g., we considered it inappropriate to expand boundaries of the Nugget Creek ACEC to include the mouth of the Dietrich River because of the distance involved. However, this potential lambing area will be investigated and an additional ACEC may be designated if appropriate.

Designation of ACECs also serves as a reminder that significant values or resources exist which must be accommodated when future management actions and land use proposals are considered near or within the ACEC.

Designation of the Jim River ACEC, to protect important downstream fishery fish spawning is an example of where impact analysis suggests that activities such as mining could have offsite impacts downstream even though actual spawning does not occur in that portion of the ACEC where mining is located.

Further, the justification for designating an ACEC is not limited to protecting cultural or wildlife resources. Another example is the ACEC designation that has been applied to the Kanuti Hot

Springs to protect the hot springs and vegetation that are determined to be special natural systems or processes.

Text revisions were made in the Final RMP to answer questions or correct misunderstandings, discrepancies, and inaccuracies. These revisions were made in response to comments concerning:

- closure of the Galbraith Lake ACEC to guiding and outfitting;
- Toolik Lake ACEC boundaries;
- impacts of state management of Sagwon Bluffs, Ivishak River, and Slope Mountain ACECs; and
- ORV access in the Toolik Lake ACEC.

Preferences and Opinions:

Comments expressing personal preferences concerning ACECs are listed below. A number appears behind the comment if more than one individual expressed essentially the same opinion. This number indicates how many people expressed that particular opinion. These opinions will be considered when making land use decisions but no response is necessary.

1. Instead of being established as an ACEC, the Kanuti Hot Springs should be promoted as an area to enjoy a hot spring in its natural state.
2. The plan should consider several areas for designation as Areas of Critical Environmental Concern. Areas mentioned include the Colville River, the Sagavanirktok River, and the South Fork Koyukuk River system.
3. All ACECs should be managed as wilderness.
4. The Dall River watershed should be designated an ACEC. (2)
5. The BLM should identify additional fish and wildlife habitat areas deserving special management or protection.
6. The Toolik Lake area should be established as an ACEC.
7. The Toolik Lake area should be established as an ACEC and Research Natural Area.
8. Recreational activities at the Toolik ACEC were opposed because they are not compatible with the research being conducted there. (4)
9. There should be more Research Natural Areas. (2)
10. The draft plan fails to document that the Jim River ACEC has peregrine falcon.
11. The plan should not place an ACEC at Jim River.
12. ACECs should not be established in the utility corridor.
13. The management philosophy behind the ACECs should be clarified to preclude them from interfering with the overall utility purpose of the corridor.
14. All ACECs should be closed to development. (5)
15. Kanuti Hot Springs should not be developed until further study has been completed.
16. ACECs are only appropriate at Galbraith Lake, Kanuti Hot Springs, Toolik Lake, and 40 to 160 acres around mineral licks.
17. The size of the Galbraith Lake and Sagwon Bluffs ACECs should be reduced to allow a corridor for the existing pipeline and road and for the proposed gas line.
18. In order to protect ongoing research, the Galbraith Lake ACEC should be enlarged to include as much of the Kuparuk River headwaters as possible. (3)
19. Mining should be allowed in the Sukakpak Mountain ACEC and the boundary of the ACEC adjusted to allow the needed space to develop low grade ore.
20. ACECs should be closed to mineral, gas and oil development, and sand and gravel extraction. (5)
21. The ACECs at Sukakpak Mountain, Nugget Creek, and Jim River should not be limited to recreation use alone.
22. The Colville River should obtain the protection afforded ACECs.
23. All ACECs over five thousand acres should be designated wilderness.
24. There should be no commercial leases at the Kanuti Hot Springs ACEC.
25. Except for those engaged in research, there should be no overnight camping at Toolik Lake, and no facilities or trails should be developed. (5)
26. The plan places too much emphasis on recreation. For example, Preferred Action 3 gives recreational facilities a higher priority than maintenance of the Dalton Highway for use of gravel in ACECs.
27. The BLM should retain the Sagwon Bluffs, Ivishak River, Slope Mountain, and Kanuti Hot Springs ACECs.
28. The Sagwon Bluffs and Ivishak River ACECs should be removed from the opening to state selection proposed in the supplement to the Draft RMP. These lands hold valuable biological and archeological values which would not be guaranteed the same protection under state management as under federal management.

29. The plan should consider establishing an interpretive site near Toolik Lake or Galbraith Lake to explain research.

ALTERNATIVES AND OTHER MANAGEMENT CONSIDERATIONS

Substantive Comments:

1. The plan has not adequately addressed multiple use as an alternative.
2. The entire range of potential resource development scenarios judged to be economically feasible should be addressed in the plan, including mineral development of the inner corridor.
3. The plan fails to explain why there is no consideration of designating the corridor as a Conservation System Unit in any of the alternatives.
4. Management of the Killik drainage under multiple-use guidelines is contrary to BLM's wild river study, which found the Killik qualified for inclusion in the National Wild and Scenic Rivers System, and Congress's action of placing the upper part of the river in the Gates of the Arctic NP.

Responses:

The preferred alternative represented the BLM's attempt to protect or allow prudent use of important resources without unnecessarily prohibiting or excessively constraining other land or resource uses. As much as possible the BLM tried to facilitate the coexistence of potentially conflicting land and resource uses.

Each alternative discussed in Chapter 2 of the draft RMP represents a different combination of multiple use management prescriptions and restrictions.

Although numerous comments suggested that the Utility Corridor should be established as a Conservation System Unit, such a designation would require an act of Congress and is beyond the authority of the BLM. This was an alternative element considered but not analyzed in detail.

Should the Killik River lands be acquired, multiple-use management would take into account the unique opportunities afforded by the region for primitive recreation and the status of adjacent lands.

Preferences and Opinions:

1. The entire Utility Corridor should be established as a federal Conservation System Unit. (19)
2. The land in the Killik River area should be consolidated and protected as a Conservation System Unit.
3. The Dalton Highway should be designated a National Scenic Highway. (15)
4. Preferences were express for the Preferred Alternative. (2)
5. Preferences were expressed supporting adoption of a mix of the Preferred Alternative and Alternative B. (7)
6. Preferred Actions 22 and 24 should be replaced with Actions B-22 and B-25, respectively.
7. The amended Preferred Alternative should be adopted provided that surface access to the transport corridor remains with BLM or the state.
8. All recommendations for changing the plan proposed by the Northern Alaska Environmental Center should be adopted
9. Alternative A should be adopted (2)
10. Alternative B should be adopted (11)
11. The wilderness section of Alternative B should be adopted. (2)
12. The minerals policies of Alternative B should be adopted. (4)
13. Alternative C should be adopted. (5)
14. The plan should maintain the wilderness nature of the corridor. (9)
15. It is inappropriate to justify Alternative B on protection of adjacent CSUs. The corridor's values are worthy of being made a Conservation System Unit independent of adjacent land ownership.
16. Given the changes in the supplement, the rationale for the Preferred Alternative on page 4-47 should be modified.

LANDS: ACQUISITION, DISPOSAL, STATE SELECTION

Substantive Comments:

1. If land is open to selection by the state, as proposed in the supplement, there should be a stipulation to the selection with provisions protecting threatened and endangered species.
2. The supplement does not identify which historic sites are in the lands proposed for opening to state selection. Moreover, such a proposal requires Section 106 compliance and because the state does not have an approved historic preservation plan, the 106 review will have to result in a finding of an "adverse effect." Such a transfer of land is probably illegal under 36CFR61 and 36CFR800.3.
3. Supplement should have discussed how state will manage lands should they be transferred.
4. The plan fails to address the appropriate management should the state remove its prohibition of land sales within five miles of the Dalton Highway.

Responses:

State land sales within five miles of the Dalton Highway were not analyzed in detail because we have no reason to believe that the state would change its current management policies for those lands.

Text revisions were made in the Final RMP to answer questions and provide additional information or correct misunderstandings, discrepancies, and inaccuracies. These revisions were made in response to comments concerning:

- consequences of state selection;
- protecting threatened or endangered species on parcels of state selection;
- Section 106 cultural review and compliance; and
- management of lands after transfer to the state.

Preferences and Opinions:

1. Eliminate split estate and trade high oil potential lands to obtain inholdings in CSUs and to consolidate the Oolamnagavik Block.
2. The Arctic Gas Line Corridor should be transferred from BLM to the Fish and Wildlife Service.
3. The plan should acknowledge that the best way to provide access to adjacent state lands is to allow conveyance of adjoining corridor lands to the state.
4. The plan should not allow development or land exchanges. (2)
5. The state should only be allowed land in the corridor through exchanges. (4)
6. There should not be homesite disposals at the Yukon Crossing.
7. There should be no homesite disposals. (3)
8. Opposes state land disposals or sales at the Yukon Crossing.
9. Eliminate homesite disposals at the nodes because these cause a significant restriction of subsistence opportunities for current rural residents. (16)
10. Leasing or permitting at Yukon Crossing and Coldfoot was endorsed but land sales in these areas was opposed.
11. The Coldfoot node should remain in federal ownership since federal law allows for preferential sale to area residents
12. The plan should not advocate resolution to split estates by disposal of subsurface estate, particularly because, absent mineral or sand and gravel deposits, there is little reason that split estate would prove an obstacle to sound management of the surface estate.
13. Lands should only be disposed of by exchange for lands which will further conservation and wise land management.
14. The plan should not allow the federal government to have fewer acres in the corridor than it currently has.
15. State selections in the corridor were endorsed. (9)
16. State selection in the Venetie block and in the northern part of the corridor were endorsed.
17. No lands should be made available for state selection. (56)
18. State selection of lands north of the Yukon River, referred to as the Stevens Village block, was opposed. (17)
19. Action B-10 which provides for consolidation of land ownership patterns in CAMA was endorsed. (14)
20. Lands within the haul road corridor and the ANILCA Sec. 1431(j) corridor should be available for state selection.

21. If any lands within the planning area do not contain sufficient "national interest" to merit federal retention, they should be made available for state selection, rather than held for exchange for lands furthering the federal interest.
22. The state should be allowed to select lands at all development nodes.
23. BLM lands should not be transferred to the NPS or F&WS, except as part of an exchange, preferably for lands with mineral potential.
24. Efforts to resolve trespass in Wiseman through land sales are inappropriate. (2)
25. Trespass problems should not be solved by granting title to the trespassers.
26. State selections should not be referred to as "land disposals" since the former are a sovereign right of the state, while the latter are discretionary actions.
27. The conveyance of corridor lands, as proposed in the supplement, could have damaging effects on adjacent federal lands, including parks and refuges. (2)
28. Elements of Preferred Actions 9 and 10 were opposed; BLM should retain lands adjacent to ANWR and manage them similarly to those lands in ANWR.
29. BLM should end split estate problems by acquiring Arctic Slope Regional Corporation subsurface estates, not by disposing of federal surface estate.
30. Approximately 325,000 acres of BLM land adjacent to ANWR should be added to ANWR.
31. State selection is significantly more efficient than exchanges in transferring ownership of lands no longer necessary to the federal interest.
32. The opening of corridor lands to state selection proposed in the supplement was stated at a meeting to be tied to BLM retention of the Denali block, but the Denali block is not mentioned in the supplement.
33. The supplement's rationale that state ownership of lands will ease management rings hollow, since the large tracts adjoining the lands proposed for opening to state selection are in federal ownership.
34. The BLM should find lands other than those immediately north of the Yukon River to exchange for state selected lands along the Denali Highway.
35. The plan incorrectly states that there are no environmental effects of state land selections. (5)
36. Contrary to what is purported on page 1-1, the conditions applying to the corridor lands between the Yukon River and Washington Creek before they were opened to selection by the state were not very different from the current status of corridor lands north of the Yukon.
37. Contrary to what is stated on page 4-40, it is not necessary to conduct a Sec. 106 review for Alternative D.
38. The Preferred Alternative is not consistent with state plans and policies to acquire lands in the corridor. (2).
39. The plan fails to show how conveyance of lands to the state would harm the national interest; the state has greater incentive to maintain the energy transportation system than the nation and the state has more expertise in maintaining recreational facilities than does BLM.
40. Opening the corridor to state selection may lead to conveyance of the land to the North Slope Borough which might develop commercial operations and lead to opening the entire Dalton Highway.

NODES

Substantive Comments:

1. The supplement fails to address the consequences of state selection on the need for and constitution of development nodes.

Response:

Text revisions were made in the Final RMP to answer questions and provide additional information in response to comments concerning the consequences of state selection on nodes.

Preferences and Opinions:

1. All land conveyances should be concentrated at nodes.
2. All development should be in the nodes and under restricted federal leases. (5)
3. Development in nodes should only be allowed under federal leases.
4. Eliminate development nodes at Pump Station 3, Prospect Creek, and Chandalar Shelf. (17)
5. Development should be limited to nodes
6. The nodes should not be developed.
7. The Yukon Crossing and Coldfoot nodes should not be expanded.
8. There should not be a school at 7-Mile.
9. Further development of nodes will hurt tourism and recreation.
10. The Coldfoot node in the Preferred Alternative is too large. (2)
11. There should be a development node at Prospect.

12. Eliminate development nodes at Pump Station 3 and Prospect Creek. (3)
13. Development at the Chandalar node was opposed. (5)
14. Development at the Coldfoot node was opposed.
15. Development at the Happy Valley node was opposed. (3)
16. Development at the Yukon Crossing node was opposed. (4)
17. The Chandalar Shelf node should be eliminated and the Yukon Crossing and Coldfoot nodes should only be large enough to provide necessary road services.
18. The Coldfoot node should be larger to accommodate greater flexibility in size and location of homesites.

MINERALS

Substantive Comments:

1. There should be separate descriptions of the extent of oil and gas activities for each alternative.
2. The plan should present realistic mineral scenarios and address developing technologies and changing mineral needs.
3. The impacts of mining and mineral material extraction on bears need to be qualified by analyzing the impacts of existing mines and material sites and using the data in Table 4-1.
4. While forbidding mineral material extraction from the Jim River is justified, prohibiting its extraction from the floodplain poses a serious problem for maintaining the Dalton Highway, which is essential to the corridor's primary transportation function. The BLM should work cooperatively with DOT/PF and ADF&G to develop measures to allow adequate gravel supplies for the road while ensuring fisheries protection.
5. The Environmental Consequences chapter seems to ignore the oil and gas regulatory framework and standard industry engineering and environmental mitigating measures; the document should discuss these, qualify the magnitude of potential impacts, and cite the literature for the basis of the plan's estimated impacts.
6. The plan should contemplate mineral leasing of locatable minerals in areas near mineral licks.
7. It is improper to evaluate mining impacts without taking into account mitigating actions.
8. The plan needs to clarify the extent of nonoccupancy zones proposed for mineral leasing activities in mineral lick areas.

Responses:

The Draft RMP analyzes impacts from oil and gas development under two scenarios. Alternatives A and B project no leasing and no oil and gas development. Analysis of impacts from oil and gas development under Alternative C is based on a development scenario similar to the Proposed Alternative; i.e., the Proposed Alternative and Alternative C have essentially the same oil and gas leasing prescription. Under these two alternatives all high and moderate potential areas are open to oil and gas development, and the development scenarios are the same. Alternative A calls for current management to continue on lands not transferred to the state.

Although the Draft RMP addressed mineral development to be allowed under each alternative, text revisions were made in the Final RMP to clarify the analysis and to incorporate more complete and accurate minerals data. Among these revisions is a scenario projecting the extent of anticipated minerals development. The mineral development scenarios in Chapter 2 and impact analysis in Chapter 4, have been modified where appropriate to reflect more careful consideration of oil and gas regulatory framework and standard industry engineering and operation.

In keeping with the original intent of the Utility Corridor, mineral materials would be made available for the development of new as well as the maintenance and repair of existing, energy transportation systems. However, multiple use management must also consider protection of other valued resources and provide for other land uses to the extent possible without restricting energy transportation.

It is beyond the authority of the BLM to make locatable mineral development available through a leasing system. This would require congressional action and is a minerals management alternative considered but not analyzed in detail.

Lands within the "inner" corridor have been withdrawn from locatable mineral development by PLO 5150 to ensure continued federal ownership. If mining claims were allowed within the inner corridor

and these were patented, it is reasonable to expect that continued use of existing energy transportation systems and development of new systems could be impeded.

Text revisions were made in the Final RMP to clarify what areas would be opened to oil and gas leasing only with nonsurface occupancy stipulations.

Preferences and Opinions:

1. The Colville River valley should be closed to mineral development.
2. Mineral policies which do not have any adverse affects on wildlife, their habitat, and areas of unique scenic value should be adopted.
3. Mineral development policies defined in actions B-1 and B-2 were endorsed. (15)
4. Oil and gas and mineral exploration should be limited.
5. The entire area should be open to mineral development. (2)
6. There should be no mineral development in watersheds that drain into CSUs.
7. The plan should provide that medium and high potential areas of CAMA be open to oil and gas leasing and that east-west corridors available for pipelines to the TAPS.
8. There should be mineral closures for crucial wildlife habitat, rivers draining into CSUs, and areas recommended for wilderness.
9. There should be no withdrawals within the corridor.
10. Because the right-of-way needs are known, the inner corridor should be reduced to about one-quarter mile in width.
11. The lands should be withdrawn from mineral location; minerals should be developed through leasing.
12. Each alternative should be revised to incorporate assurance that mineral materials for transportation systems for petroleum will be given primary consideration as merited by the corridor's primary transportation purpose.
13. The plan fails to recognize that mineral development activities may enhance, rather than detract, from recreation.
14. Because most mineral terranes cross the inner and outer corridors, closing the inner, but not the outer corridor, to mineral development may increase, rather than decrease disruption of other resource values. Under such a policy, miners would have to go to the outer corridor to develop the mine and work their way back to the inner corridor. This would disturb more land and be more costly.
15. The plan should open the inner corridor to mineral location and leasing.
16. The minerals data is good but incomplete, surficial, and, in some cases, misleading.
17. Mineral entry should not be allowed within three hundred feet of either shore of the Chandalar River in the eastern part of the Venetie block.
18. The corridor should be open to mineral location and leasing to within one half mile of the pipeline, as is the case on where the pipeline passes through state lands.
19. Page 4-2 erroneously leaves the impression that all turbidity is bad, techniques are not effective in eliminating discharges, and the impacts of turbidity cannot be mitigated.

OFF-ROAD VEHICLES (ORVS)

Substantive Comments:

1. The final RMP/EIS should discuss the methods of enforcing ORV use restrictions and their efficiency in minimizing adverse effects.
2. The plan fails to address the appropriate management should the state remove its prohibition of recreational ORV use within five miles of the Dalton Highway.

Responses:

The state prohibits both ORV use and hunting with firearms within five miles of the Dalton Highway. State enforcement of these restrictions, really minimizes the violations of BLM's ORV use restrictions.

At this time, BLM cannot predict that the state would remove its prohibition of recreational ORV use within five miles of the Dalton Highway. However, under the Proposed Plan (see Proposed Action 30 in Chapter 2) BLM proposes to allow recreational use of ORVs during the winter should the state's restrictions be removed. Additionally, BLM proposes to conduct an ORV use evaluation (see Proposed Action 31) to determine if further reclassification of lands to prohibit or allow (with or without restrictions) use of ORVs in specific areas is warranted. This reclassification, if necessary, would be through a plan amendment.

Preferences and Opinions:

1. Current ORV policy should be retained. (18)
2. Current ORV policy should be retained, except around Wiseman, where it may be modified for villagers' use.
3. All ORVs, except snowmobiles, should be prohibited. (3)
4. Subsistence snowmobile use and permitted commercial use of other ORVs should be allowed; recreational and noncommercial casual use should be prohibited.
5. Fewer restrictions should be placed on ORV use.

RECREATION

Substantive Comments:

1. The basis for the estimates of recreational demand is unclear. The estimates may be very misleading.
2. The plan does not discuss the state's *Comprehensive Outdoor Recreation Plan.*
3. The final plan should analyze the effect of a 15 to 20 percent increase in traffic because of enhanced tourism and recreation.

Responses:

The Alaska State Comprehensive Outdoor Recreation Plan (*Outdoor Recreation: Alaska*) was reviewed and useful information was considered where appropriate. Text revisions were made in the Final RMP to answer questions and provide additional information or correct misunderstandings, discrepancies, and inaccuracies. These revisions were made in response to comments concerning:

- estimating recreation demand, and
- scenarios considering recreational activities.

Preferences and Opinions:

1. Recreational development, such as waysides, should be prohibited.
2. Other resource uses should have priority over recreation.(2)
3. Waysides and camping areas should be small.
4. Recreational developments, including signs and interpretive facilities, are appropriate in the inner corridor.
5. There should be no recreational development in the outer corridor.
6. The emphasis on recreation leads one to believe that it conflicts with the primary purpose of the Utility Corridor.
7. Campers should be permitted to limit the traffic on the Dalton Highway and the impact on wildlife.
8. Recreation development along the Dalton Highway was endorsed.
9. The Dall River should be closed to sport fishing because it is being overused.
10. The Recreation Activity Management Plan proposed in the plan should incorporate an educational and interpretive program to combat incidents of trespass and vandalism on the Dall River.
11. Increasing recreational use may make it more difficult for the state to enforce its ORV restrictions.
12. Recreational developments north of Coldfoot may be premature. The market may not yet be able to successfully support quality services.
13. Campgrounds, waysides, and trails draw too many people and will interfere with subsistence and wilderness values.
14. Increasing recreational use may make it more difficult for the state to enforce its ORV restrictions.
15. Campgrounds, waysides, and trails draw too many people and will interfere with subsistence and wilderness values.
16. Preferred Action 12 is too restrictive; some recreational development may be appropriate.
17. The plan should not designate recreation areas in the Utility Corridor. These could interfere with the corridor's primary transportation mission.
18. Recreational developments north of Coldfoot may be premature. The market may not yet be able to successfully handle quality services.
19. The VRM classification for the Dalton Highway Unit should be III and the Dalton Corridor and the Oolamnagavik Block should be classified as II.

SUBSISTENCE

Substantive Comments:

1. Subsistence use patterns are not adequately defined; the plan should indicate the relative importance for subsistence of lands within and outside the planning area.
2. A Sec. 810(a) finding is not relevant for Alternative D.
3. The plan should compare subsistence use considerations under federal management of land pursuant to ANILCA Sec. 810 and under state management pursuant to state subsistence statutes.
4. The supplement should have discussed effects of state development of the corridor on subsistence.
5. The plan should specify how subsistence-related mitigation stipulations will be enforced and how the public can be involved.
6. The communities of Allakaket/Alatna, Evansville, and Stevens Village should be designated subsistence study areas. BLM should evaluate the impact of mineral activities and FLPMA sales or leases if any of these actions are to be allowed.
7. The subsistence impact of the Ambler transportation corridor requires careful consideration.
8. The plan inadequately addresses the impact development activity workers who hunt have on game necessary for subsistence.

Responses:

The RMP does not indicate relative importance of lands for subsistence uses because doing so would not adequately reflect the changing and shifting nature of subsistence uses. This is consistent with the Alaska Department of Fish and Game, Division of Subsistence which consistently states that assigning relative importance to land for sale purposes would not adequately reflect the changing and shifting nature of subsistence uses.

A section 810(a) finding on subsistence was included for Alternative D because ANILCA 810 requires a finding on any federal action pursuant to Section 805(d) of ANILCA.

Public involvement in the development of subsistence related mitigation as well as the enforcement of that mitigation is an integral part of BLM's management responsibilities. When appropriate, BLM routinely solicits input about how to mitigate potential impacts and what level of monitoring may be appropriate. This applies to subsistence mitigation as readily as with any other issue. The level and intensity of monitoring varies according to the purpose being served. Monitoring may be intended to ensure compliance with decisions, to measure the effectiveness or success of decisions, or to evaluate the validity of decisions. In each case the purpose and procedures should be included in development of a monitoring plan which the public may also help develop.

It was suggested that Allakaket/Alatna, Evansville, and Stevens Village should be designated subsistence study areas to evaluate the impacts of mineral activities and FLPMA sales leases. During this RMP process the direct and indirect subsistence impacts have been analyzed.

Text revisions were made in the Final RMP to answer questions and provide additional information or correct misunderstandings, discrepancies, and inaccuracies. These revisions were made in response to comments concerning:

- subsistence impacts of the Ambler transportation corridor, and
- the effects of state ownership of identified Corridor lands on subsistence.

Preferences and Opinions:

1. There should be no new access created which would stimulate additional hunting by other than local residents; doing so would impact subsistence economy.
2. The number of development nodes should be limited to minimize impacts on subsistence.
3. There should be no actions allowed within the Corridor which will have a significant restriction on subsistence uses. (4)
4. Wilderness designation could hinder subsistence activities.
5. Oil and gas development could have deleterious impacts on subsistence activities. (3)
6. Development and an influx of recreationists will have adverse effects on subsistence activities.
7. "Subsistence trapping" should be clarified as either "trapping for subsistence purposes" or "trapping by local rural residents."

5. Oil and gas development could have deleterious impacts on subsistence activities. (3)
6. Development and an influx of recreationists will have adverse effects on subsistence activities.
7. "Subsistence trapping" should be clarified as either "trapping for subsistence purposes" or "trapping by local rural residents."
8. The plan overstates the ability to mitigate impacts to subsistence.
9. BLM should have held an 810 subsistence hearing at Allakaket
10. Interpretive signs and materials should be developed to educate the public of the need to use the Dall River area responsibly; the drainage is an important subsistence area which is being degraded by recreationists. (3)
11. Develop interpretive signs and materials on subsistence economies. (10)
12. The plan is incorrect in stating that Alternatives A, B, and D will not cause significant restrictions of subsistence uses. Land sales in enlarged nodes, increased sport hunting and fishing, and increased mining activity will significantly restrict subsistence uses.
13. The Section 810 discussion is lacking. Development along the corridor may lead to the state classifying nearby communities as nonrural and ineligible for participation in subsistence activities. Moreover, there needs to be more thorough discussion of the impact of more residents and more activities in the corridor following development.
14. The Section 810 determination for the corridor is incomplete and inadequate.
15. The plan supplement fails to meet the subsistence requirements of ANILCA Section 810. (2)

WILDLIFE AND FISHERIES

Substantive Comments:

1. The Dall River should be added to the list of streams which contain regionally important fishery values.
2. BLM should assist ADF&G in developing a permit entry fishery for the Dall River.
3. The plan fails to assess the damage to fisheries by the introduction of heavy metals and chemicals from mining operations.
4. The plan should consider closing mineral lick areas to mineral materials sales.
5. Contrary to the implications of the section on Fisheries Resources on page 4-40, stream protection should be similar under either federal or state management.
6. The experience with the TAPS indicates that caribou habitat is not lost through the animals' avoidance of the pipeline.
7. The planning document exaggerates the adverse effects of mining on fishery resources, given compliance with government regulations.
8. Federal and state wildlife management differences should be detailed and assessed, and if no different, so state.
9. Wildlife resources and fisheries habitat should be inventoried before any uses are allowed which might impact them.
10. The plan should refer to "hares" rather than "rabbits" on page 3-33.

Responses:

Although the Dall River may contain regionally important fishery values, it is outside the planning area. Therefore, it is not listed in this RMP as a stream with important fishery values, nor has BLM pursued developing a permit entry fishery for the Dall River.

There is no evidence that heavy metals and chemicals are being dumped into streams. BLM monitoring of water quality indicates that any occurrences of heavy metals are not caused by mines that are operating.

The management prescriptions and anticipated activities described in the RMP would result in loss of caribou habitat. The significance of such habitat loss on caribou populations depends on several factors including the location, quality and amount of habitat lost and the effectiveness of mitigation measures. These determinations were placed in Chapter 4 of both the draft and final RMPs entitled "Impacts Unique to Each Alternative" and "Cumulative Impacts." More specific statements on acreage disturbed and anticipated impacts have been included in Chapter 4 of the final RMP/EIS for the proposed action.

In the discussion of impacts to fisheries it is stated that potential long term impacts are more likely as the cumulative result of many mines within the same drainage and/or as a result of a long period of mining in the same area. Total compliance with and enforcement of existing laws and regulations is

not a reasonable position from which to estimate potential impacts. There are always the possibilities of illegal activities, accidents, and other inadvertent noncompliance.

There are no data available to conclude that mining has had long term effects on area fisheries. No one knows with certainty the species or numbers of fish that occurred in streams of the planning area prior to the mining operations of the 1900s. Furthermore, sufficient data do not exist to evaluate the impacts caused by historic mining, nor is the RMP the proper forum for such a study.

The difference between federal and state wildlife management is that, while the Bureau manages wildlife habitat, the State of Alaska manages the wildlife populations, i.e., the animals, birds, fish, etc. The federal responsibilities for management of wildlife includes those species covered by specific federal legislation (e.g., Endangered Species Act). The state is not mandated to comply with the Endangered Species Act; however, in practice state policy is to manage to meet the intent of the Act.

Prior to approving any disturbing activities, an environmental analysis which addresses, among other things, fish and wildlife impacts, is required by the BLM in compliance with NEPA. Significant impacts must either be mitigated or an Environmental Impact Statement prepared prior to approval.

Text revisions were made in the Final RMP to answer questions and provide additional information or correct misunderstandings, discrepancies, and inaccuracies. These revisions were made in response to comments concerning:

- closing mineral lick areas to mineral materials sales, and
- use of the word "hares" rather than "rabbits."

Preferences and Opinions:

1. Muskox should be transplanted in the Oolamnagavik Block.
2. An HMP for the Colville River should be prepared.
3. Kanuti Hot Springs should not be leased. It should be left in its natural condition. If recreational use conflicts with wildlife, recreational use should be curtailed. (2)
4. Closures of a square quarter mile encompassing mineral licks as indicated in the Preferred Alternative is appropriate.
5. It is premature to transplant muskox to the Oolamnagavik Block; BLM needs to consult with ADF&G.
6. The plan should reiterate ADF&G's and BLM respective responsibilities as outlined in the Master Memorandum of Understanding.
7. The BLM should retain a withdrawal on known crucial anadromous fish spawning areas.
8. Closure of a five miles diameter around peregrine falcon nests, as provided in Action B-24 was endorsed.
9. The plan should improve habitat to support self-sustaining populations of fish and wildlife.
10. Mining, using appropriate mitigation measures, can increase habitat for water-dependent species.
11. Stream protection should be similar under either federal or state management.
12. There is no documentation that mineral licks have a particular function in an animal's life cycle.
13. Mining, when followed by proper mitigative measures, can increase habitat for water-dependent species, contrary to the indications on page 4-14.
14. The statement concerning irretrievable commitments of resources is not correct; even intense and unregulated placer mining in the early part of this century did not result in long term effects on fisheries.

WILDERNESS

Many comments were received relating to wilderness issues and resources within the planning area. However, as a result of existing legislation and departmental policy (see Wilderness Section in Chapter 1), review of wilderness resources was required only north of 68° N latitude, i.e., within CAMA. That review resulted in a separate wilderness EIS and report to Congress, completed by CLM in 1988. All comments relating to wilderness issues and responses to those comments are included in the *Central Arctic Management Area Wilderness Recommendations and Final Environmental Impact Statement* (USDOI, BLM 1988). A summary of these comments is below.

1. Appendix J (the Draft Wilderness EIS) should address the cumulative impacts of development in the corridor and CAMA on subsistence and wildlife migration patterns.
2. All the corridor lands should be designated wilderness. (16)
3. The "Partial Wilderness Alternative" and wilderness designation of Oolamnagavik Block were endorsed. (14)
4. The Venetie Block should be classified as wilderness. (2)
5. All Wilderness Alternative for the CAMA lands and the Utility Corridor was endorsed. (3)
6. Consolidate the Oolamnagavik Block and designate it a wilderness area.
7. Wilderness designation for the Oolamnagavik Block and for areas described in the CAMA Wilderness Study was endorsed.
8. All wilderness areas should be closed to mineral entry. (2)
9. The wilderness proposal is premature, since there is a proposal to add this area to the national park.
10. The plan should promote wilderness tourism with bus access.
11. The Nigu block should be wilderness, but managed under a park or preserve status.
12. The BLM should go beyond Action B-10 and acquire the Killik River watershed and propose that Congress designate it a wilderness area.
13. Wilderness designation for CAMA lands was endorsed. (3)
14. Wilderness designation was opposed.
15. It is realistic to allow a utility corridor through the Oolamnagavik Block. (3)
16. Land ownership should be consolidated and, wherever possible, the land designated as wilderness. This is particularly appropriate for the Oolamnagavik block and the Killik River.
17. The BLM should not only seek to acquire lands surrounding the Killik River as proposed in Preferred Action 10; it should also designate as nonmotorized wilderness.

OTHER CONCERNS

Substantive Comments:

1. Action B-5 needs to be clarified to indicate that its prohibition on guiding and outfitting camps does not extend to the state airport at Galbraith Lake.
2. Page 2-3 states that lands within the Arctic National Wildlife Refuge are presently withdrawn by PLO 6607, but Appendix F states that this PLO was "essentially terminated." This discrepancy needs to be addressed.
3. Dietrich airport should not be included in the list printed on page 3-2 of state-maintained airports in the corridor.
4. A more precise description of the location of Waldron Creek is between the Yukon River bridge and Stevens Village.
5. Appendix B (Appendix D in the Final) should be revised to indicate that PLOs 5561 and 5581 along with ANILCA Sec. 906(j)(1) cancelled PLOs 5169, 5179, 5180, and 5186 regarding state selection.
6. Subsistence maps need captions indicating that information depicted on them is derived from numerous studies with varying methodologies and that subsistence use patterns change over time.
7. The bibliography omits Sumida and Alexander 1986, which is cited on Subsistence Use Area map 2.
8. "Salt licks" should be referred to as "mineral licks" for the sake of uniformity throughout the document.
9. The maps of the northern portion of the study area should indicate that the Dalton Highway ends at the Deadhorse airport.
10. Existing Access maps should show the airports at Umiat, Allakaket, and Hughes to be state-maintained, and the Nuiqsut airport should be located on the west side of the Colville River channel.
11. Page 3-4 and the Preferred Alternative maps may mislead the public into believing all federal lands in the planning area will become open to mineral entry and oil and gas leasing as a result of this RMP. The plan should address the segregative effect of state and native selections and BLM's use authorization structure.
12. The plan provides too little information on project-specific environmental analyses and RMP monitoring to determine the potential for adverse impacts.

Responses:

The appropriate use of a federally granted state airport lease is not an issue for consideration in this plan, however; under the terms of the lease, subleasing of airport properties at Galbraith Lake is to be done only with BLM concurrence and when the purposes are in harmony with its proper use as an airport. Proper use is usually defined as activities needed to support the airport, not activities which need the support of the airport. While such a definition is open to interpretation, under Alternative B, leasing to guides and outfitters is not considered consistent with stated management objectives.

Text revisions were made in the Final RMP to answer questions and provide additional information or correct misunderstandings, discrepancies, and inaccuracies. These revisions were made in response to comments 2 through 12.

Preferences and Opinions:

1. Monitoring of impacts is inadequate and should not be part of the management plan.
2. Commercial harvesting of timber should be prohibited.
3. Solid waste disposal sites should be developed.
4. The plan properly recognizes the need to accommodate research facilities within the corridor.
5. The plan should state how BLM will deal with projected impacts.
6. Development along the Dalton Highway is opposed.
7. Support preservation.
8. The state has laws against hunting and ORVs in the corridor, but has neither the will nor the resources to enforce these prohibitions.
9. Riparian zones should be better protected by measuring area to be protected from the water bodies' lower banks, rather than from the center of the streams.
10. Appendix B (Appendix D in the Final) should indicate that the state owns the beds of navigable rivers, even if they were withdrawn for a Wild and Scenic River study by ANILCA Sec. 604.
11. Land status maps in Chapter 3 do not illustrate the large blocks of state owned and state selected lands, nor do they indicate the state's top-filing on three military installations on the Arctic Coast. This fails to give the reader information to help assess the state's interest in corridor lands.
12. Current land status as indicated in the plan appears to be incorrect.
13. The plan has not critically examined the potential cumulative impacts to water quality that may result from development in the Utility Corridor.
14. There is inadequate discussion of mitigation measures in the plan.
15. Contrary to what is stated on page 4-40, it is not necessary to conduct a Sec. 106 review for Alternative D.
16. Impacts are adequately addressed.
17. The final plan should specify criteria for all FLPMA lease applications to protect scenic qualities.
18. The plan should provide visitors an opportunity to view and understand the mineralization of the Brooks Range.
19. The BLM should consider that changes in state law relating to resource management and development may be more rapid and receive less public review than under FLPMA.
20. The BLM should undertake cooperative planning with agencies with adjacent lands.(9)
21. The Clearwater Block was not part of the original scope of the plan; including it now is not in compliance with NEPA.
22. BLM should conduct meetings in Koyukon villages and notify local fish and game advisory committees.
23. The plan fails to address the appropriate management should the state open more of the Dalton Highway to general traffic.

Table 5.5
Respondents During First and Second Comment Periods

- • Indicates written response during first comment period
- •• Indicates written response during second comment period
- ••• Indicates written response during first and second comment periods

Respondent	Issues Addressed *
Federal Advisory Groups	
• National Public Lands Advisory Council	Acs, GD, SS, RD, O
••• Northern Alaska Advisory Council	Alt, SS, Ws
••• Southern Alaska Advisory Council	Alt, RD, SS
State Offices, Agencies, Legislators, and Local Governments	
• Alaska State Historic Preservation Officer (DNR)	O
••• Citizens Advisory Commission on Federal Areas	Acs, AC, Alt, MD, RD, SS, O
• Interior Regional Fish and Game Council (ADF&G)	Acs, DN, Sbs
••• Office of the Governor	Acs, AC, Alt, DN, RD, SS, Ws, O
•• Fairbanks North Star Borough	O
•• North Slope Borough Planning Dept.	SS, O
••• Allakaket Village Council	GD, RD, Sbs, SS
• Hughes Village Council	GD, RD, Sbs, SS
•• Rampart Village Council	SS
• Alaska State Senator Bettye Fahrenkamp	AC, Alt, SS, O
•• Alaska State Senator Johne Binkley	SS
•• Alaska State Representative F. Kay Wallis	Sbs, SS
•• Alaska State Representative Henry Springer	O
Native Groups and Organizations	
• Alaska Federation of Natives, Inc.	Alt, RD, SS
••• Dinyee	AC, Acs, Alt, DN, RD, Sbs, SS, Ws, O
••• Tanana Chiefs Conference, Inc.	Acs, DN, RD, Sbs, SS, O
•• K'oyitl'ots ina Limited	Sbs, SS
•• Indigenous Survival International	GD, SS
Environmental Groups and Organizations	
• Alaska Center for the Environment	AC, Acs, Alt, DN, MD, RD, Sbs, SS, Wl, Ws, O
••• Northern Alaska Environmental Center	AC, Acs, Alt, DN, MD, RD, Sbs, SS, Wl, Ws, O
••• Sierra Club	AC, Acs, Alt, DN, MD, RD, SS, Ws, O
••• Wilderness Society, The	Acs, Alt, DN, MD, RD, SS, Ws, O
•• Trustees for Alaska	AC, DN, SS, Sbs, O
Research Organizations	
• Marine Biological Laboratory (Woods Hole, MA)	AC, RD, O
• National Science Foundation	AC, RD, O
• University of Alaska Fairbanks, Institute of Arctic Biology	AC, DN, RD, O
• University of Illinois at Urbana-Champaign, Dept. of Ecology, Ethology, and Evolution	AC, RD
• University of Alaska, Institute of Marine Science	AC, RD
• University of Massachusetts at Amherst, Dept of Forestry and Wildlife Management	AC, RD

Respondent	Issues Addressed *
Industry and/or Business Groups	
• Alaska Miners Association, Inc.	AC, Acs, MD, RD, Ws, O
• Alyeska Pipeline Service Company	Alt, MD, RD
• Greater Fairbanks Chamber of Commerce	Alt, MD, SS
• Standard Alaska Production Company	Acs, MD, O
•• Resource Development Council for Alaska, Inc.	SS
•• Alaska Oil and Gas Association	Acs, SS
Federal Agencies	
• Bureau of Mines	O
••• National Park Service	Acs, MD, RD, Sbs, SS, O
••• Environmental Protection Agency	Alt, Ws, O
Individuals	
• Adler, James	AC, Alt, MD, SS
• Adler, Kerry	AC, Alt, MD, RD, SS
• Ames, Mark	O
• Beck, Ron	Alt, Acs, DN, GD, RD, Ws
• Becker, Jon	AC, RD, SS, Wl, Ws, O
• Brookman, Gerald R.	RD, O
• Brown, Lawerence	AC, Alt, RD
••• Burns, Craig	AC, Alt, DN, MD, RD, SS, Wl, O
• Chinn, Ronald E.	DN, MD, RD, SS, Ws
•• Classen, Thomas	SS
• Connery, Bruce	Acs, RD, SS, Ws, O
• Coutler, Alan	Acs, Alt, DN, MD, RD, SS, Ws
• Dalle-Molle, John	AC, Alt, DN, RD, Ws
• Dashevsky, Sam	AC, Acs, Alt, DN, GD, RD, SS
• Doudna, David	DN, MD, RD, Ws, O
• Drummond, Chuck	AC, Alt, MD, SS, Ws
••• Frank, Oscar	AC, Alt, DN, GD, RD, SS, Sbs, Wl, Ws, O
• Fruge, Douglas J.	Acs, Alt, DN, MD, SS, Ws
• Funke, Michael	GD, MD, RD, SS, Ws
•• Holman, William	SS, O
• Hovik, Paul	GD, WS
• Hutton, Mr. Frank	Acs, Alt, DN, MD, RD, SS, Ws O
• Jettmar, Gladys	AC, MD, RD, SS, Ws
• Jettmar, Karen	Alt, DN, RD, SS, Ws
• John, Allen	Sbs
•• John, Donna	SS, O
• Kaye, Roger	Acs, Alt, MD, RD, SS, Ws, O
• Kemnitz, Richard	Acs, Alt, DN, GD, MD, RD, SS
••• Kent, Chris S.T.	AC, Alt, DN, MD, RD, SS, Wl, Ws, O
• Kipphut, George W.	AC, RD
• Klein, Frank	AC, DN, GD, MD, RD, SS, Ws
• Korobko, John	Acs, GD, MD, RD
••• Lacey, Dave	AC, Alt, DN, GD, RD, Sbs, SS, Ws, O
• Lewis, Sherry	AC, RD, SS, Wl, Ws, O
•• Long, Becky	Sbs, SS, Ws
•• Mackey, Dick	SS
• Maxwell, Kerry	Alt, GD, MD, RD, SS
•• McGuire, Sean	SS
•• Meacham, Tom	SS
• Meeks, Mark	Acs, DN, Wl, Ws

Respondent	Issues Addressed *
• Miner, Todd	GD, MD, RD, Ws
• Mitchell, Gatlin	Acs, Alt, DN, MD, RD, SS, Ws
• Morris, Mrs. Kelly	AC, Acs, Alt, MD, SS
• Paragi, Thomas	GD, RD, SS
• Pausanna, Bernice	O
• Petty, Clarence	DN, MD, RD, SS, Ws, O
• Raynolds, Martha K.	Acs, Alt, DN, GD, MD, SS, Ws
• Reakoff, Jack	AC, Acs, DN, Sbs, SS Ws, O
• Reakoff, Rick	DN, RD, Sbs, SS
• Reed, Steve	AC, GD, RD, Ws
• Rees, Michael	AC, Acs, GD, RD, SS, Ws, O
• Reller, Carl	AC, SS, Ws, O
• Richards, Hugh	DN, MD, RD, SS, Ws
•• Robinson, Dr. E.B., Jr.	SS
• Rosenberg, Carl	AC, Acs, DN, GD, MD, RD, SS, Wl
• Ruggles, Anne K.	AC, GD, RD, SS, Ws, O
• Sammis, Teresa	Acs, MD, RD, SS
• Schnorf, Craig	AC, RD, Ws
• Scranton, Chris and Pam	AC, GD, SS, Ws, O
• Sebastian, Joseph	AC, GD, SS, Ws, O
• Soileau, Don	Acs, Alt, DN, MD, RD, SS, Ws, O
• Spotts, Richard	Acs, Alt, DN, MD, RD, SS, Ws
• Standley, Chris Selin	DN, MD, RD, SS, Ws
••• Sterling, Mike	AC, Acs, Alt, DN, MD, RD, Sbs, SS Ws, O
• Stevens, Alfred P.	Acs, DN, GD, RD, Sbs, O
• Sturnick, Mark A.	Acs, Alt, DN, MD, RD, SS, Ws
• Sutton, Larry	Acs, Alt, DN, MD, RD, SS, Ws
•• Walleri, Michael J.	O
• Walters, William	GD, MD, RD, SS, Ws
•• Weinstock, June	SS, O
• Wheeler, Heather	MD, RD, Ws
• White, Alan	Acs, Alt, DN, MD, RD SS, Ws
• Wiedner, Dr. E.M.	SS
•• Yarnell, Ron	SS, O
• Zaccardi, Mike	AC, GD, MD, SS, Ws

*		
	Access / ORV use	Acs
	ACECs	AC
	Alternatives or Special Designation of Corridor	Alt
	Development Nodes (including homesite sales)	DN
	General Development	GD
	Mineral Development	MD
	Recreational Development	RD
	State Selection	SS
	Subsistence	Sbs
	Wilderness	Ws
	Wildlife	Wl
	Other	O

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