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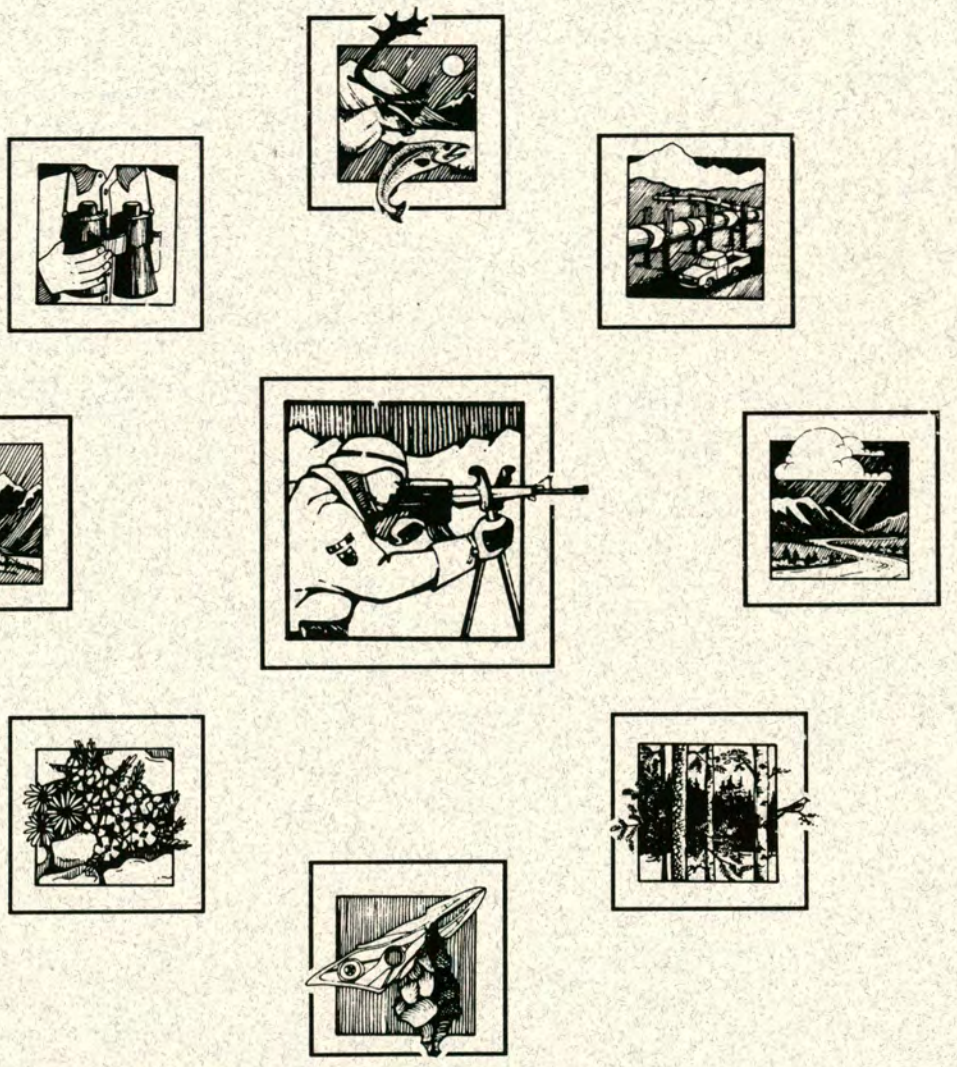
United States Department of the Interior
Bureau of Land Management
Steese/White Mountains District Office

United States Department of Defense
U.S. Army
6th Infantry Division (Light)

Fort Greely

Proposed Resource Management Plan
Final Environmental Impact Statement



Fort Greely

Proposed Resource Management Plan
Final Environmental Impact Statement

Prepared by:

U.S. Department of the Interior
Bureau of Land Management
Steese/White Mountains District

U.S. Department of Defense
U.S. Army
6th Infantry Division (Light)

1994

PROPOSED RESOURCE MANAGEMENT PLAN
AND
FINAL ENVIRONMENTAL IMPACT STATEMENT
FOR THE
FORT GREELY MANEUVER AREA
AND
FORT GREELY AIR DROP ZONE

Lead Agency: U.S. Department of Interior, Bureau of Land Management

Cooperating Agency: U.S. Army, 6th Infantry Division (Light)

Type of Action: Administrative

Abstract: This document presents the Proposed Plan and summaries of five alternative resource management plans for the Fort Greely Maneuver Area and Air Drop Zone. (For a full discussion of the alternatives to the Proposed Plan and their environmental consequences, see the draft version of this plan dated September 1988.) The Military Lands Withdrawal Act of 1986 establishes the primary uses of this land as military maneuvering, training, and testing. The Proposed Plan and the alternatives present a variety of combinations of proposals addressing the natural resources of the withdrawal and their nonmilitary uses. The "no action" alternative (Alternative A) would continue current management. The other alternatives represent a range of choices favoring relatively unimpeded military use, habitat protection, recreation, and economic development. The document goes on to describe the affected environment and the environmental consequences of the Proposed Plan and summaries of the consequences of the alternatives. It also presents public comment made on the draft of this document and the planning team's response to the comments.

The Proposed Plan differs in a number of respects from the Preferred Alternative identified in the Draft Resource Management Plan/Draft Environmental Impact Statement issued in September 1988. Most changes clarify or elaborate on the management prescriptions. The most noticeable changes in the plan affect access and the cultural resources and mineral development prescriptions. Under the Proposed Plan:

1. The Lakes Impact Area generally will be open to nonmilitary uses. *In contrast, the Preferred Alternative* closed this area to civilian use.
2. the BLM and the Army will undertake a Cultural Resource Management Plan. *In contrast, the Preferred Alternative* did not mandate a CRMP.

3. the BLM will not undertake a mineral assessment before considering whether to open the withdrawal to mineral development. *In contrast, the Preferred Alternative* required a mineral assessment before any consideration of opening the lands to mining.
4. mineral materials disposal will not be permitted. *In contrast, the Preferred Alternative* permitted such disposal. (The Department of Interior's Solicitor's Office has advised us that the Military Lands Withdrawal Act withdraws the lands from mineral material disposal.)

If you have any questions, contact:

Military Withdrawals Planning Team
Division of Resources (931)
Bureau of Land Management
Box 13
222 W. 7th Avenue
Anchorage, Alaska 99513

or call Jim Ducker, the planning team leader at (907) 271-3369.

Dear Reader,

The planning effort reflected in this Proposed Resource Management Plan/Final Environmental Impact Statement is an important step to fulfill the mandate of the Military Lands Withdrawals Act of 1986. This document is the result of work by a joint BLM-Army planning team consulting with the public. It acknowledges the primary military purpose of the withdrawn lands, yet it presents a Proposed Plan for a variety of nonmilitary uses.

The Proposed Plan, as a result of public and other input, slightly modifies the Preferred Alternative discussed in the Draft RMP/EIS dated September 1988. The BLM and the Army are in the process of drafting a Memorandum of Understanding to assign responsibilities for carrying out the elements of this plan.

The Army and the BLM thank those who took the time to participate in the planning process and assure them that their opinions and criticisms were considered and proved valuable in completing this document.

Edward F. Spang
State Director
Bureau of Land Management

for Robert G. Lawson

David A. Bramlett
Major General, U.S. Army
Commanding

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Steese/White Mountains District Office
1150 University Avenue
Fairbanks, Alaska 99709-3844

IN REPLY REFER TO:

December 20, 1993

Dear Reader:

This plan has benefited from your comments, both at public meetings and through letters you sent us following distribution of the Draft Resource Management Plan. We have taken your concerns into account; in Chapter 4 we have indicated how some of the concerns you expressed have altered the plan.

Any person or group who participated in the planning process and has an interest which is, or may be, affected by the approval of this plan may protest the plan to the director of BLM. Send protests to:

Bureau of Land Management
Division of Planning and Environmental Coordination (WO-760)
1849 C Street NW (406 L St.)
Washington, D.C. 20240

Protests must be received by February 15, 1994 and should include the following information:

* the name, mailing address, telephone number, and the interest of the person filing the protest;
* a statement of the issue or issues being protested;
* a statement of the part or parts of the plan being protested;
* a copy of all documents addressing the issue or issues that were submitted during the planning process by the protesting party, or an indication of the date the issue or issues were discussed for the record; and
* a concise statement explaining why the proposed decision is believed to be wrong.

Any significant change to the Proposed Plan made as a result of a protest will be subject to public review and comment prior to approval and implementation.

I thank you for your interest in the management of this withdrawal. I also wish to thank the men and women of the 6th Infantry (Light) for their cooperation and the professionalism they have exhibited during the course of preparing this joint planning document.

Roger Bolstad
District Manager

EXECUTIVE SUMMARY

This Proposed Resource Management Plan/Final Environmental Impact Statement was prepared in accordance with the Military Lands Withdrawal Act of 1986. It deals with the protection and utilization of the natural resources on the withdrawal, but recognizes the primary military role of these lands. The Proposed Plan presented in this document and the alternatives to it summarized in the *Fort Greely Draft Resource Management Plan/Draft Environmental Impact Statement* (DRMP/DEIS), which this document incorporates by reference, are consistent with the withdrawal's major purpose. The Proposed Plan is a modification of the Preferred Alternative discussed in the DRMP/DEIS of September 1988 and benefits from public comment received on that draft.

This volume presents a Proposed Plan and summaries of five alternative management scenarios.

Proposed Plan

The Proposed Plan seeks to maintain the public's current access to the withdrawal and examine ways to promote use of forest, recreation, and mineral values without conflicting with the military's mission.

Alternative A

Alternative A is the "no action" alternative, which would provide essentially the same management which currently exists on the withdrawal.

Alternative B

Alternative B presents a program which gives the military the greatest flexibility to use the withdrawal without interference from nonmilitary users.

Alternative C

Alternative C emphasizes protection of Fort Greely's wildlife habitat.

Alternative D

Alternative D promotes recreational use of the withdrawal.

Alternative E

Alternative E offers a series of actions designed to enhance the economic benefits derived from the withdrawn lands.

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LIST OF ABBREVIATIONS

ADF&G	Alaska Department of Fish and Game
ANILCA	Alaska National Interest Lands Conservation Act
BLM	U.S. Bureau of Land Management
CFR	Code of Federal Regulations
DBH	diameter at breast height
DOI	Department of the Interior
DRMP/DEIS	Draft Resource Management Plan/Draft Environmental Impact Statement
EIS	Environmental Impact Statement
F&WS	U.S. Fish and Wildlife Service
F.M.	Fairbanks Meridian
GVW	Gross Vehicle Weight
HMP	Habitat Management Plan
NEPA	National Environmental Policy Act
ORV	Off-road vehicle
P.L.	Public Law
RAMP	Recreation Activity Management Plan
RMP	Resource Management Plan
RS	Revised Statute
TAGS	Trans-Alaska Gas System
TAPS	Trans-Alaska Pipeline System
VRM	Visual Resource Management

Introduction

Purpose and Need for Action

This plan is designed to determine the appropriate mix of nonmilitary activities and uses which parts of Fort Greely can support, while at the same time permitting the military's important training and testing functions. The Bureau of Land Management (BLM), in cooperation with the Department of the Army, undertook this planning effort at the direction of Congress. The Military Lands Withdrawal Act of 1986 (P.L. 99-606) required the Department of the Interior (DOI) to prepare land use plans for the Fort Greely Maneuver Area and the Fort Greely Air Drop Zone. This legislation renewed the withdrawal on these lands which were originally withdrawn in 1961. The new withdrawal is for fifteen years for "military maneuvering, training, and equipment development and testing." Congress called upon the DOI, in consultation with the Army, to develop a plan for the life of the withdrawal which recognized the preeminence of the military's mission, yet included provisions necessary for "proper management and protection of the resources and values" on the withdrawn lands. It specifically suggested that the plan address the possibilities for wildlife and wildlife habitat protection, recreational use, and mineral development.* Upon adoption of the plan, BLM and the Army will draft a Memorandum of Understanding to implement the plan.

Location

The Fort Greely withdrawal consists of two tracts—the Fort Greely Maneuver Area of nearly 572,000 acres and the Fort Greely Air Drop Zone covering almost 52,000 acres—which are split by the Richardson Highway south of Delta Junction. The Maneuver Area stretches thirty to forty miles west of the highway to the Little Delta River and its tributaries, the West Fork Little Delta River and Buchanan Creek. The northern and southern boundaries are diagonal lines varying from a little over twenty miles apart in the east to about thirty-five miles apart in the west. The Delta River flows northward through the extreme eastern portion of the Maneuver Area. It separates the readily accessible area to the east, with its gun

* The act also calls for consideration of continuation of grazing. However, grazing does not occur on Fort Greely. Similarly, some topics normally addressed in resource management plans and environmental impact statements, such as prime and unique farmlands, wild horse and burro management, and land acquisition are not discussed because the resource does not exist on, or the action is inappropriate given the nature of, the withdrawal.

ranges and installations, from the roadless area in the west. In general the terrain varies from lake-dotted, open, and rolling country in the north and east to rugged, mountainous terrain in the south and west. The Air Drop Zone is an area about fifteen miles north to south, and ten miles east to west. It lies east of the Richardson Highway and west of Granite Creek. Its northern and southern boundaries zigzag on section lines, the former within a couple miles of the Alaska Highway and the latter in the foothills of the Alaska Range. Jarvis Creek runs northward near the center of the area. Rough dirt roads provide access to many portions of the drop zone.

Issues

This Proposed Resource Management Plan focuses on resolving issues. An issue for this withdrawal is a perceived concern, need, problem, conflict, or opportunity related to the use or management of Fort Greely's lands and resources. Issues for this plan are constrained by the withdrawal legislation which stated that military use is to remain predominant. The issues described below—military use, economic development, recreation, wildlife and habitat, and access—are derived from a review of existing planning and management documents, suggestions from interdisciplinary planning team members, BLM and Army policy and management, and public comment. The discussion below gives the background for each issue and a set of questions focusing on specific points related to the issue.

Military Use

The withdrawal is used for a variety of military purposes described in Chapter 3. These require facilities such as firing ranges, impact areas, landing strips, and training and maneuver areas. Future military use may require changes to existing facilities or additional facilities. Military and other human intrusions can disrupt wildlife and their habitat. Several archaeological and historical sites exist within the withdrawal, and continued protection of these sites precludes some military uses. While this plan cannot plan for or restrict future necessary military activities, it can recommend those steps the military should take to protect resource values, and it can determine actions which should be taken to enhance the military's ability to use the lands.

1. What areas or resources are especially sensitive or important and merit special protection from military activities?

Fort Greely

Military Withdrawal

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AREA MAP

Fort Greely Military Withdrawal

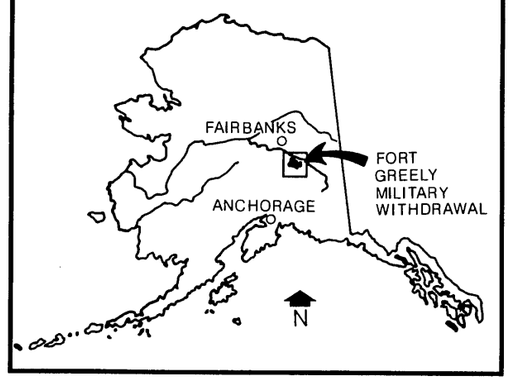
Elevations greater than 3,000 feet

SCALE

0 5 10 MILES

0 5 10 KILOMETERS

LOCATION MAP



2. What measures should the military take to minimize its adverse impact on resources?

3. How can hazardous wastes, if any, be identified, and how can the public be protected from them?

4. Which archaeological and historical sites should be excavated or relocated to allow for military use of these areas?

Economic Development

The withdrawal is closed to mineral entry and location, and to mineral leasing. Section 12 of the Military Lands Withdrawal Act of 1986 instructs the Secretary of the Interior, with the concurrence of the Secretary of the Army, to determine which lands are suitable for opening to the operation of the Mining Law of 1872, the Mineral Lands Leasing Act of 1920, the Mineral Leasing Act for Acquired Lands of 1947, or the Geothermal Steam Act of 1970. There also is public interest in the commercial use of the Fort Greely withdrawal for guiding, trapping, and forest products.

1. Should exploration and development of locatable, leasable, and salable minerals be allowed, and under what conditions and mitigating measures?

2. In what areas and under what physical and environmental conditions should forest products be made available?

3. In what areas and under what circumstances should opportunities for guiding, trapping, and other commercial activities be allowed?

Recreation

Hunting, fishing, and trapping are major recreational uses of Fort Greely. The withdrawal contains the largest variety of mammalian game, furbearers, waterfowl, and upland game birds of any military area in the country. There are few native game fish, although about a dozen lakes are stocked with nonreproducing salmonid populations, as well as grayling and sheefish. To a lesser degree, nonconsumptive uses of the withdrawal are evident. Such uses include viewing wildlife and riding off-road vehicles.

1. To what extent can recreational activities be accommodated in the withdrawal?

2. What, if any, recreational facilities are needed and appropriate for the withdrawn lands?

Wildlife and Habitat

In July 1986, the U.S. Army's 6th Infantry Division (Light), the U.S. Fish and Wildlife Service, and the Alaska Department of Fish and Game signed a cooperative agreement for managing fish and wildlife resources on Fort Greely and other Army installations in Alaska. The agreement requires resource inventories and management planning, and establishes principles concerning hunting and fishing.

1. What time and location restrictions should there be on military activities to protect wildlife and habitat?

2. What nonmilitary activities are consistent with wildlife and habitat protection and enhancement?

3. What steps should be taken to improve or expand the bison calving grounds which are deteriorating from over-grazing?

4. What steps should be taken to protect sharptail grouse dancing grounds?

5. What steps should be taken to protect caribou calving grounds?

Access

The type of public access and the extent and purpose of any access within the withdrawal needs to be addressed. Any development of recreation or economic opportunities will require access.

1. What access should be provided for consumptive and nonconsumptive resource uses?

2. For what areas should ORV use be permitted, prohibited, or limited?

3. To what extent can recreational use via aircraft be accommodated?

Scope of the Planning Document

The identification of these issues does not diminish the need to address the impact of management decisions on all other resources. The RMP is guided by the issues, but it must be comprehensive in its scope. Consequently, while Chapter 1 will focus on the alternate scenarios for addressing the isues, Chapter 2 will give a summary of all the affected environment and Chapter 3 will consider the plan's impacts on the environment's broad spectrum of values.

Criteria

The following criteria were used in the development of the resource management plan. They helped direct the planning effort in compliance with all applicable laws, regulations, and policies. The planning team submitted these criteria for public comment through a Notice of Intent and a widely distributed brochure in July 1987, and in public meetings at Delta Junction and Fairbanks in the following month.

1. All nonmilitary activities on the withdrawals will be subject to conditions and restrictions necessary to permit military use of the land.

2. Valid existing rights will be protected.

3. The plan will consider plans and policies of adjacent land owners and local governments.

4. The plan will consider wildlife and wildlife habitat, control of predatory and other animals, recreation, and prevention and appropriate suppression of fires from nonmilitary activities.

5. Wildlife and wildlife habitat will be managed consistent with a 1986 cooperative agreement between the Army, the Alaska Department of Fish and Game, and the U.S. Fish and Wildlife Service.

6. The plan will consider opening of lands to the mining laws.

7. Public access needs will be addressed, though military necessity, security, and public safety dictate that general public access will not be permitted on certain portions of the withdrawals.

8. Subsistence uses and needs will be considered in accordance with Sec. 810 of the Alaska National Interest Lands Conservation Act.

9. The plan will make no wilderness suitability recommendations.

10. The plan will utilize existing data, information, plans, and land use analyses.

11. BLM and the military will cooperate in preparing the plan which will be limited to resources and uses under BLM's administration and control.

12. The plan will specify decisions to the maximum extent practical and minimize the preparation of more specific activity plans.

13. The plan will not address contamination by military weapons and their decontamination as issues. Sec. 7 of the Military Lands Withdrawal Act establishes the Army's responsibilities for these actions.

Chapter 1

Alternatives

Introduction

Both the National Environmental Policy Act (NEPA) and BLM's resource management planning regulations require the formulation of alternatives in the development of land management plans. Each alternative presented in the Draft Resource Management Plan (DRMP) and summarized in a table at the end of this chapter represents a complete and reasonable plan to guide future management of public land and resources. (For a full discussion of the alternatives, see the DRMP issued in September 1988.) This chapter presents the Proposed Plan by describing future management that is common among all the alternatives and those elements of future management that are specific to the Proposed Plan.

Military Activities and Constraints on Alternatives

The Military Lands Withdrawal Act of 1986 mandates that the Department of the Interior, in coordination with the Department of the Army, plan for the nonmilitary use and resources of the withdrawal. The Proposed Plan presented here focuses on the nonmilitary potential of the Fort Greely withdrawal; it does not propose various scenarios for the military's conduct of their mission. In accordance with the Act, the plan recognizes the military's primary role on the land. The planning team has limited all alternatives to those nonmilitary uses and resources which are viable within the constraints necessary for protecting national security, ensuring public safety, and providing for forseeable military requirements for training, testing, and maneuvering.

Impact Areas

All alternatives are limited by the military's past use of parts of Fort Greely. There are five contiguous impact areas—Oklahoma, Delta Creek, Mississippi, Washington, and Lakes. The military has fired weapons into these areas, particularly the first four, since at least the 1960s. Some of the ordnance has produced, and continues to produce, unexploded duds. Disturbance can cause these duds to explode. The Air Force uses laser and laser-guided weapons on the Oklahoma Impact Area. Lasers can damage vision if they strike the eye, though

the Air Force normally has its lasers set at a mode that is not a hazard. The military rarely enters the impact areas, and does so only after taking stringent precautions. Under similar controls and conditions, and within the parameters of the various alternatives some nonmilitary users may gain access to these areas. However, because of the dangers inherent in traveling on these lands and the wide and unpredictable areas needed for casual uses such as hunting, fishing, and trapping, none of these or any other casual or recreational activities would be allowed under any alternative in the impact areas.

Maneuver Areas

Uses of other portions of Fort Greely would be limited by the various intermittent, and occasionally extensive, training and testing activities the Army and Air Force conduct on the withdrawn lands. Currently, there are about six hundred soldiers of the 6th Infantry Division (Light) stationed at Fort Greely. These troops along with full-time active duty soldiers and reservists and National Guard members from Alaska and the Lower 48 train on the withdrawn lands annually. Most training occurs east of the Delta River, but some large actions, particularly in the winter, occur west of the river, normally in the area north of the impact areas.

The Army permits the Air Force to conduct training and testing missions above Fort Greely. The Air Force trains over the withdrawal more than two hundred days annually. Air-to-ground firing is directed at the Oklahoma Impact Area. The Air Force may also use the area west of the Richardson Highway for air-to-air training. The latter occurs rarely—normally less than ten days a year—when the primary area for such training over Blying Sound is unavailable. When air-to-air training occurs no one should be on the ground in most of the area west of the Delta River.

Management Common to All Alternatives

Management Actions

The following management actions are ones which BLM and the Army consider appropriate to all the new alternatives and which, explicitly or implicitly, are the current policy or practice on the withdrawal. In some cases these action statements stand on their own; in some instances statements in the various alternatives give further direction in how they are to be accomplished.

Access

1. Due to the dangers of unexploded munitions inherent in impact areas, the Washington, Mississippi, Delta Creek, and Oklahoma Range impact areas are closed to all public access and use. (See Closed Areas map.) Uses, such as mining, timber harvest, and scientific investigations, and access for such use may be conducted in these areas if they are allowed by the plan and if they are approved by the

Fort Greely

PROPOSED Resource Management Plan
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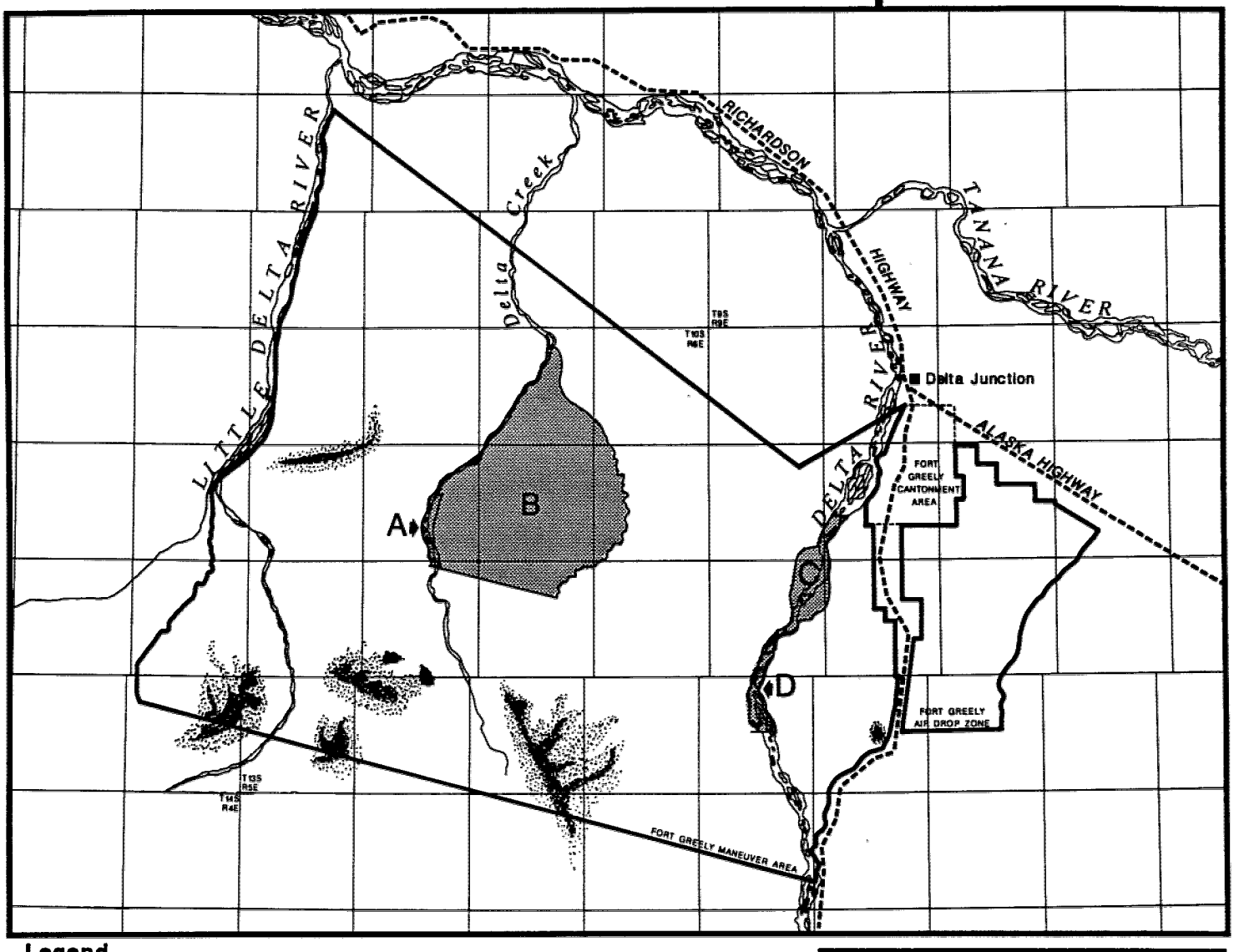
Closed Areas



Legend

Closed to all unauthorized nonmilitary activities:

A-Delta Creek Impact Area
B-Oklahoma Impact Area
C-Mississippi Impact Area
D-Washington Impact Area

SCALE

0 5 10 MILES
0 5 10 KILOMETERS

LOCATION MAP

authorizing officer. These areas are closed to off-road vehicle (ORV) use, unless specifically approved for a particular use.

2. If additional potentially dangerous sites are found, the federal government would close them to public use.
3. When firing occurs into an impact area, the affected portion of the impact area and a two mile buffer adjacent to the affected tract are off limits to all access and use.
4. All portions of the withdrawal are subject to temporary closures when the military needs them to conduct training and testing. Such closures would be for the minimum areas and periods necessary for the military's exclusive use.
5. Unless explicitly opened to public use by the plan or, on a case by case basis, by the Army, all military structures are off limits to nonmilitary use. Many of these structures are associated with ranges east of Delta River and with Cold Regions Test Center investigations.
6. Mining and other activities which involve substantial ground disturbance are prohibited from all drop zones and landing fields, where a relatively smooth surface is necessary for safe military operations, and within one mile of all existing roads and major trails (see Roads and Major Trails map), because most military training occurs near the road system. Mineral material sites are exceptions to this. They may be placed within one mile of extant roads with the concurrence of the military. Timber harvests do not normally result in the type of substantial ground disturbance contemplated in this restriction.
7. No ORVs would be allowed to run along the Trans-Alaska Pipeline System's work pad used for maintenance along its line without the permission of Alyeska Pipeline Service Company, BLM, and the District Corps of Engineers. ORVs weighing less than 1,500 pounds may cross the pipeline. ORVs weighing more than 1,500 pounds would need approval to cross the pipeline.

Air, Soil, Water, and Vegetation

Nonfederal uses of the withdrawal must conform with applicable federal and state laws and regulations concerning protection of air, soil, and water. Federal uses would comply with federal law, and with state law to the extent consistent with the federal mission.

All proposed activities, military and nonmilitary, for the withdrawn lands are evaluated under the authority of NEPA for impact on air, soil, water, and vegetative resources. Activity plans will comply with the Bureau of Land Management policy on riparian resources management, and sites disturbed by nonmilitary activities will be restored in accordance with Bureau riparian guidance.

Application of all herbicides and pesticides would only be conducted in accordance with the Fort Greely Pest Control Plan and all applicable laws and regulations.

Fish and Wildlife Habitat

Pursuant to the Sikes Act, the 6th Infantry Division (Light) has entered into a Cooperative Agreement with the U.S. Fish and Wildlife Service (F&WS) and with the Alaska Department of Fish and Game (ADF&G). The agreement calls for the development of fish and wildlife management programs which, within the constraints of the Army's needs to fulfill its mission, would improve habitat, determine "the extent of equitable military and nonmilitary access" to harvesting and enjoyment of fish and wildlife, and arrive at a consensus on the "need and means for controlling, protecting, stocking, or restoring" desirable species.

As a part of this agreement, the Army entered into a Cooperative Agreement with the Alaska Department of Fish and Game in July 1986. The parties defined certain unique or sensitive habitats, including those for the Delta Bison herd, calving and post-calving caribou, and roosting sandhill cranes, and the Army agreed to conduct its training so as to avert significant adverse effects on this wildlife.

BLM associates itself with these responsibilities through adoption of a Resource Management Plan and associated implementing Memorandum of Understanding. BLM would participate with the Army, F&WS, and ADF&G in developing these programs through a Habitat Management Plan for the withdrawal and would join as a signatory agency in any revision of the Cooperative Agreement.

The Cooperative Agreement calls for the parties to cooperatively inventory the fish and wildlife resources on the withdrawn lands. The 6th Infantry Division (Light) currently conducts or is committed to conduct the following studies during the period of this withdrawal:

a. The Army will monitor radio-collared moose by helicopter to better understand seasonal movements, contingent upon the ADF&G's purchase and emplacement of collars.
b. The 6th Infantry Division assists the ADF&G in monitoring radio-collared bison by helicopter to locate distinct herds for enumeration.
c. In cooperation with ADF&G, the Army is conducting a study of the grizzly bear population on the north face of the Alaska Range, including the Fort Greely withdrawal.

There are no known peregrine falcon nests in the withdrawal. But their population is increasing in the state. Should any occupied nests be discovered on the withdrawal, the mandates of the Endangered Species Act will apply.

Forestry

Any sale of timber on the withdrawn lands would be governed by common BLM timber management practices, contract stipulations, and the mandates of the State's forest practices regulations. Common requirements include:

a. the construction, improvement, and maintenance of safe and environmentally sound road systems. Loggers

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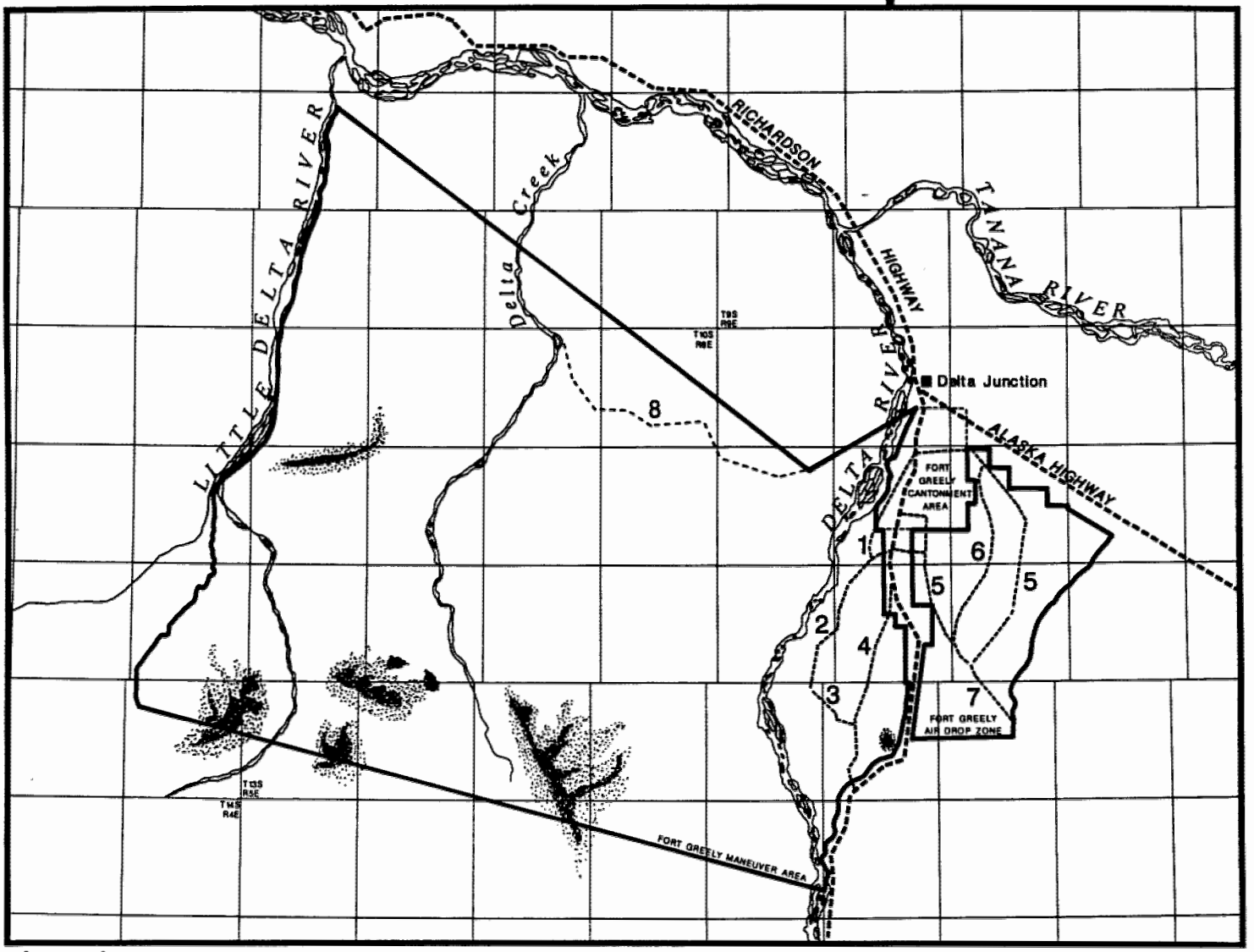
Roads and Major Trails



Legend

Roads and major trails:

1- OP Road South
2- Meadows Road
3- Windy Ridge Road
4- Old Richardson Highway
5- 33mi. Loop Trail
6- 33mi. Loop Cutoff Trail
7- Butch Lake Trail
8- Winter Trail

SCALE

0 5 10 MILES
0 5 10 KILOMETERS

LOCATION MAP

may be required to properly locate and install culverts, stabilize cuts and fills, and properly grade roads.

b. the felling and yarding of timber in such a way as to protect soil and water quality, residual trees, and human safety. Some provisions may be aerial yarding to protect fragile sites, limbing before yarding to protect residual trees or soil or water quality, and directional felling to protect buffer strips, streams, and adjacent stands.
c. the treatment of a logged site to prepare it for the next generation of trees. Some ways to prepare a site are to rip compacted skid roads, abandoned haul roads, and landings and to scarify, slash, pile, and underburn the logged site.
d. the disposal of logging slash for silvicultural and/or fire hazard reduction purposes.
e. mitigation measures for protecting wildlife habitat. Examples of some measures are the removal of debris dams from streams, and leaving wildlife trees within a cutting area.
f. other miscellaneous provisions, where appropriate, such as meeting minimum fire requirements and application of disease control measures.

Cultural Resources

The Army prepared a historic preservation plan (*Historic Preservation Plan for U.S. Army Lands in Alaska*) in June 1986. In accordance with Sec. 106 of the National Historic Preservation Act, the Army's plan requires that an inventory be completed before all ground-disturbing activities and, where appropriate, mitigation of cultural resources. The general program established by this historic preservation plan, as modified by this RMP and any Cultural Resource Management Plan mandated by this RMP, will guide cultural resource management during the period of the withdrawal.

Recreation

The Army conducts its outdoor recreation management role on the withdrawn lands to furnish equal opportunity to the public for recreation activities and to furnish as wide a variety of recreation as conditions allow.

Lands

Congress has designated the withdrawn lands as appropriate for military use. Consequently, neither the Proposed Plan nor the alternatives propose that any of these lands be made available for disposal, including State or Native selection, sales under FLPMA or the Recreation and Public Purposes Act, or exchanges.

Rights-of-Way

There are rights-of-way on Fort Greely for a corridor for the Trans-Alaska Pipeline, which passes through the withdrawal near the Richardson Highway, and a five-acre site west of Donnelly Dome, which is used for a television

transmitter. No rights-of-way would be allowed in any of the closed areas of the withdrawal.

Private individuals and the State may accept directly a congressionally granted right-of-way under the authority of Revised Statute 2477, if constructed prior to the withdrawal of these lands (September 26, 1961 for lands west of the Richardson Highway; October 3, 1961 for lands east of the highway). The federal government would work cooperatively with the State to identify all rights-of-way claims made pursuant to RS 2477 on public lands for administrative purposes only. The validity of such claims can only be determined in a court of competent jurisdiction.

Minerals

The military may use sand and gravel for its purposes; this authority flows from the military withdrawal act itself.

Measures to safeguard resource values outlined in 43 CFR 3100, 43 CFR 3600, and 43 CFR 3809 will apply to mineral development on the withdrawn lands.

Under the terms of the Military Lands Withdrawal Act of 1986, should the withdrawn lands be opened to mineral location, mineral patents would convey title to locatable minerals only. These patents would also carry the right to use as much of the surface as is necessary for mining under the guidelines established by the Secretary of the Interior by regulation.

Subsistence

The federal government would follow the procedural requirements mandated by Section 810 of the Alaska National Interest Lands Conservation Act where appropriate in the development of any additional discretionary plans or actions affecting all or portions of the military lands.

Proposed Plan

The actions prescribed in the Proposed Plan preserve the primary function of the withdrawal—military training and testing—and allow economic development and continued recreational activities within certain environmental constraints. The military's need for large tracts of undisturbed lands, the healthy state of the withdrawal's current habitat, the rather modest prospects for economic development, and the desirability of emphasizing undeveloped recreational activities in most of the withdrawal make such a diverse multiple use plan particularly attractive. This management prescription also recognizes the critical safety questions, both for civilians and soldiers, inherent in utilizing areas in which troops train with live ammunition and on which munitions are tested and have been tested for decades.

Management Actions

The following actions are consistent with achieving this goal.

Access

Proposed Action 1

The public may enter the post after gaining permission from the Army at Fort Greely. This pertains to all forms of access. They are expected to comply with all rules concerning restricted access and permanently and temporarily closed portions of the withdrawal.

Proposed Action 2

The public may use unimproved remote landing areas after complying with notification requirements and provided that this use does not interfere with military activities or incur liability to the federal government. (Note: Allen Airfield is not located in the withdrawn area addressed by this plan. Use of Allen Airfield is governed by other regulations.) Similarly, the public may land on lakes in the withdrawal.

Proposed Action 3

All development actions and military actions to the extent consistent with military needs in the caribou calving grounds would be conducted under winter conditions in which there is sufficient snow cover and the ground is adequately frozen so as to minimize damage to the vegetation and soils. The caribou calving grounds are defined in an appendix to the cooperative agreement between the Army, the Fish and Wildlife Service, and the Alaska Department of Fish and Game. (See the accompanying Caribou Calving Area map.) The Habitat Management Plan mandated by the cooperative agreement between the Army, the F&WS, and the ADF&G should give more specific descriptions of permissable and impermissable activities.

Proposed Action 4

Minimize military training in crucial sheep habitat identified in a Dall sheep study completed in 1990.

Proposed Action 5

Minimize military operations on and exclude all disruptive civilian activities from sharptail grouse dancing grounds from April 20 to June 1. The Habitat Management Plan (HMP) required by the cooperative agreement between the Army, F&WS, and ADF&G should define precise locations of these grounds.

Proposed Action 6

The HMP will establish a zone around water bodies in which there would be special precautions to protect habitat.

Proposed Action 7

Nonmilitary use of off-road vehicles (ORVs) and road vehicles is permitted in some portions of the withdrawal and under certain conditions. The impact areas are closed to vehicle use as indicated in the management common to all alternatives, and use of the remainder of the lands is limited as follows:

Road Vehicles and ORVs of 1,500 pounds or more — Vehicles of more that 1,500 pounds gross vehicle weight (GVW) may travel on Meadows Road, Windy Ridge Road, Old Richardson Highway, Thirty-three-mile Loop Trail, the access roads from these roads to the stocked lakes, and the Butch Lake trail. (GVW is the manufacturer's maximum laden weight, which is the vehicle weight plus its recommended maximum load. All the roads, except the access roads to the lakes, are shown on the Vehicle Use map.) Roads may be added or deleted from this list as necessary to protect the environment or enhance the military's mission. A permit is required to use vehicles of this size off of these routes. Generally permission to use these vehicles off these routes would only be granted when there is no danger of such use interfering with military operations, damaging the habitat, or detracting from the recreational value of the withdrawal.

ORVs of less than 1,500 pounds — No permit would be required for nonmilitary use of ORVs less than 1,500 pounds GVW. General use of these ORVs would be limited to the roads listed above, soils with low erosion hazard, and to periods with snow cover adequate to prevent disturbance of the vegetative cover. The military may also exclude public use of ORVs in certain areas where their use would be detrimental to the military's mission.

An accompanying Vehicle Use map indicates the roads and trails on which road and off-road vehicles may operate and the impact areas and areas of high erosion hazard from which

Fort Greely

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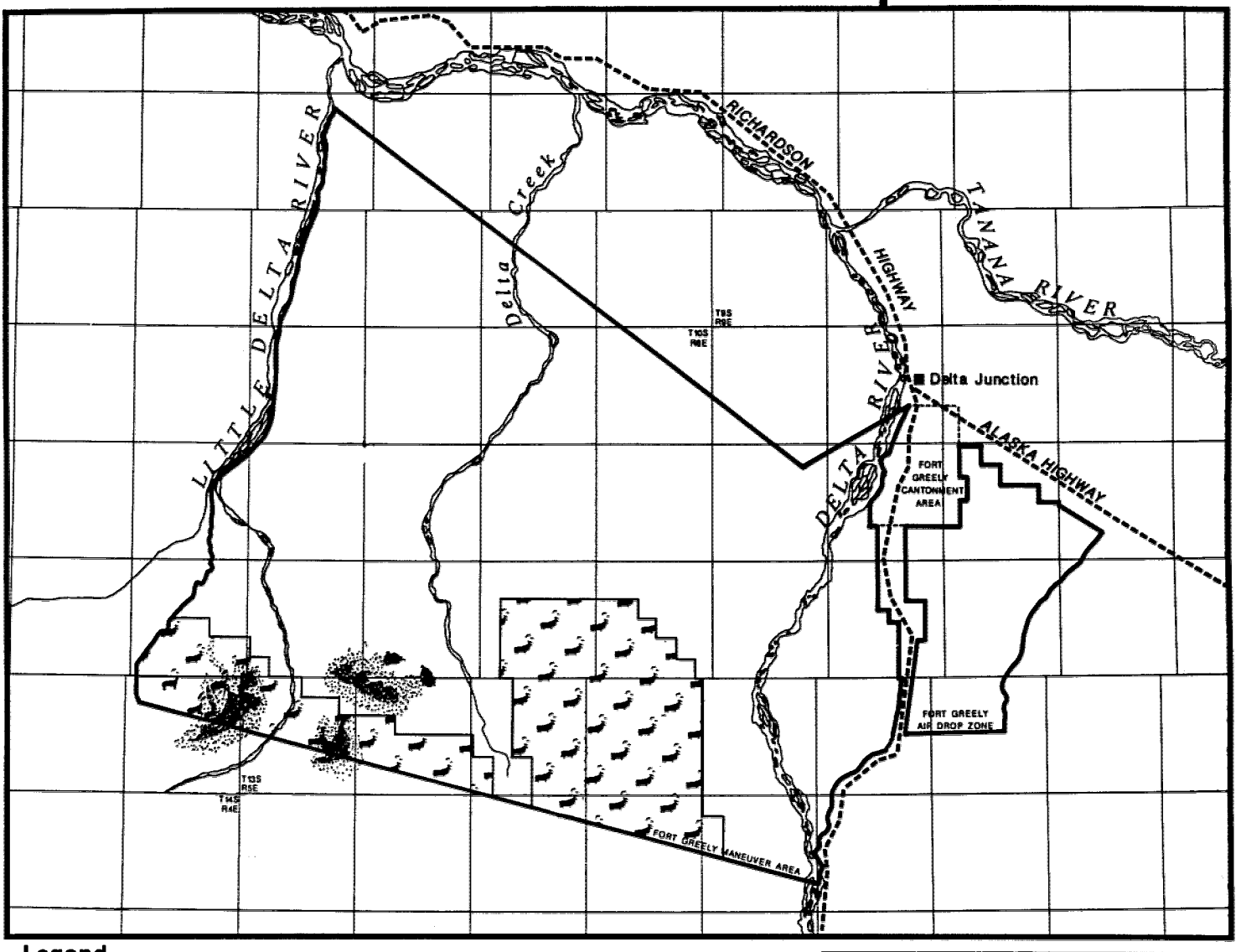
Caribou Calving Area/ Crucial Dall Sheep Habitat



Legend

Caribou calving area

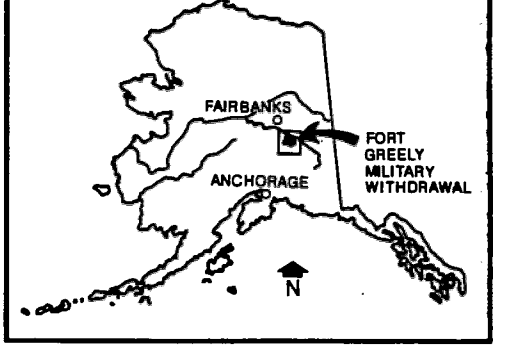
Note: As defined in the supplement to the cooperative agreement between the Army and ADF&G (ADF&G and 6th ID(L),1986)

Crucial Dall Sheep habitat
(Spiers & Heimer, 1990)

SCALE

0 5 10 MILES
0 5 10 KILOMETERS

LOCATION MAP



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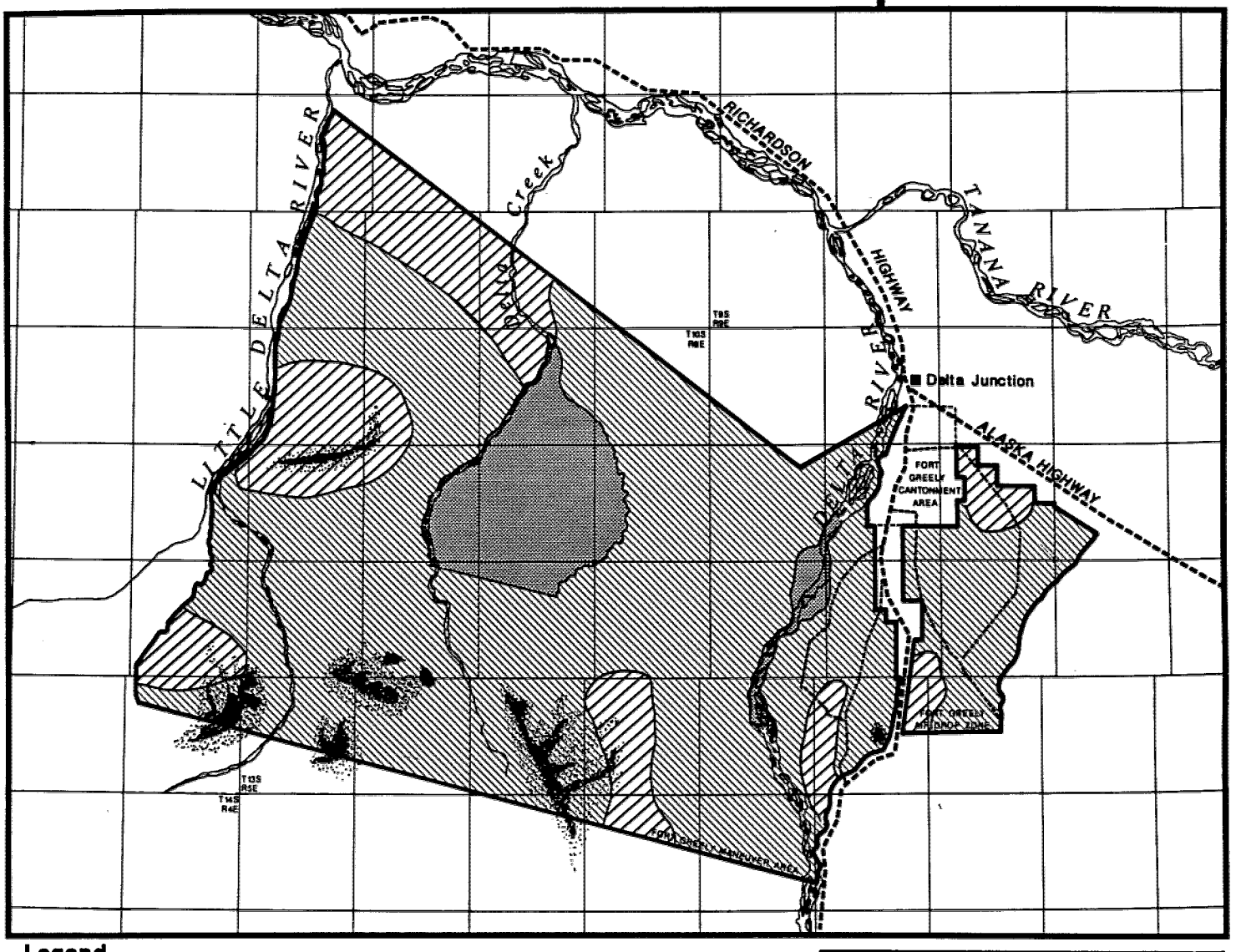
Vehicle Use



Legend

- Roads and trails on which all vehicles may operate
- Areas closed to nonmilitary vehicles at all times
- Areas closed to nonmilitary vehicle use during summer During the winter vehicles generally can use these areas
- Areas generally open to vehicle use (permit required for vehicles that exceed 1,500 GVW)

Note: The above map provides general guidance. Some "generally open" areas should be considered closed. For example, patches of low, wet drainages or soils on steep slopes should be considered closed to vehicle use.

The dry beds of Delta Creek downstream from One Hundred Mile Creek (the north boundary of the impact area) are open to use by vehicles of under 1,500 pounds GVW.

SCALE

0 5 10 MILES
0 5 10 KILOMETERS

LOCATION MAP

vehicles are excluded. Note that the map is suggestive rather than definitive; all areas not indicated as closed should not be assumed to be open. The federal authorized officer, as established in the BLM-Army Memorandum of Understanding to implement this plan, may grant permission for a specific use of ORVs of less than 1,500 pounds in an area indicated as closed on the map or for general use of additional specific trails by such vehicles. The same officer may also delete areas from those in which summer use of ORVs of under 1,500 pounds are permitted if additional information indicates that without such restrictions significant damage may occur.

Proposed Action 8

Maintain signs at major road and trail entrances to the withdrawal informing the public that they are entering a military withdrawal. The signs should warn of permanently closed areas.

Proposed Action 9

Appropriate signs would be erected to warn the public and prevent public access into the impact areas and other restricted areas.

Vegetation

Proposed Action 10

In the course of developing the military, recreational, and economic potential of the withdrawn lands, the federal government would seek to take advantage of opportunities to improve the fort's vegetation. Military and nonmilitary activities outside of the impact area would limit vegetation disturbance, particularly to wild food sources such as berries, as much as possible consistent with military needs and the goals of recreation and economic development.

Visual Resources

Proposed Action 11

The withdrawal is classified as Visual Resource Management (VRM) 4. The management objective for VRM 4 areas is to provide for activities which require major modifications of the existing character of the landscape.

Fish and Wildlife Habitat

Proposed Action 12

Monitoring the calving activity of the Delta caribou herd would continue. If the herd travels into the impact areas to calve, the Army and the Air Force would cease or modify training in and over the area until the animals leave.

Proposed Action 13

Develop and implement a Habitat Management Plan (HMP) to manage existing habitat. The HMP should manage toward the ADF&G's goals for species and should be coordinated with the Forest Management Plan outlined in Proposed Action 14 and with the Fire Management Plan noted in Proposed Action 24. At a minimum the HMP should consider:

a. what, if any, water quality control program is necessary
b. the advisability of maintaining or creating new bison food plots for the use of bison and other species
c. habitat manipulation to facilitate viewing of bison by visitors to the fort
d. the effects of transportation modes on habitat and how certain types of access should be regulated.
e. implementation of a riparian resource inventory and enhancement programs for riparian sites in less than good condition.

The plan would be consistent with the military's mission.

Forestry

Proposed Action 14

Develop a Forest Management Plan to determine the opportunity for harvest and the sustainable allowable cut of sawtimber, house logs, fuel wood, and other wood products. Such a plan must remain within the constraints of the military mission; public safety and the preservation of habitat and recreation are other values which should be considered. It may, for example, mandate the maintenance of uncut buffer strips along streams and lakes and adjacent to major recreational use roads. (It is understood that forests in the withdrawal fall under BLM's restricted category for management as outlined in BLM's Manual 1622.21A(1); that is, management of the withdrawal is primarily for the military, but timber harvests are permitted. The Forest Management Plan should address allowable harvest levels, reforestation methods, and appropriate silvicultural practices by measuring the impact of each on military needs, habitat protection, recreational opportunities, and economic considerations.)

Cultural Resources

Proposed Action 15

The BLM and the Army will develop a Cultural Resource Management Plan in consultation with the State Historic Preservation Officer. The CRMP will address the requirements of Sec. 110 of the National Historic Preservation Act. It will follow the general directions outlined in the *Historic Preservation Plan for U.S. Army Lands in Alaska.* In addition it will provide for the mitigation of the Ptarmigan Creek cabin through Historic American Building Survey documentation and archaeological testing; resolution of the management of the Sullivan Roadhouse; and management of cultural resources for their information potential, with the possible exception of the Sullivan Roadhouse.

Trespass

Proposed Action 16

Only the federal government and private developers authorized by the government may erect or maintain structures on the withdrawal. All unauthorized use of the land or resources will be investigated and either permitted or

stopped. All unauthorized structures are subject to possession by the government following proper notice.

Recreation

Proposed Action 17

All those who enter the withdrawn lands must comply with the military's rules. These presently require:

a. all those who enter to hunt, fish, or trap must sign a liability release form and attend a Hunting/Trapping/Fishing briefing prior to undertaking these activities each year.
b. hunters and trappers must submit completed harvest reports to the appropriate Army office.

Proposed Action 18

Guides, outfitters, and air taxi services may operate on the withdrawal, provided they comply with other regulations concerning nonmilitary use of the land. Guides, outfitters, and air taxi services are responsible for ensuring that their clients comply with these rules. Guides and outfitters must obtain a permit to use federal lands and comply with other provisions of 43 CFR 8372.

Proposed Action 19

Develop a Recreation Activity Management Plan (RAMP) to provide recreation opportunities compatible with military needs.

Lands

Proposed Action 20

The BLM may issue leases and permits pursuant to 43 CFR 2920. These use authorizations are subject to approval by the Army, which may reject the proposal or require additional stipulations to assure the military's unhindered use of the withdrawal.

Rights-of-Way

Proposed Action 21

Rights-of-way may be granted if they do not conflict with the military's mission. They should be subject to terms and conditions to assure that military needs are met.

Minerals

Proposed Action 22

The withdrawal will remain closed to the operation of the Mining Law of 1872, the mineral Leasing Act of 1920 as amended, the Mineral Leasing Act for Acquired Lands of 1947, and the Geothermal Steam Act of 1970. Pursuant to Sec. 12(a) of the Military Lands Withdrawal Act, the Army and BLM, by 1996 and at least every five years thereafter, will jointly reconsider whether it would be appropriate to open portions of the withdrawal to the operation of the mineral laws.

Proposed Action 23

Pursuant to Section 1 of the Military Lands Withdrawal Act of 1986, the withdrawal is closed to all forms of mineral

material disposal, both sale and free use, other than that which supports military activity.

Fire Management

Proposed Action 24

The immediate environs of the Sullivan Roadhouse and specific Air Force equipment sites would be designated Critical fire suppression sites. (If the roadhouse is moved, these lands would receive Limited fire suppression.) The areas east of the Delta River (except for about four square miles of uplands east of Jarvis Creek), north of the impact areas, and north of a trail which extends west of Delta Creek from near the mouth of the "One-hundred-mile Creek" (which enters Delta Creek in Sec. 3, T. 10 S., R. 7 E., F.M.) would receive Modified fire suppression. The remainder of the withdrawal would receive Limited fire suppression. (See Fire Management Categories map 1.) Future changes in suppression management can be effected through the Interagency Fire Management Plan with the concurrence of the military. The BLM, with the concurrence of the Army, will draft a Fire Management Plan to reduce the fire hazard on the withdrawal.

Fort Greely

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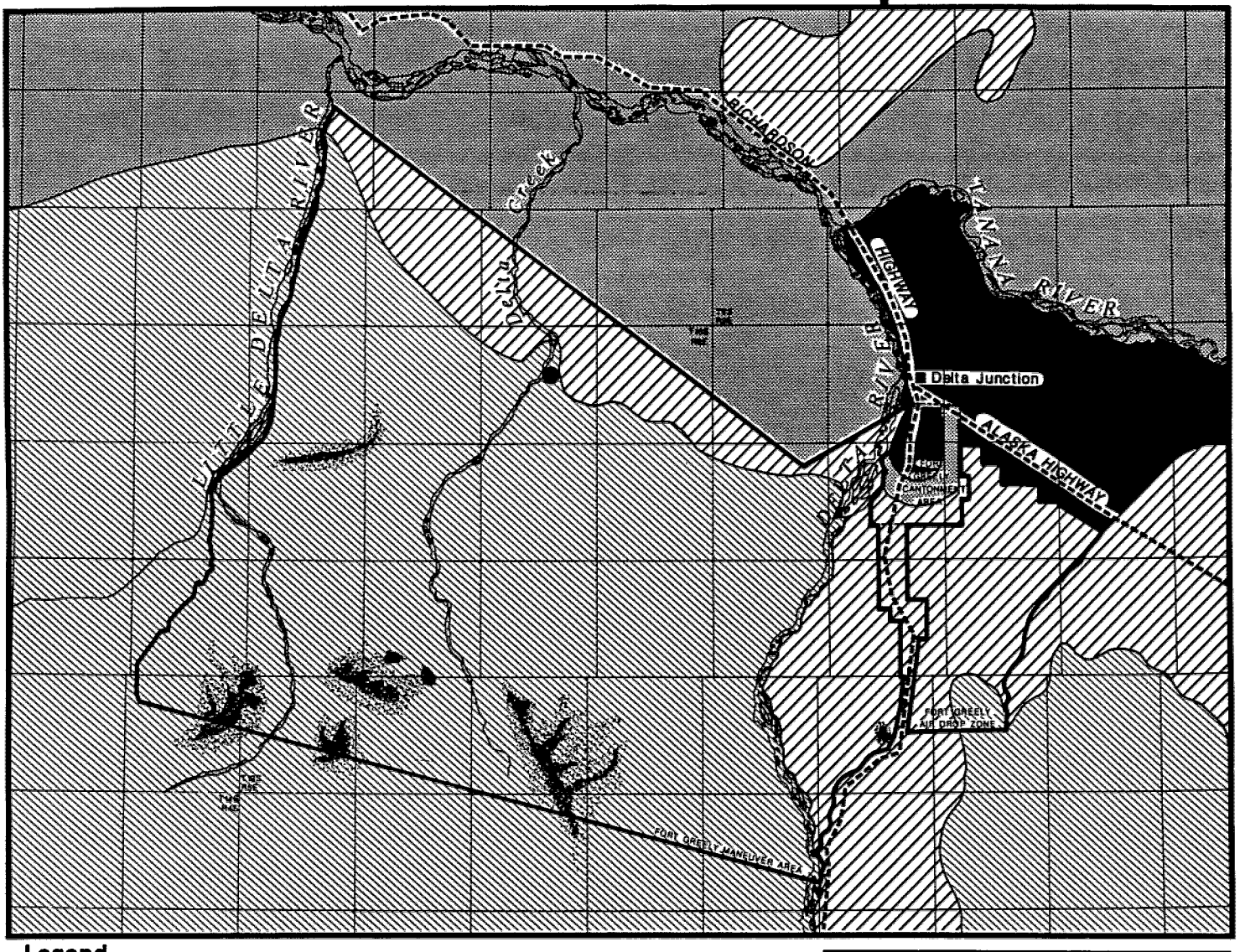
Fire Management Categories



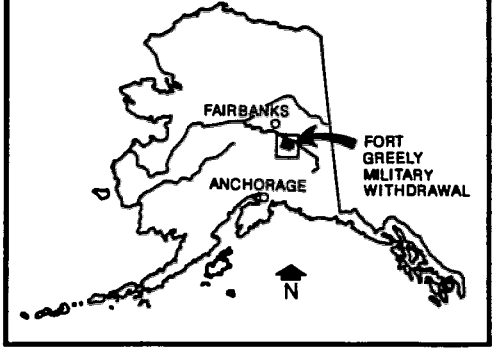
Legend

- Critical Protection
- Full Protection
- Modified Action
- Limited Action

SCALE

0 5 10 MILES
0 5 10 KILOMETERS

LOCATION MAP



The following table summarizes the actions prescribed by the Proposed Plan and its alternatives. The display is designed to facilitate comparisons of the actions concerning various facets of resource management. A blank space in the matrix indicates that, other than the management designated in the management common to all alternatives, the corresponding alternative does not mandate protection, development, or other initiative similar to that described in other alternatives.

Summary of the Proposed Plan and the Alternatives

	Proposed Plan	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Access	1. public may enter with permission from Army	1. same as Proposed Plan	1. no nonmilitary access	1. same as Proposed Plan	1. no restrictions on access	1. same as Proposed Plan
	2. remote landing areas available after notifying Army	2. same as Proposed Plan		2. same as Proposed Plan	2. same as Proposed Plan	2. same as Proposed Plan
	3. minimize adverse impact of military and development activities on caribou calving areas			3. same as Proposed Plan		
	4. minimize military training in crucial sheep habitat			4. minimize military training and prevent mining in crucial sheep habitat		
	5. minimize disruption of sharptail grouse dancing grounds			5. same as Proposed Plan		
	6. HMP will establish a zone w/special mgmt around water bodies to protect habitat			6. military will minimize activities within 100 yards of stocked lakes		

Note: Additional management direction for each alternative is contained in Management Common to All Alternatives.

Summary of the Proposed Plan and the Alternatives

	Proposed Plan	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Access (cont.)	7. no ORVs in impact areas or environmentally sensitive areas; no permit needed to use ORVs less than 1,500 lbs.; permit needed to use larger ORVs off roads	3. ORVs can operate off roads; other wheeled vehicles must stay on roads		7. same as Proposed Plan	3. same as Proposed Plan	3. same as Proposed Plan
	8. warning signs at entrances to withdrawal 9. signs to warn of impact areas		2. gates at all entrances		4. same as Proposed Plan 5. signs and gates at roads to impact and restricted areas	
				8. entrance only with guide west of Delta R. in big game season		4. same as Alternative C
				9. no motor vehicles in grizzly bear habitat		

Note: Additional management direction for each alternative is contained in Management Common to All Alternatives.

Summary of the Proposed Plan and the Alternatives

	Proposed Plan	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Access (cont.)						5. restrict public use of economic development roads 6. no military activities at economic development control facilities
Vegetation	10. improve and protect vegetation resources in the course of conducting other actions					
Visual Resources	11. all VRM 4		3. same as Proposed Plan	10. southwest portion and Donnelly Dome VRM 3; rest VRM 4	6. same as Alternative C	7. same as Alternative C
Fish and Wildlife	12. adjust military activities for caribou calving	4. same as Proposed Plan		11. same as Proposed Plan	7. same as Proposed Plan	8. same as Proposed Plan

Note: Additional management direction for each alternative is contained in Management Common to All Alternatives.

Summary of the Proposed Plan and the Alternatives

	Proposed Plan	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Fish and Wildlife (cont.)	13. HMP include H_2O program, bison plots, bison viewing; regulate transportation modes; address riparian concerns	5. Army maintains bison food plots	4. HMP to conserve wildlife without interfering with military	12. HMP to enhance wildlife 13. monitor water quality; take action when required 14. maintain bison food plots and clear fields for sharptail grouse	8. HMP to improve viewing and hunting	9. HMP to accommodate economic development and trapping
					9. emphasize maximum participation in trapping	10. establish trapping system to promote commercial trapping and sustained yield
Forestry	14. FMP to study opportunities for and the sustainable cut of timber	6. public with permit can take firewood	5. harvest only to aid military activities	15. FMP to enhance wildlife	10. FMP to emphasize personal use firewood harvesting	11. FMP to emphasize commercial harvesting

Note: Additional management direction for each alternative is contained in Management Common to All Alternatives.

Summary of the Proposed Plan and the Alternatives

	Proposed Plan	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Cultural Resources	15. undertake CRMP; mitigate Ptarmigan Cr. cabin and resolve Sullivan Rdhs.; all other inventory, evaluate, and mitigate as necessary	7. inventory, evaluate, and mitigate as necessary	6. mitigate Ptarmigan Cr. cabin; resolve Sullivan Rdhs.; inventory, evaluate, and mitigate all areas	16. same as Alternative A	11. inventory, evaluate, and mitigate recreation sites and as necessary 12. interpretive signs; resolve Sullivan Rdhs. and Ptarmigan Cr. cabin in Cultural Resources Activity Plan	12. emphasize inventory, evaluation, and mitigation west of Delta Cr. and in prime timber land; mitigate Ptarmigan Cr. cabin and resolve Sullivan Rdhs.; all other inventory, evaluate, and mitigate as necessary
Trespass	16. unauthorized use of land and resources forbidden	8. no unauthorized cabins		17. same as Alternative A	13. same as Alternative A	13. same as Alternative A

Note: Additional management direction for each alternative is contained in Management Common to All Alternatives.

Summary of the Proposed Plan and the Alternatives

	Proposed Plan	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Recreation	17. recreationists must follow military rules; these now require those who hunt, fish, or trap to sign a liability release form and attend a briefing; hunters and trappers must submit harvest reports 18. guides etc. may operate with a BLM permit	9. hunt, fish, and trap according to Army Reg. 420-6		18. hunters need permit and must submit harvest reports		
	19. RAMP to provide recreation opportunities				14. RAMP to consider joint use of military facilities, campgrounds, picnic sites and trails	

Note: Additional management direction for each alternative is contained in Management Common to All Alternatives.

Summary of the Proposed Plan and the Alternatives

	Proposed Plan	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Recreation (cont.)		10. military minimizes its use during September		19. same as Alternative A	15. Army training stops during moose season 16. Air Force training stops during moose season 17. limit training to weekdays when possible	14. same as Alternative A
		11. continue public use of small arms target ranges			18. same as Alternative A	
					19. post road and mileage signs 20. public information program 21. Army-BLM agreement on mgmt. of recreation sites	
Lands	20. leases and permits issued if they do not hinder military use	(current policy, not stated in DRMP)				

Note: Additional management direction for each alternative is contained in Management Common to All Alternatives.

Summary of the Proposed Plan and the Alternatives

	Proposed Plan	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Rights-of-Way	21. rights-of-way granted if no conflict with military	12. same as Proposed Plan		20. minimize new access routes	22. rights-of-way granted if no conflict with military; logging or mining roads open to recreationists	15. grant rights-of-way for developments other than mining 16. encourage permanent roads to aid economic developments
Minerals	22. closed to locatable and leasable mining; reevaluate determination per Sec. 12(a) of PL 99-606; also consider Dall sheep habitat	13. closed to mining, except mineral materials	7. closed to mining, except mineral materials for roads	21. open to mineral location and leasing with regulations and after check for crucial habitat in the southwest area	23 & 24. open to mineral location and leasing with regulations west of Delta R.	17 & 18. open to mineral location and leasing with regulations 19. conduct mineral assessment of Molybdenum Ridge and other appropriate areas
	23. closed to mineral material disposal	14. consider military activities in allowing mineral material sale and free use sites for road work	8. consider military activities in allowing mineral material free use sites for road work	22. consider military activities and bison in allowing mineral material sale and free use sites for road work	25. consider military and recreation activities in allowing mineral material sale and free use sites for road work	20. same as Alternative A

Note: Additional management direction for each alternative is contained in Management Common to All Alternatives.

Summary of the Proposed Plan and the Alternatives

	Proposed Plan	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Fire Management	24. Critical for Sullivan Rdhs and Air Force equipment sites; Modified east of Delta R. and north of impact areas and trail extension to west end of fort; Limited for rest. Change through Interagency Fire Management Plan. Develop a Fire Management Plan.	15. Critical for Air Force equipment sites; Full for Sullivan Rdhs; Modified east of Delta R. and north of impact areas and trail extension to west end of fort; Limited for rest	9. Critical for Air Force equipment sites; Limited for impact and west of East Fork Little Delta; Modified between East Fork and Delta Cr. and 100 Mi. Cr.; Full for rest	23. Critical for Sullivan Rdhs and Air Force equipment sites; Modified east of Delta R. and north of impact areas and trail extension to west end of fort; Limited for rest. 24. fire mgmt. plan to maximize prescribed fire for wildlife habitat	26. same as Alternative C	20. same as Alternative C

Note: Additional management direction for each alternative is contained in Management Common to All Alternatives.

The following table provides estimations of the level of activity for timber and fuel wood harvesting, recreational use and mining under the Proposed Plan and various alternatives. Discussion of the development potential of the Fort Greely withdrawal can be found at the beginning of Chapter 3.

Activity Projections 1993-2003 for the Proposed Plan and the Alternatives

	Proposed Plan	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Timber						
Acres harvested	0-100/yr.	0 - 100	0 - 300	0-100/yr.	0-100/yr.	0 - 100/yr.
Recreation						
Visitor days/yr.	9,000	8,000	0	8,000	13,000	8,000
Locatable Minerals						
Placer mining operations	0 - 1	0	0	0 - 1	0 - 1	0 - 1
Acres impacted*	0-4/yr.	0	0	0-4/yr.	0-4/yr.	0-4/yr.
Mineral Material Sites**						
Gas line sites	0	5	0	5	5	5
Acres impacted	0	25 - 50	0	25 - 50	25 - 50	25 - 50

*Does not include acreage for roads and structures.
**Assumes TAGS is built.

The following table summarizes the anticipated impacts of the Proposed Plan and the alternatives. Chapter 3 elaborates on the information concerning the Proposed Plan. See the Draft Resource Management Plan for an elaboration of the information for the other alternatives.

Summary of Environmental and Military Consequences

	Proposed Plan	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Air, Soil, Water, and Vegetation	Greater protection from ORVs than current mgmt.; potential for better monitoring of water; potential increases in erosion, sedimentation and traffic induced dust along roadways from timber harvests, increased recreational use, and, potentially from mining, but less from mineral material extraction	Small impacts from ORVs; no effects from timber harvests	Restriction on public access minimizes nonmilitary impacts; less effects from sand and gravel extraction than other alternatives because no sales are allowed; more aggressive fire suppression decreases acres burned and the amount of smoke discharged into atmosphere	Restrictions on development and military provides habitat protection; enhancement of moose, bison, and grouse habitat suppresses natural vegetation succession in favor of herbaceous and shrub vegetation; ORV, timber, and mining impacts same as in Proposed Plan	Recreational improvements may require ground clearing; visitor use will increase traffic dust and trash more than any other alternative; ORV impacts similar to Preferred Alternative but possibly more impact because of greater visitor days; timber and mining impacts same as in Proposed Plan	More impacts due to ground clearing and road construction for development; additional roads will subject more areas to traffic dust and open more land to ORV impacts

Summary of Environmental and Military Consequences

	Proposed Plan	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Fish and Wildlife	Habitat protection measures should prevent diminution in healthy animal populations despite development; HMP and FMP mandated actions will tend to increase habitat for small mammals, birds, moose, and bison; hunting by miners (if mining is eventually allowed) could cause small increase in game harvest, especially bears	Current healthy animal populations would be maintained, despite growth in military population; fewer nonmilitary impacts on wildlife than all but Alternative B because there is no mining, timber sales, or recreational improvements	Exclusion of hunters and trappers will cause a temporary increase in game and furbearers not at carrying capacity; ultimately natural forces will eliminate excess and maintain natural equilibrium	These impacts will be essentially the same as for the Proposed Plan	There will be increased pressure on wildlife from developments and greater human visitation, particularly to area along Meadows Road; little increase in hunting pressure, since hunters generally are free to hunt now, but hunting by miners could cause small increase in game harvest, especially bears	Emphasis on commercial timber harvests may increase clear cutting over that in Preferred Alternative, thus slightly increasing open habitat; without protective countermeasures there may be minor impacts due to mineral development

Summary of Environmental and Military Consequences

	Proposed Plan	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Cultural Resources	Timber harvests, recreational developments and military activities could impact sites; no disturbance from mineral material extraction, but possibly some disturbance if other mining eventually allowed; modest increase in visitor days could slightly increase intentional and unintentional disturbance of cultural sites; Ptarmigan Creek information will be preserved	Military activities and sand and gravel extraction can disturb sites	Military activities and road use sand and gravel sites can disturb sites; there will be less potential for intentional and unintentional disturbance of cultural sites by civilians; far more cultural sites will be inventoried and evaluated under this alternative compared to all other alternatives	Timber harvests, mining, and military activities could impact sites; discouraging roads and requiring entrance at certain times with guides or outfitters would tend to limit potential for intentional and unintentional disturbance of cultural sites	Timber harvests, mining, recreational developments, and military activities could impact sites; increase in visitor days could increase intentional and unintentional disturbance of cultural sites, though clearance of recreational sites will minimize this impact	Timber harvests, mining, and military activities could impact sites; encouraging roads will tend to increase potential for intentional and unintentional disturbance of cultural sites while requiring entrance at certain times with guides or outfitters will help to restrict such disturbance; Ptarmigan Creek information will be preserved

Summary of Environmental and Military Consequences

	Proposed Plan	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Socio-economics	Preserves current economic benefits of recreation; may add new source of timber, particularly for summer harvest, without notably increasing economic benefits to that sector; private developers have the additional expense of hauling sand and gravel greater distances; may result in locatable mining opening	Preserves current economic benefits of recreation, personal dead and down firewood gathering, and sales of sand and gravel	Economic benefits of recreation will shift to other areas of Alaska and some recreation may not take place; eliminates benefit of personal firewood gathering; private developers have the additional expense of hauling sand and gravel greater distances	Economic impacts of timber and mineral development would be similar to Preferred Alternative; economic stimulus of recreation would be funneled more through guides and outfitters	Impacts will be similar to Proposed Plan, except that increased recreational use will benefit those who service recreationist, particularly nonconsumptive users	Impacts will be similar to those of Alternative C

Summary of Environmental and Military Consequences

	Proposed Plan	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Military	Protecting caribou herds during calving requires that the Army and Air Force cease training on at least part of impact area 2 or 3 days each year; timber and mining operations, unless properly restricted, could interfere with training	Protecting caribou herds during calving will have the same impact as in Preferred Alternative; minimizing training during September places some restraint on military operations	Restricting civilian access will minimize possibility of interference with training; thorough cultural resource clearance will facilitate future military development; locked gates at all road entrances will be a significant inconvenience to troops	Protecting caribou herds during calving will have the same impact as in Preferred Alternative; minimizing training during September places some restraint on military operations; timber and mining operations, unless properly restricted, could interfere with training	Allowing the public access without notifying the Army will create a significant safety problem and impede training; ceasing training during moose hunting season will significantly limit Army and Air Force training flexibility; signs would undermine troop orienting training; mining operations, unless properly restricted, could interfere with training	If many economic control facilities are instituted they will significantly restrict military training; timber and mining operations, unless properly restricted, could interfere with training

Chapter 2

Affected Environment

Introduction

This chapter briefly describes the social and environmental setting of the planning area. The information in this chapter served as a basis in developing the alternatives and in predicting environmental impacts of the alternatives.

Socioeconomic Conditions

Demographic Characteristics

Over the past two decades the populations of Delta Junction and of neighboring Fort Greely have dropped. Delta Junction had 703 residents in 1970 and 652 twenty years later. Fort Greely's population has fallen more precipitously over that period from 1,820 to 1,147. (U.S. Bureau of the Census, 1972, p. 3-10; U.S. Department of Commerce News, March 1991, CB91-89) Absent stimulation of the nonmilitary sectors of the local economy, the area's population may decline because the Army is reducing personnel assigned to the fort. (U.S. Army, 6th ID(L), 1987b)

The Fort Greely area population is distinctive in several ways. It is more mobile than most Alaskan communities. Nearly half of the town's residents in 1980 did not live in the state five years earlier, and that figure is almost certainly larger on the fort where troops are assigned to a normal service rotation of two years. Residents of the fort were younger and more predominantly male than the state norm—the median age on the fort was less than 22 in 1980 compared to 26 statewide, and 60 percent of its residents were male compared to a state ratio of 53 men to 47 women. Also, substantially less than 10 percent of the area's population was Native, contrasting with 16 percent of Alaska's entire population in 1980. (U.S. Bureau of the Census, 1982a, pp. 7, 48; U.S. Bureau of the Census, 1982b)

Economy and Employment

Government employment, primarily that at Fort Greely, has supported the bulk of the Delta Junction area population for several decades. In 1986 71 percent of all employed residents of Delta Junction and Fort Greely received a federal paycheck. This included over 700 soldiers and about 350 civilian federal employees. The State and local governments

employed another 11 percent of local civilian workers. (Alaska, Department of Labor, 1986)

Most other businesses and employment opportunities in Delta Junction depend heavily on the very seasonal traffic on the Alaska and Richardson highways. Increases in the number of tourists passing through the town stirred a small expansion in restaurant, gift shop, and service station businesses in the 1980s. In the late 1980s these firms accounted for approximately 10 percent of local economic activity. (Mandeville, 1987)

Some other jobs are tied to the agricultural projects located near the town. Although farmers, like other area residents, look to Fairbanks and beyond for equipment and some of their repairs, supplies, and markets, they also support a local Alaska Farmers' Cooperative store, purchase fuel from Delta Junction vendors, and have some repairs handled at a town shop. (Franklin, 1987) In the late 1980s twenty-five residents engaged in mining and eight area sawmills employed forty people seasonally or year-round. (Geiger, 1987; Alaska, Division of Forestry, Delta Junction, 1987) Due in part to the seasonality of much of the work in the region, unemployment is traditionally high—it was about 12 percent in 1983 and 1984. (U.S. Bureau of the Census, 1982b)

Community Facilities and Services

There was a glut of housing in Delta Junction in the late 1980s. There were seventy-three homes for sale within a fifteen-mile radius of the city and a 60 percent vacancy rate for apartments in town. This was largely due to the movement of military personnel from the community onto the military base. (Geiger, 1987)

The town receives its electricity from the Golden Valley Electric Association and its telephone service from Telephone Utilities of the Northland. There are no central water or sewage systems for the town. Residents rely upon wells and septic tanks. Fort Greely has its own sewage and water plants. There is a volunteer rescue squad, and three Alaska State Troopers provide police protection. A doctor, a physician's assistant, and a dentist provide medical care. The state and the military cooperatively fund education in the area. A school on Fort Greely teaches K-8 students, while schools in town teach K-12. (Mandeville, 1987)

Subsistence

Salcha Natives in historic times ascended Delta River and Delta Creek for subsistence hunts. However, by the 1920s they ceased to travel so far to hunt. By 1945 the Natives had virtually abandoned Salcha and in 1962 there were no Native settlements in the Tanana Valley between Healy Lake and Nenana. (Andrews, 1975, pp. 31-32; McKennan, 1981, p. 566) These villages are distant from Fort Greely, and consequently the fort area has been little used by Natives for subsistence for many years.

With the possible exception of several trappers active on the west side of the Delta River, there is no evidence of subsistence activity on the withdrawal. The few trappers gain

only a portion, probably a minority, of their annual earnings from trapping. Although hundreds of people hunt on the fort, they are not likely to be subsistence hunters. Many fly in and most are probably recreational hunters from Fairbanks and Delta Junction. (Ducker to Z et al., August 26, 1987 and Ducker summary of Presler interview, November 3, 1987 in U.S., BLM, OMPB files) As noted above, the great majority of Delta Junction residents have government or other wage-earning jobs. Dot Lake is the nearest settlement which the State classifies as "rural" for purposes of subsistence fish and game allocations, and its general subsistence area lies at least twenty miles east of the eastern-most part of the withdrawal. (Martin, 1983)

Air, Soil, Water, and Vegetation Conditions

Air

The withdrawal area lies in a region with a typical continental subarctic climate characterized by a great diurnal and annual temperature variations, low precipitation, low humidity, short moderate summers, long cold winters, and great seasonal contrasts in sunlight duration. (Unless otherwise noted air, soil, and water information is from U.S. Army, 1980, pp. 2-3 to 2-17) The climate of the area is influenced by mountain ranges on three sides which form an effective barrier to the flow of warm, moist, maritime air during most of the year. The surrounding upland areas also tend to aid drainage or settling of cold arctic air into the Tanana Valley Lowlands. Extreme low temperatures in the winter are usually the result of the inflow of polar air masses, although prevention of absorption of solar radiation by persistent snow cover is a major contributing factor.

The yearly normal temperature for Big Delta near Fort Greely is 27.5 degrees F with extremes of 92 degrees F and -63 degrees F. (Arctic Environmental Information and Data Center, 1986) Annual water equivalent precipitation averages 11.38 inches, including 40.1 inches of snow. The normal wind speed at Fort Greely is 9.5 miles per hour. Winter winds are generally easterly along the Tanana River while the summer winds are generally southerly along the Delta River. (Wendler, Kodama, and Eaton, 1980, p. 5)

Major sources of air emissions within the study area during all seasons are vehicles and the burning of fuels, including wood, gasoline, diesel oil, and fuel oil. The major emissions from these sources are carbon monoxide, hydrocarbons, suspended particulates, sulfur dioxide, and nitrogen dioxide. Natural sources of particulates include high winds in the area blowing dust from dry stream beds and loess-covered hills, and from forest fires. Solid particulates are also a major component from wood burning for space heating, from ashes spread on icy roads, and from frozen water vapor emitted by internal combustion engines operating in air temperatures below -30 degrees F (ice fog).

Within the withdrawal area itself, however, these emission sources are limited to occasional military and civilian vehicle use, helicopters and other aircraft.

Soils

Well-drained shallow loamy soils occupy low slopes of the Alaska Range and portions of adjoining terraces of the river valleys. Associated soils are wet silt loams or depressions with an overlying peat layer and permafrost. These occupy broad drainages throughout the area. Level flood plains of the Tanana and Delta rivers are occupied by stratified sandy to silty soils having good drainage, with wet silty and sandy permafrost soils in the depressions. Deep peat deposits overlie these latter soils in low areas and are deep or absent adjacent to streams. Wide seasonal variation in temperatures occur in soils near Big Delta, even at moderate depths. (Aitken, 1964)

Shallow, well-drained silt loams with sandy to gravelly underlying material occupy most of the rolling uplands on the surface of the glacial moraines and alluvium east of the Delta River. Low depressions are occupied by wet silt loam with permafrost. Soils of the high foothills of the Alaskan Range are shallow gravelly and stony, occupying north-facing slopes, ridges, and steep slopes. Shallow wet silty to gravelly soils with permafrost occupy drainages and high valley bottoms. Rolling to steep uplands along the north portion of the study area (Yukon-Tanana uplands) are occupied by well-drained silty to gravelly loamy soils, with wet silty soils and permafrost in stream valleys. Permafrost is common throughout these soils on north-facing slopes and in drainage basins. Rocky land occupies steep mountain areas within the Alaskan Range, and outcrops in the Yukon-Tanana uplands.

Water

Most streams draining the study area have their headwaters in high, rugged mountains of the Alaska Range and all drain into the Tanana River. Nearly all are of glacier origin and are generally swift, steep, and carry large amounts of suspended sediments, particularly during the summer months. As these glacier fed streams leave the mountains and enter lower elevations, they become heavily braided through extensive gravel deposits.

During the open-water season the Delta River carries a suspended sediment load of 100 to 1,000 ppm. About 10-25 percent is clay size, 40-50 percent silt, and the remainder sand. Movement of bed load (course sands to gravels) occurs in the larger, faster channels during most of the flow season.

Low stream discharges typically occur during the winter (November through April) due to permafrost, ice formation, and storage of precipitation as snow and ice. Jarvis Creek, has a relatively well sustained flow in its headwater areas, but loses most of its water to groundwater as it flows onto the alluvial deposits of the lower elevations. Streams draining the Alaska Range respond slowly to the early summer heat, and generally do not reach their peak flows until July or August.

During this period increased precipitation produces additional runoff.

Nearly all of the surface water in the Tanana basin is of acceptable chemical quality. None of the streams that have been sampled exceed standards suggested by the U.S. Public Health Service for drinking water.

Plant Communities

Major vegetation communities in this area are coniferous forests, mixed forests, tall shrub, and herbaceous wetlands. Factors affecting the type and pattern of the vegetation are permafrost, depth to water table, slope, aspect, and fires. (The following vegetation and forest resource information is derived from U.S., Soil Conservation Service, 1986 and Alaska, Division of Geological and Geophysical Surveys, [1987].)

Alpine shrub tundra occur on the hilltops and upper slopes of the foothills in the southern portion of the withdrawal. Tundra vegetation consists of low and dwarf shrubs, dwarf birch, low willow, ericaceous shrubs, and dryas. On the middle slopes, below the alpine tundra and above the treeline, tall shrubs of willow, alder, and shrub birch form open and closed shrub cover. In the open tall shrub community, an understory of dwarf willow, labrador tea, alpine blueberry, spiraea, and/or grasses may be present. Mosses cover the ground on wet sites, while fruticose lichen are abundant on drier sites. Black spruce and white spruce are present at and below the treeline, in an open or woodland forest. A shrub layer of willow, birch, alder, blueberry, bearberry, and labrador tea is present in this forest community.

In the northwest corner of the withdrawal, a large north-sloping alluvial plain occurs. Tall willow and alder shrubs and scattered black spruce dominate the upper portion of the plain. On the lower slopes, the vegetation cover grades into black spruce bog with patches of dwarf black spruce and broadleaf scrub.

Open and closed coniferous forests and closed mixed and deciduous forests occur on moraines lying astride Jarvis Creek, Delta River, Delta Creek, and East Fork Little Delta River. The open coniferous forests consist of black and white spruce with a low decidous shrub layer. The closed forests consist of white spruce, black spruce, birch and aspen. Numerous kettle hole depressions in all the moraine forests support ponds, aquatic vegetation, sedge tussock wetlands, and low shrub wetlands.

Smooth, gently sloping glacial outwash plains spread northward from the northern end of the moraines. On the outwash plains east of Delta Creek, in the central portion of the withdrawal, low ericaceous shrub and mesic graminoid communities cover the upper slopes. Tall and low willow and alder shrubs invade the lower slopes. West of the Delta River, a smooth, gently sloping outwash plain spreads northward toward the Tanana River. Dwarf tree scrub and willow and alder shrubs cover this area in indistinct patterns. Dwarf tree scrub includes stands of shrub-like conifers and stunted

broadleaf trees. On the outwash plains, east of the Delta River, bogs of sedge tussocks, low ericaceous shrub hummocks, and scattered black spruce occur in the poorly drained sites. Mixed and white spruce forests, patches of fruticose lichen, and low shrub occupy the drier sites. Mixed forests of aspen, young white spruce, and young black spruce; aspen forests; and aspen, willow, and spruce scrub have developed on the plain near the mouth of Jarvis Creek.

Wide gravel covered flood plains are associated with Delta River, Jarvis Creek, Delta Creek, and East Fork Little Delta River. The flood plains are mostly barren gravel, sand, and silt. Vegetation cover is sparse in the low and active portion of the flood plain, and consists of scattered grasses, legumes, asters, goldenrod, and seedling willows. Balsam poplar, alder, and willow have developed on the higher and more stable areas of the flood plain.

Terraces occur as narrow benches above the flood plain. Scattered white spruce, balsam poplar, and aspen grow on the lower and younger terrace. Willow and alder shrubs are found in the understory. Mixed forests of aspen, white spruce, black spruce, and birch, and dense coniferous forest of white spruce and black spruce have developed on the higher terraces. Long, narrow depressions left by stream channels cutting the terrace are covered by sedge tussocks, low shrub hummocks, and scrub spruce and birch.

Timber Resources Commercial forests are identified in this area as open and closed coniferous forests of white spruce, closed deciduous forests of paper birch and aspen, and closed mixed forests of black spruce, white spruce and birch or white spruce, birch, and aspen. Because of the frequent fires in the area, these forests are mainly pole sized (5-9 inches DBH coniferous, and 5-11 inches DBH deciduous) or young reproduction stands. Coniferous stands are found east of the river in the southern portion of the withdrawal, and west of the river in the northern portion of the withdrawal. Mixed forests occur west of the river and west of the coniferous forest and extend southward along the river to the southern edge of the withdrawal. This mixed forest grades westward into a deciduous forest. Patches of mixed and deciduous forests occur east of the river at the northern edge of the withdrawal. Small stands of potential commercial forests also occur on river terraces along Delta Creek and Jarvis Creek.

Most of the woodland forests are open black spruce and white spruce forests and open and closed mixed black spruce, white spruce, and aspen forests. Other woodland forest types are closed black spruce or black spruce and white spruce forests. These forests are mainly young reproduction stands. Most of the woodland forests occur between the Delta River and Jarvis Creek and on the lower slopes of the foothills west of Jarvis Creek. Patches of woodland forests occur west of the Delta River at the northern edge of the withdrawal.

The noncommercial forests are mostly open dwarf black spruce forests. Most of these forests occur west of the Delta

River on the lower slopes of the foothills, on the moraines astride Delta Creek and the East Fork Little Delta River, on the plains in the northwest and north-central portion of the withdrawal.

The biological condition of the timber resource is affected primarily by fire, insects, and disease. Because of the frequent fires, many of the stands are immature. The spruce beetle (D. Ruffipenis) is the most damaging to the white spruce stands. The potential for an outbreak is always present. While no specific site data on disease is available for this study area, there is an average for the interior's timber. A study done by the U.S. Forest Service., estimates that 37 percent of the white spruce, 47 percent of the birch, 78 percent of the poplar and 82 percent of the aspen have decay in the merchantable stem. (Hutchison, 1967, p. 38)

Fire History

During the thirty-two years between 1956 and 1987 sixty known fires occurred on the withdrawn lands. The largest of these burned 43,500 acres of State and federal land, including much of Fort Greely east of Jarvis Creek, in 1987. Other large fires took place in 1983, igniting 35,450 acres near Delta Creek, 1971, burning 17,500 acres west of East Fork Little Delta River, and 1956, when 8,000 acres were set ablaze in the lower One-hundred-mile Creek area. Incendiary devices ignited the 1983 blaze, lightning caused the fire in 1971, and miscellaneous causes started the other two fires. Thirteen percent of the burns in the last thirty-two years began through lightning, thus human intrusion in the area is responsible for increasing the natural amount of fire by about six times. However, recent history suggests that fire suppression efforts generally reduce the acreage consumed by fire to a seventh of the area which would be consumed with no control work. (Rowdabaugh, MSA; BLM, Alaska Fire Service file maps)

Fish, Wildlife, and Their Habitat

Fort Greely has a variety of landscape features, including physiographic forms and vegetation. These conditions result in habitats that support many different animal species. (Unless otherwise cited, all data in this section is derived from Spiers, MSA.)

Fish

The withdrawn area includes a glacier, numerous lakes and ponds, and four major streams, Little Delta River, Delta Creek, Delta River, and Jarvis Creek. The streams are all glacier fed and flow north to the Tanana River from the north slope of the Alaska Range.

Despite the abundance of water resources, there is relatively little quality habitat for fish. Although Arctic grayling migrate through them, the major streams are silt laden and do not provide a fishery on Fort Greely. A few clear streams flowing into these provide summer habitat for grayling, but none has been found to be an important

spawning stream. While some lakes and ponds have native northern pike, sculpin, or northern longnose suckers, most are too shallow or oxygen deficient in the winter to support fish.

Fort Greely has a good fishery, but it is through stocking of nonnative, nonreproducing species. Approximately five hundred anglers fish fourteen lakes stocked annually by the Alaska Department of Fish and Game (ADF&G) with rainbow trout, silver salmon, king salmon, sheefish, and grayling. (Mills 1992, pp. 110-11) One of these lakes lies west of the Delta River and is inaccessible by road while the other stocked lakes are readily accessible from the Richardson Highway. ADF&G usually stock these lakes every year.

Wildlife

Compared to other U.S. military posts throughout the world, Fort Greely has a large variety of game species. Big game includes moose, caribou, bison, Dall sheep, grizzly bear, black bear, and wolves. Trappers catch red fox, coyote, wolverine, lynx, marten, wolf, beaver, and muskrat. Small game consists of snowshoe hare, willow ptarmigan, rock ptarmigan, spruce grouse, sharptail grouse, and ruffed grouse. Even though the installation is dotted with thousands of kettle lakes and ponds, it is not a major waterfowl resting area. However, during migration a variety of waterfowl stop at Fort Greely. Included are many species of ducks, Canada geese, white fronted geese, snow geese, sandhill cranes, and snipe.

Such a variety of wildlife, of course, requires a diverse habitat. On the withdrawal there are large expanses of treeless moist tundra or black spruce bogs underlain with permafrost; extensive areas of taiga or boreal forest, consisting of stands of white spruce, aspen, poplar, and paper birch; ribbons of small streams through all habitat types which support lush willow growth and thereby provide food and cover for animals that would not otherwise be there; and many lakes and ponds, alpine tundra, and a glacier.

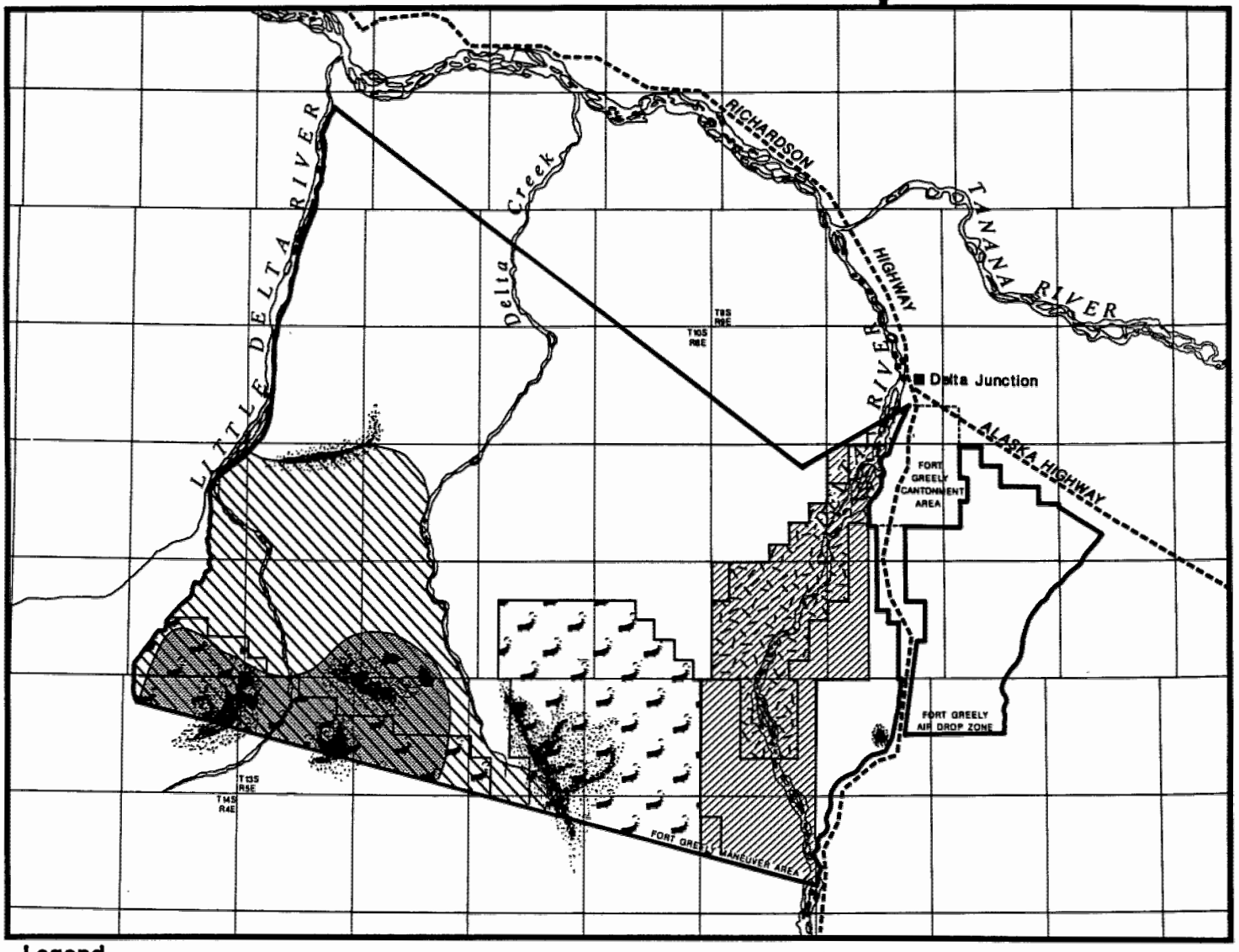
There is no history of military and other activities causing any major damage to wildlife habitat. Troops have used fields that serve as bison food plots and sharptail grouse dancing grounds. Army training units pitch tents and set up firing points in these same areas. So far, there has been no damage to the fields. However, in the spring of 1987, troops were firing from a field in which sharptails were trying to mate. Continued heavy use of these fields by the Army could render them unsuitable for dancing grounds or food plots. Similarly the calving grounds of the Delta Caribou Herd could deteriorate if troops have to train there frequently during the summer.

The accompanying map shows areas that are unique or sensitive habitats and are essential to the well-being of the wildlife species. The habitat areas indicated for bison, caribou and sandhill cranes are those agreed to in a supplement to the July 1986 revised Cooperative Agreement for Management of Fish and Wildlife Resources on Army Lands in Alaska. ADF&G and the U.S. Army 6th Infantry Division (Light) signed the

Fort Greely

PROPOSED Resource Management Plan
FINAL Environmental Impact Statement

Wildlife Habitat



Legend

Habitat

- Dall Sheep

Unique or sensitive habitat

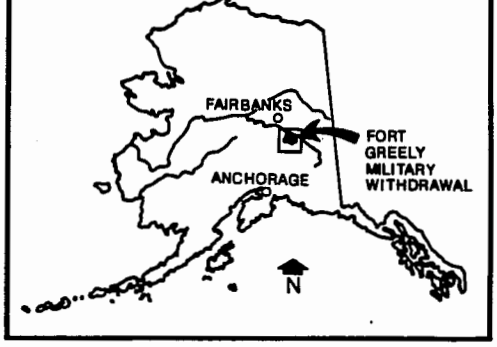
- Caribou Calving Area*
- Bison*
- Sandhill Crane*
- Grizzly Bear

*As defined in the supplement to cooperative agreement between the Army and ADF&G. (ADF&G and 6th ID(L), 1986)

SCALE

0 5 10 MILES
0 5 10 KILOMETERS

LOCATION MAP



supplement. (ADF&G and 6th ID(L), 1986) The map also shows areas on Fort Greely inhabited by grizzly bears and Dall sheep. Predators such as wolves and grizzly bears inhabit the same areas as prey like caribou and moose.

Moose

A 1984 survey found 391± 28 percent ($P<0.10$) moose on Fort Greely controlled lands. Since this survey did not include some of the better moose habitat, the moose population is actually greater than the survey found. Most of the year moose are evenly distributed throughout the area. The better moose habitat lies in the alpine regions at the south end of the installation. This habitat generally is good and improving as a result of frequent wildfires stimulating large browsing areas.

Birds

Ptarmigan usually frequent some of the higher elevations while grouse generally are distributed evenly in the low lands. Ducks, geese, and other waterfowl are associated mostly with lakes throughout the withdrawal. (Spiers, 1988a) A study done between 1976 and 1979 indicated that sandhill cranes used the lower Delta River drainage as a roosting area during their annual migrations. (Kessel, 1979)

Furbearers

There are 14 registered traplines on Fort Greely, 2 or 3 large ones west of Delta River and 10 or 11 smaller traplines east of the river evenly distributed on both sides of Richardson Highway. The variety of furbearers includes almost every kind found in interior Alaska. (Spiers, 1988a)

Threatened and Endangered Species

No threatened or endangered species are known to occur on Fort Greely. The most likely such species to occur on the withdrawn lands is the peregrine falcon. Although there have been no confirmed sightings of peregrine falcon on the withdrawal, there are several active nests along the Tanana River just north of the installation, and the bluffs on the Little Delta River might also provide suitable nesting sites.

Wildlife's Role in Economy

Hunting, and to a lesser extent fishing and trapping, contribute to the local and regional economy. Hunters on Fort Greely generate about a million dollars a year. (See Appendix B.) Guides, outfitters, and charter flight services, which provide access and other services to most hunters west of the Delta River, and Delta Junction and Fairbanks stores, restaurants, and gas stations garner the great majority of these funds. Most hunters west of the Delta River hire air transportation from Fairbanks or North Pole. Charter services charge about $130 to $165 an hour per person depending on the type of plane hired. A roundtrip to one of the gravel bar landing areas near the foothills of the Alaska Range costs a hunter approximately $500. (DuBois, 1988)

The Alaska Department of Fish and Game stocks about a dozen lakes on the withdrawn lands. These attract local fishers who will expend money to drive to the lakes and supply their fishing needs. Local residents who trap on the

withdrawn lands have analogous expenses. Although the total of these expenses is unknown, it is possible to estimate the value of the furs taken from Fort Greely. The withdrawal occupies approximately 8 percent of game management units 20A and 20D. During 1986-87 trappers harvested about $50,000 worth of beaver, lynx, otter, wolverine, and wolf from these units. Assuming that trappers on Fort Greely gathered a proportionate share, then the fort accounted for $4,000 of these sealed furs. If sealed furs accounted for approximately 20 percent of the total fur value, Fort Greely trappers would have accumulated $20,000 in furs.

Cultural Resources

Fort Greely has archaeological and historical cultural resources typical of Interior Alaska. The archaeological sites can render information about Native life and the sites from the historic period are evidence of the travel and mining activity which occurred in the region. Although there may be paleontological resources, specifically Pleistocene vertebrate remains, buried beneath the floodplains of the maneuver area, none has yet been unearthed. (Unless otherwise noted, all the cultural resource information is derived from U.S. Army COE, 1986, pp. 93-156.)

Natives living along the Tanana traditionally made hunting forays up the Little Delta River and Delta Creek and utilized the Donnelly Dome area. (Andrews, 1975, pp. 55, 70-71, 83 and 1977, v. 1: 182-83) Archaeologists have identified eighty-three prehistoric sites on the withdrawal ranging in age from the historic period back possibly to before 7000 B.C. These sites are on the approximately 5 percent of the withdrawal which has received adequate archaeological examination. The modest amount of work thus undertaken has been concentrated east of Delta River, at the headwaters of East Fork Little Delta River, Delta Creek, and One-hundred-mile Creek, at the junction of One-hundred-mile Creek with Delta Creek, and at Koole Lake.

Twenty-nine of these sites are not eligible for the National Register of Historic Places and there is insufficient information on thirty-nine others to determine their eligibility. Three sites and an archaeological district containing twelve sites are eligible for the Register. One of these three separate sites is at Koole Lake (XBD-106) and is threatened by current recreational use. The archaeological district is in an area which can be reached by road and is near a quarry south of Donnelly Dome. Three sites about which there is not enough information to determine eligibility are near Big Lake, which can be reached by road and is used as a camping and recreational area. Sites which may be eligible for the Register near Twin Lakes are similarly exposed to human activity.

There are three historic sites and a historic trail on the withdrawal. All are west of the Delta River. Sullivan Roadhouse on Delta Creek at the western edge of the Oklahoma Impact Area is on the National Register and a cabin on Ptarmigan Creek which probably dates from a molybdenum mining operation begun in 1914, is eligible for the Register. (Cobb, 1979, p. 123-24) Both are in good condition. Gordon's Roadhouse, which is in the lake-dotted region between the Delta River and Delta Creek, is in ruins. It and the Sullivan Roadhouse were on the Washburn-Donnelly winter sled trail, an alternate to part of the Valdez-Fairbanks route in the 1910s and early 1920s. (ARC 1912, p. 10; ARC 1921, p. 29; "Map of Alaska, 1923," Records of the Office of the Territories, Record Group 126, National Archives.)

Recreation

Hunting and Fishing

Hunting and fishing are the most common recreational activities engaged in on the Fort Greely withdrawal. There is no exact count of nonmilitary users of the land, but the Fort Greely Provost Marshal Office estimated that in the late 1980s approximately five hundred people annually flew in to hunt on the roadless part of the withdrawal west of Delta River. Moose hunting is not allowed in the Delta Junction Management Area, which lies between Delta River and Jarvis Creek. (Butts, MSA, Recreation) Buffalo leave the fort before hunting season begins. However, they return to the eastern portion of the withdrawal in late winter in time for hunters to harvest about two a year on the fort. (Spiers, 1988b)

ADF&G estimates that recreationists spent over 2,600 visitor days fishing at Bolio, Mark (Sec. 18, T. 12 S., R. 10 E., F.M.), and North and South Twin lakes on the road system on the fort between the Delta River and the Richardson Highway. Others fish on ten other stocked lakes in the same area. ADF&G also stocks Koole Lake (Secs. 20-21, 28-29, T. 8 S., R. 6 E., F.M.), which fishermen access by plane or snowmobile.

Camping and Picnicking

There are two cabins, one on North Twin Lake, built to serve on a trail system used for hiking and skiing, and one on South Twin Lake, built for use by the Boy Scouts, but which is used by the general public. There are a few concrete fireplaces between the North and South Twin Lakes and a few picnic tables at Bolio Lake.

Visual Resources

The visual character of Fort Greely varies greatly over the Manuever Area but is consistent over the Air Drop Zone. The Air Drop Zone and the northern part of the Manuever Area are nearly level with mixed black spruce, deciduous trees and shrubs, and muskeg. Steep mountains of the Alaska Range, lying just south of the withdrawal are a dominant visual feature of the southern part of the Manuever Area. The southern part of the Manuever Area has rolling plateau lands

interspersed with kettle lakes. Strong visual elements are present as open areas, such as lakes, bogs and tundra, and rivers ranging from nearly level, widely braided floodplains to gorge lands, with steep adjacent rock outcrops.

From vantage points along the Richardson Highway and the roaded area of the Manuever Area east of the Delta River, the background distance zone on the southern and southwestern horizon is a dominant view of Mt. Hayes and the Alaska Range. Middle ground scenes vary from foothills, tundra, moraine features, the Delta River floodplain, and the cone-shaped Donnelly Dome. Donnelly Dome is the dominant foreground feature in the area along the Richardson Highway from 10 to 20 miles south of Delta Junction.

The roaded area east of the Delta River has several natural lakes, potholes, and kettle lakes which offer visual contrast to the usual view of unbroken walls of vegetation along interior Alaska roads. Since this area and the Donnelly Dome area are within the Delta Junction Management Area, chances to see moose are greater than other places in interior Alaska. The stretch of the Delta River Valley which passes through the fort has a free-roaming bison herd, one of three in the State, and the only one where it is possible to view the herd from road access. The State maintains a viewpoint just south of Donnelly Dome on the Richardson Highway which overlooks the summer range of the herd on the Delta River.

The most obvious visual intrusion through the withdrawal lands is the Trans Alaska pipeline, which is below ground from the Tanana River, north of the withdrawal, to a point west of Donnelly Dome where it is supported above ground on pylons until it leaves the area south of Donnelly Dome. There is a viewing area along the Richardson Highway just south of Donnelly Dome for those who are interested in this unique man-made feature.

Data gathered by the Alaska Department of Transportation and Public Facilities on vehicular traffic on the Richardson Highway indicate that a daily average of 240 vehicles passed over a permanent traffic counter in 1986 located at Trim's Camp, about eighteen miles south of the southeastern corner of the Manuever Area. There are no other data available on the number, location, and characteristics of the people viewing the lands in the withdrawal. Most of the visual intrusions along the areas seen from the Richardson Highway and the roads between the highway and the Delta River are screened by timber, the primary intrusion being the roads.

Lands and Rights-of-Way

Lands

The planning area is withdrawn by Public Law 99-606, the Military Lands Withdrawal Act of 1986. The lands have been under a withdrawal for military purposes since 1961. There are several large impact areas within the planning area used for aerial gunnery training. Because of the hazards

associated with military use of the lands, they are probably unsuitable for other uses or disposal without extensive cleanup of any unexploded ordinance. (Everett, MSA, Lands)

Rights-of-Way

The Trans-Alaska Pipeline System (TAPS) parallels the Richardson Highway within a fifty-foot-wide right-of-way passing through the Fort Greely Maneuver Area at several points. The proposed Trans-Alaska Gas System follows the existing TAPS pipeline through the planning area. (Everett, MSA, Rights-of-Way)

Energy and Mineral Resources

Geology

The bedrock underlying the Fort Greely withdrawal is a complex assemblage of Precambrian and Paleozoic-age metamorphic rocks, formerly known as Birch Creek schist. These rocks were originally deposited as a sequence of clastic sediments that included shales, sands, and gravels. Subsequent recrystallization and metamorphism nearly erased all evidence of the original bedding within the schist sequence. (Capps, 1912; Moffit, 1954; Wahrhaftig and Hickcox, 1955) During the late Mesozoic and early Tertiary time, granitic rocks in the form of batholiths, dikes, and sills intruded into these metamorphic rocks.

By early or middle Tertiary time continentally derived deposits of the coal-bearing formation were laid unconformably on the metamorphic schists along the northern flanks of the Alaska Range. These loosely cemented conglomerates, sands, clays, and coal beds occupied small basins formed between Birch Creek schist ridges. (Capps, 1912; Pewe and Holmes, 1964) Erosion removed extensive portions of the coal-bearing formation as the Alaska Range continued to rise. Northward flowing streams, such as the Delta River, carried large volumes of material out of the Alaska Range. These deposits of water-worn material, named Nenana Gravel, were at one time fairly continuous. However, folding and tilting associated with uplifting of the Alaska Range caused some deposits to erode away, leaving the isolated deposits which now exist thoughout the region. Overlying Quaternary-age glacial deposits, in the form or moraines and outwash, conceal some deposits of the Nenana Gravel. (Capps, 1912; Moffit, 1954)

Three Quaternary-age glacial advances, flowing northward out of the Alaska Range, deposited morainal material as well as outwash over this region. First was the Darling Creek glacial period whose remnant deposits now lie outside the study area, but whose glacial ice may have covered the entire withdrawal. This was followed by the Delta and Donnelly glacial periods of the Pleistocene. (Pewe and Holmes, 1964) The latter period was the least extensive of the three glacial stages. Concurrent with and subsequent to these

glacial advances were periods of extensive erosion and deposition of windblown (loess) sediments.

Recent geologic events in the region include subsidence of the Middle Tanana Valley and the relative uplift of the Alaska Range. As a result, glacial deposits are being reworked by major streams in the flood plains of such drainages as the Tanana and Delta rivers. (Weber and others, 1985)

Leasable Minerals

The Fort Greely withdrawal can be divided into three sections for the assignment of leasable minerals* potential: the Middle Tanana basin, the Nenana coal basin, and a nonbasin area. (See the accompanying map.) Within the Nenana coal basin are known coal fields and outcrops of igneous and metamorphic rocks. (Merritt, 1985; Merritt and Hawley, 1986; Miller and others, 1959)

Areas of the withdrawal that occupy portions of the Middle Tanana basin and the Nenana coal basin are classified as having moderate potential (M/A)** for the occurrence of oil. (See Appendix C for maps of leasables and other mineral potential.) This is based on the presence of Tertiary-age sedimentary rocks which hold potential for the accumulation or generation of oil. In addition, rocks in the Middle Tanana basin, which may bear coal, and coal deposits in the Nenana basin may generate oil if the subsurface coals reach an appropriate level of thermal maturation. (Stanley, 1986) The nonbasin area and igneous and metamorphic rock of the withdrawal are classified as having low potential (L/A) for the accumulation of oil resources.

The Middle Tanana basin section of the withdrawal has a moderate potential (M/A) for gas. The Nenana basin has a high potential for gas (H/C in the basin's known coal fields and H/A elsewhere). These classifications are in part based on the rationale presented above for oil. In addition, the high potential for gas in the Nenana basin rests on known gas accumulations generated from thermally mature coal deposits in other parts of the world. (Stanley, 1986) The nonbasin area and the igneous and metamorphic rocks have low potential (L/A) for gas.

The Middle Tanana basin section is classified as having moderate potential (M/B) for the occurrence of coal resources. This classification is based on well-log interpretations which provide direct evidence of nonmarine Tertiary-age beds of coal in the western part of the basin and the identification by R. D. Merritt and C. C. Hawley of the Middle Tanana basin as a prospective coal basin. (Merritt and

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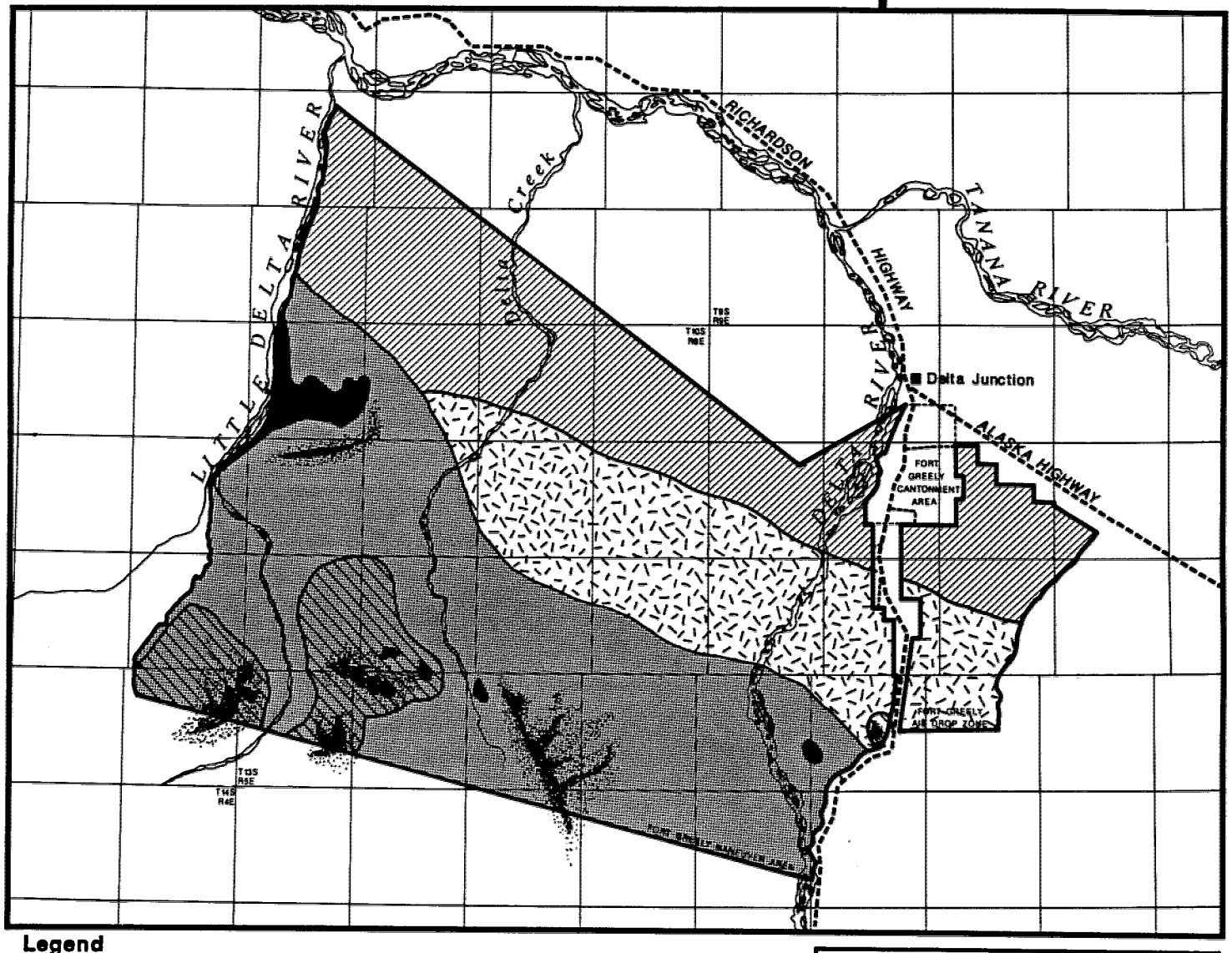
* Leasable minerals include oil, gas, coal, geothermal resources, oil shale, gilsonite, phosphate, potassium, and sodium.

** This classification system includes no (O), low (L), moderate (M), and high (H) levels of potential and levels of certainty reflecting insufficient evidence (A), indirect evidence only (B), minimal direct evidence (C), and abundant direct and indirect evidence (D) to support or refute the existence of mineral resources.

Fort Greely

PROPOSED Resource Management Plan
FINAL Environmental Impact Statement

Geologic Basins



Legend

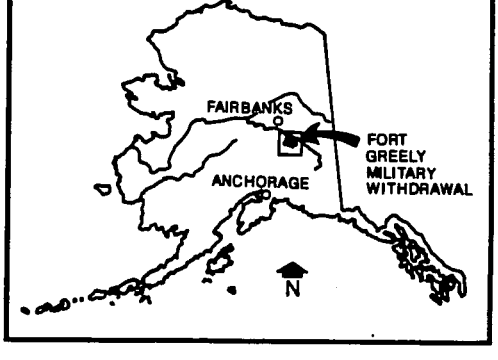
- Middle Tanana Basin
- Nenana Coal Basin
- Nonbasin Area
- Igneous/Metamorphic Rocks
- Coal fields

SCALE

0 5 10 MILES

0 5 10 KILOMETERS

LOCATION MAP



Hawley, 1986) The withdrawal's southern section lies within the Nenana coal basin and has a high potential for coal resources (H/D in the coal fields and H/B elsewhere). This classification is supported by the basin's known coal fields and outcrops of the coal-bearing formation. (Merritt and Hawley, 1986) Uncertainty concerning the subsurface geology of the nonbasin area results in its classification as having low potential (L/A) for coal. Finally, the igneous and metamorphic rocks in the withdrawal have no potential (O/D) for coal because of their unfavorable geologic environment.

Oil shales are organic shales that yield petroleum hydrocarbons upon heating. These shales are not considered petroleum or coal, but an intermediate bitumen material containing some of the properties of both coal and petroleum. Oil shales are considered to have no potential (O/D) for occurrence among the igneous and metamorphic rocks. The rest of the withdrawal has a low potential (L/D) for concentrations of oil shale. This conclusion is based on the absence of reported oil shale, including no reference in well log interpretations.

There are no known hot springs or other geothermal indications within the Fort Greely withdrawal. Granitic plutons crop out near the eastern and western borders of the withdrawal. These intrusions may hold potential for the occurrence of geothermal resources. The withdrawal is classified as having moderate potential (M/A) for geothermal resources based on the study area's spatial association with igneous plutons.

Thermal springs in Alaska are spatially associated with the contact zones of Mesozoic and Cenozoic granitic plutons. Plutons that intrude sedimentary and volcanic rocks produce springs within and outside the pluton. When the country rock is of metamorphic origin, springs are generally restricted to the marginal zones of the pluton. (Gassaway and Abramson, 1977)

Concentrations of phosphate, sodium, and potassium have no potential (O/D) for occurring among the fort's igneous and metamorphic rocks. The remainder of the withdrawal is classified as having low potential (L/B) because of its generally unfavorable geologic environment.

There is also no potential (O/D) for gilsonite among the igneous and metamorphic rocks and low potential (L/B) for it elsewhere on Fort Greely. There is some potential for gilsonite because it is associated with petroleum deposits.

Locatable Minerals

There are no valid existing mining claims or mineral patents on the Fort Greely withdrawal. No proposals for exploration, development, or processing operations for locatable minerals*** have been made.

*** Locatable minerals include a large number of metals, ores of metals, and nonmetallic minerals. Among these are gold, silver, lead, zinc, copper, molybdenite, asbestos, graphite, and various rare earths.

The gold placer resources and the molybdenum prospect along Ptarmigan Creek are classified as having high potential (H/D) based on the reported or known occurrence of these minerals. Prospectors and miners have explored a molybdenum and gold prospect on Ptarmigan Creek intermittently since 1914. (Smith, 1942) It consists of relatively sparse molybdenite in quartz veins that cut granite. High-grade samples contained as much as 2.71 percent molybdenite and a little gold. A few tons of ore were mined, but not shipped. (Joesting, 1942; Smith, 1942; Berg and Cobb, 1967) A total of thirty-two claims were located on the creek, the most recent in 1954 and 1961. None of the claims are active. (Alaska, Division of Mines, Kardex 68-20 and 68-32) All other drainages within the withdrawal have high potential (H/A) for placer gold.

The remainder of the withdrawal is assigned moderate (M/B) potential for the occurrence of locatable minerals. This level of potential is based on the reported history of mineral occurrence and possible production south and west of the withdrawal, coupled with the similar geologic settings of these occurrences outside the study area and those in the study area.

Several state mining claims lie just to the south of the withdrawal on McCumber, Riley, and Ober creeks, and at least one access route to them goes through the withdrawal. There are no available production records for the claims. Prospectors, who first reached the creeks at the turn of the century, met with some success, but failed to find rich deposits. In 1930 some prospecting was reported on McCumber Creek and its tributary, Morning Star, but the work yielded only a little placer gold. (Smith, 1933; Cobb, 1972; Mulligan, 1974) In 1942 a USGS document noted that galena, the most important ore of lead, was reportedly found in quartz stringers in schist near McCumber Creek. The same report stated that gold prospecting appeared to have been concentrated in the Tertiary gravels on Ober, Jarvis, and McCumber creeks, with Ober receiving the most attention. Several holes sunk on upper Ober Creek contained fair gold values. (Moffit, 1942) In 1954 the USGS discovered monazite, the principal ore of the rare earth elements and the main source of thorium, in a concentrate sample in the area. (Wedow and others, 1954)

There are placer deposits on Portage, Chick, and Beaver creeks, just west of the withdrawal. A trail through the northern part of Fort Greely reaches these areas. The claims on the latter two creeks are abandoned and void. There is no production information on the deposits.

Several groups of active and inactive lode claims are located south of the withdrawal at the base of the Alaska Range, but there is no information in the literature about them. Miners have traveled through the withdrawal to reach these deposits.

Mineral Materials

There is a high potential (H/D) for the occurrence of sand and gravel**** in the northern and central sections of the withdrawal as well as in the floodplain deposits of Jarvis Creek, Granite Creek, and the Delta River. These areas were identified as having potential for these resources in the Army's 1980 Final EIS for the Fort Greely withdrawal. (U.S. Army, 1980) In addition, Pewe and Holmes (1964) in a study of the geology of the Mt. Hayes D-4 quadrangle identified potential sand and gravel-bearing deposits near the Delta River. This information can be used to identify potential deposits in adjacent areas of the withdrawal where similar Pleistocene and Recent surficial deposits exist. Most of the rest of the withdrawal is assigned high potential (H/B). While these areas were not identified in the literature as potential sources of sand and gravel, they are delineated on the geological map of the fort as glacial moraine deposits or outwash and they contain Pleistocene and Recent deposits similar to those noted in the 1964 study. The absence of sand and gravel from the outcrops of metamorphic and igneous rocks account for those areas of the withdrawal having no potential (O/D) for sand and gravel.

Currently no mineral materials are being extracted from the withdrawal. Eight material sales or free use permit sites have been located on the fort, all of which are now closed or inactive. Other such gravel pits are located near the study area along the Richardson Highway and the Trans-Alaska Pipeline System.

**** Other mineral materials include common varieties of stone, cinders, pumice, pumicite, clay, limestone, dolomite, peat, and petrified wood.

Chapter 3
Environmental Consequences

Introduction

This chapter addresses several concerns. First, it presents estimates of the timber, mining, and other developments which could occur under the Proposed Plan presented in Chapter 1. The envisioned scenarios comprise the best projections of members of the Army-BLM planning team and are a basis for estimating the environmental consequences. The chapter then describes the anticipated effects of implementation of the Proposed Plan on air, soil, water, vegetation, wildlife and wildlife habitat, visual resources, the local economy, and subsistence. Because of the importance of recognizing the military's use of the lands, the chapter also portrays the potential impact of the plan on military activities. Thirdly, the chapter summarizes cumulative effects of military and nonmilitary uses on the withdrawal's resources and uses. Finally, the chapter presents summary statements concerning ANILCA 810(a) findings, unavoidable adverse impacts, short-term uses versus long-term productivity, and irreversible and irretrievable commitments of resources.

Development Scenarios

Proposed Plan

Recreation

The Proposed Plan would maintain essentially the same access for nonmilitary use as currently prevails on the withdrawn lands. The Recreation Activity Management Plan may broaden the recreational uses, and any clear cutting which may follow from the Forest Management Plan could marginally improve hunting opportunities. These changes over the life of the withdrawal would gradually increase public use of the land from an estimated 8,000 visitor days each year to approximately 9,000 visitor days each year by the turn of the century.

Forestry

Although the timber resources may allow over a thousand acres to be cut each year and still sustain the forest's yield, current demand for forest products makes it unlikely that even a hundred acres would be cut extensively in any year during the life of this withdrawal. Alaska's Division of Forestry reported that 1.4 million board feet and 1 million board feet were harvested from all lands in the Delta Junction

area in 1985 and 1986, respectively. (Alaska, Division of Forestry, Delta Junction, 1987) A clear cut on the withdrawal of less than one hundred acres could supply half this amount of timber.

Because of the limited demand, timber would probably be sold in clear-cut units of up to 100 acres. Crawler tractors would drag logs to a landing area from which trucks would transport them off the withdrawal. Heavy logs pulled over the ground would often cut through the vegetative ground cover. This ground scarification exposes mineral soil, a condition necessary for effective regeneration of birch, aspen, and spruce. On nearly level and dry sites the tractors can work during the summer; elsewhere such work would be limited to periods when the ground is frozen. Loggers would be required to conduct adequate slash disposal. A common method of disposal is to burn the residue after the harvest to control insects and disease, reduce fuel, and promote regeneration of white spruce, birch, and aspen.

Much of the commercial timber west of the Delta River is in the impact areas. Moreover, the timber on that side of the river is not readily accessible by road. Consequently, logging would focus on the areas east of Delta River, much of which can be reached from Meadows Road. Spur roads of less than a mile may be necessary to remove logs from landing areas.

Minerals

Under the Proposed Plan the withdrawal will remain closed to the operation of the mineral laws, though the BLM and the Army will reexamine what areas may be suitable for opening by 1996 and at least every five years thereafter. Thus, no mineral activity will occur until at least the late 1990s, other than mineral material extraction for the military's own construction projects. If after the reexamination of the decision on mining on the withdrawal, the BLM and the Army agree to open portions to mineral leasing or location, development might take place. The following scenarios indicate what developments may occur. Note that these scenarios do not necessarily indicate what is most likely to happen, but rather what activities could take place if valuable resources are found on the withdrawal in commercial quantities. No scenario is presented for lode mining or coal development. Lode claims were filed on a molybdenum/gold prospect on Ptarmigan Creek between 1937 and 1941, and some ore was mined but not shipped. Nevertheless, the potential for lode development is extremely remote during the life of this plan. There is little to indicate that the prospect is especially rich, and more accessable and promising deposits are not economical at today's depressed molybdenum prices. Prices are very unlikely to rise through the next decade to a level to insight interest in mining on Fort Greely. Similarly, although the withdrawal has some areas of high coal potential, the economics of coal development in Alaska make it unlikely that there will be a demand for any coal which may lie in Fort Greely until well into the next century.

Oil, Gas, and Geothermal

While, as noted in the Affected Environment chapter, it is highly unlikely that economically viable oil, gas, or geothermal resources exist on the withdrawal, the scenario presented below describes the type of operations which might occur should the Fort Greely withdrawal be opened to the exploitation of these resources. Four types of exploratory activities may take place. First, summer field investigations would be conducted via automobile, helicopter, or fixed-wing aircraft to collect rock samples from outcrops and make general observations of geologic features. They probably would not require any field camps. Second, for up to six months during winter, prospective developers might conduct seismic investigations. To accomplish this, a crew of five to ten people with three to five vehicles (all would be designed to exert little ground pressure so that they might be used off the road network) would cross the area in a grid pattern generating sound waves into the subsurface and recording their reflected waves. Third, should summer and seismic investigations suggest particularly interesting geologic structures, a company might sink an exploratory well. Finally, depending on the results of the exploratory well, a company may drill delineation wells to confirm and measure the extent of a discovery.

Exploratory and delineation wells are usually sunk in the winter for environmental, engineering, and economic reasons. Low-ground-pressure vehicles would haul construction equipment overland to the drilling site or sites from the Richardson Highway or roads on the withdrawal. Drilling pads covering two to four acres each would support the rig, equipment, and necessary facilities. The pads could be made of ice if there is enough water available at the site; otherwise pads could be constructed from excavated material or from combinations of gravel, foam, and timber, or of other combinations of materials. If the camp is to house the workers, thirty to fifty people will likely be at the site; otherwise fifteen to twenty people will be present on the site at any given time. Next to the pad there would be up to a half acre reserve pit and a much smaller flare pit. Both pits would be lined with an impermiable liner and would be eight to ten feet deep. The material excavated from the pits would be used to backfill them when the pads are abandoned. The well could be drilled, tested, and abandoned within fifty to ninety days.

After final testing and logging of a well's findings, the well is suspended or abandoned by placing cement plugs in the wellbore and casing. All equipment is then removed from the site and any debris is transported to an approved disposal facility. A final clean-up crew would return to the site in the summer to pick up any remaining debris and check on rehabilitation.

If exploratory and delineation wells indicate a viable economic discovery, the lessee would draft environmental studies and a plan for development and production of the

reservoir. The appropriate government agencies would review these documents and, if they prove satisfactory, approve them. The first on-the-ground activity would be the construction of a road from existing roads to the production drill sites; along the route of a pipeline, if one is to be built; and from gravel sites to the road network. The roads would be thirty-five feet wide and three to four feet thick. Each mile of road would cover five acres of surface. The total acreage covered by roads would depend on the size of the field and the surrounding terrain. The developer would also build a small airstrip, if it is necessary to support field operations. The airstrip would be 2,000 to 4,000 feet long and 100 to 150 feet wide.

This scenario presumes that a five thousand acre oil or gas field would prove economical to produce. Under this assumption, five pads would be necessary to deplete a gas reservoir and twenty pads for a oil reservoir. Most pads would cover five to seven acres. They would be one mile apart in a gas field and a half mile apart in an oil field. Wellheads would be protected from the environment by metal buildings about ten feet high and ten feet on each side. Once the field was depleted—probably over a period of ten to twenty-five years—the wells would be plugged and abandoned, the buildings removed, and the disturbed surface reclaimed according to government regulations.

Gas and oil production would require oil, gas, and water separators; water disposal wells; an office complex; and pipelines. Separators and disposal wells may be required on all pads or just on a few. Those pads with these facilites will require seven to ten acres. Unless the field is easily accessible to off-withdrawal facilities, one pad will also have to accommodate offices, meeting rooms, and a kitchen. Any pad containing these facilities would have to be expanded to twelve to fifteen acres. Pipelines would be required from each production pad. If a separator is located on each pad, only one pipeline will be necessary from each pad to the main production line. Up to three pipelines might be required for pads without separators.

Pipelines would transport marketable gas from the withdrawal, while oil would reach its market through a tie-in with the trans-Alaska pipeline or by truck to the refinery at North Pole. Gas lines would probably be buried, but oil pipelines probably would be placed on vertical support members. Pipelines in the field would range from three to six inches in diameter and the main pipeline out the field would probably be six to twelve inches. Gas likely would be utilized by the military or Fairbanks or some of the smaller communities in the area.

Development of a geothermal field would resemble that described for development of oil and gas in the previous two paragraphs. There would be no need for separator facilities. Steam would be piped to generators centrally located in the field to generate electricity, and instead of pipelines leaving the field, there would be a series of power lines carrying

electricity to market. The building housing the generator would be far larger than any facility required for the oil and gas scenario.

Placer Mining

Mining for locatable minerals is not likely on the Fort Greely withdrawal in the next ten years. If any locatable mining does occur, it probably will be for placer gold on Ptarmigan Creek. Prior to the establishment of the withdrawal, miners located thirty-two claims along Ptarmigan Creek, although there is no evidence that any minerals from them were ever marketed and none of the claims are currently active.

The miner probably would access the claim with light loads by air to the gravel-bar landing areas near the mouth of creek, and thence by a road to the mine site. The length of road to the mine is uncertain, but it is not likely to be less than one mile. Ground transportation to the area would most likely leave the Richardson Highway at Donnelly, and cross the Delta River and its flood plain on an existing trail. It would then bear west-northwest approximately fifteen miles on a trail as yet not built. Almost all the new trail would be over gentle-sloping terrain. Consequently, there might be as little as two acres disturbed by a winter trail; most of this would be at stream crossings. If an all-weather road proved necessary, one fifteen miles long and twenty feet wide would cause major disturbance to forty or more acres. The mining operation would also require a bunk house, a cook shack, and a shop, covering less than an acre. If the miners had their families with them, however, more buildings may be required and be spread over several acres.

The miner would probably need to build two or more settling ponds with associated spillways, drainage ditches, and a relatively flat working area on which to operate its earthmoving and gravel-washing equipment. If pay sands underlie the current stream or if it is impossible to conduct mining with the stream in its present channel, the miner may divert the creek. All the excavated material would be stockpiled and, as areas have been mined, the overburden will be replaced, the terrain and stream channel restored to as close to the original condition as possible, and, if required, the area revegetated. In the first year of construction and mining, ten to fifteen acres would be disturbed. In later years approximately as much land would be reclaimed as is disturbed.

Mineral Materials

A Solicitor's opinion received after issuance of the DRMP indicated the Military Lands Withdrawal Act of 1986 forbids mineral material disposals for other than military purposes. Consequently, there will be no development of mineral material sites on the fort for civilian uses.

Environmental Consequences Common to All Alternatives

Air, Soil, Water, and Vegetation

Land uses would comply with federal and state laws and regulations related to air, water, soils, and vegetation. Any statements about potential erosion and sedimentation differences among alternatives mostly refer to slight differences in low potentials. With continued full compliance, there should be only small impacts on air, water, and soils. Realistically, there are lapses in surveillance and compliance and some impacts do occur. Several of the proposed actions for this plan have the potential to impact air, water, soils, and vegetation resources in the withdrawal. Effects depend on the degree of use, type of development, and the location of the activity on the landscape.

Fine grained materials in the soils of the withdrawal and the presence of shallow ice-rich permafrost make it likely that disturbance or removal of the insulating ground vegetation would result in soil erosion. Water from the melting ice may percolate through the soil or run down slope, transporting soil with it. The extent of erosion would depend on the steepness of slope, aspect, amount of ice in the ground, severity of disturbance or removal of the vegetative ground cover, and the type of mitigation applied.

Settling of sediments or dust into interstices of the stream beds can damage fish habitat. Dust, generated by traffic or winds, settling on leaf surfaces can interfere with light absorption and gas exchange and decrease plant photosynthesis and respiration. Dust which accumulates on snow decreases the amount of solar energy reflected off the surface, and increases the rate of spring snow melt. The amount of dust generated from man-caused erosion is small compared to large naturally exposed areas in river floodplains and glacial outwash plains.

The Trans-Alaska Pipeline System (TAPS) would contribute only a small amount of sediment from the maintenance work pad. The oil spill potential is small.

Under all alternatives, except the Proposed Plan, the DOT/PF may obtain sand and gravel from the withdrawn lands. It is unlikely, however, that it will need to use any site on the withdrawal. All the alternatives except the Proposed Plan and Alternative B also allow sales of mineral materials. Approximately five of these might be located on the withdrawn lands. A mineral material site may have little or no organic materials that must be stripped and saved for future respreading or the site may have from one to six feet of material that is pushed to one side and saved. Bulldozers strip the overburden and break up the consolidated material. Bulldozers can generally dig to a depth of ten to twelve feet. If the material is deeper, drills are used and a series of holes are loaded with explosives and detonated, fracturing the material. The material is loaded into dump trucks by front end loaders or backhoe excavators. The trucks then haul the material to

the location where it is needed. On big jobs with short hauls, because of speed and lower operation costs, operators use scrapers instead of dump trucks and front end loaders.

Authorized officers can require specific measures in reclamation plans (43 CFR 3602.1-2). Reclamation of material sites often includes the following actions. The sides of the resulting pit are sloped to a 3:1 slope gradient or less. The floor of the pit is leveled to prevent the accumulation of water which may become a hazard to animal and human life. The saved topsoil and organic material are then respread over the side slopes and access roads and fertilizer is applied to allow reestablishment of natural vegetation and to decrease erosion. Seeding or planting maybe used in areas where quick revegetation is needed.

Cultural Resources

Fulfilling the Army's *Historic Preservation Plan for U.S. Army Lands in Alaska* would document about thirty-nine additional cultural resource sites. Based upon past experience in this area, approximately 20 percent of these, or eight sites, would prove eligible for the National Register of Historic Places.

Subsistence

None of the alternatives would have any notable impact on subsistence. There is little or no subsistence use of Fort Greely, although, except for the closed impact areas, it is open to such use. Subsistence users are at some distance from the withdrawn lands and have easier access to a plentiful supply of a variety of species closer to rural villages, such as Dot Lake. Some relatively limited fur trapping occurs on the withdrawal by residents of the Delta Junction area, who otherwise participate in the general nonsubsistence-oriented life-style of the area.

ANILCA 810(a): Consideration of the Availability of Other Lands and Other Alternatives

Throughout the planning process, the joint BLM-Army team has planned for all and only the Fort Greely lands which required such an effort as a result of the Military Lands Withdrawal Act of 1986. Consequently, this planning effort is considering all appropriate lands so that there are no "other lands" which could be considered. The six alternatives constitute the "other alternatives" required by ANILCA Sec. 810 for consideration.

Environmental and Military Consequences of the Proposed Plan

Air, Soil, Water, and Vegetation

We do not anticipate that any of the nonmilitary activities likely to occur as a result of this plan will involve the use, production, storage, transportation, or disposal of 10,000 pounds of any chemicals on the Environmental Protection Agency's "Consolidated List of Chemicals Subject to Reporting

Under Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986" or any extremely hazardous substance as defined in 40 CFR 355. Any party who would undertake a nonmilitary-related action which would involve one or more chemicals or substances from these lists will be required to notify BLM and complete appropriate environmental documentation.

ORVs

Regulations [43 CFR 8341.1(f)(4) and .2(a)] give minimum standards for operating ORVs on public lands. They provide that ORVs shall not cause undue damage or disturbance to soil, wildlife, wildlife habitat, improvements, or cultural or vegetative resources. Initial damage from ORVs can range from crushing to uprooting of vegetation. Some crushed vegetation can regenerate and recover within one year, while other plants require much longer. Uprooting of vegetation and disturbance of vegetative ground cover renders the underlying soil unprotected, creating the potential for erosion or ground subsidence. The restrictions proposed in this plan on nonmilitary ORV use lessen the potential for damage to soil, water, and vegetation. These restrictions limit the weight of ORVs used and also limit ORVs to travel over low erosion soils during summer and to periods of adequate snow cover. Under equal conditions, the lighter vehicles would inflict less damage to the vegetation than heavier vehicles. A thick layer of snow would help protect the vegetation from damage under tracks and tires, thereby, protecting the underlying soil. Although limiting travel to low erosion soils would not protect the vegetation and soils from disturbance, it reduces the potential for erosion and sedimentation.

Under the Proposed Plan recreation is expected to increase by 1,000 visitor days a year. Because current recreation use has had little impact on these resources, it is unlikely that this modest increase in visitor days would lead to adverse effects on air, soil, water, or vegetation.

Habitat Management Plan (HMP)

To date there is no evidence that there is a water quality problem on the withdrawn lands. A water quality control program, as is to be contemplated in the HMP, could provide more definitive information and monitor any changes in quality, thus providing an opportunity to remedy any problem promptly.

Forestry

Although ground scarification and slash burning assist in the regeneration of birch, aspen, and spruce, they create a potential for erosion by exposing mineral soil. Factors such as drainage, steepness, and presence of ice-rich permafrost determine the erosion potential. Because most of the commercial timber is located adjacent to the Delta River, erosion can both undermine revegetation and affect the Delta

River. Regeneration on actively eroding areas would be delayed until the soil stabilizes. To control erosion, tractor logging can be confined to well-drained soils on gentle slopes. A buffer strip at least one hundred feet wide left at the edge of streams would serve to block sediments.

Recreation

An increase of visitors to the withdrawal is projected. Traffic dust created by visitors would adversely impact the roadside vegetation community. Dust settling on roadside vegetation could cause changes in the plant community when the more dust-sensitive plants die. Where human activities occur some pollution from garbage disposal and oil spills is expected. However, because current recreational use of about 8,000 visitor days each year has had little impact on these resources, it is unlikely that an additional 1,000 visitor days will notably disrupt air, soil, water, or vegetation.

Oil, Gas, and Geothermal

As with other mineral operations, the impacts of leasable mineral development listed below will only occur if the lands are opened to the operation of the mineral leasing laws upon a review to occur in accordance with the Military Lands Withdrawal Act. Moreover, it is unlikely that any of these resources will be found in economical quantities on Fort Greely.

The high percentage of fine grained materials in some soils of the planning area and the presence of shallow permafrost makes it probable that a disturbance or removal of the ground covering vegetation, such as that which occurs in building roads, drilling pads, disposal wells, airstrips, and pipelines, will result in some soil erosion. This is particularly likely in areas of sensitive soils described on the ORV Use Map in the Alternatives chapter. Revegetation of the gravel embankments left after closure of roads, drilling pads, airstrips, and work pads associated with construction of pipelines will be similar to that of mine tailings and may take decades, as described in the discussion of impacts of placer mining.

If the eroding material produces sediment which is transported to a water body, there will be sedimentation and water quality degradation. Sediments transported off road surfaces and drilling pads with surface water runoff and materials spilled on or alongside roadways and pads are a common source of sedimentation and pollution. Roads, drilling pads, and other disturbed surfaces are also sources of dust. The area affected by dust can approximate two hundred acres per mile of road. The amount and the range of dust depends in part on the type of surface material, frequency of precipitation, the direction and speed of winds, and the speed and number of vehicles using the roads. Dust can inhibit plant growth by interfering with photosynthesis and changing plant chemistry. It also can cause earlier melting

of snow in the spring. If spring after spring this attracts animals searching for early greens, the plants can be weakened and ultimately die.

Placer Mining

Mining can have substantial impacts on these resources. Although the Proposed Plan does not open the lands to the operation of the mineral laws, the reevaluation of this management decision provided for by the action makes such an opening possible. Consequently, the effects outlined below are those that could occur should the lands become open for mineral location.

Placer operations may involve hydraulic, mechanical, or drift mining techniques. Bulldozers or draglines generally remove the overburden, although hydraulic monitors may be used. The amount of overburden removed in stripping operations varies from one to ten feet or approximately 1,600 to 5,300 cubic yards per acre stripped. Where the land is cleared for roads and mining, a potential for erosion and sedimentation is created through runoff from rain and snow melt. This is usually considered a short-term impact.

Bulldozers loosen pay gravels and push it into a pile for feeding onto a sorting device called a grizzly. Normally, miners in a small operation like that described in the scenarios for the Proposed Plan would process from 10 to 1,000 cubic yards of gold bearing gravels per day throughout the nearly one hundred day season and use from 100 to 3,000 gallons of water per minute to wash the gravels. Typically, between 50 and 90 percent of the water used in the processing system is recycled from the settling ponds and the rest is made up from streams diverted around the operation. Coarse tailings are removed from the processing area by bulldozer or loader and stacked for later reshaping or used to build settling ponds.

Federal regulations, specifically 43 CFR 3809, require rehabilitation measures. Generally, properly designed, constructed, and maintained ponds are capable of settling most settleable solids required by the Environmental Protection Agency (EPA) and Alaska Department of Environmental Conservation. Ponds are not capable of removing all the turbidity that is created during the processing phase. Additional treatment of the mine water through the use of flocculants, ground filtration systems, total recycle of all mine waters, redesign of the processing plant or a combination of the above is necessary to reduce turbidity.

The coarse tailings not used for other mining purposes remain after the area is mined out and are reshaped to harmonize with adjacent natural contours. Topsoil required to be saved is respread over the reshaped ground to promote vegetation by natural species or according to requirements in the approved plan of operations. If any mine develops on the withdrawn lands and it has the typical amount of fines in its tailings, it will normally take over thirty-five years to

establish a stable, sustaining productive community of open tall shrubs. This is generally a tall willow or alder community with a canopy cover of at least 50 percent in vegetated areas, where dying vegetation is replaced by seed or vegetative means. Such a community can sustain moderate pressure from wildlife, especially beaver or browsing moose, and may continue on the site indefinitely, or be successional to a deciduous forest with mixed spruce. Fertilizer is sometimes applied to improve plant nutrition. Seeding or planting may be used where quick vegetative cover is essential.

Fire

Fires result in beneficial and adverse impacts. The effects vary with fire severity. Generally, after a fire, the underlying soil exhibits an increase in active layer thickness and available plant nutrients. This results in a more productive site and plants respond with vigorous growth. Fires that burn through the insulating vegetative ground cover could result in thawing of the underlying permafrost. On slopes, permafrost rich in ice could release enough water to cause mass downhill movement of soil. Should the soil move into drainages, sedimentation of nearby streams would occur.

These impacts can also occur as a result of suppression activities. Firebreaks are continuous strips one to eight feet wide where all the surface organic material is removed, exposing mineral soil. Returning organic matter to the strips, seeding, or use of water bars to divert water from highly erodable areas of firebreaks can reduce erosion.

The Proposed Plan would lead to little, if any, increase in fires, and fire suppression would continue as under the current management. Following implementation of hazard reduction measures agreed upon in a Fire Management Plan, there will be a reduced risk of fire and those that do ignite should be more readily contained. Past fires and suppression efforts have not severely damaged the ground and have not required site rehabilitation. Adverse impacts to air, soil, water, and vegetation have not been significant.

Fish and Wildlife

The withdrawn lands host healthy wildlife populations. Currently hunters harvest approximately fifty moose, forty caribou, and two or three bison annually on the withdrawn lands, as well as indeterminate numbers of small game.

The Proposed Plan probably would not lead to any significant alteration in this harvest or in the numbers of wildlife. Access requirements would remain essentially the same. Actions to protect Dall sheep, caribou, and sharptail grouse habitat and to protect habitat in general, such as restrictions on ORV use, should help prevent diminution in wildlife populations, but probably would not significantly increase their numbers. For example, disruptive activity near mineral licks could hurt Dall sheep. No such disruptions currently occur. The action statements designed to prevent

disruptions in the future when mining may occur would maintain what is currently the *de facto* level of protection.

The Habitat Management Plan may develop action which could increase or redistribute wildlife populations, most likely bison and small mammals and birds which can make use of the same habitat as bison. The modest clear-cut timber and fuel wood harvests which may result after a Forest Management Plan also would provide increased habitat for some small game, birds, rodents, and moose, thus slightly increasing their numbers.

It is possible that loggers would develop short spur roads to reach timber stands. This might make it easier to harvest more small game. However, it is unlikely to increase moose harvest because the timber stands most susceptible to harvest are in an area bounded by the Delta River and Jarvis Creek which the State's Board of Game has closed to moose hunting. The harvest reports required of hunters and trappers can help management of wildlife. The prescriptions of the Recreation Activity Managment Plan would not increase consumptive uses enough to significantly affect game populations.

Should mining ultimately develop on the withdrawal, miners would probably account for some small increase in the take of game animals; the take in bears in the Ptarmigan Creek area could be significant. Mining activity itself should not impact wildlife in any important way, provided that it is conducted a sufficient distance from critical habitat such as mineral licks. However, if miners fail to properly dispose of garbage, they could attract animals to their camp. Bears attracted to garbage threaten human life and property and are often destroyed. Moreover, if contrary to expectations, leasable minerals are developed on the withdrawal, the additional roads built in association with it may act to both increase the number of hunters and the areas in which they are able to readily harvest game.

Mining would also impact the fish populations on Fort Greely, which, because of heavy sedimentation due to the glacial origins of many of the streams, are limited to small numbers of grayling. Increased suspended and settleable sediment due to mining activities would decrease primary production, which would be reflected in scarcer supplies up the food chain. Mining activities alter aquatic habitat by removing riparian vegetation and disturbing stream beds. This can increase stream flow, create barriers, and reduce or eliminate important pool habitat. Numerous studies have found that fish populations drop where streams have been impacted by mining. Reclamation of the site, regrowth of riparian vegetation, and sediment reductionwould result in restoration of habitat and minimization of long term effects of mining.

Visual Resources

The most significant degradation of the visual values of the withdrawn lands would probably be from any timber or firewood harvests that follow completion of a Forest

Management Plan. These harvests are also most likely to occur near the road network east of the Delta River, but their visual impacts would be lessened by retaining an uncut buffer along major recreational roads.

Cultural Resources

Impacts to cultural resources would be sporadic and unique to each development undertaken. Small timber harvests, mining, and recreational developments could disrupt cultural materials. However, a survey prior to clear cutting or mineral extraction should retrieve any archaeological or historical information likely to be disturbed by loggers or miners. The very modest growth in recreational use may cause a slight increase in unorganized collecting of artifacts. The Historic American Buildings Survey of the Ptarmigan Creek cabin would preserve that structure's cultural information.

Socioeconomics

By preserving current opportunities for hunting, fishing, trapping, and other recreation on Fort Greely, the Proposed Plan would continue to allow the local and regional economy to benefit from supplying recreationists' needs and from gaining the meat and fur value of the fort's wildlife. BLM and Army resource specialists' analyses of these uses are summarized in Appendix B. They arrive at different monetary values, but suggest that current recreational use of the withdrawal generates approximately $1 million annually for the local and regional economies. Guides, outfitters, and air charter services, which provide access and other services to most of the visitors to the withdrawal west of the Delta River, and Delta Junction and Fairbanks stores, restaurants, and gas stations garner the great majority of these funds. Much of this value is generated by big game hunters on the area of the withdrawal west of the Delta River.

As explained in the scenario for the Proposed Plan, Fort Greely could furnish the entire local lumber and fuel wood market, valued at about $500,000 annually. However, State and private offerings of this resource meet the local capacity. Thus, there would be little or no total dollar value to the economy from offering federal timber and fuel wood sales. However, harvests on Fort Greely may promote more consistent employment of loggers throughout the year. Currently, few State or private stands of saw timber are available on land dry enough to permit summer harvests. Fort Greely offers land which would allow summer cutting of saw timber. Fort Greely also offers fuel wood closer to Delta Junction than private landowners and the State, and thus would enable more efficient harvesting. (Edgren, 1988)

Because of the uncertainty of the feasibility of mining on the withdrawn lands, it is exceedingly speculative to estimate the economic impacts of opening them to the operation of the mining laws. Moreover, because the lands probably will not be opened until at least 1996, these impacts will not occur until at least the late 1990s. However, if a small placer mine such as outlined in the scenario descriptions above developed, it would probably employ three seasonal miners and result in adding

one full-time job equivalent to Alaskan employment. The average mine of this size generated about $77,000 for the Alaskan economy in 1985. (Alaska, Department of Commerce and Economic Development, 1986, pp. 6, 15)

Oil and gas development, though less likely than locatable mineral development, would produce far greater expenditures. Field investigation costs would be $10,000 to $20,000, and those for seismic exploration $500,000 to $1 million. Sinking, operating, and dismantling an exploratory well would require that the potential developer spend $2 million to $3 million dollars. Full-scale production as outlined in the scenario earlier in this chapter would require $7 to $8 million to install the facilities. The developer would pay approximately $300,000 per year for wages, supplies, and equipment to operate an oil field each year and $100,000 each year for a gas development. The construction phase would have secondary repercussions through much of the state's economy. Construction would develop a demand for more than $1.4 million of services and supplies. The transportation and wholesale sectors, in particular, would experience greater demands. Operations of a gas or oil field would generate an estimated $40,000 or $80,000, respectively, each year in secondary demand, with real estate receiving the largest share.

The Proposed Plan would make for more expensive extraction of sand and gravel for private development in the area than is currently the case or would be the case under Alternatives A, C, D, or E. TAGS, the most likely of the private developments, could get mineral materials from adjacent state lands, but transporting large quantities of sand and gravel to the portion of the gas line passing through the post would add considerably to the cost of the project. The Proposed Plan could add expense to State highway work by forbidding mineral material extraction under P.L. 85-767. This expense may be theoretical rather than actual, however, because contractors prefer to get virtually all the gravel for such road work in this region from their own privately-owned sources; there has been little or no mineral material for road work obtained from military lands for at least two decades.

Military

The elements of this alternative which protect wildlife habitat have modest impacts on training. Restricting Army and Air Force activity to protect the caribou herd during calving season over the past few years has required that the military cease training involving at least part of the impact areas for only two or three days each year. Restricting training in critical sheep habitat would have minimal impact on the military because very little ground training occurs in the remote mountainous region of the withdrawal used by Dall sheep. Minimizing disruption of sharptail grouse dancing grounds during mating season (April 20 to June 1) would have minor effects on military training. The military does not frequently use these areas—in the decade the Army has only used one of the dancing grounds one time during the mating

season—and alternate training sites are available. Because the Forest Management Plan would give military need the highest priority in determining whether, where, and when to have timber harvests, there should be little or no impact on military activities. It would be important for any timber harvest not to deteriorate military training potential of the withdrawn lands by clearing acres more suitable for training in a forested state or by prompting traffic which would significantly hinder military movement.

If the withdrawn lands are opened to mineral development after subsequent reevaluations, training would be effected to the extent that mines are developed. Under this alternative some small acreages, possibly near Ptarmigan Creek, may be mined and the land on which the mining takes place and areas immediately adjacent to it largely lost to military training. Extraction of oil, gas, or other leasable mineral is not likely, but, should it occur, it might interfere with military training on several thousand acres. While drilling sites, roads, air fields, and pipelines would not occupy this much area, drilling sites will be scattered about a mile apart, thus interfering with any training which requires areas devoid of any such structures. Moreover, pipelines, by stretching across many miles can hinder military operations which might need to cross its path.

The Modified fire management classification for the area between the Richardson Highway and the Delta River could permit fires which would obscure the vision and prevent training and testing utilizing the various firing ranges in this area.

Subsistence: Compliance with Section 810 (a) of ANILCA

Uses and Needs

The Proposed Plan would leave Fort Greely substantially open for any ongoing subsistence use, which, at present, is low to nil. Such usage is not likely to increase, since subsistence users are at some distance from the withdrawn lands and have easier access to a plentiful supply of a variety of species closer to rural villages, such as Dot Lake.

Section 810 (a) Finding for the Proposed Plan

The Proposed Plan would not cause a significant restriction to the subsistence use of Fort Greely, since little or no such activity now occurs and the fort would remain open for such usage, subject to military requirements to close portions of the withdrawn lands for training and safety reasons.

Cumulative Impacts of Military and Nonmilitary Uses

The previous pages have examined the effects of nonmilitary uses of the Fort Greely withdrawal. In order to fully appreciate the impact of nonmilitary uses, however, it is important also to address their impacts in conjunction with those of military actions.

Two environmental impact statements completed by the Army in 1979 and 1980 and a recent Air Force environmental assessment outline the effects of military activities. Although the Army's contingent in Alaska has grown from a brigade to a division since the completion of these documents, the major impacts they describe are largely the same as can be anticipated from continued military use. Moreover, the Army's force in Alaska is now slated to return to brigade strength.

The following pages summarize the military's impacts on resources. These impacts are in addition to those outlined in this plan for nonmilitary use. Under the heading "Interrelated Impact," the following pages also highlight cases in which the impacts of the military's actions and the Proposed Plan or one of the alternatives will be more than additive. Unless otherwise stated the cumulative impacts of military and nonmilitary use will be the same for each alternative in this plan. This analysis is based upon this RMP, the two Army EISs, the Air Force's EA, and consideration of the changes in military use from that anticipated in the Army EISs.

Air, Soil, Water, and Vegetation

Military activities in the Tanana drainage generate relatively little air pollution. Military vehicles and aircraft contribute only a small fraction of a percent to the region's airborne particulates, sulfur oxide, carbon monoxide, hydrocarbons, and nitrogen oxides. For example, in 1980 the Army estimated that its activities in the Tanana Valley produced 1,200 pounds of particulates and 22,100 pounds of carbon monoxide. In 1971 total emissions for the region of these substances were 52,143 tons and 40,731 tons, respectively.

Construction of military facilities will generate fugitive dust and additional vehicular pollutants. But such construction generally will take place on parts of the fort not within the withdrawal. In any case, this air pollution will only last as long as the construction project. Large-scale military maneuvers which involve the transport of thousands of troops can cause temporary increases in atmospheric pollutants. Nevertheless, even in the winter when such large exercises are regularly held for two weeks, the resultant air pollution is small relative to the discharges in Fairbanks and elsewhere in the vicinity of the withdrawal. Moreover, these impacts are short-lived.

Military impacts on soils is limited to site clearance for roads, trails, airstrips, drop zones, and facility construction, and to impact areas for heavy ordnance. There will be ongoing impacts to soils in the impact areas and unpaved roads, trails, and other areas of heavy use. But these disturbances will be localized; there will be no major changes in soils or soil structure due to military use.

The primary military actions which affect water quality are removal of ground cover during training, stream crossings, explosion of ordnance in or near water, and accidental oil spills. Military training during the winter has little impact on surface water quality. At breakup and through the summer, however, there can be deterioration of surface water from erosion near water bodies, if the ground cover has been disturbed. Although some such deterioration occurs, there has been no widespread damage from erosion. Vehicles crossing streams and ordnance landing in water bodies can increase sedimentation. Gases such as carbon dioxide, carbon monoxide, methane, ammonia, and hydrogen cyanide are common products of ordnance exploding in stream and lakes. Most of these gases quickly bubble to the surface and leave the water. The remainder are diluted through natural mixing. Accidental oil spills occur, but generally are quite small and are very localized. Thus, water quality, both of surface and ground water, has been excellent on the withdrawal. There is no indication that military activities have affected water quality on or downstream of the withdrawn lands.

The Army's system of roads have stripped vegetation from about two hundred acres. Construction of drop zones have affected the vegetation of approximately nineteen hundred acres. Continued use of the roads and trails will prevent vegetation from reestablishing itself and dust from military road traffic can decrease photosynthesis and plant respiration. Travel off the road network occurs during training and testing. In mobility testing, heavy vehicles may be sent into muskeg to test their capabilities. If the vegetation is only crushed, plants may regenerate the next season; if the root system is severely impacted, a plant community may take forty years or more to recover to its natural state.

Interrelated Impact

The Proposed Plan, as well as Alternatives C, D, and E, which are most likely to result in the construction of mining or logging roads, may induce more military vehicular travel. Easier access may increase training in the area. The Army will almost certainly take advantage of the roads to spread its training into different areas of the withdrawal. Thus, the discharge of air pollutants by military vehicles and damage to soil, water, and vegetation may increase with the creation of new roads; it almost certainly would become more dispersed.

Fish and Wildlife

Stream crossings by wheeled and tracked vehicles during summer result in the loss of some aquatic life. In the summer the effects on downstream organisms from slightly increased sedimentation, dissolved oxygen concentration, and biological and chemical oxygen demands are detrimental in various degrees dependent on the frequency of crossings and stream characteristics. Aquatic life in the Washington and Mississippi impact areas of the Delta River and in the part of Delta Creek in the Delta Creek Impact Area are killed and injured by explosions. But both of these water bodies carry much sediment from their glacial headwaters, so there are not a great number of fish in them in any case.

The relatively small acreage devoted to roads, trails, and other facilities and the miniscule amounts of habitat temporarily eroded following military disturbance of the ground cover vegetation are the most obvious impacts of military actions on habitat. The military also creates more habitat for grazers and browsers (and destroys an equal amount of wooded habitat) when it clears forests for bivouac sites and drop zones.

More noise may have some impact on wildlife behavior and populations. Ambient noise levels in wilderness areas range between 20 and 30 decibels. Measured from the position of the operator, weapons produce 112 to 190 decibels; small arms can be heard at levels above 70 decibels for a distance of four miles. Helicopters, which at fifteen hundred feet produce 95 decibels, are the next major source of noise produced by the Army. Jets of the Air Force, however, produce over 100 decibels at a slant distance of one thousand feet from the aircraft and some produce over 115 decibels one hundred feet directly under the aircraft.

The Air Force's aircraft will fly over much of the withdrawn lands and may affect a variety of species, including waterfowl and caribou. Helicopter noise in the foothills of the Alaska Range may disturb nesting eagles, Dall sheep, and the Delta caribou herd. Noise from helicopters, vehicles, other equipment, and discharging weapons may disturb the bison herd along the Delta River. Disturbances can affect feeding, migration, breeding, and reproduction. Extreme noises may interrupt reproduction of caribou, sheep, and bison. Dall sheep and grizzly bears are the most sensitive of the species on Fort Greely to noise. The long-term effects of noise are unknown. They include abandonment of habitat and, ultimately, a lower species population.

Although no threatened or endangered falcons are known to occur in the withdrawal, some do nest to the north along the Tanana River, and, with interior Alaska's population of the birds increasing, some may eventually use Fort Greely. Helicopter, live-fire, and equipment-testing noises may impact falcons. Winter maneuvers, training, and testing would cause very little impact in relation to other human disturbances. Aircraft noise above 75 decibels can disturb

nesting bald eagles on cliffs north of the Tanana River and golden eagles south of the fort.

Recreation, Subsistence, and Other Human Uses

Interrelated Effect

Recreation is the primary nonmilitary action which has occurred on the withdrawal. It will continue under all the alternatives except Alternative B. The Proposed Plan and some of the other alternatives may result in other uses, such as firewood and timber-gathering and mining. Military activities constrain all of these uses by limiting the ability of users to access resources. Moreover, military activities can detract from recreational experiences, most commonly through the noise of Air Force jets and Army helicopters. Because there is little or no subsistence activity on the withdrawal, little likelihood that it will become a focus of future subsistence activity, and little military and nonmilitary impact on wildlife habitat, there will not be a significant restriction of subsistence use on Fort Greely.

Socioeconomic Conditions

The populations of both the town of Delta Junction and Fort Greely have fallen over the last twenty years. Although the loss of military population has been steeper than that of the nonmilitary sector, the Army's presence accounts for a large segment of the local economy. The Army projects continued declines in the personnel assigned to the post. Unless there is countervailing growth in the nonmilitary economic sector, the area's economic opportunities and population may decrease.

Interrelated Impact

The Proposed Plan and Alternatives C, D, and E have the potential for slightly increasing the area's population and employment, but they are unlikely to have enough impact to counter the diminishing number of people working at the fort. Alternatives A and B will not create additional economic opportunity in the area, and thus will not act to counter declining military commitments in the Delta Junction area. None of the alternatives would so increase civilian use of the withdrawal as to interfere with military use and thereby jeopardize the Army's continued contributions to the local community.

Summary of Section 810(a) ANILCA Findings for All Alternatives

The Proposed Plan and the other alternatives have been evaluated in this chapter for their effect on subsistence uses and needs. None was found to have the potential to cause a significant restriction to subsistence uses. Nor would the

cumulative impacts of the nonmilitary activities postulated in the Proposed Plan, its alternatives, and the military's continued use of the lands cause a significant restriction. This is because the level of ongoing subsistence usage of Fort Greely is low to nil, as described in Chapter 2. Thus, to even cut it off entirely, as would happen under the most access-restrictive alternative (Alternative B) would only mean that potential subsistence users would use other lands closer to their residences, just as they do now.

Unavoidable Adverse Impacts

Besides the effects of the military activities for which the land has been withdrawn which are beyond the scope of this plan, there are unavoidable adverse impacts of each alternative.

ORV use would crush some vegetation, primarily near the road network. In particularly high use areas, ORVs would also disturb soils.

Surface mining would strip soil and vegetation and reduce wildlife habitat in the immediate vicinity of the operation. Some soil would erode and sediment would be transported into streams and lakes. Vegetative resources in many cases could require decades to fully recover.

Surface disturbing activities such as timber harvesting, construction of roads and recreation facilities, and mining would destroy or alter visual and cultural resources. These resources also would suffer from actions not within the government's discretion, such as vandalism, illegal collecting, natural erosion, and minimal wildfire suppression.

Short-term Uses versus Long-term Productivity

Harvesting a commercial timber stand under this plan would mean that that resource would be unavailable for some decades to come. Once sawtimber or house logs have been cut, it takes at least seventy years for the forest to mature again to produce these products. Deciduous fuel wood stands will become reestablished in twenty-five to thirty years. However, the practice of harvesting the withdrawal's timber on a sustained yield basis as proposed in several of the alternatives in this document would result in greater long-term productivity than the current practice of no commercial harvests.

Mining, by stripping surface vegetation and soils, can destroy commercial stands of timber. If the area is not logged before mining commences, the current timber would be lost, and another such stand would not likely reestablish itself for periods indicated in the above paragraph.

Alternative A, which allows use of ORVs on unstable soils, could have adverse long-term impacts on soils and vegetation.

Regular use of ORVs in such areas can cause gullying and the loss of soil. The sliding of soil down hills can undermine current vegetation and greatly retard or completely prevent their reestablishment.

The above surface-disturbing actions could also have long-term impacts on wildlife by removing habitat. However, it is unlikely that the amount of habitat destroyed would be large enough to have a significant impact on animal populations.

Irreversible and Irretrievable Commitments of Resources

Few actions prescribed in any of the alternatives would irreversibly or irretrievably commit the resources of the withdrawn lands. This is particularly true if wildlife habitat is protected through proper mitigative actions. The removal of a mineral resource is an irreversible and irretrievable commitment of that specific resource.

Chapter 4

Public Participation and Government Consultation

Public Participation

The planning team initiated its public participation period in mid-July 1987. On July 21 the *Federal Register* published a Notice of Intent which announced the beginning of the planning process and listed the preliminary issues and criteria. The team mailed 194 brochures describing the planning process and purpose and outlining preliminary issues and criteria to a wide variety of agencies, organizations, interest groups, and individuals on July 15, 1987. In the same week a news release sent to nearly sixty newspapers, radio stations, and television stations in Alaska began to generate calls to BLM requesting copies of the pamphlet. Subsequent contacts with the public led to the distribution of additional copies of the brochure. In addition to the initial mailing, approximately one hundred pamphlets were distributed to interested members of the public through the Steese/White Mountains District Office, the BLM's Public Affairs office in Fairbanks, and public meetings held in August 1987 in Delta Junction and Fairbanks. The mailing list for the scoping brochure is on file at the BLM Alaska State Office in Anchorage. Those receiving the brochure included Alaska's Congressional delegation, Alaska's governor, local mayors and State senators and representatives from Interior Alaska, a wide variety of federal and State agencies, various offices of the University of Alaska Fairbanks, members of the Northern Alaska Advisory Council, fifteen environmental and outdoor organizations, thirty-one business and development organizations, fourteen Native organizations, and thirty-three newspapers, journals, and radio and television stations.

This scoping pamphlet included a form with a prepaid return mailer, asking for public comments. Nine individuals and organizations responded in writing to the questions posed by the brochure.

The planning team held meetings to gather public comment on the preliminary issues and criteria on August 18 and 19, 1987 in Delta Junction and Fairbanks, respectively. Approximately twenty people attended these meetings. Some of those attending shared their concerns and on-the-ground expertise, particularly on trapping and hunting on the withdrawn lands. They conveyed their knowledge and interests through extensive discussions with team members, written responses on forms provided to address each issue, and by recording resource and use information on maps supplied

for that purpose. In addition, the Steese/White Mountains District Manager and a District planning team member spoke about the plan to, and encouraged comments from, the Fairbanks Chamber of Commerce and Fairbanks affiliates of the Alaska Miners Association, the International Right-of-Way Association, and the Lions Club.

The BLM distributed approximately three hundred copies of the DRMP/DEIS in the late summer of 1988. The parties receiving the document included those who received the brochure, plus similar groups and interested individuals. A complete list of those to whom drafts of the plan were sent is available at BLM's Division of Resources. The planning team held a public meeting at Delta Junction on November 15, 1988. Approximately fifteen people attended the meeting and almost everyone spoke. The team leader also gave a presentation on the planning effort to the Northern Alaska Advisory Council meeting in Fairbanks on December 7. In response to public concerns, the public comment period was extended one month to end January 3, 1989. Fourteen individuals, organizations, and agencies sent written comments. These and summaries of comments at the Delta Junction public meeting appear at the end of this chapter, along with responses to comments addressing particular inadequacies of the draft plan. No response is given for comments stating personal preferences, but these preferences were considered by the team and management.

Consultation, Coordination, and Consistency

The Bureau of Land Management, which has primary responsiblity for planning the nonmilitary use of the Fort Greely withdrawal, and the Army, which has carried on the day-to-day management of the land since creation of the withdrawal in 1961, jointly prepared this document. This joint effort was designed to pool the expertise of the two agencies, as well as to ensure the maximum coordination of military and nonmilitary planning for the withdrawal.

The planning team consulted with federal, state, and local agencies to ensure consistency between the alternatives outlined in the DRMP/DEIS and the management of adjacent land. Those parties receiving earlier drafts of the alternatives in that document included the Air Force, Alaska's Division of Government Coordination, and the city of Delta Junction. These offices also received the DRMP/DEIS.

Response to Public Comments

During the public comment period the Bureau of Land Management received fourteen written comments on the Fort Greely Draft Resource Management Plan/Draft Environmental Impact Statement. The agency also held a public meeting in Delta Junction to obtain further public opinion and information. This meeting was tape-recorded and the public's comments considered. Both the written and oral comments are displayed below, along with the planning team's response to them. The written comments are rendered in alphabetical order; the oral comments appear following the written letters. The BLM and the Army appreciate the efforts put forth by the commentors; they have helped to make this a better plan.

Letter 1
Alaska Department of Fish and Game

STATE OF ALASKA / STEVE COWPER, GOVERNOR

DEPARTMENT OF FISH AND GAME

1300 COLLEGE ROAD
FAIRBANKS, ALASKA 99701-1599

November 30, 1988

James Ducker
Military Withdrawals Planning Team
Office of Management, Planning, and Budget
Bureau of Land Management
Box 13
701 C Street
Anchorage, Alaska 99513

Dear Mr. Ducker:

RE: Draft Resource Management Plan/Environmental Impact Statement for the Fort Greely Manuever Area and the Fort Greely Air Drop Zone

The Department of Fish and Game appreciates the opportunity to review the referenced RMP/EIS. The following comments and recommendations are submitted for your consideration in completing the document.

The Preferred Alternative contains several proposals that should maintain or enhance wildlife values within the withdrawal areas. It also spells out measures constraining military activities in certain situations where disturbance would affect sensitive wildlife populations and life functions. In addition to the caribou calving area, sharp-tailed grouse dancing grounds and other areas mentioned in the text, we believe that there are important areas of bison habitat which merit some degree of protection. The Delta River within the withdrawal constitutes important seasonal habitat for bison, and activities on the Mississippi, Washington, and Texas Ranges should be managed to prevent disturbance when bison are present. The RMP should recognize that there is the potential for conflict between military training activities and wildlife resources in this area, at least at certain times of the year. Similarly, the importance of the Delta River to migrating sandhill cranes should be addressed. 1

We believe that for the most part, the measures within the Preferred Alternative protecting fish and wildlife values can be implemented without seriously affecting the military's ability to train. We encourage the Army to confine its training as much as possible to the lands that have been withdrawn for that purpose. In that way, we can work cooperatively to mitigate impacts occurring within the withdrawal while avoiding conflicts on public lands outside Fort Greely.

The department recommends that you consider modifying the Preferred Alternative to include several specific provisions of other alternatives. In the Summary of Alternatives on page 51 of the draft RMP/EIS, Fish and Wildlife, it is not entirely clear whether the Habitat Management Plan under the Preferred Alternative is intended to contain all the measures listed as #12, 13, and 14 under Alternative C and #8 under Alternative D. We encourage you to include any of 2

these that have been omitted. Similarly, Items #15, 16, and 17 for Alternative D pertaining to the timing of training and #24 for Alternative C calling for a fire management plan should be added to the Preferred Alternative. 2 cont.

In the course of reviewing the draft RMP/EIS, several issues have emerged that may not pertain to the plan in a strict legal sense but which are of importance in discussing operations on the withdrawal in a comprehensive manner. First among our concerns is the tract of land known as the "Gerstle River Test Site." This land parcel is separated from the lands covered in this plan by the state's Delta Junction Bison Range (DJBR). Because of the Army's desire to use the Gerstle land for training and the ease of logistics via the Alaska Highway adjacent to the site, we have received repeated requests from the Army to use and/or cross the Bison Range for training exercises using both the Gerstle site and Fort Greely. In our view, many of the proposals have been incompatible with the purpose of the legislatively-designated DJBR. While the land status of the Gerstle site may not fall under the purview of the Military Lands Withdrawal Act of 1986, the effect this parcel is having upon the training program at Fort Greely and the conflicts stemming from its use belong in any comprehensive discussion of the use of Fort Greely for military training. We are very concerned that remote lands within the reservation will be underutilized for their assigned purpose while conflicts continue to develop in and around the Delta Junction Bison Range. The RMP/EIS could benefit from a discussion of the relationship between the Gerstle River Test Site and the withdrawn lands covered by the plan.

In a related matter, we would like to inform the planning team that Defense Mapping Agency maps (1:250,000 scale) used by the military depict the eastern boundary of the Fort Greely Air Drop Zone incorrectly, using Rhoads Creek as the demarcation rather than Granite Creek. The department informed the Army of this error previously, but troops were still using the incorrect maps in November, 1988. The error could mislead military personnel into operating on the DJBR while believing themselves to be on Fort Greely, and should be corrected at the earliest opportunity.

Sincerely,

for Alvin G. Ott
Regional Supervisor
Habitat Division
Department of Fish and Game

cc: D. Collinsworth, Commissioner's Office
F. Rue, Habitat HQ
J. Brossia - ADNR
D. Bishop - Game
J. Clark - Sport Fish
F. Andersen - Comm. Fish
T. Haynes - Subsistence
E. Andrews - Subsistence

Responses

1-1. The Army is cognizant of the need to protect bison and sandhill cranes in the impact areas. Sixth Infantry Regulation 350-2 requires that Army personnel visually inspect impact areas to assure that weapons fire will not hit wildlife and forbids firing should animals be observed. In July 1986 the Army and the Alaska Department of Fish and Game signed a Cooperative Agreement in which the Army agreed to restrict its firing into sections of the impact area in order to avert significant adverse effects on wildlife, specifically including bison and sandhill cranes. The discussion of the Management Common to All Alternatives on page 10 has been revised to encompass this Cooperative Agreement. The discussion of wildlife on the withdrawal has also been slightly expanded to address sandhill cranes. (See page 45.)

1-2. Opinions noted.

Letter 2
Alaska Department of Natural Resources

STATE OF ALASKA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF PARKS AND OUTDOOR RECREATION

STEVE COWPER, GOVERNOR

3601 C STREET
ANCHORAGE, ALASKA 99503
PHONE: (907) 561-2020

MAILING ADDRESS:
PO. Box 107001
ANCHORAGE, ALASKA 99510-7001

September 20, 1988

File No.: 3130-1R BLM

Subject: Fort Greely Draft Resource Management Plan and DEIS

BLM AK SO 87
SEP 23 1 37 PM '88

Military Withdrawals Planning Team
Office of Management, Planning and Budget (918)
Bureau of Land Management
Box 13
701 C Street
Anchorage, AK 99513

Dear Sirs:

We have reviewed the Draft Resource Management and DEIS for the Fort Greely Maneuver Area and Fort Greely Air Drop Zone for impacts on cultural resources. We offer the following comments:

The document states that parts of the withdrawal areas will be inventoried for cultural sites "as necessary." This seems to address requirements of Section 106 but does not address requirements of Section 110(a)(2) for inventory of sites on the withdrawal area. Section 110 surveys are necessary to formulate the cultural framework against which significance of individual sites or districts can be judged. 1

The document does not clarify which agency (BLM or the Army) will have the lead responsibility for dealing with cultural resource matters. This is particularly important for communication between the State Historic Preservation Office and the appropriate federal agency on Section 106 consultations. 2

We are aware that a plan for dealing with cultural resources on U.S. Army lands in Alaska has been written, but are unaware if that plan has been officially accepted and adopted by the Army. 3

We would like to see a list of the sites noted on page 76 as not eligible for inclusion on the National Register of Historic Places. We note that determinations of eligibility are normally made in consultation with the State Historic Preservation Office and that we have no record of consulting on this many sites in the withdrawals areas. 4

In summary, we feel this plan and DEIS does not adequately address cultural resource matters, particularly in the areas defining lines of responsibility for compliance with provisions of the National Historic Preservation Act as amended.

Sincerely,

Neil C. Johannsen
Director

Judith E. Bittner

By: Judith E. Bittner
State Historic Preservation Officer

JEB:DR:dw

Responses

2-1. The commentor is correct that Sec. 110(a)(2) of the National Historic Preservation Act of 1966, as amended, calls for an inventory program which would help in the development of a more comprehensive knowledge of cultural resources to better evaluate the respective significance of individual cultural resources. The Army has completed inventories of the withdrawal. BLM and the Army will carry out additional such work as their budgets allow and will incorporate plans for these investigations on the fort in the Cultural Resource Management Plan proposed in the Fort Greely RMP. (See page 16.)

2-2. The RMP/EIS is designed to outline future management options. The BLM and the Army will sign a Memorandum of Understanding to implement the plan after the Record of Decision has been issued. The MOU will indicate the responsibilities of the agencies to carry out cultural resource programs. The BLM will forward a copy of the applicable sections of the MOU to the State Historic Preservation Officer.

2-3. The Army's adoption of the Fort Greely Resource Management Plan and the plan's implementing MOU acknowledges its adoption of the guidance contained in its Historic Preservation Plan for U.S. Army Lands in Alaska, so far as it applies to Fort Greely. The BLM and the Army also propose (see page 16) to develop a Cultural Resource Management Plan specific to Fort Greely, which will indicate how the broad directives in the Army's historic preservation plan and the RMP are to be implemented.

2-4. The Corps of Engineers submitted this information to the State Historic Preservation Office. The SHPO will find the data in their files numbered 3130-1 (COE) and 3440 (COE).

Alaska Oil and Gas Association

121 W. Fireweed Lane, Suite 207
Anchorage, Alaska 99503-2035
(907) 272-1481

November 23, 1988

Mr. Jim Ducker
Military Withdrawals Planning Team
Office of Management, Planning &
Budget (918)
Bureau of Land Management
Box 13
701 C Street
Anchorage, Alaska 99513

Dear Mr. Ducker:

The Alaska Oil and Gas Association (AOGA) is a trade association whose members account for the majority of oil and gas exploration, production and transportation activities in Alaska. AOGA appreciates this opportunity to comment on the Fort Greely Draft Resource Management Plan and Environmental Impact Statement.

AOGA supports the preferred management alternative of the Fort Greely draft management plan. The plan should contain reasonable provisions for access, rights-of-way, mineral assessment and material extraction to accommodate potential economic development while recognizing the primary mission of the military and protecting the environment. We believe the Fort Greely plan contains such balanced provisions.]1

Thank you for this opportunity to comment.

Sincerely,

O.K. Eaklock Jr

for WILLIAM W. HOPKINS
Executive Director

WWH:tp14:1468

Responses

3-1. Opinion noted.

Letter 3
Alaska Oil and Gas Association

Letter 4
Delta Fish and Game Advisory Committee

DELTA FISH & GAME ADVISORY COMMITTEE

BOX 344
DELTA JUNCTION ALASKA
99737

Dec.,1, 19[illegible]

U.S. Bureau of Land Management,
Re: Fort Greely Draft Resource Mgt. Plan

Dear Sirs:

After studying the plan our committee has decided to support the Preferred Alternative. We are in agreement with most all of this alternitive except for the following comments. 1

We are in agreement with all access actions, with the exception of action #7. Action #7 is too restrictive. We feel there is no need for weight restriction. There is very little or no ORV (civilian) damage done at present time compared to the amount done by the military with their ORV's in the areas you wish to limit ORV usuage. 2

Visual Resources, Preferred Action 11.
VRM class 4 should be restricted to impacted areas only, and the rest of the withdrawal should be of a class 111 or less if possible.

Recreation, Preferred Action 16.
Make permits available for the erection of cabins outside of the impacted areas only.

Preferred Action 18.
In this action 18, delete the sentence " Guides, outfitters and air taxi services are responsible for ensuring that their clients comply with these rules." We feel this is not justifiable or enforcable for air taxi services. 3

Respectfully,
James Weidner
Secretary

BLM AK SO 974 [illegible]

Responses

4-1. Opinion noted.

4-2. ORVs can degrade soils, vegetation, and water. Other things being equal, the heavier vehicles create greater damage. (See Radford, 1973.) Therefore, BLM has taken special care to restrict the largest vehicles. There is no extensive data comparing military and civilian damage to the environment by off-road travel.

4-3. Opinions noted.

★ Fairbanks North Star Borough

809 Pioneer Road PO Box 1267 Fairbanks, Alaska 99707 907 452-4761

September 21, 1988

Military Withdrawals Planning Team
Officer of Management, Planning, and Budget (918)
Bureau of Land Management
Box 13
701 C Street
Anchorage, AK 99513

Attn: Jim Ducker:

RE: Draft Resource Management Plan and EIS for Ft. Wainwright and Ft. Greely Maneuver Areas

Dear Sir:

Enclosed is a copy of a letter dated April 13, 1988 which was written in response to a similar request made by the Fairbanks office early last spring.

Our management philosophy has not changed since that time. We are still strongly in favor of the "economic Development" alternatives in each plan.] 1

We have no further comments. However, we would appreciate copies of the final RMP/EIS when they are available. Thank you for the opportunity to review these plans once again.

Sincerely,

Rex A. Nutter

Rex A. Nutter, Director
Department of Community Planning

RAN/BS/bjs

Sep 26 1 42 PM '88

★ Fairbanks North Star Borough

809 Pioneer Road PO Box 1267 Fairbanks, Alaska 99707 907 452-4761

April 13, 1988

Donald E. Runberg, District Manager
U.S. Bureau of Land Management
1541 Gaffney Road
Fairbanks, Alaska 99703-1399

Re: Military Land Withdrawal

Dear Sir:

The Fairbanks North Star Borough has reviewed your drafts of alternative management plans for non-military use of the Yukon Maneuver Area of Fort Wainwright, and the Fort Greely maneuver area.

Our management philosophy most closely matches that expressed in the economic development alternative as long as environmental and recreational uses are accommodated.

The mix of allowed uses under the Economic Development Alternative seems to provide for the fullest use of the area and the minimum interference with military operations in the withdrawal area. This is the closest alternative to being a truly "multiple use" management alternative, with appropriate consideration given to wildlife, recreation, environmental safeguards, and management of the resources for the benefit of the community.

We have no further comments on these alternatives but would like to be kept informed of any future plans. Thank you for the opportunity for review.

Sincerely,

Juanita Helms

Juanita Helms, Mayor
Fairbanks North Star Borough

JH/KM/bjs

Sep 26 1 42 PM '88

Responses

5 - 1. Opinion noted.

Letter 6
Minerals Exploration Coalition

MEC

MINERALS
EXPLORATION
COALITION

Minerals Advocate
In Public Policy

Mailing Address:
Box 195
767 South Xenon Court
Lakewood, Colorado 80228
(303) 232-4310

Reply to:

Lakewood, Colorado

L.C. Lee

Washington Representative
L. Courtland Lee
3814 West Street
Landover, Maryland 20785
(301) 322-5782

November 21, 1988

Jim Ducker, Team Leader
Military Withdrawals Planning Team
Office of Management, Planning and Budget(918)
Bureau of Land Management
701 C Street
Box 13
Anchorage, Alaska 99513

Dear Mr. Ducker:

This letter constitutes the comments of the Minerals Exploration Coalition (MEC) on the Draft Resource Management Plan and Environmental Impact Statement for the Fort Greely Maneuver Area and Air Drop Zone, Alaska. MEC represents companies and individuals engaged in exploration for hard minerals on federal lands.

MEC worked hard to add Section 12 to the P.L. 99-606, the Military Lands Withdrawal Act of 1986. This section provides access to military lands for the purpose of exploring for and producing locatable minerals. All areas of military bases not actively in use or containing hazardous materials should be open to mining.

MEC supports the Management Actions Common to All Alternatives, page 8. The map facing page 8 shows that most of Fort Greely would be open to nonmilitary activities. This conforms to the belief of MEC stated in the precedings paragraph.

MEC supports, with some reservations, the Preferred Alternative, Alternative C, Alternative D and Alternative E.] 1

Minerals, Preferred Action 27, provides for a mineral assessment prior to consideration of opening under Sec 12(a) of P.L. 99-606. Under this provision access for locatable mineral operations would be delayed until a mineral survey was conducted. Ultimately, access would be conditioned upon the results of that survey. We are concerned: 1) that the mineral assessment might not provide the information necessary to proceed with confidence, 2) that the time required to conduct the assessment could be excessive and 3) the cost might limit the thoroughness of the assessment.] 2

Moderate potential with direct evidence of mineralization is described on page 81. The proposed mineral assessment might add little useful information. The science and technology of conducting mineral assessments is advancing rapidly and economic conditions are ever changing. Much of the advancing knowledge and expertise resides with the mining companies. Without full use of "state of the art" technology, knowledge and methods and all tools available, including the drill and geophysical surveys, the assessment may not be adequate.

We are concerned about the delay inherent in an assessment. It might take years to find a competent contractor to conduct the field work, prepare the report and make it available to the public and finally make the decision concerning access.

We are concerned about costs of such a survey. In these days of federal budget cuts, funding for the assessment might be difficult to obtain. Funds might be inadequate to make a proper assessment.

Minerals, Alternative C, Action 21, Alternative C, Action 23 and Alternative E, Action 17 provides that the lands be open for mineral location under regulations and procedures which would ensure that necessary military activities can be accomplished at the same time as exploitation and mining. This alternative action would allow immediate access to conduct locatable mineral operations. Mining companies would conduct the mineral assessments at no expense to the government.

We believe new regulations and procedures can be drawn, taking into consideration the provisions of Sec. 12(g)(2) of P.L. 99-606. These regulations would allow both military activities and locatable mineral operations to be accomplished. Whereas the terms of new regulations and procedures governing locatable minerals would be different from those for leasable minerals, one approach should be as compatible with military operations as the other.

Minerals, Alternative E, Action 19 proposes to conduct a mineral] 3

assessment on Molybdenum Ridge and other areas on the withdrawal as deemed appropriate The comments of MEC on this proposed action are the same as on Preferred Action 21.

3 cont.

MEC is prepared to meet with you to draft special regulations of locatable mineral operations. We propose that these regulations ensure that necessary military activities and locatable mineral operations can be accomplished. Drafting these new special regulations applicable to the unique situation and operations at Fort Greely should be given high priority because they will ultimately be necessary under the Preferred Alternative as well as under Alternatives C, D and E

The Minerals Exploration Coalition looks forward to communications regarding arrangements for our further contribution to drafting regulations and the mineral assessment.

Sincerely,

John D Wells
President

Responses

6-1. Opinion noted.

6-2. The Proposed Plan does not include provisions for a mineral assessment.

6-3. The Proposed Plan does not provide for a mineral assessment of Molybdenum Ridge or any other area of the withdrawal.

November 30, 1988

Military Withdrawls Planning Team
Office of Management, Planning and Budget (918)
Box 13, 701 C Street
Anchorage, Alaska 99513

RE: Comments on Fort Greely Draft Resource Management Plan and Environmental Impact Statement

To whom it may concern:

I basically support the multi-use concept of land management. Therefore I favor the current (alternative A) and the preferred alternate options in this plan with the following revisions. 1

1. The military not attempt to duplicate the expertise of other existing natural resource management agencies such as Alaska Department of Fish and Game, Alaska Department of Natural Resources and U.S. Forest Service.

2. The military shall work with these agencies in managing natural resources on military leased land.

3. The military now holds leases on vast acreages of Alaska as indicated in this document. Confine the military to this land---they need not continue to deface other areas of our state with their continual requests for "special" land use permits.

4. Request improved cooperation from the military in support of the multiple use concept for example, when an exercise requiring exclusive use by the military is terminated early notify the public of this action via flight service stations, radio and status reports relayed through the Military Police.

We can improve the relationship between the public and military use of Alaska but that requires two way communication, consideration and cooperation.

Sincerely,

Don Quarberg

Don Quarberg
P.O. Box 349
Delta Junction, Alaska 99737

DQ:jb

Letter 7
Don Quarberg

Responses

7-1. Opinion noted. One of the purposes of the Military Lands Withdrawal Act, which renewed the Fort Greely withdrawal and prompted this plan was to ensure that the lands benefit from the multiple use management of BLM. BLM and the Army will consult with other agencies with similar expertise as appropriate. The scope of the plan does not extend to lands outside of the withdrawal.

NOV 16 '88 16:13 P.1/1

Representative Dick Shultz
Alaska State House of Representatives
P.O. Box V • Juneau, Alaska 99811 • (907) 465-4940
Home: P.O. Box 487 • Tok, Alaska 99780

Member
House Resources Committee

November 16, 1988

Don Runberg, District Manager
Bureau of Land Management
1150 University Avenue
Fairbanks, Alaska 99709-3844

FAX # 474-2248

Dear Mr. Runberg:

I would appreciate it if the following statement would be read tonight at the Bureau's meeting concerning the Resource Management Plan/Multiple Use/Access of Fort Greely.

I stand in opposition to the proposed RMP as written because I am not convinced that the traditional use of the land, as well as guaranteed access to the land, is going to be provided/protected.] 1

I recommend more public comment periods and adequate notice of meetings.

Sincerely,

Dick

Representative Dick Shultz

DS/SPP

Please send additional copies of the Draft RMP to my office, thank you.

Responses

8-1. Opinion noted.

Letter 9
United States Air Force

DEPARTMENT OF THE AIR FORCE
REGIONAL CIVIL ENGINEER, WESTERN REGION (AFESC)
630 SANSOME STREET - ROOM 1316
SAN FRANCISCO, CALIFORNIA 94111-2278

OCT 05 1988

REPLY TO ATTN OF: ROVP (Tye/556-0557)

SUBJECT: Draft Resource Management Plan and Draft Environmental Impact Statement, Fort Wainwright and Fort Greely, Alaska

TO:
Military Withdrawals Planning Team
Office of Management, Planning and Budget (918)
Bureau of Land Management
Box 13
701 C Street
Anchorage, Alaska 99513

1. The AFRCE/WR appreciates the opportunity to review your draft RMP and EIS. Although this office has no comments at this time except to forward a comment provided by the Alaskan Air Command (AAC), we would appreciate your continued coordination of this project with our office.

2. From AAC letter dated 26 Sep 88; "The Preferred Alternative permits presently occurring actions to continue and actively promotes multiple-use with a sustained yield for all lands involved in the study. It is a ratification of the existing military land management plans for these locations. These plans complement the plans the Air Force is implementing at Eielson AFB." 1

Phillip E. Lammi

PHILLIP E. LAMMI, Director
Environmental Planning Division

cc: HQ USAF/LEEV (Fordham)
HQ AAC/DEP
343 CSG/DEEV

Responses

9-1. Opinion noted.

1610 (310)

NOV 22 1988

Memorandum

To: Division of Planning and Environmental Coordination (WO 760)
Attn: Frosty Littrell

From: Alaska Programs Staff

Subject: Fort Greely and Fort Wainwright Draft RMPs/EISs

This office has reviewed the subject drafts and offers the following comments:

Fort Greely and Fort Wainwright - both drafts address the National Wildlife Federation v. Burford lawsuit and its Preliminary Injunction. On November 4, 1988, Judge Pratt issued an order vacating the injunction and dismissing the lawsuit. The Federation filed a Notice of Appeal on November 11, 1988 which, as of this date, has not been acted upon by the court. The progress of this case should continued to be monitored. 1

Fort Wainwright:

- Chapter 2, Affected Environment (Page 65): Second paragraph should be corrected to reflect signed grant for TAGS right-of-way.

- Appendix B, Management Situation Analysis Documents: The introductory paragraph is incomplete in that the final sentence is unfinished.

The review of the Fort Greely draft resulted in no additional comments.

cc: 310:RF; MIB-Rm 3653
LLH: 310:MIB Rm 3653:Lbrooks:lab:11-22-88:343-6511 — wg-68L
918
cc:AK 980/J Decker

Responses

10-1. Discussion of the National Wildlife Federation v. Burford lawsuit has been deleted. It is no longer a factor in this RMP.

Letter 11
United States Environmental Protection Agency

U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 SIXTH AVENUE
SEATTLE, WASHINGTON 98101

REPLY TO ATTN OF WD-136

Mr. Jim Ducker, Team Leader
Military Withdrawals Planning Team
Office of Management, Planning and Budget (918)
Bureau of Land Management
Box 13
701 C Street
Anchorage, Alaska 99513

Re: Fort Greely Draft Resource Management Plan (DRMP) and Environmental Impact Statement (DEIS)

Dear Mr. Ducker:

The Environmental Protection Agency (EPA) has reviewed the Fort Greely Draft Resource Management Plan (RMP) and the Draft Environmental Impact Statement (DEIS), a joint Bureau of Land Management and U.S. Army action under the Military Land Withdrawal Act of 1986.

This review has been carried out pursuant to EPA's authority under the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act. We have the following two major comments.

First, the DEIS does not describe the cumulative effects of the military uses and the uses permitted by the various alternatives in the plan. Without this analysis, it is difficult to determine if the incremental effects from uses allowed in the plan will be significant. 1

Secondly, the DEIS identifies a number of additional plans (Habitat Management Plan, Recreation Activity Management Plan, Forest Management Plan, etc.) that are essential to provide comprehensive management of the Fort Greely Military Withdrawal. The Final EIS should describe when these plans will be developed, how monitoring will be incorporated into the plans to assure that the plan's objectives are being met, and if the plans will be subject to review under NEPA. 2

We have rated this DEIS EC-2 (Environmental Concerns - Insufficient Information). A copy of our rating system is enclosed.

Thank you for the opportunity to review your Resource Management Plan and Draft Environmental Impact Statement on the subject project. We look forward to receiving and reviewing the Final EIS for this plan.

If you would like to discuss our comments, you can contact Clark Smith, our Federal Facilities Coordinator, at (206) 442-1327.

Sincerely,

Ronald A. Lee, Chief
Environmental Evaluation Branch

Responses

11-1. We agree with this statement and have added a section addressing the cumulative impacts of military and nonmilitary uses of the withdrawal.

11-2. The Approved RMP will describe how monitoring will be accomplished. All activity plans will be subject to NEPA.

SUMMARY OF THE EPA RATING SYSTEM
FOR DRAFT ENVIRONMENTAL IMPACT STATEMENTS:
DEFINITIONS AND FOLLOW-UP ACTION *

Environmental Impact of the Action

LO--Lack of Objections

The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities with no more than minor changes to the proposal.

EC--Environmental Concerns

The EPA review has identified environmental impacts that should be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

EO--Environmental Objections

The EPA review has identified significant environmental impacts that must be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no-action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

EU--Environmentally Unsatisfactory

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potential unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the CEQ.

Adequacy of the Impact Statement

Category 1--Adequate

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category 2--Insufficient Information

The draft EIS does not contain sufficient information for EPA fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

Category 3--Inadequate

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

*From EPA Manual 1640 Policy and Procedures for the Review of Federal Actions Impacting the Environment

Letter 12
United States Fish and Wildlife Service

IN REPLY REFER TO:

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Northern Alaska Ecological Services
101 12th Ave., Box 20, Room 232
Fairbanks, AK 99701
November 21, 1988

Memorandum

TO: Military Withdrawals Planning Team,
Bureau of Land Management, Anchorage

FROM: Field Supervisor, Northern Alaska Ecological Services
U.S. Fish and Wildlife Service, Fairbanks

SUBJECT: Draft Resource Management Plan/Environmental Impact Statement for the Fort Greely Maneuver Area and Air Drop Zone.

The U.S. Fish and Wildlife Service (Service) has reviewed The Draft Resource Management Plan/Environmental Impact Statement for the Fort Greely Maneuver Area and Air Drop Zone. The document was prepared in conjunction with the Military Lands Withdrawal Act of 1986. We have only a few comments to offer.

The Preferred Alternative offered in the document does not generally recommend profound changes from current land uses of the areas that would involve additional and potentially significant adverse impacts on fish and wildlife resources, except for provisions that could potentially open military lands for mineral development. Discussions of the environmental consequences of mineral development warrant substantial improvement, particularly regarding impacts to aquatic resource impacts, which are virtually neglected. In addition to degradation of water quality and loss of aquatic and terrestrial habitat, the document should discuss, as available information allows, the short and long term implications to resident species of fish and wildlife. Environmental impacts of placer mining constitute the primary subject of several recent draft environmental impact statements prepared by the Bureau of Land Management and the National Park Service. Perhaps discussion of the environmental consequences can be supplemented by reference to these other Department of the Interior documents. 1

Followed are recommended revisions to the "Threatened and Endangered Species" section of the document that would more adequately and accurately address threatened and endangered species within the military withdrawal and the associated responsibilities to protect such species.

Two federally listed species occur in the areas, the threatened Arctic peregrine falcon and the endangered American peregrine falcon. The Arctic peregrine falcon breeds in northern Alaska and migrates through the areas while the American peregrine falcon breeds in central Alaska in areas near the Fort Greely Maneuver Area and Air Drop Zone and also migrates through the areas. There are no known nest sites in the military withdrawals, but given the currently increasing status of peregrine falcon population in Alaska, it is possible that one or more pairs of falcons may find suitable nesting habitat in the areas and attempt to breed there. It is unlikely that any of the alternatives will effect the migration of peregrines through the areas, however, should any occupied nest sites be discovered in the areas, the "Recommended Protection Measures" in the Peregrine Falcon Recover Plan-Alaska Population will apply, regardless of the alternative selected. 2

Thank you for the opportunity to comment on this draft document. If you have any questions or desire any further assistance, please contact Tony Booth at 456-0324.

Responses

12-1. The Environmental Consequences chapter has been revised to give more consideration to the impacts of mining, particularly that to aquatic resources.

12-2. The Management Common to All Alternatives has been amended to direct that should any occupied American peregrine falcon nests be discovered in the withdrawal, the mandates of the Endangered Species Act will apply.

UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
Box 547
Delta Junction
Alaska 99737

November 28, 1988

Jim Ducker
Military Withdrawals Planning Team
Bureau of Land Management
Box 13
701 C Street
Anchorage, AK. 99513

Dear Mr. Ducker:

Thank you for giving me the opportunity to comment on the Draft Resource Management Plan and Environmental Impact Statement for the Fort Greeley Maneuver Area and The Fort Greeley Drop Zone. My comments on the plan are as follows.

Preferred action 6: This action states that the military will establish a zone around water bodies and would institute special precautions to protect habitat. Would these precautions be applicable to both military and nonmilitary uses? On what information would the military base this action? What types of precautions would be made under this action? The plan needs to be more specific on this item. Specific input from other agencies such as Alaska fish and Game and the Soil and Water Conservation Districts should be used to make this determination. A detailed soil survey should be used as the basis for determining this action. 1

Preferred action 7: This action deals with off-road vehicles. I agree with the determination to limit use of ORV's over 1500 GVW to the established roads. This should be limited during periods of rain or during spring breakup. For ORV's less than 1500 GVW, no permit is required to use on the road system, during winter, and on soils with low erosion hazard. What criteria is being used to determine soils with low erosion hazard? The only soil reference in the plan was the "Exploratory Soil Survey of Alaska" issued by the Soil Conservation Service in 1979. Using the survey, I find that all soils in Major Land Resource Area (MLRA) 173, Alaska Range, are rated severe for off-road trafficability. Similarly, in MLRA 174, Interior Alaska Lowlands, only map units IR8 and IR10 are not rated severe for off-road trafficability. Combined with the closed impact areas this only leaves the area of the Fort Greeley Drop Zone west of Jarvis Creek and a small portion in the northwest corner of the Fort Greeley Maneuver Area as areas with open areas with no soil limitation for off-road vehicle use. This is quite different from the ORV Map between pages 18 and 19 of the plan. What other soils information was used to determine ORV use and why wasn't it listed in the Bibliography. If soils with a low erosion hazard are open to ORV use then a criteria needs to be used to identify those soils. A detailed soil survey should be used as the basis for determining soils with a low erosion hazard due to ORV use. 2

I agree with the remaining actions listed the preferred alternative, especially the development of the Habitat Management Plan, Forestry Management Plan and the Recreation Activity Management Plan.

In Chapter 4, Public Participation, there is no mention of the Salcha-Big Delta Soil and Water Conservation District. The Soil and Water Conservation District is the state agency responsible for the development and implementation of natural resource conservation programs within their boundaries. Fort Greely is within the Salcha-Big Delta Soil and Water Conservation District. Copies of the plan were sent to the District and to the Soil Conservation Service only after I called and requested them. The Soil and Water Conservation District should be included in the remainder of the planing process and also in the development of future management plans in the area.

One area which the Soil and Water Conservation District could could help with the Resource Management Plan is with soils information. The capability of the soil should be the basis for any development in the Fort Greely area. A soil survey would identify the soils and their capability for various uses such as recreation, roads, ORV use, and timber. The "Exploratory Soil Survey of Alaska" which was used in the plan states that it is useful only for large scale planning and that a detailed soil survey should be used when planning an intensive use in smaller areas. It appears that the plan calls for some intensive uses of the land and that a detailed soil survey of the area should be used to direct this type of development.

Again, I thank you for the opportunity to review the plan.

Sincerely,

Gary N. Champlin
District Conservationist

cc: Salcha-Big Delta Soil and Water Conservation District

Responses

13-1. This action has been revised. The HMP which will define the zone should utilize the expertise at the ADF&G and the Soil Conservation Service.

13-2. In determining what lands should be restricted for summer ORV use, the planning team consulted the Exploratory Soil Survey of Alaska. This document provides general data concerning large areas of the state. Aerial photographic information on vegetative cover and slope data from topographic maps, however, indicate that portions of the withdrawal have soils less susceptible to disruption by ORVs. The areas indicated as restricted from summer ORV use are low and boggy or on 30 percent or steeper slopes. Slopes with exposed bedrock were not restricted. The map shows large general areas which no doubt include exceptions of less susceptible soils occurring in areas too small to indicate on the map.

Letter 14
Floyd Weaver

(Typed for Reproduction Purposes)

I would like to list my comments in two parts. One favorable and the other un-favorable.

Favorable

I think the best alternative is "A". The present system is working well and I think some improvement could be made in the Bison area.]1

1) Page #3 and #5 Wild Life & Habitat Agreement. This is a good agreement and should be followed.

2) Page #15 Access - Page #24. The Preferred Alternative is a good plan and could be lived with without much problem.]2

3) Page #25 Alternative #A. The status quo is a very good idea. Things are going very well with The Delta Junction-Ft. Greely area now and no great problems exist.]3

4) Page #29 Forestry. This is a good idea. Also access could be improved into the areas where a fire several years ago has made some of the best dead and down areas in Delta Junction. Due to poor access much of this resource will go wasted.]4

Non Favorable

1) Page #1 & 2. The description of the Drop Zone is not correct. The area east of the Richardson Highway is primarily used as a maneuver area and within this area are two small Drop Zones. This can be checked out by contacting Range Control at Ft. Greely.]5

2) Page #3 & 4 Wildlife & Habitat. This 1986 agreement is not being followed. There is very little being done on the Bison habitat problem. The state says it is the Army who is responsible, the Army says they don't have funds.

Page #5, Par #5. This is a good agreement but it is not being followed.

Page #7 & #8. I feel that impact areas are too large and much of the land within these areas could be opened to the public. The statement about the military entering the impact areas really is not correct. Large groups of military use the Lakes Impact Area each year in the winter.]6

Page #10 Fish & Wildlife. Not enough is being done in the area and the Agreement is not being followed. The Bison range needs improvement.]7

Page #29 Access. This is totally non-acceptable.]8

Page #30 Forestry. Due to a very large burn several years ago, there is much dead and down fire wood that should remain open to the public.]9

Page #33 Action #8. This is a very bad alternative because it would not allow people who have their own means of transportation to use them. I don't think this plan is constitutional.]10

Page #45 Wildlife & Habitat Action #10. I do not think that this plan would be a good one because it sells the right to the furbearers. The state of Alaska Constitution says that Fish and Game belong to <u>all</u> the people.]11

Page #45 Forestry. Private use of dead and down would should be allowed]12

Thank You
Floyd Weaver
Box 1081
Delta Junction
AK 99373

Responses

14-1. Opinion noted.

14-2. Opinion noted.

14-3. Opinion noted.

14-4. The Forest Management Plan developed for the plan will address access. Commercial operators normally will be required to construct their own routes to any areas not already accessable. These routes may be available to other users if they do not interfere with military operations and public safety. The FMP will examine whether the available resources justify federal expenditure of funds to construct roads. The BLM rarely engages in less-than-cost timber sales; the agency usually only considers building a road to timber or fuel wood if it anticipates that it will recoup its cost by charging those who harvest the wood. The BLM could justify expending more funds on a timber and firewood road than the anticipated return on the investment if such a road would serve other land management needs. In addition the FMP will examine ways in which any expansion of roads and trails made by the Army for military purposes might also serve people who wish to harvest the withdrawal's timber and fuel wood.

14-5. The planning documents for Fort Greely use the name in the Military Lands Withdrawal Act to designate this tract of land.

14-6. The Army has opened the Lakes Impact Area to public use. Whenever military personnel enter other impact areas, they do so with the Explosive Ordnance Detachment and have the benefit of examining Army records enabling them to avoid heavily impacted areas.

Letter 14 continued

14-7. Opinion noted.

14-8. Opinion noted. This comment does not deal with the Proposed Plan.

14-9. Opinion noted. This comment does not deal with the Proposed Plan.

14-10. Opinion noted. This comment does not deal with the Proposed Plan.

14-11. Opinion noted. This comment does not deal with the Proposed Plan.

14-12. Opinion noted. This comment does not deal with the Proposed Plan.

Oral Comments
Delta Junction Public Meeting, November 15, 1988 and Northern Alaska Advisory Council, December 7, 1988

(OC-1 to OC-10 are from the public meeting; OC-11 is from the Advisory Council meeting.)

OC-1. "That area [Lakes Impact Area] is not dangerous. The military conducts field problems in it. I mean annually. The SUSV's run all over the place. . . . You have a road, several of the major roads that go through there that the military uses continuously." (Ralph Miller, Delta Junction)

OC-2. "I physically, me alone, drew the boundaries of all these ranges, the impact areas . . . under totally different set of circumstances than we are talking about. We didn't have a range regulation and one night they said 'Hey, we're going to get a gig if we don't have all this tomorrow and we got to do it,' and I did it that night. . . . The Lakes Impact Area is too large. . . . From the Delta River a 1000 meters in to One Hundred Mile Creek . . . there is zero ordnance unless someone got sloppy. . . . I see no problem in using those areas." (Ed Sheehan, Delta Junction, 29-year resident, supervised range control at Fort Greely 1971-1987 and worked in range control since 1960.)

OC-3. "If you want access to this country [southwest corner of the fort and adjacent State land] which is where the mining is going to be--where the existing mines are--you are going to have to come this way [through Lakes Impact Area from the north] and get up high, go across One Hundred Mile Creek and go in there. People are doing it hunting and fishing-wise every year and have been for as long as I've been in this country irregardless of what the military might think." (Sheehan)

OC-4. People at the meeting just want a "fair and reasonable policy." If civilians can't go into the Lakes Impact Area, then the military should not be allowed in there either. (Sheehan)

OC-5. Speaker questions why the plan does not show trails on the west side of the Delta River. There are trails which are used on the west side of the river and the plan should reflect them. People are concerned with losing their opportunity to use them. (Bruce Geraghty, Sen. Coghill's office, November 16, 1988, Fairbanks)

Bison Habitat

OC-6. "Who is going to maintain these bison plots? They are growing back into brush, they need to be brushed, they need to be fertilized, they need work on them. . . . The bison calving ground is in the Delta River. . . . That's an impact area. . . . What is being done to protect the bison in the calving area when they are in there?" Six bison have been killed during military training in recent years. (Floyd Weaver, Delta Fish and Game Advisory Committee, Delta Junction)

OC-7. Some of the bison habitat is more critical than other such habitat and much of it is in the impact areas. There is concern with conflicts. (Steve Dubois, ADF&G, Delta Junction)

Guides

OC-8. People should not be required to use a guide to enter the part of Fort Greely west of the Delta River during hunting season. (Sheehan and Weaver)

Cabins

OC-9. "An 8' x 10' trapper's cabin no way in the world can hurt the . . . United States Army security." (Miller)

Sharptail Grouse

OC-10. The RMP does not provide enough information on sharptail grouse dancing grounds. It will have to include precise information on the locations of the grounds in order for the Army to avoid their use during critical times. (Don Murrell, Cold Regions Test Center, Fort Greely)

Trapping

OC-11. "How can the federal government sell trapping rights to commercially trap and have the State Department of Fish and Game regulate it?" Trapping should not be restricted to commercial trappers as would be the case under Alternative E. (Weaver)

Excessive Restriction of Military Use

OC-12. Greater public use of Fort Greely through adoption of Alternative D may cause the military to ask for more permits to use State land. (Dubois)

ORV Access along Delta Creek

OC-13. While it is understandable that ORVs should remain off most of the land along Delta Creek during the summer, the bed of the braided stream and the dry creek bed to the east of the current channel provide suitable and regularly used access to the area of the fort north of the Sullivan Roadhouse, even in the summer. (Rick Schikora)

Responses to Oral Comments
Delta Junction Public Meeting, November 15, 1988

OC-1. See the response to comment 14-6, above.

OC-2. See the response to comment 14-6, above.

OC-3. The Army has opened the Lakes Impact Area. Moreover, the first statement under Access in the Management Common to All Alternatives has been reworded to indicate that the authorized officer may permit access through the impact areas to carry on noncasual activities such as mining. Ground access to the southwestern portion of the withdrawal may also be available by crossing the Delta River south of the impact areas and proceeding westward along the foothills or by traveling up the Little Delta River.

OC-4. See the response to comment 14-6, above.

OC-5. Roads and trails are shown on maps in the plan for two purposes. Those on the Roads and Major Trails map indicate which areas should not be disturbed by major ground-disturbing activities because the Army trains near these routes. The Off Road Vehicle Use map indicates which roads are suitable for vehicles weighing over 1,500 pounds. Neither map is intended as a comprehensive depiction of roads and trails on the withdrawal. The "Winter Trail" which forms much of the northern boundary of the impact areas has been added to the first map because the Army does train near it and does not want major ground-disturbing activities along it. The Army does not anticipate requiring such restrictions along other routes, and none of the trails on the west side of the Delta River are considered suitable for ORVs over 1,500 pounds.

OC-6. The Habitat Management Plan in the Proposed Plan will examine what needs to be done concerning the bison plots and will assign responsibilities based on the MOU drafted between the Army and BLM to implement this Resource Management Plan.

OC-7. See the response to comment 1-1, above.

OC-8. Opinion noted.

OC-9. Opinion noted.

OC-10. Most dancing grounds are located on bison food plots. An up-to-date listing of these sites is available at Fort Greely's Natural Resources Office and will be provided to interested civilians and military units. The Habitat Management Plan mandated by this RMP may add other sites to the list of known sharptail grouse dancing grounds.

OC-11. Opinion noted. This comment does not deal with the Preferred Alternative.

OC-12. Opinion noted. This comment does not deal with the Preferred Alternative.

OC-13. The State does not restrict ORV access on Delta Creek and the creek does not provide valuable fish habitat. The Proposed Plan has been modified to permit ORVs of under 1,500 pounds to travel on the dry beds of the creek up to One Hundred Mile Creek, which forms part of the northern boundary of the Oklahoma Impact Area. (See the Off Road Vehicle (ORV) Use map.)

Appendix A

List of Preparers

The following individuals served as planning team members for this Resource Management Plan. They supplied resource expertise and assisted management in formulating the alternatives. Since most of the data contained in this document was obtained by 1990, the following information is current as of that year.

Pam Bissonnette
BLM Geologist
B.S. Geology, University of Montana
Experience: 3 years BLM

Billy Butts
BLM Recreation Planner
B.S. Agriculture, Sam Houston State Teachers College
Experience: 13 years BLM, 19 years Bureau of Indian Affairs, 2 years teaching

John Cook
BLM Archaeologist
Ph.D. Anthropology, University of Wisconsin
Experience: 10 years BLM, 6 years teaching UAF

Lee Douthit
BLM Subsistence Specialist
B.A. History, Texas Woman's University
M.A., Ph.D. Anthropology, University of Texas at Austin
Experience: 10 years BLM, 5 years university teaching

Jim Ducker
BLM Planning Team Leader
B.A. History, Villanova University
A.M., Ph.D. History, University of Illinois
Experience: 9 years BLM

Rod Everett
BLM Realty Specialist
Experience: 9 years BLM

Russ Hansen
BLM Forester
B.S., M.F. Forestry, University of Minnesota
Experience: 32 years BLM

Dwight Hovland
BLM Soil Specialist
B.A. Chemistry/Biology, St. Olaf College
M.S., Ph.D. Soils, University of Minnesota
Experience: 19 years BLM, 11 years university teaching and research

Junior Kerns
Army Fish and Wildlife Biologist
B.S. Wildlife Biology/Management, University of Missouri
Experience: 13 years Army

Lynette Nakazawa
BLM Vegetation Specialist
B.S. Soils, University of California, Berkeley
Experience: 9 years BLM, 2 years Forest Service

Bill Peake
Army Realty Specialist
B.S. Natural Resource Management, Ohio State University
Experience: 5 years Army, 5 years BLM, 2 years Ohio D.N.R.

Bill Quirk
Army Natural Resouce Specialist
B.S. Agronomy, M.S. Soils
Experience: 14 years Army, 1 year Forest Service, 1 year BLM

Kirk Rowdabaugh
BLM Forester and Fire Management Specialist
B.S. Biology, University of New Mexico
M.S. Forest Management, Colorado State University
Experience: 13 years BLM

Ken Spiers
Army Fish and Wildlife Biologist
B.S. Biology, Roanoke College (Salem Virginia)
M.S. Wildlife Management, Virginia Polytechinic Institute and State University
Experience: 9 years Army, 2 years State of Tennessee; 3 years U.S. Marines

The Proposed RMP has benefited from additional geological information furnished by BLM employees Bill Diel, Aden Seidlitz, and Ron Teseneer.

Carol Belenski, BLM's State Office Planning Branch's Visual Information Specialist, served as Project Cartographer and Publishing Coordinator. Sue Steinacher and Kim Mincer provided illustrations.

Appendix B

Calculations of Economic Value of Recreation on Fort Greely

Resource specialists on the joint Army-BLM planning team used two methods which estimate the value of recreational use of the withdrawal. One method estimated visitor days, the type of use which took place on these days, and assigned a dollar value to the various visitor days. The other method focused on hunting, calculating the value of the species taken and the cost to those harvesting Fort Greely's wildlife. Each specialist strove to derive estimates of expenditures. Both methods are very hypothetical. That both arrived at a figure of about $1 million is in part attributable to hunting being the major recreational activity on the withdrawal.

Visitor Day Method

There are no studies of expenditures by recreationists which are directly applicable to Fort Greely. However, there has been research of somewhat analogous use. Hunting on the withdrawn land can be divided into two types--the more expensive trip which generally entails flying into the area west of the Delta River and the trip in which hunters gain access via the road network east of the river. There are no appropriate estimates of the average daily expenditure for fly-in hunting. Studies of deer, moose, and goat hunting in Southeast Alaska in 1986 determined average expenditures to be $120, $196, and $355, respectively. (ADF&G, 1986a; ADF&G, 1986b; ADF&G, 1986c) A 1983 statewide sheep hunt study indicated that average daily expenses were $275. (Watson, in progress) These figures are suggestive of expenditures; based upon them the recreation specialist assigned the average hunting day west of the Delta River a value of $250.

There is a more analogous study of hunting expenditures in a roaded area. In 1984 ADF&G conducted a survey of hunters along the Denali Highway and found that their average expenditure was $94 per day. (ADF&G, 1984) Consequently, the recreation specialist estimated that hunting costs east of the Delta River would average about $95 per day.

The expense involved with other recreation use, such as picnicking, sight-seeing, and camping, is not as well documented. Average daily expenditures by visitors to

Fairbanks in 1985 were $45. (GMA Research Corporation) However, these probably reflect expenses such as hotel accommodations that few visitors to Fort Greely would entail. Consequently, the recreation specialist estimated that these other recreationists would contribute about $25 a visitor day to the Alaskan economy.

Using these figures and estimates of current use derived from the Army's Provost Marshal's Office and ADF&G the recreation specialist made the following calculations:

hunting west of Delta River	$250 x 3000	= $750,000
hunting east of Delta River	$95 x 385	= $36,575
other recreation	$25 x 4615	= $115,375
		$901,950

Wildlife Unit Value Method

The planning team also examined the value of hunting by estimating the average expenditure for each animal harvested on Fort Greely. The major species hunted are moose and caribou. Studies by the Fish and Wildlife Service in 1980 and Robert McLean for ADF&G in 1983 estimated the value of big game taken in the Tanana Valley. More recently McLean estimated that about 60 percent of that value is derived from moose and 15 percent from caribou. (McLean, 1988) Given the number of each species harvested in the valley, this would result in a figure of $10,200 expended for each moose harvested and $16,795 for each caribou. Hunters take an average of 53 moose and 42 caribou from Fort Greely each year. If they spend the average sums to get these animals, then hunters on the fort expended $540,600 for moose and $705,390 for caribou. Other species stimulated much lower expenditures. For example, bison hunters spent about $18,000 in 1986-87 in the Delta Junction area. (Morgan, 1987) (They would have spent more reaching the vicinity from other areas of Alaska.) The vast majority of bison are taken from lands outside the withdrawal so less than a thousand dollars of these proceeds can be directly attributed to hunting on Fort Greely.

Appendix C
Mineral Potential Maps

The following pages display the mineral potential for various resources on Fort Greely. The maps reflect the Mineral Potential Classification System as defined in Bureau Manual 3031. This system includes:

Levels of Potential

O The geologic environment, the inferred geologic processes, and the lack of mineral occurrences do not indicate potential for accumulation of mineral resources.

L The geologic environment and the inferred geologic processes indicate *low potential* for accumulation of mineral resources.

M The geologic environment, the inferred geologic processes, and the reported mineral occurrences and/or valid geochemical/geophysical anomaly indicate *moderate potential* for accumulation of mineral resources.

H The geologic environment, the inferred geologic processes, the reported mineral occurrences and/or valid geochemical/geophysical anomaly, and the known mines or deposits indicate *high potential* for accumulation of mineral resources. The "known mines and deposits do not have to be within the area that is being classified, but have to be within the area that is being classified, but have to be within the same type of geologic environment.

ND Mineral(s) potential *not determined* due to lack of useful data. This notation does not require a level-of-certainty qualifier.

Level of Certainty

A The available data are insufficient and/or cannot be considered as direct or indirect evidence to support or refute the possible existence of mineral resources within the respective area.

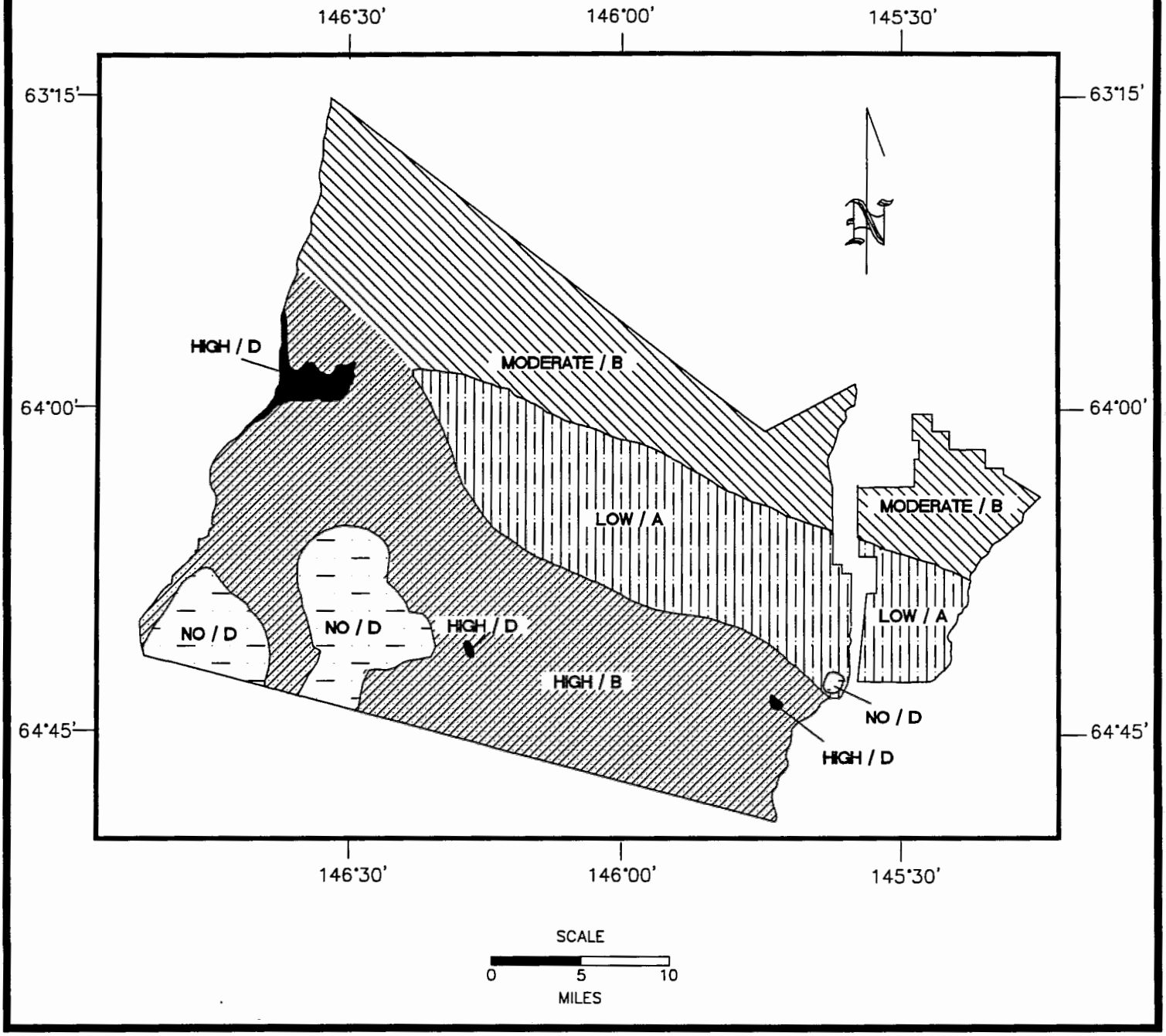
B The available data provide *indirect* evidence to support or refute the possible existence of mineral resources.

C. The available data provide *direct evidence* but are quantitatively minimal to support or refute the possible existence of mineral resources.

D. The available data provide *abundant direct* and *indirect evidence* to support or refute the possible existence of mineral resources.

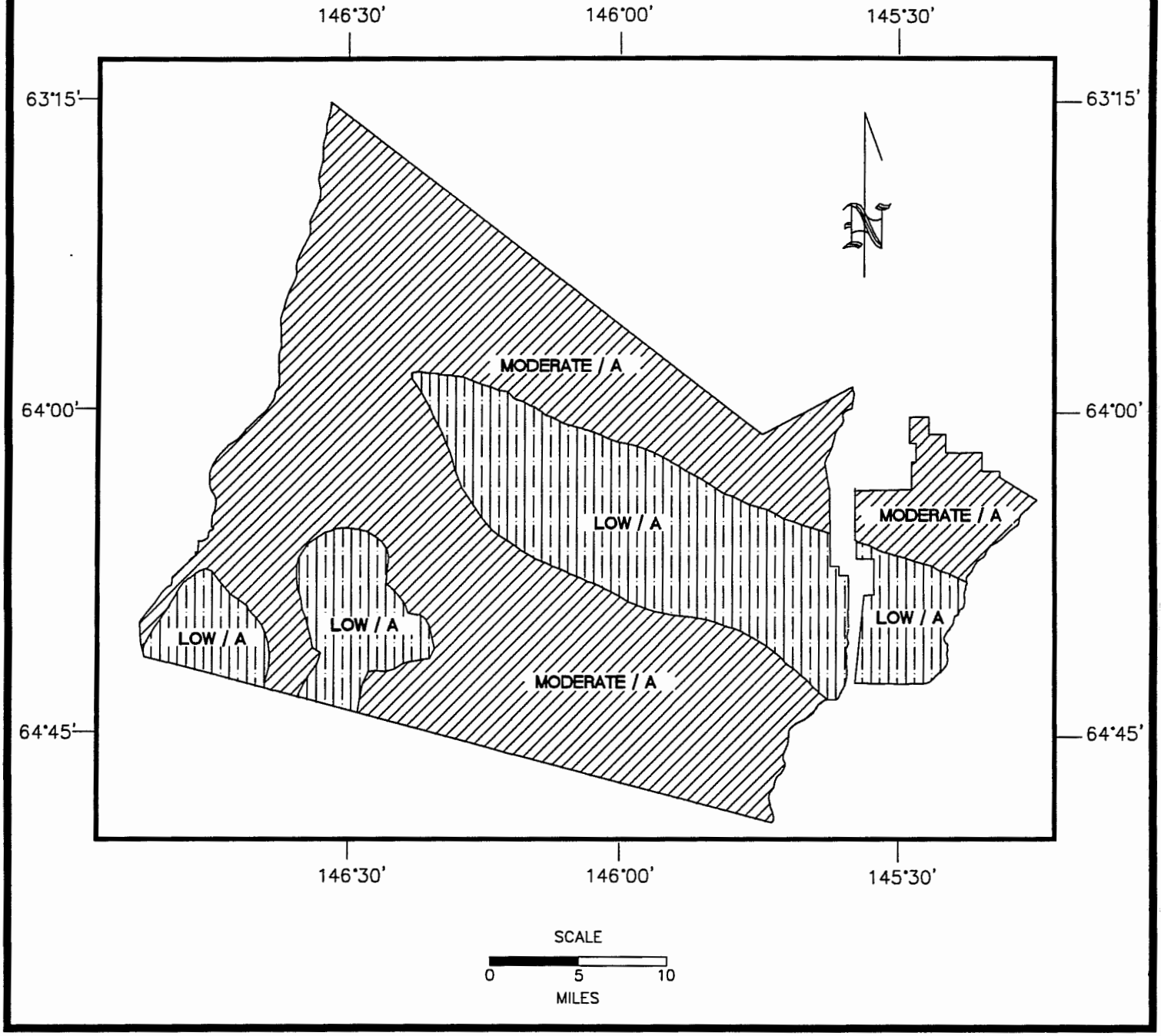
FORT GREELY WITHDRAWAL
LEASABLE MINERAL POTENTIAL

›››› COAL ‹‹‹‹



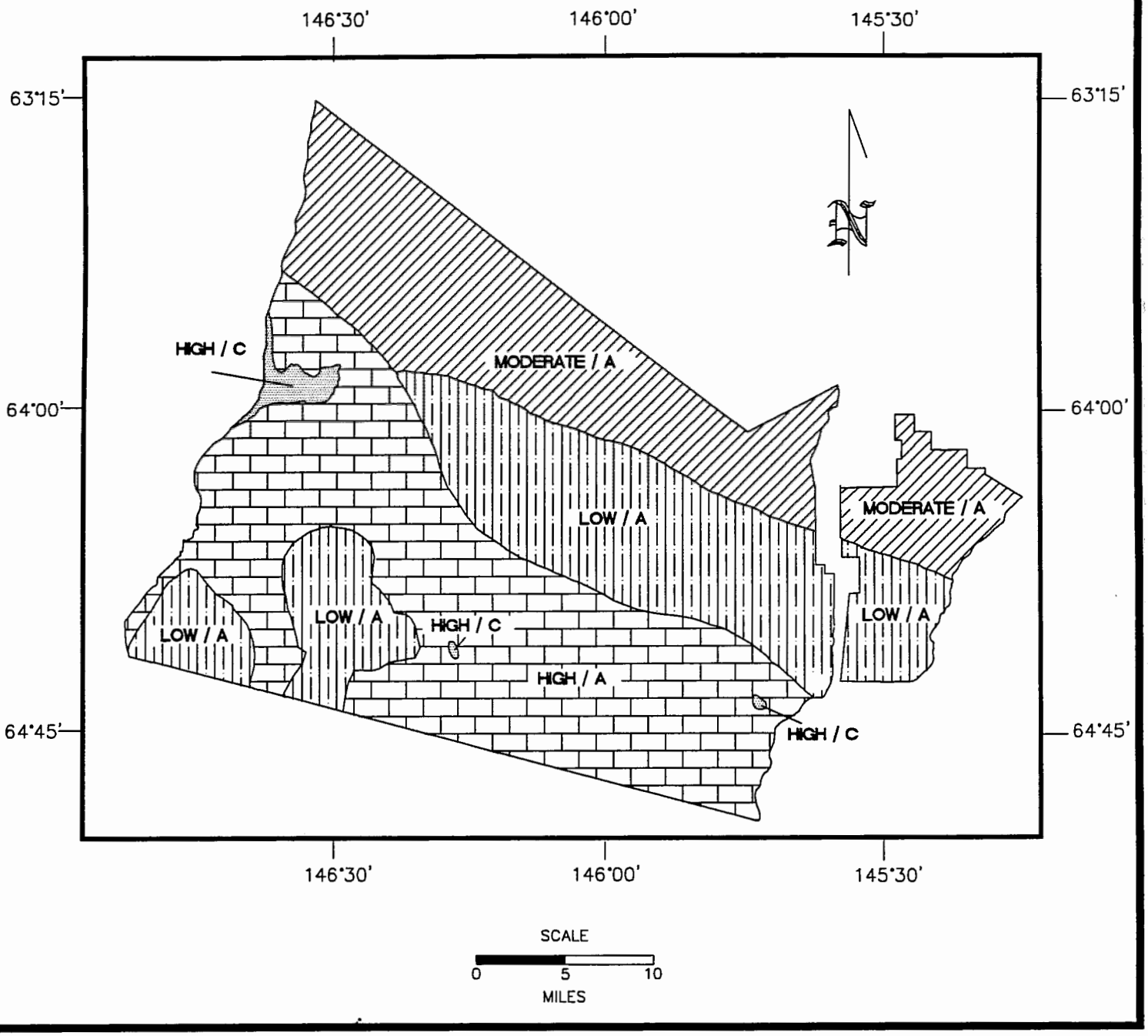
FORT GREELY WITHDRAWAL
LEASABLE MINERAL POTENTIAL

›››› OIL ‹‹‹‹



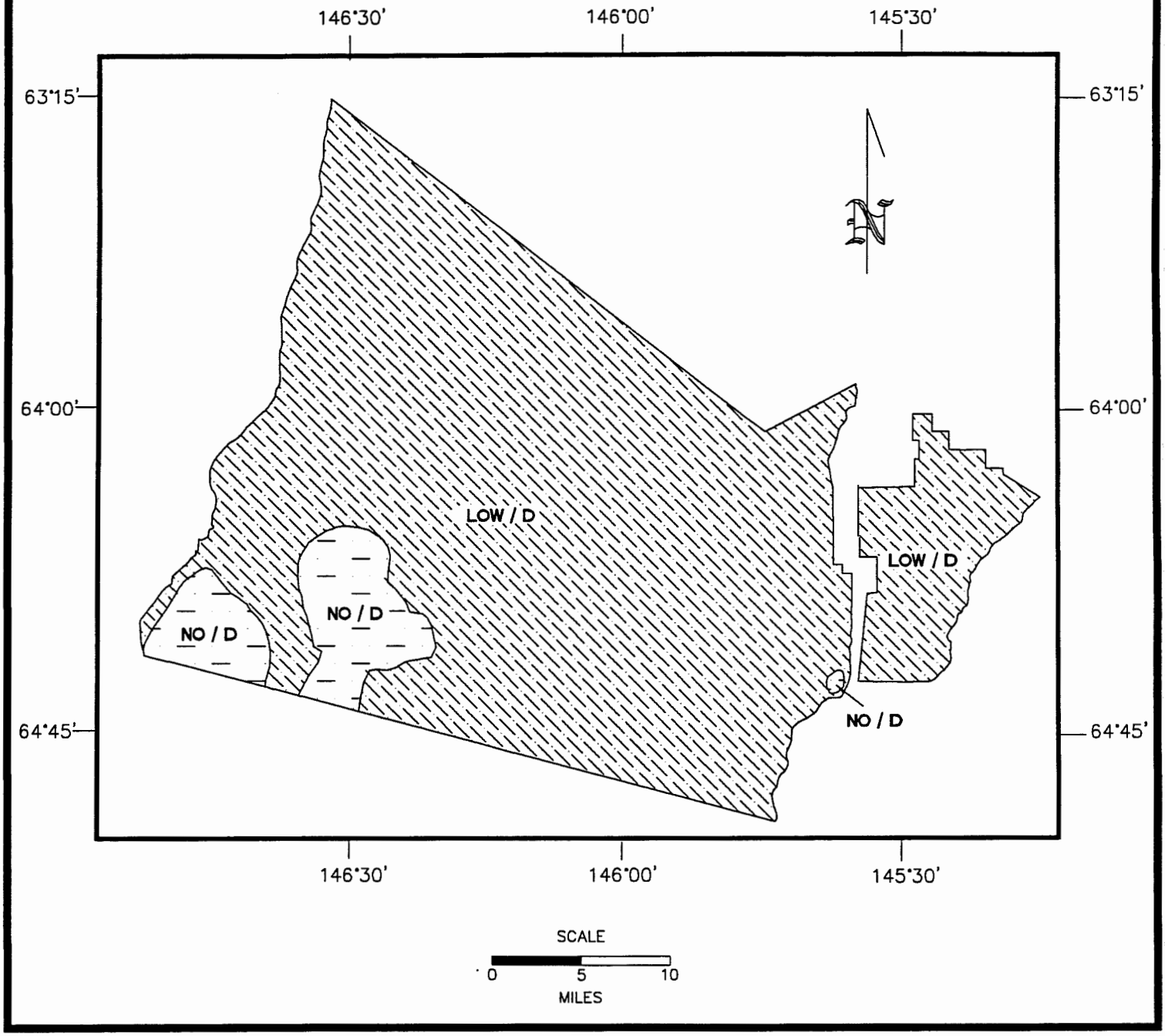
FORT GREELY WITHDRAWAL
LEASABLE MINERAL POTENTIAL

›››› GAS ‹‹‹‹



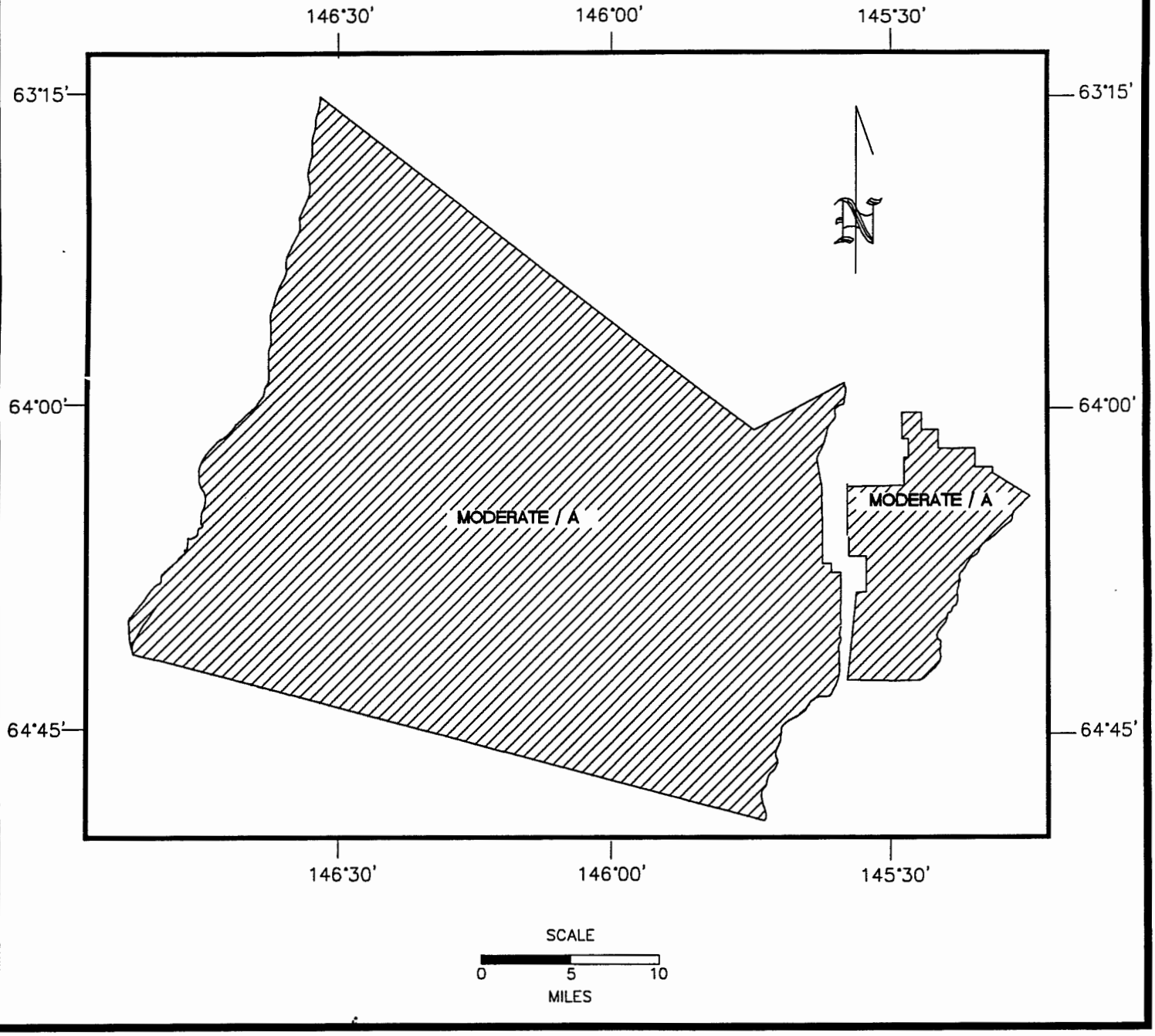
FORT GREELY WITHDRAWAL
LEASABLE MINERAL POTENTIAL

›››› OIL SHALE ‹‹‹‹



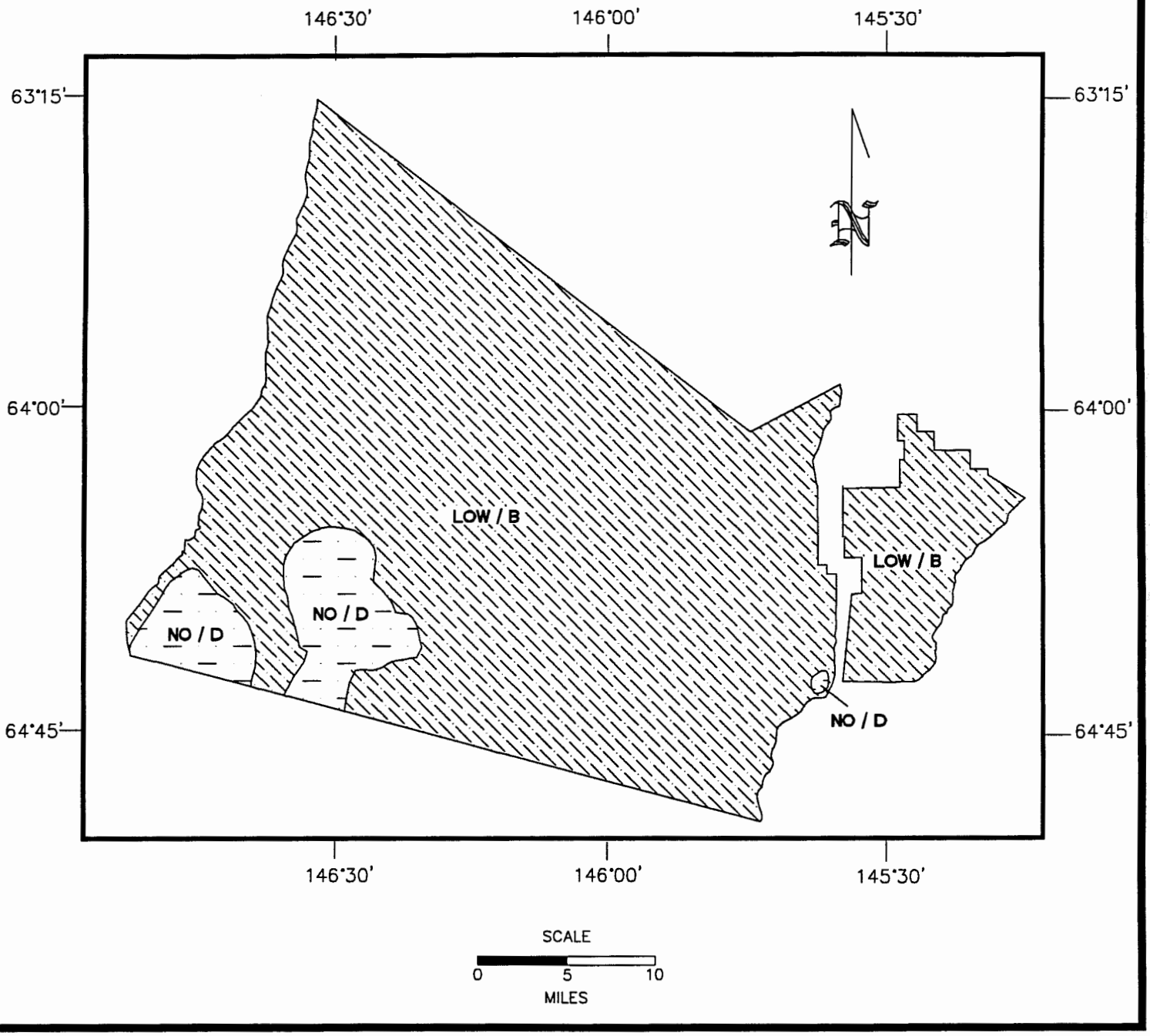
FORT GREELY WITHDRAWAL
LEASABLE MINERAL POTENTIAL

›››› GEOTHERMAL ‹‹‹‹



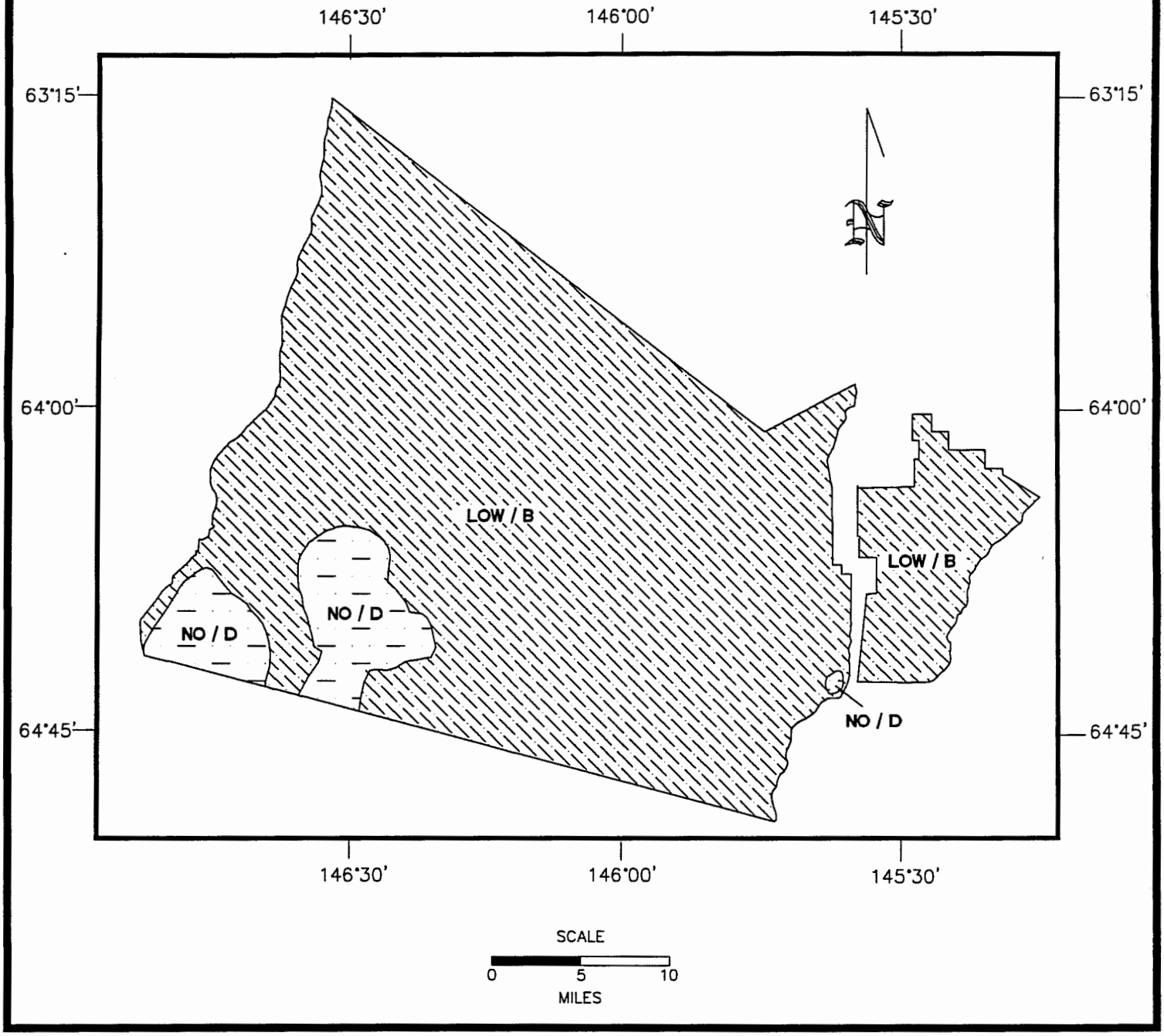
FORT GREELY WITHDRAWAL
LEASABLE MINERAL POTENTIAL

›››› PHOSPHATE, SODIUM, AND POTASSIUM ‹‹‹‹

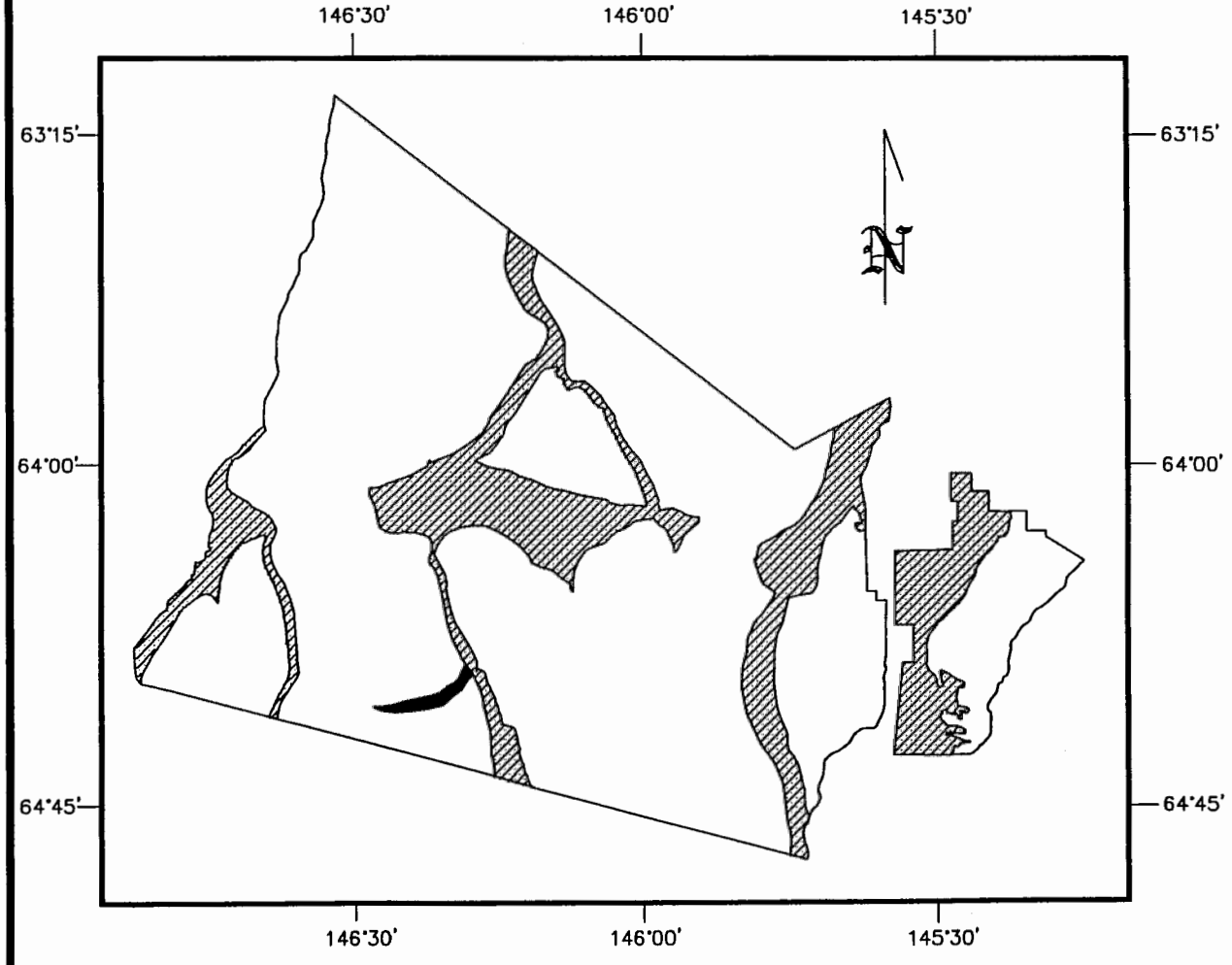


FORT GREELY WITHDRAWAL
LEASABLE MINERAL POTENTIAL

›››› GILSONITE ‹‹‹‹



FORT GREELY WITHDRAWAL
LOCATABLE MINERAL POTENTIAL

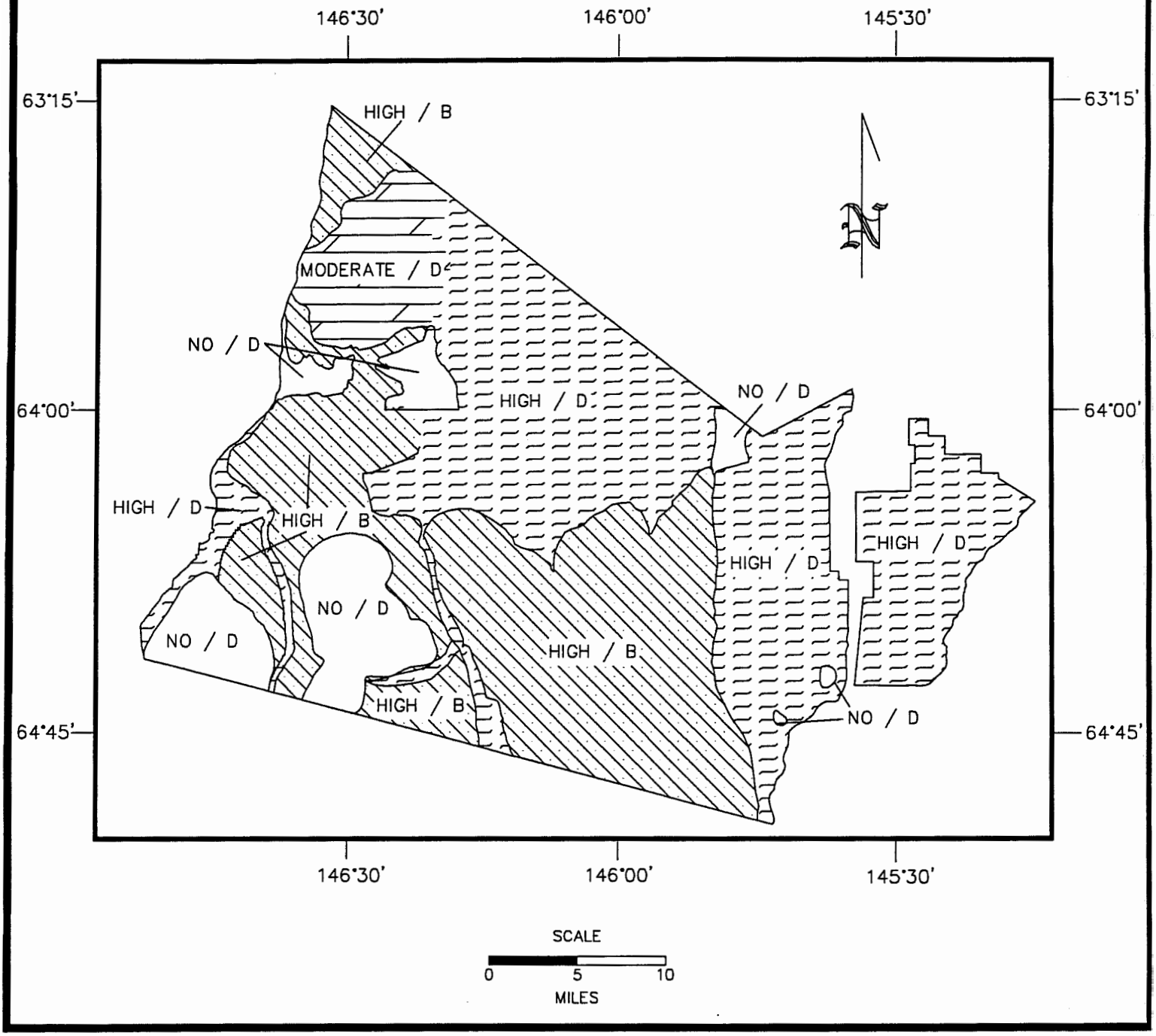


KEY

- High potential (H/D) for placer gold and molybdenum
- High potential (H/A) for placer gold
- Moderate potentail (M/B) for locatable minerals

FORT GREELY WITHDRAWAL
SALEABLE MINERAL POTENTIAL

>>>> SAND AND GRAVEL <<<<



Appendix D
Bibliography

Management Situation Analysis Documents

Most of the resource and management information summarized in this report is addressed in greater detail in a series of reports, called Management Situation Analysis (MSA) documents, prepared by the planning team. The titles of the MSA reports differ. They are cited in the text by the author's name, MSA, and, if the author wrote such a report on more than one resource or use, by the name of the resource or use. These documents are listed below and are available in Anchorage at the BLM's Alaska State Office, Division of Resources and in Fairbanks at the agency's Steese/White Mountains District Office.

Bissonnette, Pam and Bill Diel, Aden Seidlitz, and Ron Teseneer. Coal, Fluid Minerals, Locatable Minerals, Mineral Materials, Non-Energy Leasable Minerals

Butts, Billy. Recreation, Visual Resources

Cook, John. Cultural Resources

Douthit, Lee. Subsistence

Everett, Rod. Lands, Rights-of-Way

Hovland, Dwight. Soil, Water and Air Resources

Rowdabaugh, Kirk. Fire Management

Smith, LaRalle. Forest Resources

Spiers, Ken. Fish and Wildlife Habitat

Books, Reports, Articles

Aitken, G. W. 1964. *Ground Temperature Observations: Big Delta, Alaska.* Technical Report 104. Hanover, N.H.: U.S. Army Cold Regions Branch and Engineering Laboratory.

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Fort Greely

Proposed Resource Management Plan

Proposed Resource Management Plan

Introduction

The Fort Greely Proposed Resource Management Plan is the result of a joint BLM-Army planning effort which began shortly after passage of the Military Lands Withdrawal Act of 1986. It fulfills that law's requirement to plan for the nonmilitary use of the fort. It has benefited from comments from the public and public agencies at the outset during public meetings to help define issues in 1987 and after publication of the Draft Resource Management Plan late in 1988.

The PRMP is the same as the Proposed Plan described in the Final Environmental Impact Statement portion of this volume and is based on the Preferred Alternative contained in the DRMP. Substantive changes from the Preferred Alternative are explained in footnotes. The maps for the PRMP are the same as those contained in the FEIS; please refer to those maps, which can be located using the Table of Contents at the beginning of this volume.

Goals and Objectives

The Military Lands Withdrawal Act of 1986 provides the essential goals and objectives of the PRMP for Fort Greely's withdrawal. The law dictated that the lands be reserved for military use, but called for a plan to include provisions "necessary for proper management and protection of the resources and values" of the area. Therefore, the general goal of the planning process has been to identify appropriate multiple-use resource management which will not hinder the military from carrying out its necessary activities.

The actions in this PRMP preserve the primary function of the withdrawal—military training and testing—and allow economic development and continued recreational activities within certain environmental constraints. The military's need for large tracts of undisturbed lands, the healthy state of the withdrawal's current habitat, the rather modest prospects for economic development, and the desirability of emphasizing undeveloped recreational activities in most of the withdrawal make such a diverse multiple use plan particularly attractive. This management prescription also recognizes the critical safety questions, both for civilians and soldiers, inherent in utilizing areas in which troops train with live ammunition and on which munitions are tested and have been tested for decades.

Management Prescriptions

The following statements contain the prescriptions for management of the withdrawal during the life of this plan. The initial section includes the steps included in the "Management Common to All Alternatives" section of the FEIS.

Management Common to All Alternatives

Access

1. Due to the dangers of unexploded munitions inherent in impact areas, the Washington, Mississippi, Delta Creek, and Oklahoma Range impact areas are closed to all public access and use.[1] (See Closed Areas map.) Uses, such as mining, timber harvest, and scientific investigations, and access for such use may be conducted in these areas if they are allowed by the plan and if they are approved by the authorizing officer. These areas are closed to off-road vehicle (ORV) use, unless specifically approved for a particular use.
2. If additional potentially dangerous sites are found, the federal government would close them to public use.
3. When firing occurs into an impact area, the affected portion of the impact area and a two mile buffer adjacent to the affected tract are off limits to all access and use.
4. All portions of the withdrawal are subject to temporary closures when the military needs them to conduct training and testing. Such closures would be for the minimum areas and periods necessary for the military's exclusive use.
5. Unless explicitly opened to public use by the plan or, on a case by case basis, by the Army, all military structures are off limits to nonmilitary use. Many of these structures are associated with ranges east of Delta River and with Cold Regions Test Center investigations.
6. Mining and other activities which involve substantial ground disturbance are prohibited from all drop zones and landing fields, where a relatively smooth surface is necessary for safe military operations, and within one mile of all existing roads and major trails (see Roads and Major Trails map), because most military training occurs near the road system. Mineral material sites are exceptions to this. They may be placed within one mile of extant roads with the concurrence of the military. Timber harvests do not normally result in the type of substantial ground disturbance contemplated in this restriction.
7. No ORVs would be allowed to run along the Trans-Alaska Pipeline System's work pad used for maintenance along its line without the permission of Alyeska Pipeline Service Company, BLM, and the District Corps of Engineers. ORVs weighing less than 1,500 pounds may cross the pipeline.

[1] The Lakes Impact Area is no longer listed among areas closed to all public access and use.

ORVs weighing more than 1,500 pounds would need approval to cross the pipeline.

Air, Soil, Water, and Vegetation

Nonfederal uses of the withdrawal must conform with applicable federal and state laws and regulations concerning protection of air, soil, and water. Federal uses would comply with federal law, and with state law to the extent consistent with the federal mission.

All proposed activities, military and nonmilitary, for the withdrawn lands are evaluated under the authority of NEPA for impact on air, soil, water, and vegetative resources. Activity plans will comply with the Bureau of Land Management policy on riparian resources management, and sites disturbed by nonmilitary activities will be restored in accordance with Bureau riparian guidance.

Application of all herbicides and pesticides would only be conducted in accordance with the Fort Greely Pest Control Plan and all applicable laws and regulations.

Fish and Wildlife Habitat

Pursuant to the Sikes Act, the 6th Infantry Division (Light) has entered into a Cooperative Agreement with the U.S. Fish and Wildlife Service (F&WS) and with the Alaska Department of Fish and Game (ADF&G). The agreement calls for the development of fish and wildlife management programs which, within the constraints of the Army's needs to fulfill its mission, would improve habitat, determine "the extent of equitable military and nonmilitary access" to harvesting and enjoyment of fish and wildlife, and arrive at a consensus on the "need and means for controlling, protecting, stocking, or restoring" desirable species.

As a part of this agreement, the Army entered into a Cooperative Agreement with the Alaska Department of Fish and Game in July 1986. The parties defined certain unique or sensitive habitats, including those for the Delta Bison herd, calving and post-calving caribou, and roosting sandhill cranes, and the Army agreed to conduct its training so as to avert significant adverse effects on this wildlife.

BLM associates itself with these responsibilities through adoption of a Resource Management Plan and associated implementing Memorandum of Understanding. BLM would participate with the Army, F&WS, and ADF&G in developing these programs through a Habitat Management Plan for the withdrawal and would join as a signatory agency in any revision of the Cooperative Agreement.

The Cooperative Agreement calls for the parties to cooperatively inventory the fish and wildlife resources on the withdrawn lands. The 6th Infantry Division (Light) currently conducts or is committed to conduct the following studies during the period of this withdrawal:[2]

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[2] The Army is no longer conducting some of the studies they were doing at the time the DRMP was published. Consequently, they are not listed here.

a. The Army will monitor radio-collared moose by helicopter to better understand seasonal movements, contingent upon the ADF&G's purchase and emplacement of collars.
b. The 6th Infantry Division assists the ADF&G in monitoring radio-collared bison by helicopter to locate distinct herds for enumeration.
c. In cooperation with ADF&G, the Army is conducting a study of the grizzly bear population on the north face of the Alaska Range, including the Fort Greely withdrawal.

There are no known peregrine falcon nests in the withdrawal. But their population is increasing in the state. Should any occupied nests be discovered on the withdrawal, the mandates of the Endangered Species Act will apply.

Forestry

Any sale of timber on the withdrawn lands would be governed by common BLM timber management practices, contract stipulations, and the mandates of the State's forest practices regulations.[3] Common requirements include:

a. the construction, improvement, and maintenance of safe and environmentally sound road systems. Loggers may be required to properly locate and install culverts, stabilize cuts and fills, and properly grade roads.
b. the felling and yarding of timber in such a way as to protect soil and water quality, residual trees, and human safety. Some provisions may be aerial yarding to protect fragile sites, limbing before yarding to protect residual trees or soil or water quality, and directional felling to protect buffer strips, streams, and adjacent stands.
c. the treatment of a logged site to prepare it for the next generation of trees. Some ways to prepare a site are to rip compacted skid roads, abandoned haul roads, and landings and to scarify, slash, pile, and underburn the logged site.
d. the disposal of logging slash for silvicultural and/or fire hazard reduction purposes.
e. mitigation measures for protecting wildlife habitat. Examples of some measures are the removal of debris dams from streams, and leaving wildlife trees within a cutting area.
f. other miscellaneous provisions, where appropriate, such as meeting minimum fire requirements and application of disease control measures.

Cultural Resources

The Army prepared a historic preservation plan (*Historic Preservation Plan for U.S. Army Lands in Alaska*) in June 1986. In accordance with Sec. 106 of the National Historic Preservation Act, the Army's plan requires that an inventory be completed before all ground-disturbing activities and,

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[3] This statement was revised to assure that timber practices would comply with the State's new forest practices regulations.

where appropriate, mitigation of cultural resources. The general program established by this historic preservation plan, as modified by this RMP and any Cultural Resource Management Plan mandated by this RMP, will guide cultural resource management during the period of the withdrawal.

Recreation

The Army conducts its outdoor recreation management role on the withdrawn lands to furnish equal opportunity to the public for recreation activities and to furnish as wide a variety of recreation as conditions allow.

Lands

Congress has designated the withdrawn lands as appropriate for military use. Consequently, neither the Proposed Plan nor the alternatives propose that any of these lands be made available for disposal, including State or Native selection, sales under FLPMA or the Recreation and Public Purposes Act, or exchanges.

Rights-of-Way

There are rights-of-way on Fort Greely for a corridor for the Trans-Alaska Pipeline, which passes through the withdrawal near the Richardson Highway, and a five-acre site west of Donnelly Dome, which is used for a television transmitter. No rights-of-way would be allowed in any of the closed areas of the withdrawal.

Private individuals and the State may accept directly a congressionally granted right-of-way under the authority of Revised Statute 2477, if constructed prior to the withdrawal of these lands (September 26, 1961 for lands west of the Richardson Highway; October 3, 1961 for lands east of the highway). The federal government would work cooperatively with the State to identify all rights-of-way claims made pursuant to RS 2477 on public lands for administrative purposes only. The validity of such claims can only be determined in a court of competent jurisdiction.

Minerals

The military may use sand and gravel for its purposes; this authority flows from the military withdrawal act itself.

Measures to safeguard resource values outlined in 43 CFR 3100, 43 CFR 3600, and 43 CFR 3809 will apply to mineral development on the withdrawn lands.

Under the terms of the Military Lands Withdrawal Act of 1986, should the withdrawn lands be opened to mineral location, mineral patents would convey title to locatable minerals only. These patents would also carry the right to use as much of the surface as is necessary for mining under the guidelines established by the Secretary of the Interior by regulation.

Subsistence

The federal government would follow the procedural requirements mandated by Section 810 of the Alaska National Interest Lands Conservation Act where appropriate in the development of any additional discretionary plans or actions affecting all or portions of the military lands.

Proposed Plan

Access

Proposed Action 1

The public may enter the post after gaining permission from the Army at Fort Greely. This pertains to all forms of access. They are expected to comply with all rules concerning restricted access and permanently and temporarily closed portions of the withdrawal.

Proposed Action 2

The public may use unimproved remote landing areas after complying with notification requirements and provided that this use does not interfere with military activities or incur liability to the federal government. (Note: Allen Airfield is not located in the withdrawn area addressed by this plan. Use of Allen Airfield is governed by other regulations.) Similarly, the public may land on lakes in the withdrawal.

Proposed Action 3

All development actions and military actions to the extent consistent with military needs in the caribou calving grounds would be conducted under winter conditions in which there is sufficient snow cover and the ground is adequately frozen so as to minimize damage to the vegetation and soils. The caribou calving grounds are defined in an appendix to the cooperative agreement between the Army, the Fish and Wildlife Service, and the Alaska Department of Fish and Game. (See the accompanying Caribou Calving Area map.) The Habitat Management Plan mandated by the cooperative agreement between the Army, the F&WS, and the ADF&G should give more specific descriptions of permissible and impermissible activities.

Proposed Action 4

Minimize military training in crucial sheep habitat identified in a Dall sheep study completed in 1990.

Proposed Action 5

Minimize military operations on and exclude all disruptive civilian activities from sharptail grouse dancing grounds from April 20 to June 1. The Habitat Management Plan (HMP) required by the cooperative agreement between the Army, F&WS, and ADF&G should define precise locations of these grounds.

Proposed Action 6

The HMP will establish a zone around water bodies in which there would be special precautions to protect habitat.[4]

Proposed Action 7

Nonmilitary use of off-road vehicles (ORVs) and road vehicles is permitted in some portions of the withdrawal and under certain conditions. The impact areas are closed to vehicle use as indicated in the management common to all alternatives, and use of the remainder of the lands is limited as follows:

Road Vehicles and ORVs of 1,500 pounds or more — Vehicles of more that 1,500 pounds gross vehicle weight (GVW) may travel on Meadows Road, Windy Ridge Road, Old Richardson Highway, Thirty-three-mile Loop Trail, the access roads from these roads to the stocked lakes, and the Butch Lake trail. (GVW is the manufacturer's maximum laden weight, which is the vehicle weight plus its recommended maximum load. All the roads, except the access roads to the lakes, are shown on the Vehicle Use map.) Roads may be added or deleted from this list as necessary to protect the environment or enhance the military's mission. A permit is required to use vehicles of this size off of these routes. Generally permission to use these vehicles off these routes would only be granted when there is no danger of such use interfering with military operations, damaging the habitat, or detracting from the recreational value of the withdrawal.

ORVs of less than 1,500 pounds — No permit would be required for nonmilitary use of ORVs less than 1,500 pounds GVW. General use of these ORVs would be limited to the roads listed above, soils with low erosion hazard, and to periods with snow cover adequate to prevent disturbance of the vegetative cover. The military may also exclude public use of ORVs in certain areas where their use would be detrimental to the military's mission.

An accompanying Vehicle Use map indicates the roads and trails on which road and off-road vehicles may operate and the impact areas and areas of high erosion hazard from which ORVs are excluded. Note that the map is suggestive rather than definitive; all areas not indicated as closed should not be assumed to be open. The federal authorized officer, as established in the BLM-Army Memorandum of Understanding to implement this plan, may grant permission for a specific use of ORVs of less than 1,500 pounds in an area indicated as closed on the map or for general use of additional specific trails by such vehicles. The same officer may also delete areas from those in which summer use of ORVs of under 1,500 pounds are permitted if additional information indicates that without such restrictions significant damage may occur.

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[4] This action was reworded so that water body protection might benefit from the investigations which will be part of the Habitat Management Plan.

Proposed Action 8

Maintain signs at major road and trail entrances to the withdrawal informing the public that they are entering a military withdrawal. The signs should warn of permanently closed areas.

Proposed Action 9

Appropriate signs would be erected to warn the public and prevent public access into the impact areas and other restricted areas.

Vegetation

Proposed Action 10

In the course of developing the military, recreational, and economic potential of the withdrawn lands, the federal government would seek to take advantage of opportunities to improve the fort's vegetation. Military and nonmilitary activities outside of the impact area would limit vegetation disturbance, particularly to wild food sources such as berries, as much as possible consistent with military needs and the goals of recreation and economic development.

Visual Resources

Proposed Action 11

The withdrawal is classified as Visual Resource Management (VRM) 4. The management objective for VRM 4 areas is to provide for activities which require major modifications of the existing character of the landscape.

Fish and Wildlife Habitat

Proposed Action 12

Monitoring the calving activity of the Delta caribou herd would continue. If the herd travels into the impact areas to calve, the Army and the Air Force would cease or modify training in and over the area until the animals leave.

Proposed Action 13

Develop and implement a Habitat Management Plan (HMP) to manage existing habitat. The HMP should manage toward the ADF&G's goals for species and should be coordinated with the Forest Management Plan outlined in Proposed Action 14 and with the Fire Management Plan noted in Proposed Action 24. At a minimum the HMP should consider:

a. what, if any, water quality control program is necessary
b. the advisability of maintaining or creating new bison food plots for the use of bison and other species
c. habitat manipulation to facilitate viewing of bison by visitors to the fort
d. the effects of transportation modes on habitat and how certain types of access should be regulated.
e. implementation of a riparian resource inventory and enhancement programs for riparian sites in less than good condition.

The plan would be consistent with the military's mission.

Forestry

Proposed Action 14

Develop a Forest Management Plan to determine the opportunity for harvest and sustainable allowable cut of sawtimber, house logs, fuel wood, and other wood products. Such a plan must remain within the constraints of the military mission; public safety and the preservation of habitat and recreation are other values which should be considered. It may, for example, mandate the maintenance of uncut buffer strips along streams and lakes and adjacent to major recreational use roads. (It is understood that forests in the withdrawal fall under BLM's restricted category for management as outlined in BLM's Manual 1622.21A(1); that is, management of the withdrawal is primarily for the military, but timber harvests are permitted. The Forest Management Plan should address allowable harvest levels, reforestation methods, and appropriate silvicultural practices by measuring the impact of each on military needs, habitat protection, recreational opportunities, and economic considerations.)

Cultural Resources

Proposed Action 15

The BLM and the Army will develop a Cultural Resource Management Plan in consultation with the State Historic Preservation Officer. The CRMP will address the requirements of Sec. 110 of the National Historic Preservation Act. It will follow the general directions outlined in the *Historic Preservation Plan for U.S. Army Lands in Alaska.* In addition it will provide for the mitigation of the Ptarmigan Creek cabin through Historic American Building Survey documentation and archaeological testing; resolution of the management of the Sullivan Roadhouse; and management of cultural resources for their information potential, with the possible exception of the Sullivan Roadhouse.[5]

Trespass

Proposed Action 16

Only the federal government and private developers authorized by the government may erect or maintain structures on the withdrawal. All unauthorized use of the land or resources will be investigated and either permitted or stopped. All unauthorized structures are subject to possession by the government following proper notice.[6]

Recreation

Proposed Action 17

All those who enter the withdrawn lands must comply with the military's rules. These presently require:

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[5]This action has been expanded to call for the development of a Cultural Resource Management Plan. The CRMP will indicate how the general directives in the Army's *Historic Preservation Plan for U.S. Army Lands in Alaska* and in this RMP will be carried out and will address the Sec. 110 requirements of the National Historic Preservation Act, thus rectifying short-comings cited by the State Historic Preservation Office.

[6] The management action has been expanded to address all forms of trespass, not just unauthorized cabins.

a. all those who enter to hunt, fish, or trap must sign a liability release form and attend a Hunting/Trapping/Fishing briefing prior to undertaking these activities each year.
b. hunters and trappers must submit completed harvest reports to the appropriate Army office.

Proposed Action 18

Guides, outfitters, and air taxi services may operate on the withdrawal, provided they comply with other regulations concerning nonmilitary use of the land. Guides, outfitters, and air taxi services are responsible for ensuring that their clients comply with these rules. Guides and outfitters must obtain a permit to use federal lands and comply with other provisions of 43 CFR 8372.

Proposed Action 19

Develop a Recreation Activity Management Plan (RAMP) to provide recreation opportunities compatible with military needs.

Lands

Proposed Action 20

The BLM may issue leases and permits pursuant to 43 CFR 2920. These use authorizations are subject to approval by the Army, which may reject the proposal or require additional stipulations to assure the military's unhindered use of the withdrawal.

Rights-of-Way

Proposed Action 21

Rights-of-way may be granted if they do not conflict with the military's mission. They should be subject to terms and conditions to assure that military needs are met.

Minerals

Proposed Action 22

The withdrawal will remain closed to the operation of the Mining Law of 1872, the mineral Leasing Act of 1920 as amended, the Mineral Leasing Act for Acquired Lands of 1947, and the Geothermal Steam Act of 1970. Pursuant to Sec. 12(a) of the Military Lands Withdrawal Act, the Army and BLM, by 1996 and at least every five years thereafter, will jointly reconsider whether it would be appropriate to open portions of the withdrawal to the operation of these mineral laws.[7]

Proposed Action 23

Pursuant to Section 1 of the Military Lands Withdrawal Act of 1986, the withdrawal is closed to all forms of mineral

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[7] The Preferred Alternative in the DRMP called for a mineral assessment before consideration of any mineral opening. Under the Proposed Plan the determination on whether to open parts or all of the withdrawal to mineral development rests solely on such activities' compatibility with the military's need for training.

material disposal, both sale and free use, other than that which supports military activity.[8]

Fire Management

Proposed Action 24

The immediate environs of the Sullivan Roadhouse and specific Air Force equipment sites would be designated Critical fire suppression sites. (If the roadhouse is moved, these lands would receive Limited fire suppression.) The areas east of the Delta River (except for about four square miles of uplands east of Jarvis Creek), north of the impact areas, and north of a trail which extends west of Delta Creek from near the mouth of the "One-hundred-mile Creek" (which enters Delta Creek in Sec. 3, T. 10 S., R. 7 E., F.M.) would receive Modified fire suppression. The remainder of the withdrawal would receive Limited fire suppression. (See Fire Management Categories map 1.) Future changes in suppression management can be effected through the Interagency Fire Management Plan with the concurrence of the military. The BLM, with the concurrence of the Army, will draft a Fire Management Plan to reduce the fire hazard on the withdrawal.

Consistency Determinations

The Bureau of Land Management strives to have its plans conform to those of other federal agencies and with the land use plans of state and local governments. In formulating the Fort Greely Resource Management Plan, the BLM has benefited from the participation of members of the 6th Infantry Division (Light)—the primary users of the withdrawal—on its planning team and on a steering committee overseeing the work of the planning team. The U.S. Air Force, which conducts extensive training on this withdrawal, has also assisted in building this RMP, both through direct meetings with the planning team and indirectly by communicating its needs through the Army.

The plan has also benefited from the comments of various state and local agencies. Several comments made by these bodies resulted in changes in the Preferred Alternative reflected in the Proposed Plan. Additionally, a copy of this Proposed Plan has been submitted to the Governor of Alaska for a consistency review.

The plan is consistent with plans adopted by the U.S. Army for these lands as well as with the State's *Tanana Basin Area Plan for State Lands*, as amended in 1991. The State plan designates lands west of the withdrawal for wildlife habitat, though the upper Little Delta River basin also is considered appropriate for mining. The area south of the western segment of the withdrawal are designated for public

[8] Sec. 1 of the Military Lands Withdrawal Act of 1986 closed the withdrawal to mineral material disposals. Thus, the Preferred Action had to be altered to exclude the disposal of mineral materials.

recreation and wildlife habitat. The plan indicates lands east and southeast of Fort Greely are appropriate for mining, recreation, and wildlife. The area north of the fort and east of the Delta River are largely in private hands, but those to the west of the river are classified for forestry, wildlife, recreation, and agriculture.