

Chapter 5. Biological Resources Management

5.1 Wetlands Management

Wetlands are an integral part of the ecosystem, providing a variety of functions that support ecosystem health including moderating extremes in waterflow, aiding natural purification of water, and maintaining and recharging groundwater. Wetlands are nursery areas for many wildlife and aquatic species. Additionally, wetlands are unique ecological areas, are high in aesthetic value and support a variety of recreational activities such as fishing, hunting, and bird watching.

Wetlands are periodically or permanently inundated by surface or groundwater and support vegetation adapted for life in saturated soil (USACE 1985 and Executive Order (EO) 11990). Approximately 398,000 acres of wetlands were surveyed by the National Wetlands Inventory. More than half of Fort Greely and Donnelly Training Area was not included in the National Wetlands Inventory.

5.1.1 Wetlands Management Program Goals and Objectives

Wetlands management goals and objectives all contribute to one or more of the overall natural resources program goals of stewardship, military training support, compliance, quality of life, and integration. Wetlands management goals and objectives are listed below:

- Implement an effective wetland management plan that will maintain and enhance the health, productivity and biological diversity of wetland ecosystems.
- Attain goals by applying management prescriptions listed in the wetlands management action plan.
- Ensure that USARAK is in compliance with all applicable federal and state laws and regulations regarding wetlands.
- Provide wetland areas for realistic military training, while maintaining ecosystem integrity and minimizing impacts to wetlands.
- Apply management prescriptions to all Fort Greely and Donnelly Training Area user groups: military, recreationalists, Directorate of Public Works, and Alaska Fire Service.
- Promote early coordination between installation staff and the Environmental Resources Department (ERD) to prevent adverse impacts to wetlands.
- Provide a customer-friendly process to initiate wetland permits for military exercises or construction.

Wetland management on Fort Greely and Donnelly Training Area is implemented on the primacy of the military mission and the belief that effective training can be accomplished with minimal long-term environmental damage while complying with applicable laws and regulations. Effective training and environmental stewardship are compatible and necessary for the maintenance of a quality military training environment and protection of sensitive wetland areas.

5.1.2 Wetlands Management Plan

Wetlands program management and planning includes all the planning, budgeting, overseeing contracts, and organization necessary to implement the wetlands management program. The primary emphasis for this component of the wetlands management program is to prepare and update a wetlands management plan for Fort Greely and Donnelly Training Area.

Description and Justification: Prepare, update, and implement a wetland management action plan for Fort Greely and Donnelly Training Area. Due to the importance and extent of wetlands found on Fort Greely and Donnelly Training Area, a wetland management plan is necessary to give direction and establish policy for the use, maintenance, and restoration of wetlands. This document supports the military mission and works in conjunction with the Fort Greely and Donnelly Training Area Integrated Natural Resources Management Plan (INRMP). Implementation of an effective wetland management plan would maintain and enhance the health, productivity, and biological diversity of wetland ecosystems. Updates of the wetlands management plan are required by Public Law 106-65 (Military Land Withdrawal Act) as mitigation for the land withdrawal LEIS and Public Law 86-797 (Sikes Act) every five years to implement the INRMP. Per Memorandum DAIM-ED-N, 21 March 1997, this component of the INRMP is a class 1 requirement.

Measures of Effectiveness:

- Complete, update, and maintain a wetlands management plan.
- Effectively protect sensitive wetlands while allowing military use in low function wetlands.
- Involve the agencies in wetlands planning and the public in review.

Management History: The first wetland management action plan was completed in 2001.

Current Management: Current management actions to update the wetlands management plan will cease in 2002. If this INRMP is not approved and funded, no new wetlands management plan will be prepared, updated, or implemented. Policies already in place in the current wetlands management plan will continue.

Proposed Management:

Table 5-1. Wetlands Management Plan.

OBJECTIVE	RESPONSIBLE FOR IMPLEMENTATION	PRIORITY	IMPLEMENTATION				
			2002	2003	2004	2005	2006
Conduct annual updates of the wetlands management action plan	USARAK Natural Resources	High	x	x	x	x	x
Prepare and update wetlands management action plan for the planning period of 2007-2011.	USARAK Natural Resources	High					x
Complete NEPA documentation for update	USARAK Natural Resources	High					x

Other Management Alternatives Considered and Eliminated: There are no alternatives to maintaining a current wetlands management plan in terms of updates at least every five years. NEPA documentation is also legally mandated.

5.1.3 Wetlands Inventory and Monitoring

Two wetland inventories have been completed on Fort Greely and Donnelly Training Area: the National Wetlands Inventory (NWI) by the USFWS and the Waterways Experiment Station (WES) inventory by the USACE.

The Alaska Region Land Condition Trend Analysis (AKLCTA) program is utilized to monitor military and nonmilitary use of wetlands at Fort Greely and Donnelly Training Area. Through AKLCTA, information is gathered on Fort Greely and Donnelly Training Area training lands based on land use polygons (i.e., bivouac, cantonment, drop zone, airstrip/assault strip, ranges, firing point, road corridor, rights-of-way, habitat management, excavation/ gravel pit, vehicle maneuver, and foot maneuver). Surveyors look for type of use and physical damage to the landscape.

In addition to quantitative monitoring through AKLCTA, ERD staff continues to conduct qualitative assessments of use during large military training field exercises. This effort prevents undue wetland damage and ensures speedy and proper wetland reclamation, where necessary. Recreational use of wetlands is also monitored through the LCTA program and through observation by the ERD staff.

5.1.3.1 Wetlands Monitoring

Description and Justification: The Alaska Region Land Condition Trend Analysis (AKLCTA) methodology is utilized to monitor military and nonmilitary use of wetlands at Fort Greely and Donnelly Training Area. Conducting wetlands monitoring is required as mitigation for the five year Section 404 Clean Water Act wetlands permit for military training, by Public Law 106-65 (Military Land Withdrawal Act) as mitigation for the land withdrawal LEIS, and Public Law 86-797 (Sikes Act) to implement the INRMP.

Monitoring Areas: There are three general types of military use at Fort Greely and Donnelly Training Area: urban, impact (weapons training and certification) and maneuver. Wetlands monitoring concentrates on wetlands areas that have been used for maneuver training. Approximately 401,000 acres of Fort Greely and Donnelly Training Area are classified as maneuver military use. This use includes field training exercises involving a variety of military training maneuvers, bivouac activities and live fire operations from permanent firing ranges.

Military training involves the movement of tracked or wheeled vehicles across terrain. Foot traffic can also be classified as a training activity. Almost all military training tasks involve the maneuver component of military use and can take place both on and off-road.

Bivouac activities are conducted at any place where a military unit stops for any length of time. This location could actually be anything from a defensive fighting position to a permanent or temporary firing point. Most often, bivouacs resemble temporary campgrounds. Activities occurring at these sites include digging, earthmoving, snowplowing, water purification, field sanitation, vehicle washing, vehicle decontamination training, and general vehicle maintenance. Facilities needed for support of these activities include field kitchens and laundry and bath facilities.

USARAK military units also conduct regular range maintenance activities including clearance of munitions and repair of targets.

Measures of Effectiveness:

- Conduct annual monitoring to comply with wetland permit during 2002-2005.
- Submit annual report to USACE to comply with wetlands permit during 2002-2005.

Management History: LCTA has been monitoring disturbance in wetlands since 1997. Aerial surveys for wetlands disturbance have been conducted since the 1970s.

Current Management: The AKLCTA program is utilized to monitor military and nonmilitary use of wetlands at Fort Greely and Donnelly Training Area.

In addition to quantitative monitoring through AKLCTA, ERD staff continues to conduct qualitative assessments of use during large military training field exercises. LCTA is currently approved and funded through 2002. Unless this INRMP is approved and funded, LCTA monitoring will cease in 2003.

Proposed Management:

Table 5-2. Wetlands Monitoring.

OBJECTIVE	RESPONSIBLE FOR IMPLEMENTATION	PRIORITY	IMPLEMENTATION				
			2002	2003	2004	2005	2006
Follow the Wetlands Monitoring Protocol to track and record military training activities conducted in wetland areas as required by the five-year general wetland permit.	USARAK Natural Resources	High	x	x	x	x	x
Use AKLCTA methodology to monitor military use of wetlands.	USARAK Natural Resources	High	x	x	x	x	x
Continue to monitor large military training field exercises	USARAK Natural Resources	High	x	x	x	x	x
Use AKLCTA data to apply for 5-year general wetland permit renewal	USARAK Natural Resources	High				x	
Use AKLCTA methodology to monitor nonmilitary use of wetlands	USARAK Natural Resources	High	x	x	x	x	x

Other Management Alternatives Considered and Eliminated: There are many other potential methods of monitoring wetlands. However, Alaska Region LCTA methods were developed specifically for the Alaskan ecosystems, with the specific purpose in mind of assessing land condition, including wetland condition. Other methods could be developed that include more intensive data collection, but these would be cost-prohibitive.

5.1.3.2 Wetlands Planning Level Survey

Description and Justification: Conduct wetlands planning level surveys on Fort Greely and Donnelly Training Area. The wetlands survey includes a wetlands classification system based on hydro-geomorphic characteristics of vegetative communities. The project includes a description of values and functions of wetlands on Fort Greely and Donnelly Training Area along with management recommendations. It also includes digitization of all wetland boundaries.

In addition to the fact that the National Wetlands Inventory only covered about 45% of Fort Greely and Donnelly Training Area, it also failed to detect many of the smaller wetlands on Fort Greely and Donnelly Training Area, which rendered it inadequate for installation natural resources management programs. Wetland surveys on Fort Greely and Donnelly Training Area are required for management of withdrawn

public lands. An accurate wetland planning level surveys is required by AR 200-3 and is required to implement this INRMP as mandated by Public Law 86-797 (Sikes Act). Per Memorandum DAIM-ED-N, 21 March 1997, this planning level survey is a class 1 requirement. Per Memorandum DAIM-ED-N, 21 March 1997, this planning level survey is a class 1 requirement.

Measures of Effectiveness:

- Complete, maintain, and update wetlands planning level survey on Fort Greely and Donnelly Training Area.
- Identify the requirement for a wetlands planning level survey in the EPR.

Management History: Planning level wetland surveys were conducted in FY 97 and FY 98 for Fort Greely and Donnelly Training Area.

Current Management: Two wetland inventories have been completed on Fort Greely and Donnelly Training Area: the National Wetlands Inventory (NWI) by the USFWS and. The final report on the wetland inventory by the Waterways Experiment Station (WES), USACE is expected in 2002.

Proposed Management: Under this preferred alternative, no planning level wetland surveys will be completed during 2002-2006. The 10-year update for wetland planning level surveys on Fort Greely and Donnelly Training Area is projected for 2007.

Other Management Alternatives Considered and Eliminated: There are no alternatives to maintaining a current wetlands planning level survey. Per the Sikes Act, AR 200-3, and Memorandum DAIM-ED-N, 21 March 1997, this planning level survey must be updated every 10 years.

5.1.4 Wetlands Management

Description and Justification: Wetlands management will help maintain proper wetland functions while allowing military training and ensuring plant, wildlife and soil resources are not degraded. Implementation of wetlands management will improve the quality of military training at Fort Greely and Donnelly Training Area by providing realistic training options in wetlands, resulting in an overall increase in training opportunities. In addition, conducting wetlands management activities will reduce the amount of planning time previously needed for wetland permit applications to train in wetlands. Wetlands management also establishes a basis for conservation and protection of wetlands. Conducting wetlands management is required as mitigation for the five year Section 404 Clean Water Act wetlands permit for military training, by Public Law 106-65 (Military Land Withdrawal Act) as mitigation for the land withdrawal LEIS, and Public Law 86-797 (Sikes Act) to implement the INRMP.

Wetlands Management Areas: The environmental pre-approval overlays were developed as a tool for planning military training activities and managing wetlands. Approved/restricted activities are listed in three color-coded categories. The yellow and red categories are the wetland management areas for Fort Greely and Donnelly Training Area. The environmental pre-approval overlay is available at each Range Control or in each ITAM office. ITAM or range staff provide instruction on use of overlay. Each overlay is available in a summer and winter version. The summer approved, limited or prohibited activities for each category on the overlays are listed in Table 5-3. The winter environmental limitations overlay is shown in Figure 5-1.

Table 5-3. Environmental Limitations Overlays Management Areas.

Category	Approved Activity SUMMER	Limited Activity (requires approval by Range Control on a case- by-case basis)	Prohibited Activity
GREEN No limitations or restrictions	<ul style="list-style-type: none"> - Tracked, wheeled and foot maneuvers - Bivouacs - Defensive fighting positions - Digging - Earth moving - Field kitchens - Laundry and bath facilities - Water purification - Portable latrines - Slit trenches - Vehicle decontamination training - Timber cutting (under 4" in diameter) - POL distribution 	<ul style="list-style-type: none"> - Smoke generation - Fuel farms 	None
YELLOW Minor limitations or restrictions	<ul style="list-style-type: none"> - Tracked, wheeled and foot maneuvers - Bivouacs - Assembly areas - Defensive fighting positions - Timber cutting (under 4" in diameter) 	<ul style="list-style-type: none"> - Digging - Earth moving 	<ul style="list-style-type: none"> - Laundry and bath facilities - Portable latrines - Slit trenches - Vehicle decontamination training - Smoke generation - Fuel farms - POL distribution
RED Significant limitations or restrictions	<ul style="list-style-type: none"> - Foot maneuvers 	<ul style="list-style-type: none"> - Tracked and wheeled maneuvers 	<ul style="list-style-type: none"> - Bivouacs - Assembly areas - Defensive fighting positions - Timber cutting (under 4" in diameter) - Mechanical digging - Earth moving - Laundry and bath facilities - Portable latrines - Slit trenches - Vehicle decontamination training - Smoke generation - Fuel farms - POL distribution

Summer Special Conditions: The red and yellow categories on these overlays each have special conditions that must be observed while training in those areas.

Green: No environmental restrictions. However, all normal procedures outlined elsewhere in this regulation should be followed. Smoke generation and fuel farms in areas represented as green on the overlay require prior approval from Range Control on a case-by-case basis.

Yellow: Notify Range Control when planning to train in yellow areas. Environmental / ITAM staff must pre-survey area. Stream crossings are permitted at 90 degree angles only.

Red: Notify Range Control when planning to use red areas. Environmental / ITAM Staff must pre-survey red area to determine on-the-ground limits of each red area. Open water and streams have 50-meter buffers - NO VEHICLES IN BUFFER - FOOT MANEUVER ONLY. Vehicular maneuver is not allowed except during stream crossings, which must be crossed at a 90-degree angle to the direction of the stream flow. No stream crossing at shear or cut banks. Earth moving, mechanical digging, bivouacs, assembly areas, fighting positions, timber cutting, laundry and bath sites, portable latrines, slit trenches, vehicle decontamination, smoke generation, and any POL distribution are restricted in any area designated as red on the overlay.

Winter Special Conditions: The red and yellow categories on these overlays each have special condition that must be observed while training in those areas.

Green: No environmental restrictions. However, all normal procedures outlined elsewhere in this regulation should be followed. Smoke generation and fuel farms in areas represented as green on the overlay require approval from Range Control on a case-by-case basis.

Yellow: - Notify Range Control when training in yellow areas. Environmental / ITAM staff must pre-survey area. Stream Crossings at 90 degree angles only. Use caution when snow plowing. Minimum of 6 inches of snow pack must remain on trails or other clearings to minimize damage to vegetation and soils. Activities limited in areas shown as yellow on the overlay include tracked and wheeled maneuvers, bivouacs, assembly areas, defensive fighting positions and timber cutting. These activities may be approved on a case-by-case basis by Range Control or ITAM staff if there are no seasonal wildlife restrictions.

Red: Notify Range Control when using red areas. Environmental / ITAM staff must pre-survey red area to determine on-the-ground limits of each red area. Open water and streams have 50-meter buffers - NO VEHICLES IN BUFFER - FOOT MANEUVER ONLY. Vehicular maneuver is not allowed except during stream crossings, which must be crossed at a 90-degree angle to the direction of the stream flow. No stream crossing at shear or cut banks. Earth moving, mechanical digging, bivouacs, assembly areas, fighting positions, timber cutting, laundry and bath sites, portable latrines, slit trenches, vehicle decontamination, smoke generation, and any POL distribution (fuel farms and tankers) are restricted in any area designated as red on the overlay.

Measures of Effectiveness:

- No net loss of wetlands during 2002-2006.
- No restriction in the amount of military training during 2002-2006.
- No Notices of Violation from use of wetlands in 2002-2006.
- Comply with five-year wetlands permit during 2002-2006.
- Minimize restrictions to training from wetlands management policies and issues.
- Coordinate with the USACE for all proposed actions that have the potential to impact wetlands.
- All mitigation measures identified in CWA Section 404 permits for natural resource management projects/plans are being implemented per the agreed schedule.

Management History: Historical wetlands management at Fort Greely and Donnelly Training Area involved field inspections of military exercises and processing of wetland permits on a project-by-project basis. These actions have been reactive rather than proactive due to staffing constraints and limited overall wetland knowledge. Installation-wide wetland damage is minimal, in part due to past management efforts, but mainly because field access is limited to winter months and persistent inundation of wetland areas complicates military training activities.

Current Management: Wetlands management entails managing military, recreational, and other uses to minimize disturbance. Wetlands management also includes reclamation of disturbed areas.

Wetlands Use Management: USARAK has obtained a five-year general wetland permit to conduct military training in wetlands at Fort Greely and Donnelly Training Area. This permit allows limited maneuver or other military activities to occur in some wetland areas, a change from the past where no activity was permitted at all. USARAK may not damage more than 40 acres per year of wetlands. If that amount is exceeded, training in wetlands will be prohibited and individuals may be liable for fines and other penalties. Restoration of all damage is mandatory.

To protect certain wetland areas and to prevent unpermitted damage, USARAK developed environmental pre-approval overlays to be used with the five-year wetland permit (figure 5-1). Use of these overlays is required when requesting to train in wetland areas in order to avoid possible fines. The overlay clarifies where certain activities that may impact training areas may be conducted. Approved/restricted activities are classified as three color-coded categories based on the presence of wetlands.

To reduce damage to wetlands within training lands from maneuver or other training activities, USARAK has implemented an Environmental Awareness (EA) program. The goal of the EA program is to foster a conservation ethic in military personnel. A variety of materials and methods are used to educate the military on a wide range of environmental issues. For example, educational briefings on environmental issues, including wetland identification, are held throughout the year and Environmental Awareness materials are presented at Range Control briefings, pre-command briefings and before all major field exercises.

Training Requirements Integration (TRI) is another component of the ITAM program that is implemented to minimize damage to natural resources by integrating military training requirements with land condition trends (derived from LCTA). In the case of wetland management, TRI has been accomplished by range scheduling procedures and the use of environmental pre-approval overlays.

Following major exercises, USARAK staff composes an After Action Report that details any significant occurrences during the exercise and distributes it to all participating units. This report serves as an educational document for the units to consider during their next large field exercise. Issues typically addressed in the report include wetland damage, petroleum, oil and lubricant (POL) spills, trash and debris clean-up, snowplowing, and refilling and recontouring of areas used for digging.

Outdoor recreation does impact wetlands and wetland-related species (Racine et al. 1998 and Racine 1998). However, these issues are addressed in the outdoor recreation management and action plan. Brief discussions of specific actions are also included in the wetlands management action plan.

The presence of wetlands has shaped the existing development on Fort Greely and Donnelly Training Area Main Post and will continue to affect future development. Wetland areas have required and will continue to require special consideration for development. Specific goals and objectives for the future development of Fort Greely and Donnelly Training Area are based on considerations of the installation mission and findings of significant on-post and off-post conditions. Future land use requirements such as construction of buildings, parking areas, recreation facilities and future mission needs may require the filling-in of wetland areas to accommodate increased demands on existing land use areas.

When making management decisions concerning wetlands, the two wetland inventories are utilized. In instances where a CWA Section 404 Individual or Nationwide Wetland Permit is required, the ERD staff will utilize both inventories prior to making initial site visits. If the proposed project area is within a wetland area, as confirmed by the inventories and a site visit, ERD staff will request a Jurisdictional Determination by the USACE. Ultimately, the USACE will conduct a site visit and complete a wetland delineation for the project area. The USACE will recommend the type of wetland permit application to submit.

Wetlands Reclamation: Wetland reclamation projects will be coordinated through the Land Rehabilitation and Maintenance (LRAM) program, a component of ITAM. The LRAM program strives to sustain long-term training by enhancing and increasing training opportunities, repairing damaged training lands, and implementing procedures and technology to decrease future damage and long-term rehabilitation costs. LRAM incorporates professionally accepted best management practices for all projects designed to repair, rehabilitate, and maintain wetlands in training areas. LRAM projects at Fort

Greely and Donnelly Training Area focus on soil erosion control, river/stream bank stabilization, and revegetation to promote proper wetland function.

Military activities such as cross-country maneuvers, digging of defensive fighting positions, snowplowing in winter, and bivouacs can disturb wetland soil and vegetation. This disturbance increases the potential for soil erosion and transport. USARAK Range Regulation 350-2 and educational efforts help to minimize wetland disturbance. However, some damage may still occur. Techniques for repairing damage include installing waterbars, re-contouring areas to match surrounding area, rolling back the vegetative mat, and revegetation.

The LRAM program is also used to identify and prioritize reclamation activities in areas heavily impacted by recreational use. Impacts resulting from recreational use are similar to those resulting from military activities. Thus, similar rehabilitation measures can also be applied to these areas. Current reclamation management of recreational sites involves the maintenance of newly developed sites and the upgrade of locations to be developed for future recreational use.

Road drainage maintenance is important for controlling sedimentation. Road maintenance on training lands is generally a responsibility of the Directorate of Public Works (DPW). Some maintenance work on roads and trails on Fort Greely and Donnelly Training Area is done through the LRAM component of ITAM.

Land rehabilitation activities will commence immediately upon initiation of wildfire suppression activities on Fort Greely and Donnelly Training Area. Minimum impact fire suppression tactics to meet suppression objectives are utilized to reduce adverse impacts to forest resources and to reduce the extent of rehabilitation required.

Proposed Management:

Table 5-4. Wetlands Management and Reclamation Projects.

OBJECTIVE	RESPONSIBLE FOR IMPLEMENTATION	PRIORITY	IMPLEMENTATION				
			2002	2003	2004	2005	2006
Implement and comply with five-year general wetlands permit.	USARAK Natural Resources	High	x	x	x	x	x
Apply for five-year extension of existing wetlands permit	USARAK Natural Resources	High				x	
Report on amount of annual wetlands disturbance to USACE	USARAK Natural Resources	High	x	x	x	x	x
Apply for other CWA Section 404 wetland permits on an as-needed basis.	USARAK Natural Resources	High	x	x	x	x	x
Update environmental pre-approval overlays and associated restrictions.	USARAK Natural Resources	High	x	x	x	x	x

OBJECTIVE	RESPONSIBLE FOR IMPLEMENTATION	PRIORITY	IMPLEMENTATION				
			2002	2003	2004	2005	2006
Conduct wetlands determinations using National Wetlands Inventory (NWI) and Waterways Experiment Station (WES) Wetland Delineation.	USARAK Natural Resources	High	x	x	x	x	x
Implement AFS policy on prescribed burns in wetland areas	USARAK Natural Resources	High	x	x	x	x	x
Conduct rehabilitation activities on damaged wetlands following military use and after fire suppression activities.	USARAK Natural Resources	High	x	x	x	x	x
Conduct rehabilitation activities on damaged wetlands occurring as a result of recreational activities and DPW activities.	USARAK Natural Resources	High	x	x	x	x	x

Other Management Alternatives Considered and Eliminated: There are many other potential methods for protecting and managing wetlands. However, total exclusion of all wetlands is not plausible. Military training must occur in all habitats. On the other hand, no limitations on the use of wetlands could permanently damage the ecosystem. The proposed management actions listed above carefully balance the needs of the military mission, recreation, and the ecosystem. Other actions would be too minimal or would be cost-prohibitive.

5.1.5 Wetlands Management Responsibilities

Range Control, a component of the Directorate of Plans, Training, Security and Mobilization (DPTSM), is the primary authority for regulating military land use and various stipulations of the permits. Range Control's authority to schedule training facilities and conduct range inspections initiates from the Installation Commander and is explained in the USARAK Range Regulation 350-2, which details acceptable conduct during training exercises in the field to reduce negative environmental impacts.

USACE is the authority for insuring compliance with the requirements of Section 404 of the Clean Water Act, which regulates use of wetland areas. As such, USACE will conduct random follow-up inspections on a representative sample of disturbed wetlands to insure compliance with the five-year general permit and other permits as issued.

5.2 Forest Management

Forest management is required to protect, maintain, and enhance military training environments. Tree density, ground cover, and other factors within the forest ecosystem are critical to the accomplishment of the military mission. In addition, management of the forest ecosystem is important to maintain biodiversity, wildlife habitat management, and the development of outdoor recreation.

5.2.1 Forestry Program Goals and Objectives

Forestry goals and objectives all contribute to one or more of the overall natural resources program goals of stewardship, military training support, compliance, quality of life, and integration. Forestry goals and objectives are listed below:

- Manage vegetation and timber in support ecosystem management objectives.
- Manage vegetation and timber in support of military range upgrade projects.
- Manage vegetation and timber to enhance recreational opportunities.

The objectives for meeting the forestry program goals are as follows:

- Maintain an current inventory of forest and vegetative resources.
- Conduct forestry planning.
- Implement forest management practices through timber stand improvement, timber management, timber sales, and timber salvage cuts.
- Control forest pests.
- Provide firewood for local military and civilian population.
- Conduct commercial timber sales only as a tool to meet the above goals.

5.2.2 Forestry Management Plan

Forestry program management and planning includes all the planning, budgeting, overseeing contracts, and organization necessary to implement the forestry program. The primary emphasis for this component of the forestry program is the preparation and update of the forest management plan every five years and the forestry action plan annually.

Description and Justification: Prepare, update, and implement a forest management action plan for Fort Greely and Donnelly Training Area. The forest management plan will consider public safety, preservation of habitat, and recreation. Harvests of timber products from Fort Greely and Donnelly Training Area are permitted, but not mandatory. Commercial forest harvest has not been significant on Fort Greely and Donnelly Training Area. Management of the forest ecosystem is one of the most critical aspects of land management on the installation due to the high percentage of forested land and its importance to wildlife. The management of forest and woodland resources is consistent with ecosystem management principles. The Fort Greely and Donnelly Training Area Resource Management Plan (BLM and U.S. Army, 1994) requires the development of a forest management plan that is compatible with achieving the military mission. Updates of the forest management plan are required by Public Law 106-65 (Military Land Withdrawal Act) as mitigation for the land withdrawal LEIS and Public Law 86-797 (Sikes Act) every five years to implement the INRMP. Per Memorandum DAIM-ED-N, 21 March 1997, this component of the INRMP is a class 1 requirement.

Measures of Effectiveness:

- Complete, update, and maintain a forest management plan.
- Maintain and enhance the health, productivity and biological diversity of forest and woodland ecosystems.
- Maintain a diverse forest to enhance a varied military training environment.
- Involve resource agencies in planning for forest management and the public in review of the plan.

Management History: The first forest management plan for Fort Greely and Donnelly Training Area was completed in 2001.

Current Management: Current management actions to update the forest management plan will cease in 2002. If this INRMP is not approved and funded, no new forest management plan will be prepared, updated, or implemented. Policies already in place in the current forest management plan will continue.

Proposed Management:

Table 5-5. Forest Management Plan.

OBJECTIVE	RESPONSIBLE FOR IMPLEMENTATION	PRIORITY	IMPLEMENTATION				
			2002	2003	2004	2005	2006
Conduct annual updates of the forest management action plan.	USARAK Natural Resources	High	x	x	x	x	x
Prepare and update forest management action plan for the planning period of 2007-2011.	USARAK Natural Resources	High					x
Complete NEPA documentation for update	USARAK Natural Resources	High					x

Other Management Alternatives Considered and Eliminated: There are no alternatives to maintaining a current forest management plan in terms of updates at least every five years. NEPA documentation is also legally mandated.

5.2.3 Forest Inventory

Description and Justification: Forest inventory involves the identification and delineation of species, size class and density of forest and other vegetative resources. USARAK utilizes the Ecological Land Classification for Fort Greely and Donnelly Training Area as the basis for identifying general species locations throughout the installation. Within ecological land classification units known as ecotypes, stands are delineated through a combination of field surveys, air photo interpretation, satellite imagery and GIS. Stands are sampled to determine tree species composition, size class distribution, canopy cover, stem density, basal area, regeneration composition and density, and merchantable volumes by species. This information is essential for effective management of forest resources. Recent requests from the public indicate the need to conduct forest inventories on Fort Greely and Donnelly Training Area to determine if there are sufficient resources to support a commercial forest program. The Sikes Act requires those withdrawn lands, such as at Fort Greely and Donnelly Training Area, be included in INRMP planning and program implementation, including forest management. Conducting forest inventory is required by Public Law 106-65 (Military Land Withdrawal Act) as mitigation for the land withdrawal legislative EIS and Public Law 86-797 (Sikes Act) to implement the INRMP.

Measures of Effectiveness:

- Maintain current and accurate spatial and tabular data on the forest resources on Fort Greely and Donnelly Training Area.

Management Areas: Forest inventory will be conducted in the following areas on Fort Greely and Donnelly Training Area. Donnelly East Training Area will be inventoried in the summer of 2002, 2003, and 2004. Analysis of stand data, including maps and reports, for Donnelly East Training Area will be

completed during the winters of 2002, 2003, and 2004. Donnelly West Training Area will be inventoried in the summer of 2004, 2005, and 2006. Analysis of stand data, including maps and reports for Donnelly West Training Area will be completed in the winter of 2004, 2005, and 2006.

Management History: The Tanana Chiefs Conference, Inc. conducted an inventory of forest resources on military land withdrawals within interior Alaska for the BLM (Tanana Chiefs Conference 1993). The inventory included the Main Post area, the northern periphery of the West Training Area, the entire East Training Area, and GRTS for a total of 391,851 acres (about 60% of Fort Greely and Donnelly Training Area). Large tracts of unforested upland areas in the West Training Area were excluded from the inventory. Cover types were classified according to their commercial forest potential. Other types were classified as non-forested land, rivers, and other waters.

Two CFI plots were established in the Gerstle River Test Site during the summer of 2000 in cooperation with UAF Forestry Experiment Station.

Current Management: Forest inventory involves the identification and delineation of species, size class and density of forest and other vegetative resources. USARAK utilizes the Ecological Land Classification for Fort Greely and Donnelly Training Area as the basis for identifying general species locations throughout the installation. Within ecological land classification units known as ecotypes, stands are delineated through a combination of field surveys, air photo interpretation, satellite imagery and GIS. Stands are sampled to determine tree species composition, size class distribution, canopy cover, stem density, basal area, regeneration composition and density, and merchantable volumes by species. This information is essential for effective management of forest resources. Permanent plots are measured every five years. Permanent plot locations and intensity are systematically stratified by forest type across the landscape.

Continuous forest inventory plots (CFI) are also located throughout the forested areas of Fort Greely and Donnelly Training Area training lands. These permanent plots are an effective method for detecting changes in forest health, composition, structure, forest fire fuel loading, and determining growth and mortality, which can be applied in growth projection models. Periodic measurement of permanent sample plots is statistically superior to successive independent inventories for evaluation of changes in forest conditions. Permanent plot locations and intensity will be systematically stratified by forest type across the landscape.

Current inventory actions will continue if this INRMP is not approved and funded. However, no new inventory methods will be prepared, updated, or implemented.

Proposed Management:

Table 5-6. Forest Inventory.

OBJECTIVE	RESPONSIBLE FOR IMPLEMENTATION	PRIORITY	IMPLEMENTATION				
			2002	2003	2004	2005	2006
Conduct forest inventory on 15% of lands per year that may have viable commercial forest value.	USARAK ITAM	High	x	x	x	x	x
Conduct continuous forest inventory plot monitoring on 100 CFI plots per year.	USARAK ITAM	High	x	x	x	x	x
Prepare annual forestry report.	USARAK ITAM	High	x	x	x	x	x

Other Management Alternatives Considered and Eliminated: There are many other potential methods of conducting forest inventory. However, proposed methods for conducting forest inventory were developed specifically for the Alaskan ecosystems. Other methods could be developed that include collecting data at many more points per year, but these would be cost-prohibitive.

5.2.4 Forest Management

The objective of the forest management or silvicultural program is to promote a healthy ecosystem capable of supporting the military mission and natural resources requirements. Silvicultural treatments are designed to restore, maintain, and improve the ecological functions and values of the particular forest unit being managed. Silvicultural treatments used will improve military mission areas, and, when possible, attain multiple use and sustained yield timber management while enhancing watersheds, wildlife habitats, and natural beauty values along scenic corridors. When silvicultural treatments provide opportunity for commercial sale of forest products, each commercial forest activity will be performed in accordance with 10 USC 2665, and operating expenses will be commensurate with anticipated financial returns on lands on which the Army holds vegetative rights.

Silvicultural systems used will be consistent with the silvics of the species and ecology of the forest type, maintain the site's productivity, and be chosen to best achieve the management objectives. In general, boreal forests naturally occur as even-aged stands across the landscape, and the management scheme is to maintain a diverse mosaic of even-aged stands. A variety of silvicultural systems will be used, including uneven-aged management on a limited basis, in order to achieve the desired management objective. Timber harvesting areas will be sized and configured to best meet silvicultural, wildlife, scenic, military and other specific objectives of the area. Harvest methods can include intermediate partial cuts prior to the final stand renewal reproduction cuts.

Description and Justification: Timber, fuelwood, or Christmas tree sales will be used to accomplish military or ecosystem objectives. Timber stand improvement, timber management, timber sales, and timber salvage cuts may be utilized as tools to accomplish habitat improvement or to improve the commercial value of forest tree species. Forest ecosystem management is necessary to support military training by reducing forest density and implementing habitat management, which will, in turn support increased biodiversity. Conducting forest management is required by Public Law 106-65 (Military Land Withdrawal Act) as mitigation for the land withdrawal LEIS and Public Law 86-797 (Sikes Act) to implement the INRMP.

Forest Management Areas: Forest management areas identify areas where there is likelihood that forest management actions may occur during 2002-2006. These management areas are described in Table 5-7 and shown in Figure 5-2.

Table 5-7. Forest Management Areas.

Management Areas	Priority	Size
Forest management areas	High priority for forest management	2100 acres
	Medium priority for forest management	30,600 acres
	Low priority for forest management	137,00 acres
Forest protection areas	No forest management	18,900 acres
Non-forested areas	Low priority for forest management	454,400 acres

Measures of Effectiveness: Meeting military mission requirements will remain the primary objective of forest management during 2002-2006. Future management of the forest ecosystem on Fort Greely and Donnelly Training Area will:

- Support the military mission
- Protect ecosystem functionality
- Sustain production of forest products
- Provide quality recreational opportunities.
- Minimize restrictions to training from forest management policies and issues.

Management History: Fort Greely and Donnelly Training Area's forestry management traditionally emphasized the sale of Christmas trees and firewood as well as urban landscaping on Main Post.

Current Management: Forest management does not just involve commodity production; protection of sensitive habitats and needs of the military for cover and concealment are primary objectives. It is important to maintain a wide variety of ages and species, maintain a mosaic of stand structure across the landscape, protect watersheds, and protect options for future management. The components of forest management on Fort Greely and Donnelly Training Area include timber removal for military mission support, timber stand improvement, forest regeneration, timber management, timber sales, and forest disease/insect prevention.

Conduct Timber Removal for Military Mission Support: The military needs to train personnel under certain environmental conditions. This may require the removal of trees to create open areas for drop zones, small arms firing ranges, or construction. Thinning stands of trees to allow maneuverability in certain areas may also be necessary.

USARAK natural resources personnel have two choices when there is a need to clear or thin timber with commercial value on withdrawn lands. They can request support from BLM to conduct a timber sale, or they can remove the trees without selling them (by cutting or burning) upon approval from BLM and after NEPA analysis. Troops are permitted to harvest forest products to achieve training objectives. Trees less than four inches dbh may be cut without prior approval. Removal of larger trees on approved sites requires Natural Resources Branch coordination. Stumps must be less than six inches high. (U.S. Army, Alaska 1994).

Timber Stand Improvement: Timber Stand Improvement (TSI) is designed to improve species composition, quality, and/or growth rate of existing stands by removing competing vegetation to allow preferred trees to grow at faster rates. TSI is often categorized as noncommercial activities used to improve the quality of commercial timber, but it may also be used to improve forest conditions for other uses. TSI may include thinning, chemical injection, prescribed burning, etc., all of which are designed to improve species composition, quality, and/or growth rate of existing stands by removing competing vegetation to allow preferred trees to grow faster.

Forest Regeneration: Regeneration of forests, either natural or planned, is an essential part of forest ecosystem development. Regeneration of forests can be made through planting seedlings, planting sprigs, coppice cuts or seeding.

Silviculture: Silviculture is the art and science of managing vegetation and timber to meet ecosystem management objectives while maximizing the commercial value of the timber that must be cut to meet those objectives. Management of white spruce should be conducted on a 120-year rotation, and hardwood sawtimber should be conducted on a 60-80 year rotation. Black spruce is currently not suitable for commercial management.

Timber Sales: The removal and/or thinning of timber on portions of Fort Greely and Donnelly Training Area could improve conditions for conduct of the military mission and enhance the local economy. The Fort Greely and Donnelly Training Area Resource Management Plan (BLM and U.S. Army 1994) requires that timber sales on Fort Greely and Donnelly Training Area be governed by common BLM timber management practices, contract stipulations, and the mandates of the state's forest practices regulations. Common requirements include:

- Construction, improvement, and maintenance of safe and environmentally-sound road systems.
- Felling and yarding of timber in such a way as to protect soil and water quality, residual trees, and human safety.
- Treatment of logged sites to prepare them for the next generation of trees.
- Disposal of logging slash for silvicultural and/or fire hazard reduction purposes.
- Mitigation measures for protecting wildlife habitat.
- Other miscellaneous provisions where appropriate, such as meeting minimum fire requirements and application of disease control measures.

Harvest plans would be prepared prior to commercial sales of forest products. Plans would include sale boundaries, cruised volume, silvicultural prescription, road layout, best management practices for prevention of soil erosion and sedimentation, water quality considerations, cultural resources protection, wildlife considerations, harvest method(s), scaling requirements, slash disposal, site preparation, and regeneration requirements. A USARAK wildlife biologist would assist with plans for timber sales to ensure consideration of wildlife habitat values. Documentation for compliance with NEPA as well as required cultural resources surveys would be completed prior to sales.

Forest Disease/Insect Prevention: The spruce bark beetle (*Dendroctonus rufipennis* [Kirby]) is becoming more significant on Fort Greely and Donnelly Training Area in terms of its effects on the forest ecosystem. ADNR estimates that 30%-50% of forest stands older than 150 years are infected in the Fort Greely and Donnelly Training Area. One result of spruce bark beetle outbreaks is increased fire danger. Standing dead timber generally falls within 10 years, creating up to 40 tons of fuel per acre on the ground.

The best prevention tactic to reduce spruce bark beetle damage is managing for a diversity of species and age classes within the forest. The combination of mature spruce and a reduction in natural disturbance is ideal for the spruce bark beetle and associated changes in the forest ecosystem. (Dr. Edward Holsten, personal communication). Thus, TSI and prescribed burning would reduce susceptibility to the spruce bark beetle.

A species of engraver beetle (*Ips* sp.) is found throughout Alaska, but it is most prevalent in the Interior. *Ips* favors sites with accumulations of slash, which has not been a factor on Fort Greely and Donnelly Training Area. *Ips* outbreaks usually develop and disappear rapidly, precluding the need for direct control operations (Holsten et al. 1985).

Other important forest insects or diseases known on Fort Greely and Donnelly Training Area include spruce budworm (*Choristoneura* sp.) and larch sawfly (*Prosiphora erichsoni* [Hartug]). Holsten et al. (1985) describes important insects and diseases that affect forests in Alaska.

Current forest management actions will continue if this INRMP is not approved and funded. However, no new management actions will be prepared, updated, or implemented.

Proposed Management:

Table 5-8. Forest Management Projects.

OBJECTIVE	RESPONSIBLE FOR IMPLEMENTATION	PRIORITY	IMPLEMENTATION				
			2002	2003	2004	2005	2006
Conduct timber management on Donnelly East and West training areas and Gerstle River Training Area.	USARAK Natural Resources	High	x	x	x	x	x
USARAK will remove or thin up to 400 acres of trees or shrubs per year to support military training activities.	USARAK Natural Resources	High	x	x	x	x	x
Conduct timber stand improvement on a maximum of 100 acres per year of timber stand improvement.	USARAK Natural Resources	High	x	x	x	x	x
Conduct salvage cuts on up to 400 acres per year.	USARAK Natural Resources	High	x	x	x	x	x
Conduct forest pest protection on up to 200 acres per year.	USARAK Natural Resources	High	x	x	x	x	x
Obtain necessary NEPA, Section 106 and CWA Section 404 permits.	USARAK Natural Resources	High	x	x	x	x	x
Provide fuelwood and Christmas trees to military and public annually.	USARAK Natural Resources	High	x	x	x	x	x
Conduct timber sales and cut up to a maximum of 20,000 board feet per year.	USARAK Natural Resources	High	x	x	x	x	x

Other Management Alternatives Considered and Eliminated: There are many other potential methods for managing forests. However, no other options would meet the needs of the military mission. The proposed management actions listed above carefully balance the needs of the military mission, recreation, and the ecosystem. Other actions would be too minimal or would be cost-prohibitive.

5.2.5 Forestry Responsibilities

Under Public Law 99-606, BLM retains vegetative and mineral rights for Donnelly East and West training areas. Any vegetation manipulation by USARAK must be approved by BLM. BLM and USARAK timber management practices, contract stipulations, and the mandates of the state's forest practices regulations would govern the sale of timber from these lands.

This project will be completed in cooperation with BLM, which holds timber rights under Public Law 106-65. Forests on withdrawals fall under BLM's restricted category for management; that is, management of the withdrawal is primarily for the military, but timber harvests are permitted. Members of the public may approach BLM for a permit to purchase timber on withdrawn lands, but each timber sale must be approved by the military.

Timber removal and other forest management practices will be coordinated with Range Control to ensure minimal disruption of military training. Scheduling usually will be done three to six months in advance of activities. Appropriate NEPA documentation will be completed prior to implementation of timber stand improvement projects.

5.3 Fire Management

Interior Alaska ecosystems require fire for continued functionality. However, wildfires are a concern at Fort Greely and Donnelly Training Area due to their impact on human activities and structures, and military operations. Fire has been a natural force in Interior Alaska for thousands of years. It is a key environmental factor in these cold-dominated ecosystems. Without fire, organic matter accumulates, the permafrost table rises, and ecosystem productivity declines. Vegetation communities become much less diverse, and animal species normally associated with certain successional stages find the environment unsuitable. Fire rejuvenates these ecosystems. It removes some insulating organic matter, resulting in a warming of soils. Nutrients are added to the soil from ash and increased decomposition rates. Vegetation re-growth quickly occurs, and the cycle begins again.

5.3.1 Fire Management Goals and Objectives

Fire management goals and objectives all contribute to one or more of the overall natural resources program goals of stewardship, military training support, compliance, quality of life, and integration. Fire management goals and objectives are listed below:

- Protect human life, identified private property and cultural resources.
- Preserve the military mission.
- Let fire, as nearly as possible, play its natural role in the ecosystem.
- Use prescribed fire to manage natural resources when needed.

5.3.2 Fire Management Plan

Fire program management and planning includes all the planning, budgeting, overseeing contracts, and organization necessary to implement the forestry program. The primary emphasis for this component of the fire management program is the preparation and update of the fire management plan by the BLM Northern Field Office every five years.

Description and Justification: Write, update, and implement a fire management plan for Fort Greely and Donnelly Training Area. The fire management plan provides the planning framework for all fire management decision-making, and specifies the uses of fire, which are consistent with and can enhance land management objectives. The plan would reduce forest fire hazard caused by incendiary type weapons and will enhance habitat as part of ecosystem management. Training is essential to the U.S. Army's mission of preparedness and military readiness. Fire Management has become an increasing concern on training sites in recent years as the activities associated with training increases the risk of unplanned fire ignitions with the use of ammunition and pyrotechnics. This document provides guidance and direction to establish an effective fire management program and the eventual development of a fire management plan that fulfills interagency guidelines. This document identifies responsibilities and standard practices for fuels management, pre-suppression, prevention, and suppression while supporting military preparedness along with United States Department of the Interior, Bureau of Land Management (BLM) and United States Army Alaska (USARAK) resource management goals.

Updates of the fire management plan are required by the Memorandum of Understanding between BLM and USARAK concerning the Management of Certain Public Lands Withdrawn for Military Use and the Interdepartmental Support Agreements WC1SH3-95089-502 and 140138-95089-905 between USARAK and BLM, Public Law 106-65 (Military Land Withdrawal Act) as mitigation for the land withdrawal LEIS and Public Law 86-797 (Sikes Act) every five years to implement the INRMP. Per Memorandum DAIM-ED-N, 21 March 1997, this component of the INRMP is a class 1 requirement.

Measures of Effectiveness:

- Complete, update, and maintain a fire management plan
- Establish fire management procedures and protocols to provide USARAK the capability to complete its mission to maintain combat readiness and fulfill resource management intent.
- Maintain and enhance the health, productivity and biological diversity of the ecosystem through fire suppression, fire prevention, and prescribed fire planning.
- Involve resource agencies in planning for fire management and the public in review of the plan.

Management History: The first fire management action plan was completed in 2001.

Current Management: Current management actions to update the fire management plan will cease in 2002. If this INRMP is not approved and funded, no new fire management plan will be prepared, updated, or implemented. Policies already in place in the current fire management plan will continue.

Proposed Management:

Table 5-9. Fire Management Plan.

OBJECTIVE	RESPONSIBLE FOR IMPLEMENTATION	PRIORITY	IMPLEMENTATION				
			2002	2003	2004	2005	2006
Conduct annual updates of the fire management action plan.	USARAK Natural Resources	High	x	x	x	x	x
Prepare and update fire management action plan for the planning period of 2007-2011.	USARAK Natural Resources	High					x
Complete NEPA documentation for update	USARAK Natural Resources	High					x
Develop an interagency fire management plan that adheres to guidelines outlined by the Interagency Wildland Fire Coordinating Group.	BLM Alaska Fire Service	High		x			
Develop pre-suppression plans for each of the area units of Fort Greely and Donnelly Training Area.	BLM Alaska Fire Service	Medium		x			
Develop plans for proposed prescribed fires.	BLM Alaska Fire Service	Medium		x			

OBJECTIVE	RESPONSIBLE FOR IMPLEMENTATION	PRIORITY	IMPLEMENTATION				
			2002	2003	2004	2005	2006
Develop plans and fuel treatment projects to reduce the threat of fires starting on military lands and impact areas and burning onto adjacent lands of high resource value.	BLM Alaska Fire Service	Medium		x			
Develop generic burn plan for various military directorates to use for grounds maintenance projects.	BLM Alaska Fire Service	Medium		x			

Other Management Alternatives Considered and Eliminated: There are no alternatives to maintaining a current fire management plan in terms of updates at least every five years. NEPA documentation is also legally mandated.

5.3.3 Fire Management Inventory

Description and Justification: Fire management inventory includes monitoring forest fuel hazard as well as mapping past fires. This information is extremely useful for managing and decision-making during fire events. Past fire history also is an important input into habitat management decision-making. Conducting fire management inventory is required by Public Law 106-65 (Military Land Withdrawal Act) as mitigation for the land withdrawal legislative EIS and Public Law 86-797 (Sikes Act) to implement the INRMP.

Management Areas: The high number of ignitions on Fort Greely and Donnelly Training Area presents a challenge to fire managers in terms of regular suppression and surveillance efforts. It also represents the need for fuels mapping and hazard fuel reduction projects to lessen the change of undesirable fires spreading to areas requiring suppression options. The average fire return interval for Fort Greely and Donnelly Training Area varies from 100 to 150 years. The majority of land burned on Fort Greely and Donnelly Training Area resulted from relatively few fires (Figure 5-3).

Measures of Effectiveness:

- Maintain a complete history of fires on Fort Greely and Donnelly Training Area.
- Identify potential forest fuel hazards on Fort Greely and Donnelly Training Area.

Management History: From 1980 through 2000, 89 wildfires have been reported from Fort Greely and Donnelly Training Area. Eleven of these fires were attributed to natural causes and 78 were attributed to human causes. Of the 78 fires resulting from human activities, 60 were attributed to military training activities. Human-caused fires, and particularly military training-caused fires represent nearly 88 percent of the fire ignitions reported to Fort Greely and Donnelly Training Area. Current mapping efforts for past fires have been kept by BLM. These maps include the Oklahoma Impact Area fire in 1996, the Carla Lake Fire in 1998, and the Donnelly Fire in 1999 (Figure 5-3). Forest fuel hazard maps have never been developed for Fort Greely and Donnelly Training Area.

Current Management: Fire surveillance activities remain an integral part of range operations and the fire department and will continue if this INRMP is not approved and funded. However, no new actions will be prepared, updated, or implemented.

Proposed Management:

Table 5-10. Fire Management Inventory.

OBJECTIVE	RESPONSIBLE FOR IMPLEMENTATION	PRIORITY	IMPLEMENTATION				
			2002	2003	2004	2005	2006
Collect fuel loading information as part of the forest inventory.	USARAK ITAM	High	x	x	x	x	x
Delineate and maintain GIS data layers showing historical fires.	USARAK ITAM	High	x	x	x	x	x
Map past areas where ordnance has been used and develop pre-suppression plans on how to deal with wildland fire suppression in these areas.	USARAK ITAM	High	x	x	x	x	x
Map all known cultural features on suppression maps and develop fire management recommendations for these features.	USARAK ITAM	High		x			
Map all military structures on suppression maps. Assess fire suppression options and recommendations for these structures.	USARAK ITAM	High		x			
Map all known natural resources features and areas of concern from wildland fire suppression and management activities on suppression maps. Develop management strategies to avoid conflicts with these natural resources features and areas of concern.	USARAK ITAM	High			x		
Update fuels map.	USARAK ITAM	High			x		
Update fire history map.	USARAK ITAM	High	x	x	x	x	x
Research causes of fire ignitions to identify areas of high fire occurrence	USARAK ITAM	High				x	
Map all known nonsensitive structures.	USARAK ITAM	High				x	
Update fire maps with military special use areas and fire management options for these areas.	USARAK ITAM	High	x				

OBJECTIVE	RESPONSIBLE FOR IMPLEMENTATION	PRIORITY	IMPLEMENTATION				
			2002	2003	2004	2005	2006
Research weather patterns influencing fire behavior and historical weather analysis for each land unit.	USARAK ITAM	High	x				

Other Management Alternatives Considered and Eliminated: There are many other potential methods of conducting fire management inventory. However, proposed methods for conducting fire management inventory were developed specifically for the Alaskan ecosystems. Other methods could be developed that include collecting data at many more points per year, but these would be cost-prohibitive.

5.3.4 Fire Management

Description and Justification: The components of fire management include both prevention and suppression. Benefits of fire suppression and fire prevention to training include reduced fuel load, an increased number of days that a facility is available during high fire season, reduced fire fighting costs, and protection of range facilities. Benefits to the environment are considerable, particularly in areas that have not burned in recent years. Fire management is required to protect, maintain, and enhance military training environments. In addition, management of the boreal ecosystem is important to maintain biodiversity, wildlife habitat, and the development of outdoor recreation. The management of fire on the landscape is consistent with ecosystem management principles. Conducting fire management is required by Public Law 106-65 (Military Land Withdrawal Act) as mitigation for the land withdrawal LEIS and Public Law 86-797 (Sikes Act) to implement the INRMP.

Fire Management Designations: Fire suppression priorities are grouped into four categories: Critical, Full, Modified, and Limited. Below are summaries of each category (Anonymous 1982).

Critical Management Option - Areas receive maximum detection coverage and are highest priorities for attack response. Immediate and aggressive initial attack is provided. Land owners/managers are notified of the situation as soon as possible. Critical management areas receive priority over adjacent lands and resources in the event of escaped fires.

Full Management Option - Areas receive maximum detection coverage and receive immediate and aggressive initial attack responses. If the initial attack response is successful or the fire is otherwise controlled within the first burning period, special agency notification is not required. When fires escape initial attack and require additional suppression, affected land owners/managers are notified to develop further fire strategy.

Modified Management Option - This option provides a management level between Full and Limited. The intent is to provide a relatively high degree of protection during periods of increased fire danger, but a lower level of protection when risks of fires are diminished. Modified areas receive maximum detection coverage. Initial attack action, or non-action, is based on standardized evaluation data determined by the Alaska Interagency Wildland Fire Coordination Group. Unstaffed fires are monitored.

Limited Management Option - This option recognizes areas where natural fire is important or the values at risk do not warrant the expense of suppression. Limited management areas receive routine detection effort. Attack response is based on needs to keep the fire within Limited management areas and to protect individual Critical management sites within Limited management areas. Land owners/managers are immediately notified of fires detected. Unstaffed fires are monitored.

There are two other special categories on Army lands in Alaska. *Unplanned* areas are those lands that the land manager/owner has opted out of the Alaska Interagency Wildland Fire Management Plan. These lands are usually treated as Full. For suppression direction, the Land Manager needs to be contacted. *Restricted* or *Hot Zone* is a category used for impact areas and other places where no on-the-ground fire fighting occurs. Fires can still be suppressed in Restricted Areas, but suppression is through aerial means.

Fire Management Areas: Fire management areas are shown in Figure 5-4.

Donnelly West Training Area: Donnelly West Training Area covers approximately 531,000 acres. The major community types found in Donnelly West Training Area consist of lowland wet needleleaf, lowland wet broadleaf, gravelly needleleaf, wet low scrub, gravelly broadleaf, gravelly moist low scrub, upland moist needleleaf, upland rocky dry broadleaf, upland rocky dry low scrub, upland moist broadleaf, upland moist low and tall scrub, lowland moist meadow, and tussock scrub bog. Currently most of the Donnelly West Training Area is in limited fire suppression due to few resources at risk from fire and the recognition of fire as a natural process in ecosystem function (Alaska Interagency Wildland Fire Management Plan 1998). The northern boundary of Donnelly West Training Area is in modified fire suppression to provide a buffer to adjacent state lands that are in full suppression status. Military resources at risk from wildland fire do exist in the Donnelly West Training Area. These resources have been identified and mapped and need to be visited to assess pre-suppression tactics and fuel treatment options. A private inholding, which serves as a hunting lodge, exists along the extreme western boundary. This inholding is given full fire suppression status and an assessment of the land and buildings needs to be completed. The central portion of Donnelly West Training Area is an impact area used by the Army and Air Force. The eastern portion along the Delta River is an impact area used by the Army for small arms and submunitions. Further investigation of these impact areas is required to ascertain previous areas where ordnance has been used and disposed. Cultural resources have also been identified and management options relating to wildland fire have been determined. Trespass cabins in Donnelly West Training Area have been identified and mapped and assigned no fire protection status. Donnelly West Training Area is bounded by private parcels and state lands.

Donnelly East Training Area and Fort Greely: Donnelly East Training Area and Fort Greely cover approximately 110,000 acres. The major community types found consist of lowland wet needleleaf, lowland wet broadleaf, gravelly needleleaf, wet low scrub, gravelly broadleaf, gravelly moist low scrub, upland moist needleleaf, upland rocky dry broadleaf, upland rocky dry low scrub, upland moist broadleaf, upland moist low and tall scrub, lowland moist meadow, and tussock scrub bog. Currently the Donnelly East Training Area is in full fire suppression due to the close proximity of the community of Delta Junction and the cantonment area of Fort Greely. This area is also subject to high winds and extreme fire behavior further supporting the full fire suppression status. The northern portion of the Main Post is in critical fire suppression due to the life and property at risk (Alaska Interagency Wildland Fire Management Plan 1998). The Army does have structures throughout the Donnelly East Training Area which are at risk from wildland fire. These resources have been identified and mapped and need to be visited to assess pre-suppression tactics and fuel treatment options. Donnelly East Training Area surrounds a portion of private and state land known as the key hole. This area needs to be assessed to determine threat from wildland fires. In 1999 the Donnelly Flats Fire burned approximately 18,000 acres of Donnelly East Training Area and Fort Greely in a few days of extreme fire behavior. Cultural resources have been identified, and management options relating to wildland fire have been determined. Trespass cabins in have also been identified and mapped and assigned no fire protection status. Donnelly East Training Area and Fort Greely is bounded by allotments, private parcels, and state lands.

Gerstle River Training Area: Fort Greely and Donnelly Training Area's Gerstle River Training Area covers approximately 20,000 acres. The major community types found in the Gerstle River Training Area

consist of lowland wet needleleaf, lowland wet broadleaf, gravelly needleleaf, wet low scrub, gravelly broadleaf, gravelly moist low scrub, upland moist needleleaf, upland rocky dry broadleaf, upland rocky dry low scrub, upland moist broadleaf, upland moist low and tall scrub, lowland moist meadow, and tussock scrub bog. Currently the Gerstle River Training Area is in unplanned fire suppression due to risks of unknown ordnance and other weapons use on the site (Alaska Interagency Wildland Fire Management Plan 1998). A fire suppression status and plan for addressing wildland fires on the Gerstle River Training Area needs to be completed. The adjacent land is in limited, modified, and full fire suppression status. No resources at risk from wildland fire have been identified in the Gerstle River Training Area. Further investigation is required to ascertain previous areas where ordnance has been used and disposed. No cultural resources survey has been conducted for the Gerstle River Training Area and management options related to wildland fire have not been determined. The Gerstle River Training Area is bounded by state lands.

Whistler Creek Rock Climbing Area and Black Rapids Training Site: Fort Greely and Donnelly Training Area's Whistler Creek Rock Climbing Area and Black Rapids Training Site (Black Rapids) cover approximately 3,300 acres. The major community types consist of upland moist needleleaf, upland moist low and tall scrub, and alpine. Currently Black Rapids is in full fire suppression to protect the resources of the site (Alaska Interagency Wildland Fire Management Plan 1998). The road corridor adjacent to Black Rapids is in modified fire suppression status while the rest is in limited fire suppression status. The Army does have structures at Black Rapids which could potentially be at risk from wildland fire. These resources need to be identified, mapped, and visited to assess pre-suppression tactics and fuel treatment options. No cultural resources survey has been conducted for Black Rapids, and management options related to wildland fire have not been determined. Black Rapids is bounded by federal and state lands.

Measures of Effectiveness:

- Protect structures and man-made facilities.
- Reduce the ability of potential fires to spread outside Fort Greely and Donnelly Training Area.
- Reduce forest fuel hazard through prescribed burning.
- Reduce the escapement of wildland fire from impact areas through prescribed fires and mechanical treatments along the boundaries of impact areas.

Management History: Fire suppression efforts were conducted in 1996 at the Oklahoma Impact Area fire, in 1998 at the Carla lake fire, and in 1999 at the Donnelly fire. Fire management categories were approved in 1998. Fire prevention activities were conducted at Fort Greely and Donnelly Training Area through a series of firebreaks cut around the bivouac area in the 1960s. These firebreaks have been maintained annually since then.

Current Management:

Prevention: There are three components of wildfire prevention on Fort Greely and Donnelly Training Area. The first component is to reduce the likelihood of starting a fire by limiting activities as imposed by the fire danger rating system. Reducing fuel hazard through mechanical removal and prescribed burning is the second component, and constructing or maintaining fire or fuel wood breaks is the third component. Although discussed here together with the other components of prevention, prescribed fire is a distinct management tool. All prescribed burn planning is made in conjunction with AFS, and all prescribed burn plans must have approval of the BLM Northern Field Office.

The Fire Danger Rating (FDR) is used on Fort Greely and Donnelly Training Area to reduce the risk of wildfire. The Fort Greely and Donnelly Training Area Fire Department monitors fire danger parameters; when certain levels of risk are reached, restrictions on military activities are imposed. The Fire

Department collects weather readings during fire season. Data are used to calculate the FDR using the Canadian Forest Fire Danger Rating System, which is an indication of wildfire danger. The FDR is provided to Range Control, which restricts the use of munitions and pyrotechnics as fire danger increases. Open burning requires a permit, except small warming fires do not require a permit (Army Environmental Handbook 2000). All fires may be prohibited during extreme fire danger conditions; check with Range Control for any restrictions.

The 1998 Range Policy, as written, categorizes fire danger into four headings; low, moderate, high and extreme. In order for the Canadian Forest Fire Danger Rating System (CFFDRS) to be applied to this type of rating scheme, there will need to be a certain amount of subjectivity associated with the interpretation of the indices as no single indices gives a complete picture of the fire danger. A thorough understanding of CFFDRS is necessary for the Fire Manager to make accurate determinations.

Both prescribed burning and mechanical removal of vegetation can be used to accomplish fuel hazard reduction, which, in turn, makes wildfires less likely to start and easier to control. Burning often opens areas to additional military training options, particularly maneuvers that are hampered by dense cover.

The prescribed burning “window” for grasses is very narrow, particularly during spring between loss of snow cover and green-up, usually occurring in May. Often this period is very wet, which makes burning difficult. It is often easier to get good burning conditions in fall, but there is debate over the relative value of fall burning. In addition, winds must be such that they do not blow smoke into urban areas, which further narrows the window. It is difficult to long-range plan prescribed burning due to weather, military training, and availability of resources. An air permit from the Alaska Department of Environmental Conservation is required for any burning, as well as NEPA documentation.

Individual prescribed burns will have plans and appropriate NEPA documentation prepared after coordination between the BLM/NFO, the Natural Resources Branch, and the Fort Greely and Donnelly Training Area Fire Department. AFS may be used to prepare plans for USARAK. Burn plans are used to evaluate and minimize risks associated with prescribed burning and will include how the fire will be set.

Cutting fuel breaks specifically for fire control occurs on Fort Greely. Major highways, waterways, and previously burned areas act as fuel breaks on portions of the installation. The likelihood of a fire crossing a human-constructed fuel break is unpredictable due to the extreme winds that the Delta Junction area experiences.

Wildfire Suppression: Wildfire suppression is an emergency operation and takes precedence over all other operations with exception of safeguarding human life. Initial attack operations for fires started on all critical, full, and modified (before conversion to limited) lands is provided by AFS. Wildlife suppression is accomplished by the BLM Alaska Fire Service. USARAK contributes to fire detection and is available to help if needed.

Current fire management actions will continue if this INRMP is not approved and funded. However, no new management actions will be prepared, updated, or implemented.

Proposed Management:

Table 5-11. Fire Management Projects.

OBJECTIVE	RESPONSIBLE FOR IMPLEMENTATION	PRIORITY	IMPLEMENTATION
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			2002	2003	2004	2005	2006
Conduct fire suppression activities as necessary.	BLM Alaska Fire Service (ADNR – Division of Forestry)	High	x	x	x	x	x
Obtain necessary NEPA, Section 106 and CWA Section 404 permits.	USARAK Natural Resources	High	x	x	x	x	x
Obtain appropriate air quality permits	USARAK Natural Resources	High	x	x	x	x	x
Identify and assess fuel management strategies for urban/wildland interface areas.	USARAK Natural Resources	High	x	x	x	x	x
Implement Firewise program for private landowners adjacent to military lands.	USARAK Natural Resources	High	x	x	x	x	x
Break up large continuous fuels in areas requiring fire suppression status.	USARAK Natural Resources	High	x	x	x	x	x
Develop more effective means of calculating fire weather indices for localized training areas and implement a program of relaying fire danger ratings to training units.	USARAK Natural Resources	High	x	x	x	x	x
Develop program of providing assistance to training military units during periods of high fire danger	USARAK Natural Resources	High	x	x	x	x	x
Develop and disseminate procedures for detection and reporting of fires.	USARAK Natural Resources	High	x	x	x	x	x
Develop standard operation procedures for each area unit to assist firefighters and Incident Commanders in establishing priorities, making decisions, dealing with ordnance issues, etc.	USARAK Natural Resources	High	x	x	x	x	x
Develop GIS system for military fire management office and for use on incidents with current data, maps, photos, suppression options, and restrictions	USARAK Natural Resources	High	x	x	x	x	x

OBJECTIVE	RESPONSIBLE FOR IMPLEMENTATION	PRIORITY	IMPLEMENTATION				
			2002	2003	2004	2005	2006
Identify and use fuel reduction treatments to reduce the threat of wildland fire at the urban/wildland interface, military structures, selected training areas, and cultural resources.	USARAK Natural Resources	High	x	x	x	x	x

Other Management Alternatives Considered and Eliminated: There are many other potential methods for conducting fire management. However, no other options would meet the needs of the military mission. The proposed management actions listed above carefully balance the needs of the military mission, fire management, and the ecosystem. Other actions would be too minimal or would be cost-prohibitive.

5.3.5 Fire Management Responsibilities

The AFS, a BLM agency, has primary fire suppression responsibility for wildfires on lands in central and northern Alaska. The Army has an Inter-Service Support Agreement with BLM whereby AFS is provided facilities on Fort Wainwright in exchange for fire protection on Army lands.

The Fort Greely and Donnelly Training Area Fire Department is responsible for fire suppression on Main Post, and AFS has primary responsibility for the rest of Fort Greely and Donnelly Training Area. The Fort Greely and Donnelly Training Area Fire Department monitors fire danger parameters; when certain levels of risk are reached, restrictions on military activities are imposed. The Fire Department collects weather readings during fire season. Data are used to calculate Fine Fuel Moisture Content (FFMC), which is an indication of wildfire danger. The FFMC is provided to Range Control, which restricts types of munitions and pyrotechnics allowed as fire danger increases.

5.4 Fish and Wildlife Management

Fish and wildlife management on Fort Greely and Donnelly Training Area is built upon a tradition of game management to support hunting, trapping, and fishing. In the early 1980s this base broadened, driven by a growing recognition of the importance of nongame species in ecosystem functions. More recently, emphasis has been on general fauna and flora inventory. Data needed to build a nongame program as part of managing ecosystems has been or is being collected. Data collection will continue as part of program expansion.

5.4.1 Fish and Wildlife Goals and Objectives

Fish and wildlife goals and objectives all contribute to one or more of the overall natural resources program goals of stewardship, military training support, compliance, quality of life, and integration. Fish and wildlife goals and objectives are listed below:

- Improve the quality of habitat for game and nongame species.
- Use artificial nesting structures to improve productivity for wildlife species.
- Maintain sustainable hunting, trapping, and fishing programs.

5.4.2 Habitat Management Plan

Fish and wildlife program management and planning includes all the planning, budgeting, overseeing contracts, and organization necessary to implement the fish and wildlife management program. The primary emphasis for this component of the fish and wildlife management program is to prepare and update the habitat management plan.

Description and Justification: Prepare, update, and implement a habitat management plan for Fort Greely and Donnelly Training Area. The plan will describe projects to improve biodiversity and moose, bear, Dall sheep, raptor, fishery, upland game bird, and migratory bird habitats. The habitat management plan will maintain a diverse training environment, enhance recreational opportunities; and comply with the Sikes Act, Migratory Bird Treaty Act, Executive Order 12962, Recreational Fishery Resources Conservation Plan, Endangered Species Act, and AR 200-3. Updates of the habitat management plan are required by Public Law 106-65 (Military Land Withdrawal Act) as mitigation for the land withdrawal LEIS and Public Law 86-797 (Sikes Act) every five years to implement the INRMP. Per Memorandum DAIM-ED-N, 21 March 1997, this component of the INRMP is a class 1 requirement.

Measures of Effectiveness:

- Complete, update, and maintain a habitat management plan.
- Enhance wildlife, recreation, and military habitat on Fort Greely and Donnelly Training Area.
- Involve resource agencies in planning for habitat enhancement and the public in review of the plan.

Management History: The first habitat management action plan for Fort Greely and Donnelly Training Area was completed in 2001.

Current Management: Current management actions to update the habitat management plan will cease in 2002. If this INRMP is not approved and funded, no new habitat management plan will be prepared, updated, or implemented. Policies already in place in the current habitat management plan will continue.

Proposed Management:

Table 5-12. Habitat Management Plan.

OBJECTIVE	RESPONSIBLE FOR IMPLEMENTATION	PRIORITY	IMPLEMENTATION				
			2002	2003	2004	2005	2006
Conduct annual updates of the habitat management action plan.	USARAK Natural Resources	High	x	x	x	x	x
Prepare and update habitat management action plan for the planning period of 2007-2011.	USARAK Natural Resources	High					x
Complete NEPA documentation for update	USARAK Natural Resources	High					x

Other Management Alternatives Considered and Eliminated: There are no alternatives to maintaining a current habitat management plan in terms of updates at least every five years. NEPA documentation is also legally mandated.

5.4.3 Fish and Wildlife Inventory and Monitoring

5.4.3.1 Fish and Wildlife Monitoring

Fish and wildlife inventory includes fauna planning level surveys of birds, fish and small mammals on Fort Greely and Donnelly Training Area. These surveys identify neotropical, waterfowl, and raptor avian species; salmon, grayling, and other fish species; and small and large mammal species. Raptors are important components of the ecosystem, and many are vulnerable to human impacts as evidenced by their listing either in Alaska or in other areas of the United States. There is considerable concern in North America over declining numbers of many neotropical migratory birds. The Department of Defense is a major participant in the nationwide Partners in Flight program. Data on the status of neotropical migratory birds are required to manage and protect these declining species, as mandated by the Sikes Act and AR 200-3. Small mammals play important ecological roles as secondary consumers and as prey for a variety of predators.

Description and Justification: Fish and wildlife monitoring on Fort Greely and Donnelly Training Area entails monitoring important and sensitive indicator species including salmon, moose, bison, bears, great grey owls, northern goshawks, wolves, small mammals, and neotropical migratory birds. Game monitoring will emphasize moose, bison, ruffed grouse, black bears, and wolves. Moose and bears are monitored to ensure harvest levels are optimal for both utilization and protection of the species. Sharptail grouse are monitored to determine habitat improvement needs and to monitor success of habitat improvement practices. Monitoring data will be digitally stored in the USARAK GIS. Conducting fish and wildlife monitoring is required by Public Law 106-65 (Military Land Withdrawal Act) as mitigation for the land withdrawal legislative EIS and Public Law 86-797 (Sikes Act) to implement the INRMP.

Measures of Effectiveness:

- Complete annual or bi-annual monitoring of fish and wildlife to support decision making and management of the ecosystem at Fort Greely and Donnelly Training Area
- Conduct monitoring to maintain an accurate database of fauna species
- Conduct cost-sharing of monitoring utilizing partnerships with ADF&G, USFWS, BLM

Management History: Fish and wildlife monitoring on Fort Greely and Donnelly Training Area has been conducted primarily through collecting hunting and fishing information through the HTF program. Aerial nesting trumpeter swan surveys have been conducted on Fort Greely and Donnelly Training Area by the USFWS division of migratory bird management on a five year basis starting in 1990.

Current Management: Fish and wildlife monitoring includes annual or periodic checks to evaluate trends in populations. Breeding Bird Surveys (BBS) are used to monitor avian species, and one route has been established on Fort Greely and Donnelly Training Area. A late-winter, nocturnal survey route for breeding owls has also been established. Hunter check stations and hunter surveys are used to collect data on game species. Aerial monitoring is also used to evaluate populations of large species, such as moose surveys, which are conducted annually. USARAK will continue aerial swan surveys on a biannual basis, utilizing standardized USFWS survey techniques. Caribou are monitored annually to avoid conflicts between military training and caribou calving. Fish monitoring is conducted through user success surveys and stream and lake surveys. Harvest information for fish is collected by ADF&G's biologists through a statewide harvest survey. The survey, however, may not represent actual harvest, as youths (less than 16 years of age) are not included (Barry Stratton pers. com.). Fort Greely and Donnelly Training Area is also participating in the North American Amphibian Monitoring Program (NAAMP) in Alaska, which is a survey route run one evening during the wood frog breeding season.

Current inventory and monitoring actions will continue if this INRMP is not approved and funded. However, no new actions will be prepared, updated, or implemented.

Proposed Management:

Table 5-13. Fish and Wildlife Monitoring.

OBJECTIVE	RESPONSIBLE FOR IMPLEMENTATION	PRIORITY	IMPLEMENTATION				
			2002	2003	2004	2005	2006
Conduct trumpeter swan monitoring biannually from the kettle lakes region in the Alaska Range to the Delta and Tanana Rivers.	USARAK ITAM	High	x		x		x
Conduct caribou monitoring annually.	USARAK ITAM	High	x	x	x	x	x
Conduct BBS route annually.	USARAK ITAM	High	x	x	x	x	x
Annually monitor neotropical birds using two MAPS stations.	USARAK ITAM	High	x	x	x	x	x
Annually monitor breeding owls.	USARAK ITAM	Medium	x	x	x	x	x
Annually monitor wood frogs using NAAMP protocol.	USARAK ITAM	Medium	x	x	x	x	x
Update the bird checklist.	USARAK ITAM	High		x			

Other Management Alternatives Considered and Eliminated: There are many other potential methods of conducting fish and wildlife monitoring. However, the existing methods are standard, and in many cases follow nationwide or USFWS protocols. Other methods could be developed that include much more intensive data collection, which might enable monitoring of additional species, but these would be cost-prohibitive.

5.4.3.2 Fauna Planning Level Surveys

Description and Justification: Conduct fauna planning level surveys of birds, fish, amphibian, and mammals on Fort Greely and Donnelly Training Area. These planning level surveys focus on neotropical, waterfowl, and raptor avian species; salmon, grayling, and other fish species; and small mammal species. This project is a 10-year update to determine trends in faunal biodiversity and improve the quality of the faunal database. An accurate fauna planning level surveys is required by AR 200-3 and is required to implement this INRMP as mandated by Public Law 86-797 (Sikes Act). Per Memorandum DAIM-ED-N, 21 March 1997, this planning level survey is a class 1 requirement.

Measures of Effectiveness:

- Complete, maintain, and update a fauna planning level survey on Fort Greely and Donnelly Training Area.
- Complete, maintain, and update a planning level survey for threatened, endangered, or species of concern on Fort Greely and Donnelly Training Area.
- Identify the requirement for a fauna planning level survey in the EPR.

- Identify the requirement for planning level survey for threatened and endangered species fauna in the EPR.

Management History:

Raptors: A survey of cliff and tree nesting raptors on Fort Greely was conducted in 1998 by ABR (Anderson et al. 2000). This project located and mapped active and inactive nest structures for three sensitive raptor species: peregrine falcon, golden eagle, and bald eagle; and collected incidental information on other cliff nesting (e.g., gyrfalcon) and tree-nesting (e.g., northern goshawk and great grey owl) species. The area is well within the breeding range of peregrine falcons, gyrfalcons (*Falco rusticolus*), golden eagles (*Aquila chrysaetos*), and red-tailed hawks (*Buteo jamaicensis*). A pre-leaf-out (mid-May) aerial survey was used to identify and map large stick nests (bald eagles) as well as incidental nest sites for other tree-nesting species. Survey crews (pilot and two observers) used a Cessna 185 (Anderson et al. 2000).

An early to mid-incubation period survey (late May-early June) was used to identify large stick nest platforms (golden eagles and peregrines) and/or occupancy of cliff sites by raptors. The golden eagle is the most commonly occurring cliff-nester in the study area, and three golden eagle nests were found. Unoccupied golden eagle nests were observed near Molybdenum Ridge and on Ptarmigan Creek, but no bald eagle nests were identified. In addition, cliffs were evaluated for their potential use by nesting raptors, and several suitable sites were identified (Anderson et al. 2000).

Whitewash found along the cliff areas of Molybdenum Ridge were characteristic of Gyrfalcons, although no gyrfalcon or peregrine falcon nests were recorded. Cliff sites along Molybdenum Ridge and the Little Delta River seem to offer the best habitat for peregrine falcons (Anderson et al. 2000).

Neotropical Migratory Bird Surveys: Neotropical migratory bird surveys were conducted during 1998 to develop GIS databases, bird-habitat models, and status reports. Breeding bird checklists, point counts, and constant effort mist-netting stations were utilized. Appendix F provides an updated bird species list.

Small Mammals: Small mammals were surveyed in 1998 and 1999 on Fort Greely and Donnelly Training Area (Anderson et al. 2000). This survey developed a list of mammals that occur on Fort Greely and Donnelly Training Area; assessed small mammal and furbearers' habitat associations for use in ecological land evaluation; and documented the occurrence and relative abundance of species of concern (lynx, river otter, Alaska tiny shrew) or relatively unique small mammals (hoary marmot and woodchuck). Appendix F includes an updated small mammal list

Large Mammals and Fish: Large mammal monitoring (game species) has occurred by ADF&G for many years, but no baseline planning level surveys have been conducted on Fort Greely and Donnelly Training Area.

Current Management: There are currently no ongoing actions updating the fauna planning level survey.

Proposed Management: Under this preferred alternative, no fauna planning level surveys will be conducted during 2002-2006. The 10-year update for fauna planning level surveys on Fort Greely and Donnelly Training Area is projected for 2007.

Other Management Alternatives Considered and Eliminated: There are no alternatives to maintaining a current fauna planning level survey. Per the Sikes Act, AR 200-3, and Memorandum DAIM-ED-N, 21 March 1997, this planning level survey must be updated every 10 years.

5.4.4 Fish and Wildlife Management

Fish and wildlife population management is accomplished through actions directly affecting fish and wildlife species. Setting population number goals and stocking game species are the primary actions used to manipulate populations directly. Habitat management affects fish and wildlife populations indirectly by manipulation of vegetation to improve their habitat.

5.4.4.1 Fish and Wildlife Population Management

Hunting, fishing, and trapping on Fort Greely and Donnelly Training Area are conducted under regulations promulgated by the ADF&G to ensure that population numbers can be supported by the available habitat as well as being able to sustain meeting the recreational demand. USARAK collects data on the harvest of furbearers on the post and provides these data to the ADF&G to assist the agency in promulgating harvest regulations. USARAK manages hunting, trapping, and fishing on Fort Greely and Donnelly Training Area in terms of areas available, dates within ADF&G seasons, safety requirements, permit and reporting requirements, and other parameters to avoid conflicts with the military mission and provide safe, high quality recreational experiences.

Description and Justification: Conduct fish and wildlife management on Fort Greely and Donnelly Training Area. Fish and wildlife management includes providing information to ADF&G to help it set harvest numbers and stock fish in lakes; control nuisance animals; conduct management of important and sensitive indicator species including nongame species, furbearers, waterfowl and waterbirds, raptor and other avian predators, neotropical, migratory and other avian species, moose, caribou, bison, grouse, Dall sheep, and fish. Conducting fish and wildlife population management is required by Public Law 106-65 (Military Land Withdrawal Act) as mitigation for the land withdrawal LEIS and Public Law 86-797 (Sikes Act) to implement the INRMP.

Measures of Effectiveness:

- Maintain sustainable numbers of all species on Fort Greely and Donnelly Training Area.
- Preserve and enhance biodiversity.
- Provide an adequate fishery on Fort Greely and Donnelly Training Area through annual fish stocking.

Management Areas: Fisheries management emphasis areas on Fort Greely and Donnelly Training Area are shown in Figure 5-5. ADF&G Game Management Units are shown in Figure 5-6.

Management History: ADF&G has utilized lakes on Fort Greely and Donnelly Training Area that are suitable for fish stocking for many years. Fort Greely and Donnelly Training Area has numerous lakes that provide opportunities for recreational fishing. In the past, Fort Greely provided helicopter support for stocking remote lakes, both on and off the post.

Current Management: Fish stocking is used to enhance human use (fishing) of sustainable natural resources, consistent with ecosystem management. It is an important aspect of fisheries management in Alaska, since fishing opportunities would be very limited without stocking. According to the ADF&G stocking plan (2001), stocking diverts angling pressure away from fragile native stocks while maintaining fishing opportunities. Fish stocking directly supports quality of life for the Delta-Greely community.

ADF&G stocks fish in 16 lakes on Fort Greely under the Statewide Stocking Plan (ADF&G 2001), which is updated annually. ADF&G plans to continue stocking during 2002-2005 as shown in Table 5-14.

Table 5-14. Stocking in Fort Greely Lakes during 2002-2005 (ADF&G 2001).

Location	Species	Size	2002	2003	2004	2005
Koole	Rainbow	Fingerling	20,000	20,000	20,000	20,000
Bolio	Rainbow	Catchable	2500	2500	2500	2500
Mark	Rainbow	Fingerling		3600		3600
Mark	Coho	Fingerling	3600		3600	
Mark	Arctic Char	Subadult		200		200
Weasel	Rainbow	Fingerling	1600		1600	
Bullwinkle	Rainbow	Fingerling		800		800
Chet	Rainbow	Fingerling/ Brood	0/25	1600/25	0/25	1600/25
Chet	Arctic Char	Subadult		250		250
Ghost	Rainbow	Fingerling		1000		1000
Ghost	Arctic Char	Subadult		300		300
South Twin	Rainbow	Brood/ Catchable		25/500		25/500
Rockhound	Rainbow	Fingerling		600		600
No Mercy	Rainbow	Fingerling		600		600
Nickel	Rainbow	Fingerling		1000		1000
Nickel	Grayling	Catchable		250		250
Nickel	Arctic Char	Subadult		100		100
North Twin	Rainbow	Fingerling	2000	2000	2000	2000
J	Arctic Char	Subadult		150		150
Doc Lake	Rainbow	Fingerling		500		500
Luke	Grayling	Catchable		400		400
J	Grayling	Catchable		750		750
J	Coho	Fingerling	3000		3000	
Sheefish	Grayling	Catchable		400		400
Sheefish	Arctic Char	Subadult		700		700

Hunting, fishing, and trapping are allowed on Fort Greely under regulations promulgated by ADF&G to ensure available habitat can support population numbers, as well as being able to sustain recreational hunting demand. USARAK manages wildlife populations within these regulations. USARAK collects post harvest data on game, furbearers, and sport fish and provides this information to ADF&G to assist the agency in promulgating species harvest regulations. USARAK manages hunting, trapping, and fishing on Fort Greely by designating areas available, establishing dates within ADF&G seasons, safety requirements, permit and reporting requirements, and other parameters to avoid conflicts with the military mission while providing safe, high quality recreational experiences. USARAK collects data on species that are harvested, which is valuable for managing future harvests.

USARAK is committed to preserving and enhancing biodiversity. Prior to any introduction of a new species to the post, appropriate NEPA documentation and consultation with partners of this INRMP will be completed. There are no current plans for transplanting wildlife either onto or from Fort Greely.

Table 5-15. Fish and Wildlife Population Management.

OBJECTIVE	RESPONSIBLE FOR IMPLEMENTATION	PRIORITY	IMPLEMENTATION				
			2002	2003	2004	2005	2006
Annually stock Koole, Bolio, Mark, Weasel, Bullwinkle, Chet, Ghost, South Twin, Rockhound, No Mercy, Nickel, North Twin, Doc, Luke, J, and Sheefish Lakes	ADF&G	High	x	x	x	x	x
Conduct annual big game harvests to maintain population levels.	ADF&G	High	x	x	x	x	x

Other Management Alternatives Considered and Eliminated: There are many other potential methods for conducting fish and wildlife population management. However, no other options would meet the needs of the military mission. The proposed management actions listed above carefully balance the needs of the military mission, recreation, and the ecosystem. Other actions would be too minimal or would be cost-prohibitive.

5.4.4.2 Habitat Improvement

Description and Justification: Habitat management includes development and enhancement of habitat to ensure sustainable populations of game species (including moose, brown and black bear, wolf, wolverine, lynx, coyote, fox) with no reduction in overall habitat quality for nongame species (such as small mammals, bald eagles, owls, hawks, and a variety of waterfowl and passerines currently inhabiting the installation). This project will enhance habitat on up to 200 acres per year on Fort Greely and Donnelly Training Area during 2002-2006. USARAK, Alaska Department of Fish and Game, USFWS and BLM are responsible for habitat management on Donnelly East and West training areas. Conducting habitat improvement is required by Public Law 106-65 (Military Land Withdrawal Act) as mitigation for the land withdrawal LEIS and Public Law 86-797 (Sikes Act) to implement the INRMP.

Habitat Management Areas: Habitat management areas have been created to show the likelihood of habitat manipulation in any given area. These areas are listed in Table 5-16 and shown in Figure 5-7.

Table 5-16. Habitat Management Areas.

Management Areas	Habitat Action	Habitat Type Desired	Size
Habitat management areas	Reduce forest density and forest understory	Medium forest canopy with open understory	35,000 acres
	Reduce scrub vegetation on a rotational basis.	Primary successional habitat with low to no forest canopy and high density shrub layer	30,000 acres
	Eliminate all woody vegetation on a permanent basis. Maintain herbaceous and grass ground cover.	Open	4000 acres
	Increase woody vegetative cover through wildlife improvement plantings.	Shrubland to open forest	5000 acres
Habitat protection areas	No habitat management or other vegetation manipulation	Protect habitat as it naturally occurs	587,000 acres
Non-Habitat Areas	None	N/A	9500 acres

Measures of Effectiveness:

- Maintain a minimum of 100 acres of preferred bison habitat.
- Improve the quality of up to 1000 acres of habitat for game and nongame species.
- Manage game habitats to support sustainable hunting and fishing programs.

Management History: Habitat management on Fort Greely and Donnelly Training Area has historically been focused on bison habitat improvement. Food plots and prescribed burns were used on Fort Greely and Donnelly Training Area to manipulate bison habitat and their use of the land.

The 1982 Fort Greely Fish and Wildlife Plan stated that bison calving grounds on the west bank of the Delta River were being overgrown by woody species. About 50 acres of the area were aerial fertilized during the summer of 1981. The fertilizer was purchased using Army funds, while ADF&G contracted the aircraft. An appendix to this plan included *A Bison Management Plan for Fort Greely and Donnelly Training Area, Alaska* (Kiker and Fielder 1980) with two supplements: *A Management Plan to Reroute the Migration Pattern of the Delta Bison Herd* (Fielder 1980) and *A General Plan for Expanding and Rehabilitating the Summer Range of the Delta Bison Herd* (Spiers 1981).

Bison use of the Texas and Washington ranges, (on the eastern side of the Delta River) for calving has increased in recent years. USARAK rehabilitated six forage plots (2-30 acres each) closest to Texas Range in 1999, which had overgrown with aspen and other hardwoods, and they were in an area where prescribed burning was difficult to accomplish. The rehabilitation included the use of brush hogging to remove the shrub overstory, followed by minimal disking, seeding with grass mix, and fertilizing.

Also in 1999, about 20 acres of scrub and pole aspen were cut to encourage new growth within forage range of moose and other game. This habitat enhancement was accomplished by hydro-axing pre-selected plots, and has produced mixed results. In the spring of 2001, 4 of the 5 habitat cuts were surveyed for aspen regeneration and moose browse (see Table 5-17).

Table 5-17. Habitat Manipulation Results (2001 data) for 1999 Aspen Hydro-Axing.

Plot Number	Regeneration	Moose Browse	Size
1	Little	Very Little	4 acres
2	Excellent	High	4 acres
3	Good	Very Little	3 acres
4	Almost None	Some	7 acres
5	Good	Not Surveyed	2 acres

Current Management: USARAK utilizes two primary methods of manipulating habitat: prescribed burning and mechanical removal of vegetation. USARAK also utilizes herbaceous and woody vegetation plantings in the cantonment area to improve habitat.

Prescribed Burning: Prescribed burning is beneficial to ecosystem maintenance on much of Fort Greely and Donnelly Training Area because fire is an important component of the ecosystem's development. Prescribed burning is also favored by BLM. It is a more natural means of vegetation removal than using timber harvest or other mechanical means. A five-year study by ADF&G (Simpson and Shields 1995) on four sites within the Tanana Flats Training Area burn found the following.

- Moose moved into and heavily browsed a lightly burned study area, which revegetated with prolific willow sprouting.
- Moose moved into and heavily browsed prolific growth of aspen sprouts and suckers in an intensively burned study area.
- Two study areas dominated by black spruce that were burned heavily showed little regrowth of preferred browse species, and moose use was low.
- There was little evidence of snowshoe hares in all but the lightly burned study area.
- By 1985, tree seedling, tall shrub, low shrub, and moss cover had increased in all four study areas.
- Increases in herbaceous cover occurred in three of the four areas.

ADF&G uses prescribed burning for habitat restoration on state lands west of Wood River. The burning is prescribed by the *Western Tanana Flats Prescribed Burning Plan* (State of Alaska 1995). This plan has three goals.

- Restore age diversity among aging vegetative types, thus maintaining or enhancing wildlife habitat values for species needing early- to mid-successional stages.
- Maintain or enhance wildlife-related recreation opportunities in an area close to human population centers in Alaska's interior.
- Reduce the risk of unmanageable, expensive, and potentially dangerous wildfires that could threaten adjacent communities and protected timber resources.

Mechanical Removal and Revegetation: Mechanical means of habitat manipulation are the second primary way to accomplish habitat management. Mechanical tools used to accomplish habitat management include commercial timber sales, timber stand improvement, firewood cutting, hydro-axe and military maneuver training. Habitat improvement areas may then be planted with desired herbaceous species, depending on natural regeneration.

Current habitat management actions will continue if this INRMP is not approved and funded. However, no new actions will be prepared, updated, or implemented.

Proposed Management:

Table 5-18. Habitat Management.

OBJECTIVE	RESPONSIBLE FOR IMPLEMENTATION	PRIORITY	IMPLEMENTATION				
			2002	2003	2004	2005	2006
Improve and enhance 40 acres of bison habitat every 2 years.	USARAK Natural Resources	High	x		x		x
Enhance up to 200 acres annually of military training habitat.	USARAK Natural Resources	High	x	x	x	x	x

Other Management Alternatives Considered and Eliminated: There are many other potential methods for conducting habitat management. However, no other options would meet the needs of the military mission. The proposed management actions listed above carefully balance the needs of the military mission, recreation, and the ecosystem. Other actions would be too minimal or would be cost-prohibitive.

5.4.5 Fish and Wildlife Management Responsibilities

ADF&G has the primary responsibility for managing fish and wildlife game populations. ADF&G sets population goals and carries out stocking on Fort Greely and Donnelly Training Area. USFWS is primarily responsible for managing nongame populations of fish and wildlife. USARAK is responsible for working together with these two agencies to conduct habitat management on Fort Greely and Donnelly Training Area. Routine grounds maintenance on Fort Greely and Donnelly Training Area is the responsibility of Roads and Grounds Maintenance, DPW.

5.5 Endangered Species Management

There are no known federally endangered or threatened species on Fort Greely and Donnelly Training Area, but there are a number of rare, uncommon, or priority species. The endangered species management program at Fort Greely and Donnelly Training Area deals primarily with these rare, uncommon, and priority species.

The endangered species program is integrated fully with other natural resources programs, especially ecosystem management. Because there are no federally-listed endangered or threatened species on Fort Greely and Donnelly Training Area, all actions that protect, conserve, and enhance rare, uncommon, and priority species and their habitats are listed under other program areas.

5.5.1 Endangered Species Management Goals and Objectives

Endangered species management goals and objectives all contribute to one or more of the overall natural resources program goals of stewardship, military training support, compliance, quality of life, and integration. Endangered species management goals and objectives are listed below:

- Protect and conserve endangered, threatened, rare, uncommon and priority species on Fort Greely and Donnelly Training Area.
- Identify and delineate endangered species and their habitats on Fort Greely and Donnelly Training Area.

- Conduct appropriate Section 7, Endangered Species Act consultation for any actions that may impact endangered species.

5.5.2 Endangered Species Planning

Endangered, threatened, or rare species program management and planning includes all the planning, budgeting, overseeing contracts, and organization necessary to implement the endangered species program. The primary emphasis for this component of the endangered species management program is to ensure that rare, uncommon or priority species are included in the ecosystem management plan. There will be no endangered species management plan for Fort Greely and Donnelly Training Area unless a federally listed endangered or threatened species is found on Fort Greely and Donnelly Training Area.

5.5.3 Endangered Species Inventory and Monitoring

Endangered species inventory and monitoring is accomplished through other program surveys. One of the objectives for flora and fauna planning level surveys was to identify any endangered or threatened species. LCTA monitoring continues to look for any potential threatened or endangered species as vegetation is monitored. Avian monitoring, especially breeding bird surveys, continues to look for threatened or endangered species nesting locations. Rare, uncommon, or priority species found on Fort Greely and Donnelly Training Area are identified and delineated through these planning level survey and monitoring efforts.

5.5.4 Endangered Species Management

Endangered species management involves protecting, conserving, and enhancing habitat for rare, uncommon, or priority species.

Description and Justification: Endangered species management involves protecting, conserving, and enhancing habitat for rare, uncommon, or priority species. There are no known federally endangered or threatened species on Fort Greely and Donnelly Training Area, but there are a number of rare, uncommon, or priority species. Endangered, threatened and rare species management on Fort Greely and Donnelly Training Area entails monitoring and protection of sensitive habitat for avian, mammal, and plant species. Conducting endangered and threatened species management is required by the Endangered Species Act, Public Law 106-65 (Military Land Withdrawal Act) as mitigation for the land withdrawal LEIS and Public Law 86-797 (Sikes Act) to implement the INRMP.

Measures of Effectiveness:

- Protect all threatened and endangered species on Fort Greely and Donnelly Training Area.
- Monitor annually to locate any threatened or endangered species on Fort Greely and Donnelly Training Area.
- No jeopardy opinions for threatened or endangered species.
- Conserve habitat for rare, uncommon, and priority species on Fort Greely and Donnelly Training Area.
- Maintain a designated natural resources professional with appropriate training on Fort Greely and Donnelly Training Area

Management History: During flora and fauna planning level surveys conducted in 1998 and 1999, USARAK surveyed for any threatened or endangered species. No endangered species were identified

during these or any other surveys. No special management actions have been taken to protect or conserve any rare, special interest, uncommon or priority species.

Current Management: Current management for endangered species is limited to continuing the ongoing search to locate any potential endangered or threatened species.

Proposed Management:

Table 5-19. Endangered Species Management.

OBJECTIVE	RESPONSIBLE FOR IMPLEMENTATION	PRIORITY	IMPLEMENTATION				
			2002	2003	2004	2005	2006
Take appropriate steps to survey for threatened and endangered species, if new species are listed or there is reason to believe that currently listed species might occur on Fort Greely and Donnelly Training Area.	USARAK Natural Resources	High	x	x	x	x	x
Conserve habitat for rare, uncommon, and priority species through the ecosystem management actions listed under habitat management and fish and wildlife management.	USARAK Natural Resources	High	x	x	x	x	x
Comply with USFWS protocols for TES if located on Fort Greely and Donnelly Training Area.	USARAK Natural Resources	High	x	x	x	x	x

Other Management Alternatives Considered and Eliminated: There are no other options to endangered species management. If an endangered species is located on Fort Greely and Donnelly Training Area, USARAK is legally mandated to take appropriate steps to survey and protect that species. Other actions would be too minimal or would be cost-prohibitive.

5.5.5 Endangered Species Program Responsibilities

US Fish and Wildlife Service is responsible for administering the Endangered Species Act. USARAK is responsible for continuing to identify and delineate any species that are listed as threatened or endangered. USARAK is responsible for conducting Section 7 consultation with USFWS for any actions that may affect endangered or threatened species.

5.6 Special Interest Area Management

Designation of special protection status for important or fragile natural areas is an effective management tool. In accordance with AR 200-3, areas that contain natural resources that warrant special conservation efforts will be identified by USARAK during the inventory and classification process. After appropriate study and coordination, such areas may be managed as Special Interest Areas for their unique features.

Per AR 200-3, this INRMP “will address the special management necessary for these areas, and all current and future land uses will consider the uniqueness of these areas and plan accordingly to ensure conservation of their resources.”

5.6.1 Special Interest Area Goals and Objectives

Special interest area management goals and objectives all contribute to one or more of the overall natural resources program goals of stewardship, military training support, compliance, quality of life, and integration. Special interest area management goals and objectives are listed below:

- Identify and provide protection for areas of special ecological or cultural concern.

5.6.2 Special Interest Area Management Plan

Special interest area program management and planning includes all the planning, budgeting, overseeing contracts, and organization necessary to implement the special interest area program. The primary emphasis for this component of the special interest area program is the preparation and update of the special interest area management plan every five years.

Description and Justification: Prepare, update, and implement a special interest areas management action plan for Fort Greely and Donnelly Training Area. The special interest areas management action plan identifies, delineates, and proposes measures to protect and conserve special interest areas on Fort Greely and Donnelly Training Area. Updates of the special interest area management plan are required by Public Law 106-65 (Military Land Withdrawal Act) as mitigation for the land withdrawal LEIS and Public Law 86-797 (Sikes Act) every five years to implement the INRMP. Per Memorandum DAIM-ED-N, 21 March 1997, this component of the INRMP is a class 1 requirement.

Measures of Effectiveness:

- Complete, update, and maintain a special interest areas management plan.
- Decrease disturbance to special interest areas on Fort Greely and Donnelly Training Area.
- Involve resource agencies in planning for special interest areas and the public in review of the plan.

Management History: The first special interest areas management and action plan for Fort Greely and Donnelly Training Area was completed in 2001.

Current Management: Current management actions to update the special interest areas management plan will cease in 2002. If this INRMP is not approved and funded, no new special interest areas management plan will be prepared, updated, or implemented. Policies already in place in the current special interest areas management plan will continue.

Proposed Management:

Table 5-20. Special Interest Areas Management Plan.

OBJECTIVE	RESPONSIBLE FOR IMPLEMENTATION	PRIORITY	IMPLEMENTATION				
			2002	2003	2004	2005	2006
Conduct annual updates of the special interest areas management action plan.	USARAK Natural Resources	High	x	x	x	x	x

OBJECTIVE	RESPONSIBLE FOR IMPLEMENTATION	PRIORITY	IMPLEMENTATION				
			2002	2003	2004	2005	2006
Prepare and update special interest areas management action plan for the planning period of 2007-2011.	USARAK Natural Resources	High					x
Complete NEPA documentation for update	USARAK Natural Resources	High					x

Other Management Alternatives Considered and Eliminated: There are no alternatives to maintaining a current special interest areas management plan in terms of updates at least every five years. NEPA documentation is also legally mandated.

5.6.3 Special Interest Area Inventory and Monitoring

Inventory of special interest areas is conducted to identify, locate, delineate and map areas of unique or sensitive status. Annual monitoring is accomplished through other programs such as LCTA, aerial monitoring, and fish and wildlife monitoring.

5.6.4 Special Interest Area Management

Designation of special protection status for sensitive or fragile areas is an important management tool. It is often easier and more cost effective to place use restrictions on some areas to minimize damage or disturbance, than to repair damage or disturbance after it has occurred.

Description and Justification: Manage special interest areas on Fort Greely and Donnelly Training Area. Special interest areas on Fort Greely and Donnelly Training Area are the Delta bison area, the sandhill crane roosting area, Delta caribou calving areas, water body protective areas, Dall sheep habitat areas, and moist tundra areas. Special interest areas will be individually managed according to their specific needs. The management and protection of special interest areas is consistent with ecosystem management principles. Conducting special interest area management is required as mitigation for the five year Section 404 Clean Water Act wetlands permit for military training, by Public Law 106-65 (Military Land Withdrawal Act) as mitigation for the land withdrawal LEIS, and Public Law 86-797 (Sikes Act) to implement the INRMP.

Management Areas: Special interest areas on Fort Greely and Donnelly Training Area are the Delta bison area, the sandhill crane roosting area, Delta caribou calving areas, waterbody protective areas, Dall sheep habitat areas, and moist tundra areas. These areas are shown on Figure 2-15, and are described in greater detail in Section 2.3.4.

Measures of Effectiveness:

- Limit disturbance in designated sandhill crane areas each year from 25 April through 15 May, and 1 September through 30 September when sandhill cranes are present.
- Suspend activities or operations that would adversely affect caribou calving areas during 15 May through 31 May when caribou are present.
- Conduct all development and military actions in the caribou calving grounds under winter conditions when there is sufficient snow cover and the ground is adequately frozen to minimize the damage to vegetation and soils.
- Reduce impacts around water bodies and in moist tundra areas.

- Limit disturbance to bison calving areas from 15 April through 15 June, if bison are present.
- Reduce bison human conflicts.
- Limit disturbance to Dall sheep habitat areas.

Management History: Agreements for bison calving areas and caribou calving areas have been in place since the late 1980s. Protection of water bodies and sensitive habitat has been in place since the 5-year general wetland permit protected all such areas.

Moist tundra is one of the more easily damaged ecosystems on Fort Greely and Donnelly Training Area, especially during warm weather. At Fort Greely and Donnelly Training Area, moist tundra occurs above treeline on tops of hills, 2,500-3,000 feet above sea level. The Army provides protection for fragile moist tundra by requiring it be frozen prior to military training. In addition, a six-inch layer of snow is required to be left on the ground when creating winter trails for military access rather than plowing to bare ground. This prevents damage to the protective vegetation mat.

Current Management: Special interest area management includes protecting special interest areas through regulations, overlays, and barriers. USARAK Regulation 350-2, *Range Regulation*, has many general provisions to protect environmental resources, including special interest areas, on Fort Greely and Donnelly Training Area. The provisions include:

- NEPA review of actions affecting natural resources;
- restoration of sites damaged by digging;
- removal of wire, rope, string, concertina wire, and other training debris;
- wildfire prevention measures or enhancement;
- preference for use of established roads and trails;
- stream crossing requirements to include coordination with ADF&G;
- protection of trees with diameters greater than four inches;
- prohibitions on harassment of wildlife;
- spill prevention and containment measures;
- hazardous materials handling procedures;
- coordination of ground-disturbing activities with the Natural Resources Branch; and
- controls on outdoor recreation including hunting, trapping, fishing, and firewood cutting.

Military mission-related restrictions within special interest areas are included in the Environmental Limitations map and Environmental Awareness materials prepared for distribution to military units that use training areas on Fort Greely and Donnelly Training Area. Most military mission-related restrictions involving special interest areas have been in place for some time with no significant adverse impacts on accomplishment of the mission.

Physical barriers can be used to protect special interest areas. However, this is only used in extreme cases because barriers tend to draw attention to an area.

Current special interest area protection actions will continue if this INRMP is not approved and funded. However, no new actions will be prepared, updated, or implemented.

Proposed Management:

Table 5-21. Special Interest Areas Management.

OBJECTIVE	RESPONSIBLE FOR IMPLEMENTATION	PRIORITY	IMPLEMENTATION
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			2002	2003	2004	2005	2006
Manage and protect the bison calving area	USARAK Natural Resources	High	x	x	x	x	x
Manage and protect sandhill crane roosting areas	USARAK Natural Resources	High	x	x	x	x	x
Manage and protect caribou calving and post-calving areas	USARAK Natural Resources	High	x	x	x	x	x
Manage and protect cultural resources areas	USARAK Natural Resources	High	x	x	x	x	x
Manage and protect areas surrounding lakes from excessive damage or contamination	USARAK Natural Resources	High	x	x	x	x	x
Manage and protect other riparian areas, lakes, and wetlands	USARAK Natural Resources	High	x	x	x	x	x
Manage and protect moist tundra special interest areas	USARAK Natural Resources	High	x	x	x	x	x
Complete NEPA documentation when necessary	USARAK Natural Resources	High	x	x	x	x	x

Other Management Alternatives Considered and Eliminated: There are many other potential methods for conducting special interest areas management. However, no other options would meet the needs of the military mission. The proposed management actions listed above carefully balance the needs of the military mission, recreation, and the ecosystem. Other actions would be too minimal or would be cost-prohibitive.

5.6.5 Special Interest Area Responsibilities

USARAK has primary responsibility for management of special interest areas. Within USARAK, DPW Environmental Resources Department has responsibility to identify, locate, monitor and manage special interest areas. DPTSM Range Control provides control over access into these areas.

5.7 Pest Management

5.7.1 Pest Management Goals and Objectives

Pest management goals and objectives all contribute to one or more of the overall natural resources program goals of stewardship, military training support, compliance, quality of life, and integration. Pest management goals and objectives are listed below:

- Meet requirements defined by the Army pest management program measures of merit.
- Use alternative strategies (sanitation, trapping, biological control, mechanical control, etc.).
- Select the least toxic pesticides.
- Select precision application techniques that target specific pests and habitats.
- Emphasize education, communication, monitoring, inspection, and record keeping.

5.7.2 Pest Management Plan

Pest management program management and planning includes all the planning, budgeting, overseeing contracts, and organization necessary to implement the pest management program. The primary emphasis for this component of the pest management program is the preparation and update of the installation pest management plan every five years.

Description and Justification: Maintain and update the Integrated Pest Management Plan. Fort Greely and Donnelly Training Area updated its Integrated Pest Management Plan (IPMP) in 1996. The goal of the IPMP is to minimize the adverse environmental impacts of using pesticides while achieving an acceptable level of control and cost-effectiveness. Completion and updates of the plan are required to meet USARPAC pest management measures of merit. This plan discusses specific actions necessary to accomplish pest management on Fort Greely and Donnelly Training Area. Pest management planning is a requirement of AR 200-5. Updates of the pest management plan are required by Public Law 106-65 (Military Land Withdrawal Act) as mitigation for the land withdrawal LEIS and Public Law 86-797 (Sikes Act) every five years to implement the INRMP. Per Memorandum DAIM-ED-N, 21 March 1997, this component of the INRMP is a class 1 requirement.

Measures of Effectiveness:

- Complete, maintain, and update a pest management plan for Fort Greely and Donnelly Training Area.
- Meet the pest management measures of merit through pest management planning.
- Designate a qualified/trained pest management coordinator.
- Continue to reduce pesticide use.
- Involve resource agencies in planning for pest management and the public in review of the plan.

Management History: The Fort Greely and Donnelly Training Area pest management plan was first completed by the Corps of Engineers in 2000.

Current Management: Current management actions to update the installation pest management plan will cease in 2002. If this INRMP is not approved and funded, no new pest management plan will be prepared, updated, or implemented. Policies already in place in the current pest management plan will continue.

Proposed Management:

Table 5-22. Installation Pest Management Plan.

OBJECTIVE	RESPONSIBLE FOR IMPLEMENTATION	PRIORITY	IMPLEMENTATION				
			2002	2003	2004	2005	2006
Conduct annual updates of the installation pest management action plan.	USARAK Natural Resources	High	x	x	x	x	x
Prepare and update installation pest management action plan for the planning period of 2007-2011.	USARAK Natural Resources	High					x
Complete NEPA documentation for update	USARAK Natural Resources	High					x

Other Management Alternatives Considered and Eliminated: There are no alternatives to maintaining a current installation pest management plan in terms of updates at least every five years. NEPA documentation is also legally mandated.

5.7.3 Pest Management Inventory and Monitoring

Pest management inventory and monitoring is accomplished by surveillance surveys by pest control personnel. Other natural resources monitoring efforts also contribute to pest management monitoring. LCTA, in particular, monitors vegetation annually and identifies invasive and exotic plant species in the training areas.

5.7.4 Pest Management

Measures of Merit: In 1994, the Department of Defense developed a Measures of Merit Program for all military installations which requires a pest management plan to be prepared, signed, and implemented. Other requirements include the reduction of pesticide use on all installations by 50 percent over a seven year period (1994–2000) and certified training of all pest control personnel.

Installation Pest Management Plan: Fort Greely and Donnelly Training Area completed and approved a pest management plan in 1996. Reduction in pesticide usage on Alaskan installations is being closely coordinated with USARPAC. All Alaskan Army pest control personnel are in compliance with the basic training certification required by Measures of Merit.

Chemical Use: All chemicals used on Fort Greely and Donnelly Training Area are EPA-approved. Pesticide use has fallen dramatically over the last two years. Significant decreases in the number of soldiers based on the post has contributed to that reduction.

Reducing chemical use is a major goal of the pest management program. Installation personnel understand both immediate and long-term threats to humans and ecosystem functions from chemical abuses. The pest management program emphasizes careful evaluation before chemicals are applied. More efficient equipment and techniques allow the reductions in the volumes and toxicity of chemicals used.

The most difficult objective for Fort Greely and Donnelly Training Area is the reduction of herbicides. In general, the acreage of improved grounds has not been reduced enough to allow for a 50 percent reduction in herbicides without changing the appearance of the post. Reduced grounds maintenance has eliminated about 1/8th of improved grounds since 1993, but significant future reductions are unlikely. Dandelion (an exotic species) control is especially difficult to achieve if herbicide reduction objectives are implemented.

Invasive and Exotic Plant Control: At Fort Greely and Donnelly Training Area, vegetation control is required on the airfield, shoulders of main roads, storage areas, and in pavement cracks. Weeds such as dandelions, knotweed, crabgrass, etc. are treated when requested on a service or work order (Lassek 1996). Chemical control is a last-resort option. Lawn weeds are treated with 2-4D; Roundup® is used on weeds growing in pavement cracks.

Soil sterilants are used in areas where bare ground is required, such as the industrial portion of the post and the POL (Petroleum, Oil, and Lubricants) point. Bromacil® is used for this purpose. Any plant control activities associated with withdrawn lands will consider the BLM strategic noxious weed control plan.

Pest Animal Control: Pests must be controlled for a variety of reasons, including human health, protection of property and foodstuffs, protection of desired vegetation, safety, and general quality of life.

Domestic Pets. Stray cats and dogs generally are the responsibility of road patrol personnel of the Provost Marshal. Neither road units nor game wardens with the Military Police have access to tranquilizer guns, so slip nooses are generally used to capture animals. Captured animals are taken to the Fort Greely and Donnelly Training Area veterinarian.

Household and Nuisance Pests. Pest Control handles household pests on Fort Greely and Donnelly Training Area. An integrated approach is used to control pests, including education, sanitation, and as a last resort, chemical control. Rodents, such as shrews, voles, and lemmings are controlled by using sticky traps or bait (Lassek, 1996).

Undesirable Fish. A few Fort Greely and Donnelly Training Area lakes, such as J Lake, have excessive biomass of undesirable fish, principally northern longnose suckers. They affect the growth and survival of game species. Fort Greely and Donnelly Training Area and ADF&G personnel will cooperatively use Rotenone to remove most of this biomass and restock these lakes with game fish. Because undesirable species can move back into these lakes during periods of high water, a gabion dam was constructed in 1999. Gabions are wire containers with large rock that allow water, but not fish, to flow through.

Road-killed Caribou and Moose. State Troopers are called to handle road-killed moose. If carcasses are still safe for human consumption, they are donated, using a charity list.

Birds (except BASH). Cliff swallows may build nests under eaves of buildings, including residences, creating a nuisance and health concern. Droppings are unsightly and are a growth medium for a fungi that causes a respiratory infection (histoplasmosis). Swallows also are infested with mites. Exclusion from nesting sites is the preferred means for controlling cliff swallows. Sometimes it is necessary to destroy nests, which may include eggs or young. Fort Greely and Donnelly Training Area personnel will ensure that such nest destruction is conducted only under a permit from USFWS. Detection and action early in the breeding season will avoid destruction of nests with young or eggs. The Fire Department is sometimes called upon to wash out nests in places difficult to reach such as in the aircraft hangar. Swallow problems have significantly decreased in recent years.

There are numerous ways to deal with pigeon problems, depending on location. Each case is evaluated individually and appropriate action is taken. In general, screening is the preferred method to keep pigeons from hangars. However, in 1995 it was necessary to trap pigeons, with 287 being captured.

All actions are performed in accordance with the Migratory Bird Treaty Act, which prohibits the taking, killing, or possession of migratory birds.

Ornamental and Tree Pests. Scale insects, aphids, and other pests of trees and ornamentals are seldom a problem on Fort Greely and Donnelly Training Area. Use of insect-resistant trees and ornamentals, and proper care of trees, including watering, pruning, and fertilization, minimize outbreaks (Lassek 1996).

Real Property and Stored Product Pests. Real property pests include carpenter ants and decay fungi. Neither is a major concern at Fort Greely and Donnelly Training Area. Control is conducted on an as-needed basis. Veterinary personnel at MEDDAC inspect for pests in stored products except in Housing, which is the Pest Controller's responsibility. The two most common pests of stored products are the sawtooth grain beetle (*Oryzaephilus surinamensis*) and the confused flour beetle (*Tribolium confusum*). Infestations are controlled by DPW generally through destruction of the product followed by application of a residual insecticide (Lassek 1996).

Disease Vectors. Mosquitoes, biting gnats, and flies are serious pests during warm months. The Alaska Preventative Medicine Branch, MEDDAC and the Pest Controller are responsible for monitoring mosquitoes and determining if they need to be controlled. Control is the responsibility of DPW and includes elimination of mosquito breeding areas and use of pesticides when needed. Ultra low volume insecticide treatment of *Pyrenone* is recommended. Flies normally are treated using sanitation practices.

Predator Control. A special provision has been established that prohibits the control of wolf populations on military lands in Alaska. USARAK has no intention of permitting wolf control on its lands during 1998-2002. Any predator control on Fort Greely and Donnelly Training Area must be approved by USARAK and evaluated through the NEPA process.

Other Animals. Pest Control handles most other animal problems. Each problem is evaluated individually. Bear problems usually require assistance from ADF&G, although MP game wardens have first-response responsibility. Wardens occasionally chase moose from housing areas.

Bird-Aircraft Strike Hazard Management: The BASH program will develop ways of reducing the air strike hazard by manipulating habitat to decrease the number of birds near the runway. The role of the Natural Resources Branch is to provide technical expertise and make recommendations to Public Works, USARAK Aviation Safety, Airfield Operations, and the Pest Control Branch to reduce bird use in critical areas. The BASH program will include the following features:

- Continue depredation of key nuisance species with depredation permit to be renewed annually. The pest management program will repair or place wire on hangers where swallows and pigeons are roosting or nesting.
- Produce education materials for BASH, including videos, posters, handouts, training, bird books.
- Attend Post BASH team meetings, which are scheduled to meet at least once in the spring and in the fall.
- Ensure that Public Works and the Fire Department work together to keep birds off the airfields.

5.7.5 Pest Management Program Responsibilities

Pest management is the responsibility of Fort Wainwright DPW, specifically a Certified Pest Controller. Currently, there is no Certified Pest Controller at Fort Greely and Donnelly Training Area. Other organizations involved include the PMO and DPW Environmental Resources. The Pest Management Coordinator for USARAK is within Natural Resources Branch, DPW, Fort Richardson. He is not involved in routine pest management operations, but serves as a technical advisor to the program.

Noxious animal control responsibility is shared at Fort Greely and Donnelly Training Area. In general, Pest Control Branch, DPW, and the Provost Marshal work within the cantonment area. The Provost Marshal, assisted by ADF&G and the Alaska State Troopers, handles problems with game animals. Animal Damage Control (ADC), U.S. Department of Agriculture, has skills that may be useful in controlling noxious animals.

Figure 5-1. Environmental Limitations Overlay.

Figure 5-2. Forest Management Areas.

Figure 5-3. Fort Greely and Donnelly Training Area Fire History.

Figure 5-4. Fire Management Areas.

Figure 5-5. Fisheries Management Areas

Figure 5-6. ADF&G Game Management Units

Figure 5-7. Habitat Management Areas.