DEPARTMENT OF THE ARMY
UNITED STATES ARMY ALASKA

ENVIRONMENTAL ASSESSMENT

INTEGRATED TRAINING AREA MANAGEMENT PROGRAM MANAGEMENT PLAN

June 2005

ENVIRONMENTAL ASSESSMENT

UNITED STATES ARMY ALASKA
INTEGRATED TRAINING AREA MANAGEMENT PROGRAM
MANAGEMENT PLAN

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11 July 2005
Date

FINAL FINDING OF NO SIGNIFICANT IMPACT

United States Army Alaska, Integrated Training Area Management Program Management Plan

The National Environmental Policy Act of 1969 (NEPA) requires federal agencies to consider potential environmental impacts prior to undertaking a course of action. Within the Department of the Army, NEPA is implemented through regulations promulgated by the Council on Environmental Quality [40 CFR Parts 1500 – 1508], with supplemental guidance provided by Army NEPA regulations [32 CFR Part 651]. In accordance with NEPA, U.S. Army Garrison, Alaska (USAG-AK) has prepared an environmental assessment (EA) to consider the environmental effects of a proposed management plan for its Integrated Training Area Management (ITAM) program.

Description of Action: U.S. Army Alaska (USARAK) proposes to institute a management plan through which to implement its ITAM program. This management plan would provide a systematic approach to maintaining and improving its range and training land infrastructure in support of USARAK's mission to provide ready combat forces for worldwide joint military operations, crisis response and peacetime engagements. Currently, the ITAM program performs range and training land maintenance and improvements in an ad-hoc fashion without a formal, systematic approach. A management plan would institute standard operating procedures and best management practices for all ITAM component programs and projects to provide consistency among management approaches, increase oversight, and streamline processes and procedures to improve ITAM program efficiency. The management plan would provide the standardization necessary to allow ITAM to more easily predict possible impacts of projects and determine efficacy of project procedures. As individual ITAM projects are identified, this EA would be utilized as the foundation for NEPA analysis. Project-specific assessments would tier from it to account for local conditions and impacts.

The decision is whether to implement Alternative 1: Continue ITAM Program without a Management Plan (No Action); Alternative 2: Implement ITAM Program through a Management Plan (Proposed Action); or Alternative 3: Suspend ITAM Program. The preferred alternative is Alternative 2.

Procedure: Analysis of potential environmental impacts associated with each alternative action is set forth in the *United States Army Alaska Integrated Training Area Management Program Management Plan Environmental Assessment.* The findings of this EA are incorporated into this final decision document. Potential issues were determined to be relevant if they fell within the scope of the proposed action, if they suggested different actions, or if they influenced the decision on the proposed action. Early in the process, USARAK and agency stakeholders or experts were informed of the proposed action, and their comments were solicited. Solutions responsive to public concerns and questions were integrated into elements of the proposed action.

Public comments were solicited following public announcements in the *Fairbanks Daily News Miner* and the *Anchorage Daily News* during the comment period that ran from 27 Apr 05 to 27 May 05. Comments were received from two state and two federal agencies. No comments were received from the public. All comments were positive and provided clarifications relating to specific regulatory requirements for the ITAM Plan.

Discussion of Anticipated Environmental Impacts of the Implementation of a USARAK ITAM Program Management Plan: After consideration of potential environmental impacts, community concerns, and USAGAK mission requirements, Alternative 2: Implement ITAM Program Through a Management Plan (Proposed Action) was found to offer the best course of action.

Under Alternative 2, minor temporary adverse impacts to soil, vegetation, wetlands, water resources, wildlife and fisheries, human health and safety, noise, and air quality will occur. These impacts will be short-term, lasting for the duration of the project activities (approximately 10 days). Alternative 2 will have long-term beneficial impacts to all resources, as the purpose of ITAM is to repair, maintain, and improve training lands disturbed by military training. Long-term beneficial impact will include erosion prevention, revegetation, wetlands reclamation, streambank stabilization, habitat improvement, fuel load reduction, improvements for public access, and cultural resource protection. These actions will serve to mitigate impacts from training, construction, and recreation activities.

Mitigation Measures: No mitigation measures are proposed.

Conclusion: In an attempt to balance the Army's training and readiness responsibilities and land stewardship obligations, USAGAK has chosen Alternative 2: Implement ITAM Program through a Management Plan as its preferred alternative. Based on a review of the information contained in this EA, USAGAK determined that implementation of an ITAM management plan, as set forth in Alternative 2, is not a major federal action that would significantly affect the quality of the environment within the meaning of Section 102(2)(C) of the National Environmental Policy Act of 1969, as amended. Accordingly, the preparation of an environmental impact statement for this proposed action is not required.

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LIST OF ACRONYMS

AAC	Alaska Administrative Code
ADNL	A-Weighted Day-Night Average Sound Level
AK LCTA	Alaska Land Condition Trend Analysis
CAA	Clean Air Act
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
FICUN	Federal Interagency Committee on Urban Noise
GIS	Geographic Information Systems
GMU	Game Management Unit
ITAM	Integrated Training Area Management
LCTA	Land Condition Trend Analysis
LRAM	Land Rehabilitation and Maintenance
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NRHP	National Register of Historic Places
NRCS	Natural Resources Conservation Service
ORRV	Off-Road Recreational Vehicle
PCB	Polychlorinated Biphenyls
PSD	Prevention of Significant Deterioration
RTLA	Range and Training Land Assessment
RTLP	Range and Training Land Program
SRA	Sustainable Range Awareness
TCP	Traditional Cultural Properties
TRI	Training Requirements Integration
USAGAK	United States Army Garrison, Alaska
USARAK	United States Army Alaska

CHAPTER 1: PURPOSE AND NEED FOR ACTION

1.1 INTRODUCTION

The United States Army must maintain its capability to put overwhelming land combat power on future battlefields and defeat potential enemies. Decisive victories depend on the Army's ability to deploy rapidly, fight, self-sustain, and win quickly with minimum casualties. As the Department of Defense's premiere land force, the Army relies on land to achieve its training and testing objectives and maintain force readiness. Force readiness depends on high quality, realistic training. The Army must be allowed to train as it will fight.

The Army uses the Sustainable Range Program to improve the way it designs, manages, and uses ranges and to ensure that current and future doctrinal requirements are met. The goal of the Sustainable Range Program is to maximize the capability, availability, and accessibility of ranges and training land to support training and testing requirements. It consists of two core programs: the Range and Training Land Program, which consists of range modernization and range operations; and the Integrated Training Area Management (ITAM) program, which consists of land management and land maintenance activities. This environmental assessment (EA) addresses the implementation of a *USARAK ITAM Management Plan*, a comprehensive and consistent approach towards implementing the ITAM program.

1.1.1 Integrated Training Area Management

The Army recognizes that training to doctrinal standards under realistic combat conditions will affect the environment. Providing premiere and realistic training opportunities requires training lands to be in good environmental condition. It is in overcoming the apparent conflict between force readiness and environmental stewardship that the ITAM program serves the overall needs of the Army. The ITAM program essentially acts as an ongoing mitigation program for Army training and testing activities. It is the Army's formal strategy for focusing on sustained use of training and testing lands, and it provides the Army with the sound planning and execution mandatory to protect Army land as an essential asset for training.

The intent of the ITAM program is to systematically provide a uniform training land management capability across the total Army. The Army will manage its lands in a manner to ensure no net loss of training capabilities and to support current and future training and mission requirements. The integration of stewardship principles into training land and conservation management practices ensures that the Army's lands remain viable to support future training and mission requirements.

ITAM establishes a systematic framework for decision-making and management of Army training lands. It integrates elements of operational, environmental, master planning, and other programs that identify and assess land use alternatives. The ITAM program also supports sound natural and cultural resources management practices and stewardship of land assets while sustaining those assets to support training, testing, and other installation missions.

ITAM achieves successful maintenance and management of Army training lands through its five component programs:

- *Training Requirements Integration (TRI)* is a decision-support procedure that integrates all requirements for land use within the natural and cultural resources management processes. TRI integrates the installation training and testing requirements for land use derived from the Range

and Training Land Program, the range operations and training land management processes, and the installation training readiness requirements with the installation's natural resources conditions.

- *Land Rehabilitation and Maintenance (LRAM)* is the management process that cites protocols for reducing long-term impacts of training and testing by combining preventive and corrective land reclamation, reshaping, rehabilitation, repair, and maintenance practices. It involves repair of damaged lands and use of land construction technology to avoid future damage to training lands. LRAM uses technologies such as revegetation and erosion control techniques to maintain soils and vegetation required for accomplishment of the military mission. These efforts are specifically designed to maintain quality military training lands and to minimize long-term costs associated with land rehabilitation or additional land purchase.

- *Sustainable Range Awareness (SRA)* is the component of the ITAM program that seeks to foster a conservation ethic in military personnel. It is an educational and outreach process that educates range operations personnel and military and non-military land users on their environmental stewardship responsibilities. The educational materials produced by the SRA program describe the principles of land stewardship and the practices of reducing training and/or testing impacts.

- *Range and Training Land Assessment (RTLA)* is the monitoring component of the ITAM program which seeks to maintain a balance between the use of training lands to maximize military preparedness and the conservation of biologically diverse and functioning ecosystems. RTLA provides for the collecting, inventorying, monitoring, managing, and analyzing of tabular and spatial data concerning land conditions and natural resources at U.S. Army Alaska (USARAK). RTLA also provides data needed to evaluate the capability of training lands to meet multiple use demands on a sustainable basis.

- *Geographic Information Systems (GIS)* is the foundational support element of the ITAM program. It is an important tool for resource (cultural, environmental, natural, and military training) management and an important component of the USARAK decision support system. GIS is a computer-based tool capable of assembling, storing, manipulating, and displaying geographically referenced information, (i.e., data identified according to their locations). GIS technology integrates common database operations such as query and statistical analysis with the unique visualization and geographic analysis benefits offered by maps.

United States Army Alaska is committed to providing its soldiers with the best training possible. As such, its training lands must be maintained and managed in order to allow soldiers to train to standard.

1.2 PURPOSE AND NEED FOR ACTION

The guiding principle of Army environmental stewardship is that all activities, including training and testing, must be environmentally sustainable and meet current needs without compromising the integrity of the environment for future generations. The intent of the ITAM program is to systematically provide a uniform training land management capability across the total Army.

Fulfilling USARAK's mission to provide ready combat forces for worldwide joint military operations, crisis response, and peacetime engagements requires top-notch training facilities for soldiers to prepare. Realistic training scenarios require ongoing range and training land maintenance and upgrades in order to maintain a high quality training environment. With repeated use and no maintenance, training lands deteriorate. Use of increasingly sophisticated equipment without range improvements or upgrades can also cause training lands to become outdated and ineffective. Providing up-to-date training infrastructure

is essential to USARAK's commitment of providing its soldiers with the highest quality training possible. Therefore, USARAK seeks the best possible approach to managing its training lands in order to fulfill mission requirements.

Currently, the ITAM program performs range and training land maintenance and improvements in an ad-hoc fashion without a formal, systematic approach. A management plan would institute standard operating procedures and best management practices for the LRAM and RTLA programs to provide consistency among management approaches, increase oversight, and streamline processes and procedures to increase ITAM program efficiency. Additionally, many ITAM projects utilize construction contractors. Establishing standard operating procedures through the *USARAK ITAM Management Plan* will ensure standardization of technique and allow ITAM to more easily predict possible impacts and to determine efficacy of project procedures.

All ITAM projects must meet applicable regulatory requirements before projects can be implemented. These include the National Environmental Policy Act (NEPA), National Historic Preservation Act, Archaeological Resources Protection Act, Clean Water Act, Alaska State laws, and USARAK regulations. Currently, NEPA documentation is inconsistent between ITAM projects. USARAK seeks to institute a method to ensure consistent NEPA documentation through this EA and successive project-specific environmental and cultural analyses.

1.2.1 ITAM Program Objectives

The following ITAM goals outline the program's mission to steward Army training land (AR 350-4ITAM):

- Utilize current infrastructure to the most efficient extent possible in order to minimize cost and natural resource impacts.
- Achieve optimal sustained use of lands for the execution of realistic training, by providing a sustainable core capability that balances usage, condition, and level of maintenance.
- Implement a management and decision-making process that integrates Army training and other mission requirements for land use with sound natural and cultural resources management.
- Advocate proactive conservation and land management practices.
- Align Army training land management priorities with training, testing, and readiness priorities.

The objectives for meeting ITAM program goals are as follows:

- Determine the capacity of the land to sustain training and testing through diagnostic methods, models, and tools; and support assignment of the optimum type, frequency, duration and intensity of training and testing that can be conducted on a given parcel.
- Identify the risks and costs associated with exceeding the capacity of the land.
- Allocate training land uses, including the type, frequency, duration and intensity of use, based on the capacity of the land to sustain those uses.
- Support sustained use of land by planning, programming, and executing repair and maintenance projects and by reconfiguring and redesigning training and testing areas to meet recognized requirements.
- Educate users to prevent avoidable damage to the land and to minimize unavoidable damage resulting from training, testing, and other mission activities.

- Establish a defined land condition base line for natural and cultural resources that will be maintained through ITAM and is relevant to the installation environmental setting and mission activity.
- Monitor land and natural resource conditions and determine trends in those conditions.
- Stabilize and sustain natural and cultural resource conditions by changing type, frequency, duration, or intensity of use, or by applying adjusted levels of repair and maintenance.
- Increase understanding of Army mission training requirements by educating environmental and natural resources personnel.

1.2.2 Location

Implementation of the *USARAK ITAM Management Plan* is proposed for Alaska's three main Army installations: Fort Richardson, Fort Wainwright, and Donnelly Training Area (Figure 1).

Fort Richardson

Fort Richardson encompasses approximately 61,000 acres. The post is located in south-central Alaska adjacent to Anchorage, Eagle River, and Elmendorf Air Force Base (Figure 1). The Knik Arm of Cook Inlet borders the north side of the post, and Chugach State Park lies to the south and southeast. The town of Eagle River lies along the northeast border. Anchorage and Elmendorf Air Force Base form the western boundary.

The western boundary is approximately 11 miles long, from the Knik Arm to its terminus beside Anchorage and Chugach State Park. The eastern border is 21 miles and also runs from Knik Arm to Chugach State Park. Fort Richardson is approximately six miles across, from east to west.

The cantonment area is situated at the base of the Chugach foothills, on the alluvial floodplain between the Chugach Mountains and the Knik Arm of Cook Inlet. Located approximately seven miles from downtown Anchorage, the cantonment area is bordered on the west by Elmendorf Air Force Base, on the north by training areas, on the east by the Glenn Highway, and on the south by Ship Creek, recreational areas, and training areas.

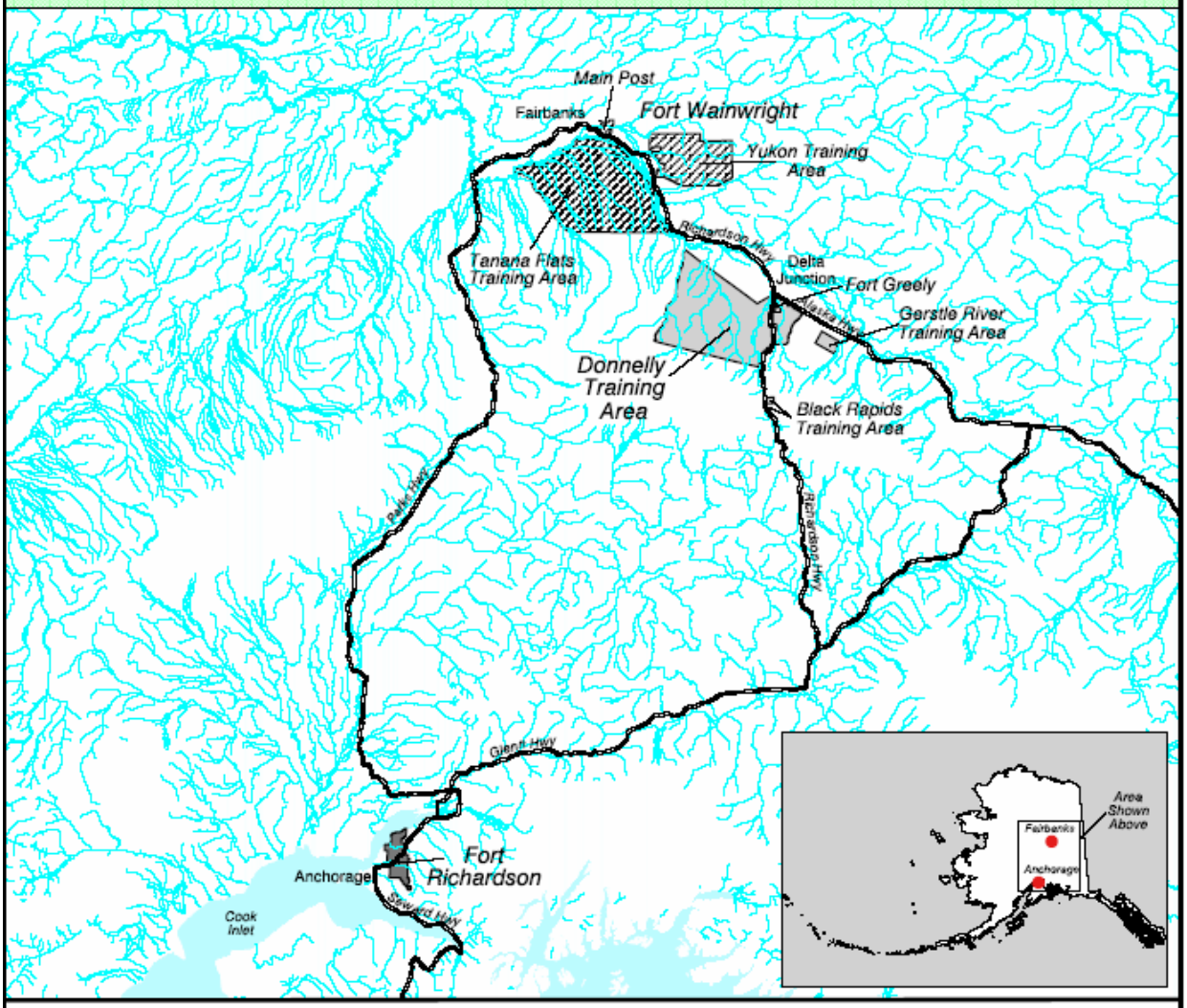
Fort Wainwright

Fort Wainwright encompasses approximately 917,000 acres and lies near Fairbanks, 120 miles south of the Arctic Circle. The installation is located in central Alaska, north of the Alaska Range in the Tanana River Valley (Figure 1). The Main Post consists of 13,700 acres, Tanana Flats Training Area is over 655,000 acres, and Yukon Training Area totals 247,952 acres.

The Main Post of Fort Wainwright is situated on a flat alluvial plain. It is bordered on the west by the city of Fairbanks and on the other three sides by open space that is owned by the state of Alaska. Tanana Flats Training Area is located south of Main Post. Its north and east boundaries are formed by the Tanana River, while the Wood River borders the western edge. Yukon Training Area is located 16 miles east-southeast of Fairbanks, and the post is bound by the Chena River on the north and the Salcha River to the south. Eielson Air Force Base is located on Yukon Training Area's west border.

Figure 1

General Locations
Fort Richardson, Fort Wainwright, and Donnelly Training Area



Legend

- Fort Wainwright
- Donnelly Training Area
- Fort Richardson
- Fort Greely
- Streams
- Highways

Source: USARAKd,e,f

Scale: 1:3500000

100 0 100 Miles

N

Donnelly Training Area

Donnelly Training Area encompasses approximately 624,000 acres and is located within the Tanana River Valley approximately 100 miles southeast of Fairbanks, near Delta Junction (Figure 1). The southern portion of the post is within the foothills of the Alaska Range, and the northern part is bound by the Tanana River. The Main Post consists of 6,700 acres that USARAK transferred to the Space and Missile Defense Command. USARAK will continue to implement the ITAM program on Space and Missile Defense Command lands on an as-needed basis. Donnelly Training Area West is 531,000 acres and Donnelly Training Area East is 93,000 acres (USARAK 2002e). The Little Delta River borders the western boundary of Donnelly Training Area West, and the Delta River and portions of its floodplains form the eastern border. The southern border follows a straight diagonal line from MacArthur Mountain to the Delta River, approximately 26 miles from the intersection of the Alaska and Richardson highways. To the north, the boundary follows a diagonal line from the Little Delta River to the Main Post.

The Delta River and its floodplain form the west side of Donnelly Training Area East, and Granite Creek forms the eastern border. The northern boundary roughly parallels the Alaska Highway, and the southern boundary lies at the base of the Alaska Range's foothills.

Two outlying land parcels are located near Donnelly Training Area. The Gerstle River Training Area is approximately 19,000 acres and is located about three miles south of the Alaska Highway and 30 miles southeast of Delta Junction. Gerstle River Training Area is a rectangular area, oriented northwest to southeast, and measures about five miles, north to south, and nine miles, east to west. Black Rapids Training Area and Whistler Creek Rock Climbing Area are 2,780 acres and are located 35 miles south of Delta Junction along the east side of the Richardson Highway.

1.3 SCOPE OF THIS EA AND DECISION TO BE MADE

The *National Environmental Policy Act of 1969* (NEPA), CFR 1500-1508 and the *Environmental Analysis of Army Actions; Final Rule* [32 CFR Part 651 Fed. Reg. 29 March 02 (67FR15289-15332)] require the Army to assess the environmental impacts of the proposed action.

This EA will provide the decision-maker with the information necessary to evaluate the environmental, cultural, and socioeconomic impacts associated with the alternatives as directed by NEPA. The selection of an alternative will take into account technical, economic, and political feasibility; environmental and social issues; and the ability to meet objectives of the USARAK mission. The following alternatives have been evaluated for presentation to the decision-maker:

- Alternative 1: Continue ITAM Program without a Management Plan (No Action)
- Alternative 2: Implement ITAM Program through a Management Plan (Proposed Action)
- Alternative 3: Suspend ITAM Program

1.3.1 Issues Analyzed

The ITAM program's standard practices identified in the *USARAK ITAM Management Plan* at Fort Richardson, Fort Wainwright, and Donnelly Training Area are the focus of this EA. The scope of this document includes potential environmental, cultural, and socioeconomic impacts of the proposed action. Resource categories analyzed for the proposed action and alternatives include:

- Soil Resources
- Vegetation

- Wetlands
- Water Resources
- Wildlife and Fisheries
- Fire Management
- Public Access and Recreation
- Cultural Resources
- Human Health and Safety
- Socioeconomics
- Noise
- Air Quality

The discussion will include the environmental impacts of the alternatives; environmental effects (adverse or beneficial) should the proposed action be implemented including direct, indirect, long-term, and short-term impacts; any irreversible or irretrievable commitments of resources; and cumulative impacts. As ITAM projects are already utilized as mitigation for Army training and testing activities, mitigation measures on individual ITAM projects are not discussed in this document. Any mitigation that is required for specific ITAM projects will be considered in further NEPA analyses.

1.3.2 Issues Considered and Eliminated from Analysis

The following issues would not be affected by the proposed action and have been eliminated from further analysis:

- **Environmental Health and Safety Risks for Children**
  Executive Order 13045 (1994), *Protection of Children from Environmental Health Risks and Safety Risk*s, requires identification and assessment of environmental health and safety risks that may disproportionately affect children. In accordance with the mandates of Executive Order 13045, all ITAM projects would be reviewed to ensure no dangerous or hazardous activities occur near schools or childcare facilities.

- **Environmental Justice**
  Executive Order 12898 (1994), *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Population*s, directs each federal agency to identify and address any disproportionately high and adverse environmental effects of its programs, policies, and activities on minority populations and low-income populations. There are no foreseeable environmental justice impacts resulting from the proposed action.

- **Floodplains Management**
  Executive Order 11988 (1977), *Floodplain Management*, directs all federal agencies to evaluate the potential effects of any actions it may take in a floodplain and take measures to minimize potential impacts to or within floodplains if other practicable alternatives are not available. There are no foreseeable impacts to floodplains resulting from the proposed action.

1.4 PUBLIC AND AGENCY COMMENT

NEPA requires an early and open process to inform the public of a proposed action and to identify significant issues related to the action. This process is termed “scoping”. USARAK published a Notice of Availability (NOA) in the *Fairbanks Daily News-Miner* and the *Anchorage Daily News* on April 27 and

May 1, 4, 8, 11, 15, 18, 22, 25, 27 2005 announcing the beginning of the public comment period for this EA. No public meetings were held. Agency scoping meetings were held in Anchorage on March 3 and in Fairbanks on March 4, 2005. Agencies and organizations represented include Alaska Department of Natural Resources, Office of Habitat Management and Permitting; U.S. Army Corps of Engineers, Regulatory Branch; Alaska Railraod; Salcha-Delta Soil and Water Conservation District; U.S. Fish and Wildlife Service; State of Alaska, Division of Forestry; and the BLM, Alaska Fire Service.

All comments received have been compiled and are included in Appendix E. Responses to those comments are summarized in Appendix F. No comments were received from the public. Potential issues were determined to be relevant to the analysis of the proposed action if they fell within the scope of the proposed action, if they suggested different actions or mitigation, or if they influenced the decision on the proposed action. Solutions responsive to most of the agency concerns and questions were integrated into this EA and into specific sections of the ITAM Management Plan.

Specific issues of concern to agencies included wetland function classification, wetland definitions, culvert installation and fish passage, gravel extraction and pit reclamation, dust control, streambank repair, erosion and sediment control structures, vegetative buffers and temporary stream crossings. Agency representatives provided specific comments on the ITAM Management Plan within each of these categories. All suggested changes and comments to the management plan were accepted.

1.5 OTHER ENVIRONMENTAL ANALYSES RELEVANT TO THE ACTION

Previously prepared EAs and environmental impact statements (EISs) that address ongoing actions, issues, or baseline data at USARAK are used as background information or are incorporated by reference into this EA as appropriate. Examples of such NEPA documentation are:

- Final Legislative Environmental Impact Statement for Alaska Army Lands Withdrawal Renewal, Vol. 1-2, November 1999.
- U.S. Army Alaska Integrated Natural Resources Management Plan 2002-2006, Vol. 1-3, September 2002.
- Final Environmental Impact Statement for Transformation of U.S. Army Alaska, Vol. 1-2, February 2004.

The most recent NEPA documents and management plans can be found on USARAK's conservation website (*http://www.usarak.army.mil/conservation/NEPA_home.htm*).

1.6 ORGANIZATIONAL STRUCTURE OF THIS EA

This EA was prepared in accordance with the Council on Environmental Quality regulations (40 CFR Parts 1500-1508) and *Environmental Effects of Army Actions; Final Rule*. It consists of a single volume which contains Chapter 1: Purpose and Need for Action; Chapter 2: Description of Proposed Action and Alternatives; Chapter 3: Description of the Affected Environment and Environmental Consequences; Chapter 4: Preparers and Contributors; Chapter 5: References; and Chapter 6: Agencies and Individuals Contacted; and Appendices. Where appropriate, the chapters present separate information for Fort Richardson, Fort Wainwright, and Donnelly Training Area.

CHAPTER 2: DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

USARAK proposes to institute a management plan for implementing the ITAM program. This management plan would provide a systematic approach to maintaining and improving its range and training land infrastructure in support of USARAK's mission to provide ready combat forces for worldwide joint military operations, crisis response, and peacetime engagements. In order to prepare its combat forces, USARAK must be able to provide the best possible training facilities. This requires ongoing maintenance and improvements to training land infrastructure, which is accomplished through the ITAM program.

2.1 DETAILED DESCRIPTION OF THE ALTERNATIVES

2.1.1 Alternative 1: Continue ITAM Program without a Management Plan (No Action)

Under the No Action Alternative, the ITAM program would continue to operate without a management plan and without standard operating procedures for project implementation. As a result, ITAM projects would occur on an ad-hoc basis with reduced ability for consistency between projects, potential for less accurate assessment of impacts, and limited contractor oversight. Projected ITAM projects for the next five years include approximately 1,000 acres of vegetation management and 500 acres of trail upgrades and road and pad hardening (Appendix A). NEPA analysis and documentation is required under this alternative but has not been consistently fulfilled for ITAM projects (see Appendix C for a sample Record of Environmental Consideration). Alternative 1 represents how ITAM is currently implemented at USARAK.

2.1.2 Alternative 2: Implement ITAM Program through a Management Plan (Proposed Action)

Under Alternative 2, the ITAM program would continue to operate but would follow a management plan. The *USARAK ITAM Management Plan* would outline goals, objectives, measures of effectiveness, policy, procedures, and projects for each of the five components of the ITAM program. By standardizing ITAM's operations, the management plan would allow ITAM to better fulfill its objectives (Section 1.2.1).

General project categories are provided for each component of the ITAM program (Table 2.1). ITAM's planning (TRI), education (SRA), and spatial data (GIS) programs do not involve direct contact with natural resources, as do the management (LRAM) and monitoring (RTLA) programs. Therefore, general project categories for LRAM and RTLA represent standard operating procedures and best management practices that would be developed and followed for these programs. Detailed descriptions of the general project categories and standard operating procedures are provided in the chapters of the management plan identified in the table. The management plan can be found on USARAK's conservation website (*www.usarak.army.mil/conservation/NEPA_home.htm*). Best management practices are described in Appendix B.

The implementation of standard operating procedures and best management practices for the LRAM and RTLA programs would provide consistency among management approaches, increase oversight, and streamline processes and procedures to improve ITAM program efficiency. The management plan would provide the standardization necessary to allow ITAM to more easily predict possible impacts of projects and to determine efficacy of project procedures. As individual ITAM projects are identified, this EA would be utilized as the foundation for NEPA analysis. A checklist (Appendix C) would be used to

determine whether additional NEPA analysis is warranted. If it is warranted, project-specific assessments would tier from this EA to account for local conditions and impacts.

Under this alternative, the *USARAK ITAM Management Plan* would facilitate the assessment of impacts for ITAM project NEPA compliance. The implementation of standard operating procedures and best management practices would result in impacts being more predictable and assessment potentially more thorough. Documentation of the standard operating procedures and best management practices would help ensure future NEPA documents for ITAM projects are more efficient and consistent. Information from the *USARAK ITAM Management Plan* and this EA could be incorporated by reference in successive NEPA documents. While this would be beneficial to institutional and administrative aspects of the ITAM program, it would not noticeably affect environmental or social resources.

Table 2.1 ITAM Program General Project Categories.[1]

ITAM Component	**General Project Category**	***USARAK ITAM Management Plan* Chapter**
Training Requirements Integration (TRI)	-Range Facility Inventory -Terrain Analysis -Maneuver Land Capability, Capacity, and Impact Analysis -Training Load Distribution -Training Area Reconfiguration -Environmental Limitations and Restrictions	Chapter 4
Land Rehabilitation and Maintenance (LRAM)	-Berm Installation and Maintenance -Biological and Chemical Controls -Culvert Installation -Dust Control -Education Kiosks -Erosion and Sediment Control Structures -Fire/Fuel Breaks and Trenches -Fire Suppression -Gravel Crushing -Gravel Extraction -Gravel Pit Development -Gravel Pit Reclamation -Guard Rail Installation -Land Grading and Shaping -Latrine and Water Point Installation -Low Water Crossing Hardening -Maneuver Trail Maintenance and Upgrade -Pad Hardening -Prescribed Burning -Revegetation -Road Crossings -Road Hardening -Sign and Seibert Stake Installation -Soil Stabilization Practices (Permanent) -Soil Stabilization Practices (Temporary) -Streambank Repair (Interior Alaska) -Streambank Repair (South Central Alaska) -Tactical Bridge Installation -Trail Closure	Chapter 5 and Appendix C2

ITAM Component	General Project Category	*USARAK ITAM Management Plan* Chapter
	-Training Area Cleanup -Vegetation Cutting and Clearing (Mechanical) -Vegetation Cutting and Thinning (Hand) -Vegetation Protection -Water Bar Installation -Wetlands Reclamation	
Sustainable Range Awareness (SRA)	-Implementation Plan -Training/Education Materials -Presentations/Briefing/Training	Chapter 6
Range and Training Land Analysis (RTLA)	-Standard Land Condition Trend Analysis (LCTA) -Alaska Region Land Condition Trend Analysis (AK LCTA) -Small Mammal Monitoring -Avian Monitoring -Military Exercise Monitoring -Soil and Water Quality Monitoring -Rare, Threatened, and Endangered Species Monitoring -Wetlands Monitoring -Invasive Species Monitoring	Chapter 7 and Appendices E1 - E9
Geographic Information System (GIS)	-Spatial Data Collection, Input, Storage, Maintenance, Analysis, Distribution, and Products	Chapter 8

[1]LRAM projects have been proposed for the next five years and are described in Appendix A.

2.1.3 Alternative 3: Suspend ITAM Program

Under Alternative 3, the ITAM program would not be implemented. While ITAM is an Army-wide program and USARAK does not have the option to discontinue its use, Alternative 3 considers potential environmental impacts if the program were discontinued. This provides a useful tool in assessing the effectiveness of the ITAM program's ability to sustain continued use of Army training lands.

2.2 SUMMARY OF ENVIRONMENTAL CONSEQUENCES

2.2.1 Summary of Impacts under Each Alternative

Table 2.2 contains a summary matrix of the alternatives comparing their environmental consequences for the specific resource categories. The table describes the range of environmental consequences of the proposed action and alternatives discussed in Chapter 3. The qualitative terms used in the matrix are generally defined as:

- None – No impact is expected to occur.
- Minor – Negative impacts are expected to occur; impacts would be measurable and may have slight impact to resource.
- Moderate – Negative impacts are expected to occur; impacts would be noticeable and would have a measurable effect on resource.
- Severe – Negative impacts are expected to occur; impacts would be obvious and would have serious consequences to resource. These impacts would be considered significant.
- Beneficial – Beneficial impacts are expected to occur.

Table 2.2 Summary of Environmental Consequences[1] under Each Alternative.

Resource Categories	Alternative 1		Alternative 2		Alternative 3	
	Short Term	Long Term	Short Term	Long Term	Short Term	Long Term
Soil Resources	Minor to Beneficial	Minor to Beneficial	Minor to Beneficial	Minor to Beneficial	Minor to Severe	Minor to Severe
Vegetation	Minor to Beneficial	Minor to Beneficial	Minor to Beneficial	Minor to Beneficial	Minor to Severe	Minor to Severe
Wetlands	Minor to Beneficial	Minor to Beneficial	Minor to Beneficial	Minor to Beneficial	Severe	Severe
Water Resources	Minor to Beneficial	Beneficial	Minor to Beneficial	Beneficial	Severe	Severe
Wildlife and Fisheries	Minor to Beneficial	Beneficial	Minor to Beneficial	Beneficial	Moderate to Severe	Moderate to Severe
Fire Management	Beneficial	Beneficial	Beneficial	Beneficial	Moderate	Moderate to Severe
Public Access and Recreation	Beneficial	Beneficial	Beneficial	Beneficial	Minor	Moderate
Cultural Resources and Subsistence	Beneficial[2]	Beneficial[2]	Beneficial[2]	Beneficial[2]	Moderate	Moderate
Human Health and Safety	Minor to Beneficial	Minor to Beneficial	Minor to Beneficial	Minor to Beneficial	Moderate	Moderate
Socioeconomics	Beneficial	Beneficial	Beneficial	Beneficial	None to Minor	None to Minor
Noise	None to Minor	Beneficial	None to Minor	Beneficial	Beneficial	Minor
Air Quality	Minor	None	Minor	None	None to Moderate	None to Moderate

[1]Short-term impacts are defined as impacts lasting for the duration of a project (typically about ten days) or up to one year, depending on the resource.
[2]Impacts would be beneficial only if properly applied. TRI, SRA, and GIS could have adverse impacts if they identify archaeological or cultural sites and make them publicly available.

2.2.2 Summary of Cumulative Impacts

Analysis of cumulative impacts is required for NEPA documents. Cumulative impacts result from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions. Cumulative effects can also result from individually minor but collectively significant actions taking place locally or regionally over a period of time. Impacts of these cumulative activities are discussed in Chapter 3 of this EA. Activities resulting in cumulative impacts include cantonment and range improvement projects, training activities, and non-military activities. The regions of influence for cumulative impacts are similar to those described in Table 3.a.

A variety of capital improvement projects are planned or are currently underway on installation cantonment areas. These areas typically contain installation support infrastructure. USARAK's cantonment areas have undergone substantial development over the past 50 years. Current and future projects include building upgrades, new training and support facilities, new housing, fencing, and other infrastructure.

Maneuver training generally occurs outside of cantonment areas. There are several current and future range construction and improvement projects planned on USARAK lands. These include new ranges, forward operations bases, battle courses, demolition areas, and maneuver corridors.

USARAK is currently undergoing force transformation to a Stryker Brigade Combat Team. This entails increased training activity, stationing of new personnel, and utilization of additional support vehicles and equipment. Environmental impacts of this action on USARAK training lands are presented in the *Transformation of U.S. Army Alaska Final Environmental Impact Statement* (USARAK 2004). The ITAM program was specifically developed to provide sustained use of military training lands while also achieving long-term environmental sustainability. Many of the ITAM activities described in this EA were designed as mitigation for training impacts outlined in the aforementioned EIS.

Non-military activities can also contribute to cumulative impacts on USARAK lands. These include public recreation (including air-boating and off-road recreational vehicles) and other activities affecting USARAK lands such as the Trans-Alaska Pipeline and Alaska Railroad activities.

CHAPTER 3: DESCRIPTION OF THE AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter describes the affected environment (existing conditions) and the environmental consequences for the proposed action and alternatives. The table below describes thresholds to which environmental impacts are compared. Exceeding a threshold would represent a significant impact under NEPA.

Table 3.a Impact Thresholds[1] in Relation to Issue and Region of Influence.

Resource/Issue of Concern	Region of Influence	Threshold[2]
Soils	Installation watersheds	Erosion resulting in soil loss or compaction that precludes establishment of native vegetation or sediment delivery; unpermitted construction during summer months; or unpermitted mechanical digging or drilling.
Vegetation	Installation landscape	Fragmentation, loss, or degradation of high quality natural areas or sensitive sites; local extirpation of rare or sensitive plant species; or the introduction or extreme increased prevalence of undesirable non-native species.
Wetlands and Water Resources	Watersheds	Unpermitted deposition of dredged or fill materials into wetlands and other "Waters of the U.S."; a violation of federal or state discharge permits; significant sedimentation of waterways; and/or potential degradation of an aquifer.
Wildlife	Landscape scale	Population-level impacts (e.g., potential to reduce local populations below self-sustaining levels, or long-term loss or impairment of substantial portions of local habitat [species specific]); or direct impacts/disturbance to birds protected by the Migratory Bird Treaty Act.
Fisheries	Watersheds	Impeded movement or access to habitat; removal of cover and foraging area; or unpermitted work conducted in anadromous streams, especially during critical anadromous fish life cycles (mid-May to mid-July).
Fire Management	Landscape scale	Significantly increased risk of fire or reduced access for fire protection crews.
Public Access and Recreation	Installation and immediate surrounding area	Significant impact on levels of recreational use or significant numbers of users displaced to alternative locations for recreational opportunities; non-compliance with the Sikes Act.
Cultural Resources	Installation and immediate surrounding area	Irreversible damage to a prehistoric or historic site that is listed or is eligible for listing in the National Register of Historic Places, or is listed as a National Historic Landmark.
Human Health and Safety	Installation and immediate surrounding area	Significant increased risks to human health resulting from handling, storage, and disposal of hazardous materials; or conditions leading to a Notice of Violation of laws pertaining to the generation, use, or disposal of hazardous and/or toxic materials or wastes.
Socioeconomics	Regional scale	Significant impacts on levels of employment or family income, disproportionate impacts to minorities or low-income individuals, or causes health and safety risks for children.
Noise	Installation and surrounding area	Any increase in Zone II or Zone III noise contours that would extend off installation boundaries into populated areas.

Resource/Issue of Concern	Region of Influence	Threshold[2]
Air Quality	Installation and immediate surrounding area	Violation of state or federal air quality regulations.

[1]Although some thresholds are designated based on legal or regulatory limits or requirements, others reflect discretionary judgment and best management practices on the part of the Army in order to accomplish its primary mission of military readiness while also fulfilling its conservation stewardship responsibilities. Quantitative or qualitative analyses may be used in determining whether, and the extent to which, a threshold is exceeded.
[2]Thresholds listed are for potential effects of the proposed action prior to or without mitigation.

As LRAM activities are responsible for the majority of resource impacts under the proposed action, Table 3.b outlines the resources affected by each of the LRAM standard operating procedures included in the *USARAK ITAM Management Plan*. Effects on these resources are further described in Sections 3.1 through 3.12 in this EA.

Table 3.b Resources Affected by LRAM Standard Operating Procedures.

LRAM Standard Operating Procedure	Resource Affected
Berm Installation and Maintenance	Soil Resources, Water Resources, Fire Management, Cultural Resources, Human Health and Safety, Socioeconomics, Noise
Biological and Chemical Controls	Wetlands, Socioeconomics
Culvert Installation	Water Resources, Wildlife and Fisheries, Cultural Resources, Socioeconomics, Noise
Dust Control	Socioeconomics, Air Quality
Education Kiosks	Public Access and Recreation, Cultural Resources, Socioeconomics
Erosion and Sediment Control Structures	Soil Resources, Water Resources, Wildlife and Fisheries, Socioeconomics, Noise
Fire/Fuel Breaks and Trenches	Vegetation, Water Resources, Wildlife and Fisheries, Fire Management, Socioeconomics, Noise
Fire Suppression	Vegetation, Fire Management, Cultural Resources
Gravel Crushing	Soil Resources, Wildlife and Fisheries, Cultural Resources, Socioeconomics, Noise
Gravel Extraction	Soil Resources, Water Resources, Wildlife and Fisheries, Cultural Resources, Socioeconomics, Noise
Gravel Pit Development	Soil Resources, Wetlands, Water Resources, Wildlife and Fisheries, Cultural Resources, Socioeconomics, Noise, Air Quality
Gravel Pit Reclamation	Soil Resources, Vegetation, Water Resources, Wildlife and Fisheries, Cultural Resources, Socioeconomics
Guard Rail Installation	Cultural Resources, Human Health and Safety, Socioeconomics, Noise
Land Grading and Shaping	Soil Resources, Water Resources, Socioeconomics, Noise
Latrine and Water Point Installation	Water Resources, Cultural Resources, Human Health and Safety, Socioeconomics, Noise
Low Water Crossing Hardening	Soil Resources, Vegetation, Water Resources, Wildlife and Fisheries, Fire Management, Public Access and Recreation, Socioeconomics, Noise

Maneuver Trail Maintenance and Upgrade	Soil Resources, Vegetation, Wetlands, Water Resources, Wildlife and Fisheries, Fire Management, Public Access and Recreation, Cultural Resources, Socioeconomics, Noise
Pad Hardening	Soil Resources, Vegetation, Water Resources, Fire Management, Public Access and Recreation, Cultural Resources, Socioeconomics, Noise
Prescribed Burning	Soil Resources, Vegetation, Water Resources, Wildlife and Fisheries, Fire Management, Socioeconomics, Air Quality
Revegetation	Soil Resources, Vegetation, Water Resources, Wildlife and Fisheries, Fire Management, Public Access and Recreation, Cultural Resources, Socioeconomics
Road Crossings	Soil Resources, Vegetation, Wetlands, Water Resources, Wildlife and Fisheries, Fire Management, Public Access and Recreation, Cultural Resources, Socioeconomics, Noise
Road Hardening	Soil Resources, Vegetation, Wetlands, Water Resources, Fire Management, Public Access and Recreation, Cultural Resources, Human Health and Safety, Socioeconomics, Noise
Sign and Seibert Stake Installation	Public Access and Recreation, Cultural Resources, Socioeconomics, Noise
Soil Stabilization Practices (Permanent)	Soil Resources, Vegetation, Water Resources, Wildlife and Fisheries, Cultural Resources, Socioeconomics, Noise
Soil Stabilization Practices (Temporary)	Soil Resources, Vegetation, Water Resources, Wildlife and Fisheries, Cultural Resources, Socioeconomics, Noise
Streambank Repair (Interior Alaska)	Soil Resources, Vegetation, Water Resources, Wildlife and Fisheries, Cultural Resources, Socioeconomics
Streambank Repair (South Central Alaska)	Soil Resources, Vegetation, Water Resources, Wildlife and Fisheries, Cultural Resources, Socioeconomics
Tactical Bridge Installation	Water Resources, Wildlife and Fisheries, Cultural Resources, Socioeconomics, Noise
Trail Closure	Soil Resources, Vegetation, Water Resources, Wildlife and Fisheries, Public Access and Recreation, Cultural Resources, Socioeconomics
Training Area Cleanup	Soil Resources, Wildlife and Fisheries, Human Health and Safety, Socioeconomics
Vegetation Cutting and Clearing (Mechanical)	Soil Resources, Vegetation, Wetlands, Water Resources, Wildlife and Fisheries, Fire Management, Public Access and Recreation, Cultural Resources, Socioeconomics, Noise
Vegetation Cutting and Thinning (Hand)	Soil Resources, Vegetation, Wetlands, Wildlife and Fisheries, Fire Management, Public Access and Recreation, Cultural Resources, Socioeconomics, Noise
Vegetation Protection	Vegetation, Water Resources, Wildlife and Fisheries, Public Access and Recreation
Water Bar Installation	Soil Resources, Vegetation, Water Resources, Public Access and Recreation, Cultural Resources, Socioeconomics, Noise
Wetlands Reclamation	Wetlands, Water Resources, Wildlife and Fisheries, Cultural Resources, Socioeconomics, Noise

3.1 SOIL RESOURCES

3.1.1 Affected Environment

Soil is a dynamic medium made of mineral and biological matter, organic material, water, and air. Soils are produced by the continual interaction of five soil-forming factors: climate, vegetation, organisms, parent material, and topography. Climate is the most important soil-forming factor for Alaska. Differences in soil composition and formation result in soils of differing properties, which are also continually altered by natural processes. Soil properties ultimately determine the natural and human activities that can take place in a given area.

Permafrost is defined as soil, silt, and rock that remain frozen year-round. Though a thin layer may thaw during summer months, the majority of permafrost remains frozen until the local climate changes or it melts due to disturbance of the insulating peat and vegetation above it. Permafrost is a major factor influencing the distribution of vegetation and human activities in Alaska. It typically exists in multiple layers of varying thickness ranging from less than one foot to more than 150 feet. Permafrost has important influences on soil processes including cryoturbation (the mixing of soil due to freezing and thawing which results in contorted and broken horizons), rapid water runoff, ground subsidence and restriction of drainage. Thermokarst is the process and range of features resulting from irregular subsidence of permafrost. These features include hummocks and mounds, water-filled depressions, flooded forests, and mudflows on sloping ground.

More information can be found in the *Transformation of U.S. Army Alaska Final Environmental Impact Statement* (USARAK 2004).

Fort Richardson

Soil maps utilizing the Unified Soil Classification System describe a wide variety of engineering soil types on Fort Richardson. Glacial moraines, outwash, tidal flats, and peat bogs all provide a wide variety of parent material for soils at the installation (USARAK 2004). The soils are shallow, immature, and deficient in primary plant nutrients and water retention ability, making them a primary limiting factor for vegetative growth during dry periods. In depressions and saturated areas, such as wetlands, surface horizons may be covered with peat (USARAK 2002e). A soil survey of the Anchorage area conducted by the Natural Resources Conservation Service identified two distinct climatic zones along with their associated soil types (Moore 2002) – the lowlands surrounding Anchorage (including Fort Richardson) and the adjacent Chugach Mountains.

Permafrost is found in less than 1% of Fort Richardson. It occurs primarily in patches of forested bogs near Muldoon Road, with some permafrost persisting at high elevations. Although thermokarst has occurred in the forested bog areas, the effects of thermokarst have been negligible (<0.1% of the area over 200 to 300 years) (Jorgenson et al. 2002).

Fort Wainwright

The soils of Fort Wainwright are weakly developed as a result of the cold climate and youth of parent materials. Nearly all soils on Fort Wainwright have some organic layer, except where floods occurred or humans frequently disturbed the surface. Organic matter accumulation, oxidation and reduction of iron, and cryoturbation are the major soil-forming processes in the Fort Wainwright area (Swanson and

Mungoven 2001). Engineering soil types found at Fort Wainwright consist dominantly of silt on the hills with wetter and more organic silty soils in the lower drainages (USARAK 2004).

Most of the soils on Main Post are Chena alluvium, formed in unconsolidated silt-gravel mixture. Soils at Tanana Flats Training Area are formed in various unconsolidated materials and are dominated by highly organic, wet, and cold soils (Rieger et al. 1979). The south slopes of the mountainous Yukon Training Area consist of well-drained silt loams, while north-facing slopes are shallow, gravelly, silt loams. Drainage bottoms and depressions consist of shallow gravelly, silt loam covered with a thick layer of peat (BLM and U.S. Army 1994).

On Main Post, permafrost occurs at variable depths with discontinuous permafrost lying just beneath the surface in some areas. Most of Tanana Flats Training Area is underlain by continuous or discontinuous permafrost. Permafrost lies within 20 inches of the surface and is nearly 128 feet thick in some places (USARAK 2002f). Tanana Flats is experiencing rapid and widespread thermokarst as a result of degrading permafrost. Eventually this will dramatically alter the structure and function of ecosystems in permafrost-dominated areas. Yukon Training Area is in the discontinuous permafrost zone of Alaska where perennially frozen ground is widespread. The thick layers of peat typical of both north slopes and drainage bottoms/depressions are underlain by permafrost, while south slopes are generally free of permafrost (BLM and U.S. Army 1994).

Fort Wainwright's Integrated Natural Resources Management Plan (USARAK 2002f) indicated military activity has its greatest impacts on soil productivity in the Main Post area due to construction. Soils in other areas have been impacted by military activities, localized around small arms ranges, roads, and other facilities. The Stuart Creek Impact Area, located in the Yukon Training Area, may have had more severe erosion due to explosions and burning, but overall, soils on Fort Wainwright have been relatively unaffected by military training (USARAK 2002f).

Donnelly Training Area

Soils in Donnelly Training Area are primarily derived from glacial activities, modified by streams and discontinuous permafrost, and in many places overlain by loess. Few soils in Donnelly Training Area have been mapped in detail, with the exception of areas near the Main Post cantonment area. The Natural Resources Conservation Service has identified 12 soil associations in the area (Rieger et al. 1979). Soils in the northern, west-central, and eastern portions of Donnelly Training Area West were identified as silt-loam associations, while Donnelly Training Area East was described as a shallow silt-loam over gravelly sand. Engineering soil types found at Donnelly Training Area are highly variable due to the diverse geomorphic landscape and sediments comprising it (USARAK 2004).

Soils at Gerstle River Training Area are described as poorly drained with mottled gray, gravelly silt or sandy loam beneath the thick surface mat of peat. Soils on the western portion of Black Rapids Training Area were developed in glacial till and most are poorly drained. Bedrock outcrops on peaks and ridges and loose rubble occur in many high areas. Well-drained soils have developed in very gravelly material at the foot of high ridges and on some south-facing slopes and hilly moraines at lower elevations. The eastern portion of the training area is classified only as rough mountainous land in a 1979 exploratory survey (Rieger et al. 1979).

Permafrost is highly patchy and irregular on Donnelly Training Area, particularly in morainal areas where abrupt changes in slope and aspect occur (Jorgenson et al. 2001). The highly variable sediment types,

complicated topography, and micro-climatic variability make prediction of permafrost difficult. Isolated patches of permafrost are found in areas under sandy gravel from 2 to 40 feet below ground level, with thickness varying from 10 to 118 feet. A relatively large portion of the landscape has discontinuous permafrost, but existing and abandoned river channels, lakes, wetlands, and other low-lying areas are likely permafrost-free (Williams 1970). Gerstle River Training Area has a shallow permafrost table (below 10 to 20 inches) that occupies a broad outwash plain (Rieger et al. 1979). Permafrost conditions at Black Rapids Training Area are assumed to be similar to those of Donnelly Training Area.

Only a small proportion of Donnelly Training Area is presently affected by permafrost degradation, which is indicated by the presence of thaw ponds. Permafrost degradation appears to be less compared to Fort Wainwright due to the cooler climate and higher elevations, and the prevalence of thaw-stable, gravelly soils at Donnelly Training Area. However, areas dominated by loess or other silty sediments may be more vulnerable to permafrost degradation. Continued climatic warming or disturbance of the ground surface may increase the amount of thermokarst at Donnelly Training Area.

3.1.2 Environmental Consequences

Alternative 1: Continue ITAM Program without a Management Plan (No Action)

Under this alternative, the ITAM program would continue but without a management plan. TRI would continue to provide administrative and logistical support to ensure timely and efficient implementation of the ITAM program. GIS would continue to provide mapping and spatial assistance in characterizing soils and soil impacts to support and enhance management efforts. Impacts of the TRI, LRAM, SRA, and RTLA programs on soil resources are discussed below.

TRI
The TRI program would ensure land management practices that meet the Army's needs while minimizing impacts on the environment. Range facility inventories, terrain analysis, training area configuration, and training land distribution are measures utilized under this program to integrate natural resource conditions, including soils, with range operations and training requirements.

LRAM
Although any project involving earth moving will result in soil disturbance, most LRAM projects would result in long-term beneficial impacts to soils.

Site selection for gravel pit development would be based on soils and hydrology maps, ground truthing, and sample testing. These methods would identify areas that minimize natural resource impacts while meeting construction needs. Due to the lack of adequate gravel sources in Yukon Training Area, gravel extraction in this training area would include blasting bedrock with explosives and subsequent crushing and mixing to create gravel. The proposed quarry area, pending drill core testing, would be the northern Bravo Battery in the northwest area of Fort Wainwright. Selection of this site would follow recommendations from a gravel inventory conducted for the Salcha-Delta Soil and Water Conservation District during the summer of 2004 (Engebretson 2005).

Permafrost areas would be avoided when possible, and consultation with the Department of Public Works is necessary for all projects to determine if dig permits are required. Gravel extraction procedures would specify that surface overburden (soil and vegetation) be rolled to the outer edges of the pit, then placed and notched to facilitate adequate drainage. This overburden would be reused for gravel pit reclamation. Side barrow (gravel extraction along roadsides) would typically be associated with trail and road upgrade

projects and would result in wide, concave ditches during construction. The concave ditches would be maintained after construction in order to provide effective site drainage. Gravel pit development and extraction and crushing of gravel would result in some minor adverse impacts including increased soil erosion while pits are active. Soil contamination would also be possible due to high vehicle activity. Gravel pit reclamation, however, would have beneficial impacts on soil resources.

Gravel pit reclamation procedures would include temporary grading, ditching, and/or constructing berms to prevent overland flows from entering the disturbed areas. Slopes would not exceed 2.5:1 to help reduce on-site erosion. Procedures would also recommend a wind and water erosion monitoring program. Permanent reclamation procedures would include utilizing original, on-site material as surface fill. Any imported fill would be sterilized or covered by a minimum of three feet of on-site material. If available, on-site overburden material would be installed as the top four to six inches on all exposed soils.

Military and recreational off-road travel as well as driving on the edges and sides of roads to avoid bad road conditions damages roadways and causes soil compaction and erosion. This would be less likely to occur if existing roads were in good condition. Additionally, repeated use of firing points and bivouac sites often results in soil compaction and erosion due to heavy vehicular traffic. Road crossings, maneuver trail upgrade and maintenance, and hardening of roads and pads would help reduce these impacts. Additionally, hardening low water crossings would concentrate vehicular impacts to a specified area. This would minimize impacts to soils along the rest of streambanks. Projected trail upgrade and road/pad hardening projects for the next five years include approximately 85 acres impacted at Fort Richardson, 245 acres at Fort Wainwright, and 135 acres at Donnelly Training Area (Appendix A). Since these projects involve upgrade and maintenance of existing range and training land infrastructure, the majority of acres affected would be previously disturbed.

Erosion and sediment control structures and land grading and shaping would reduce erosion impacts by helping control surface runoff and sedimentation, and directing water away from erosion-prone areas. Because soils exposed from these and other standard operating procedures are vulnerable to erosion, temporary and permanent soil stabilization practices would improve unstable soils. The most common revegetation activity on USARAK lands would be seeding exposed soils. Live staking and fascines (tightly wrapped bundles of willow) would be methods used along streambanks, water courses, and erosion-prone slopes to stabilize soils, control erosion, and prevent bank slope failure.

Streambank repair, rock armoring, and barb dikes would all help reduce streambank erosion. Hardening low water crossings would also help reduce streambank and bed erosion by providing designated crossing locations. Water bars would be installed to prevent rill erosion by draining water from the portions of a roadway exceeding 5% slope. Trail closure would allow areas with compacted or eroded soils to recover. Installation and maintenance of berms behind firing targets would contain munitions, helping minimize soil contamination.

Vegetation management practices would also affect soils. Mowing would allow plant material to act as a mulch layer. Hand or mechanical vegetation thinning/cutting activities would be determined based on soil type. Trees would typically be ground or cut flush with ground level, resulting in little or no intrusion into mineral soil. However, training area cleanup would involve the mechanical removal of stumps or tree debris and would disturb soils and prevent tree biomass from decomposing into the soils. Most hand clearing would occur on unfrozen hydric soils, while most mechanical operations would be conducted on frozen soils. Projected thinning projects for the next five years include approximately 20 acres impacted at Fort Richardson and 140 acres at Fort Wainwright. About 100 acres of mowing is planned at Donnelly Training Area (Appendix A).

Some mechanical operations would require pulling of trees or tree clumps, which would remove root balls and associated soil. This would initially increase erosion by removing the root systems that help absorb water and retain soils. However, downed trees would be piled and burned, chipped and spread out, or buried and left to decompose, all of which would return nutrients to soils rather than remove biomass off site. Prescribed burning would be typically used for drop zone management and may result in increased erosion and potential permafrost impacts through increased soil temperatures. Projected burning projects include 800 acres impacted at Donnelly Training Area (Appendix A).

Best management practices for erosion control would be utilized in support of LRAM projects (Appendix B). These would include controlling runoff from land grading activities by creating temporary and permanent diversions or dikes that would reduce slope length, collect storm water runoff, and deflect runoff to outlets able to convey it by non-erosive means. Gradient terraces may be incorporated into the grading plan to shorten the slope length and reduce storm water velocity. Check dams would be used to reduce the energy of storm water and help prevent erosion. Filter berms are temporary ridges that slow, filter, and divert flow from an open traffic area and act as an efficient form of sediment control. Grass-lined channels would also be used in some areas to filter and convey runoff, and riprap would be used in areas of concentrated runoff to prevent erosion by stabilizing slopes, drainage ways, and outlets.

Vegetated buffers would reduce the velocity of storm water runoff, help prevent soil erosion, provide an area for the runoff to permeate the soil, and act as filters to catch sediment. Temporary storm drain diversions, earth dikes, and interceptor dikes would be used to contain storm water on-site or redirect storm water to discharge into a sediment trap or basin. Subsurface drains would be used to prevent saturated soils that can hinder growth of certain types of vegetation and sometimes cause slope failure. A high water table can saturate soils and prevent growth of certain types of vegetation. Mulch or sod would be applied to stabilize exposed soils and reduce storm water runoff velocity. Permanent seeding would be used to reduce erosion, decrease sediment runoff from disturbed areas, and provide permanent stabilization in disturbed areas by establishing perennial vegetative cover. Soil roughening would often be used in conjunction with land grading and seeding practices for temporary erosion control to reduce runoff velocity, increase infiltration, reduce erosion, trap sediment, and prepare soils for seeding and planting. Chemical soil stabilization would use soil additives or palliatives (including calcium chloride and anionic asphalt, latex, or resin-water emulsions) to provide temporary soil stabilization. Soil palliatives would only be used on mineral soils.

Stand pipes (drain tubes placed perpendicular to the ground in areas susceptible to ponding) would be installed to maintain ponding water below levels that would overtop a road or pad and would help minimize erosion due to flooding. Cobble drains would be installed underneath roads crossing sub-surface water flows to prevent soil saturation and road impairment. Gabions would help reduce the impact of erosive, seasonal water flows. Log cribbing may be used to retain soil or gravel firmly in place. Asphalt or reinforced concrete may be used to control erosion (particularly, at stream crossings) or to reinforce specific erosion-prone areas along roadways or within training areas. Grid pavers made of cement or plastic would be used to line ditches or stream bottoms where vehicles cross in order to prevent erosion, stabilize the creek bottom, and minimize rutting or shifting of material.

Construction sequencing, which involves timing land disturbance activities to minimize soil erosion and sedimentation, would be used. Construction entrances would be designed to minimize the amount of mud and sediment attached to motorized vehicles leaving a construction area. Temporary stream crossings would be erected when necessary to provide streambank stabilization, reduce damage to streambeds or channels, and minimize sediment loading from construction traffic. Soil retention structures and practices would be used to hold soil in place, prevent slope failure, or keep soil contained within a site boundary. Geotextiles would protect soil surfaces from wind and water erosion while also allowing vegetation

growth. Wind and sand fences would be used to reduce the off-site movement of fine sediments transported by wind. Brush barriers and silt fences would trap sediment and prevent off-site transport from storm water run-off. On larger sites, sediment basins and rock dams would be used to trap sediments and temporarily detain runoff. Sediment traps would be used to specifically collect sediment-laden runoff from disturbed areas and construction sites.

SRA
This component of the ITAM program would educate soldiers about the importance of preventing damage to terrain, which can decrease training realism and undermine the training mission. Damage from training maneuvers could cause loss of acreage for training, safety hazards, decreased tactical maneuverability, increased maintenance costs, and loss of vegetation. The SRA program would ensure that soldiers are aware of specific environmental concerns, regulations, and restrictions intended to minimize impacts to natural resources, including soils. These include encouraging training plans to include locations of known sensitive areas to ensure these areas are avoided and plans for repairing maneuver damage. When maneuver damage occurs, units are required to report the damage to Range Control; if found negligent, the unit may be charged for repair.

Requirements instruct soldiers to observe all speed limits and stay away from the edges of roads to prevent damage to roadways and soils and vegetation adjacent to roadways. Driving on the edges causes them to break and crumble. This can result in roads washing out when it rains, leading to further erosion problems.

Virtually all off-road traffic leads to some form of erosion, causing both operational hazards and environmental damage. Maneuver requirements direct vehicles to remain on marked trails and designated routes (except when directed otherwise) during tactical deployment and established roads during administrative time. Cross-country travel in vehicles with low ground pressure is not restricted during winter months when the ground is frozen and the vegetation mat and soil is protected by snowpack. During April and May, vehicles are confined to designated roads and trails during breakup. From May through September, however, cross-country movement is not permitted in designated alpine areas above 600 meters elevation, wetlands, and creek and river bottoms.

Additionally, soldiers are directed to not drive directly up steep hills and to wash vehicles only at designated wash racks. Digging is allowed only in approved areas, and overlays are provided by range control. All foxholes, trench systems, tank traps, hull-down positions, and explosive excavations must be backfilled and leveled before redeployment. Soldiers are directed to stockpile the topsoil separately when excavating, refill and smooth-over foxholes and trenches after exercises are completed, and disassemble and scatter all overhead cover. During snow removal, soldiers are directed to not allow the bulldozer's blade to penetrate the vegetative mat and soil beneath the snowpack. The SRA program would have a beneficial impact by helping ensure that all military requirements aimed at protecting soils are known and followed.

RTLA
By maintaining a balance between the use of training lands to maximize military preparedness and the conservation of biologically diverse and functioning ecosystems, RTLA would monitor the capability of training lands to meet multiple use demands on a sustainable basis. It would seek to help avoid excessive military use that would exhaust natural resources. The RTLA program would include Standard Land Condition Trend Analysis (LCTA), Alaska Land Condition Trend Analysis (AK LCTA), military exercises monitoring, and soil and water quality monitoring.

The LCTA program collects physical and biological resources data in order to relate land conditions to training and testing activities. These data provide information to effectively manage land use and natural resources. The AK LCTA program is the long-term monitoring program used to evaluate the ecological health of USARAK training areas. Annual field surveys provide data used to evaluate the capability of training lands to meet multiple use demands (military and non-military) on a sustainable basis. This information is used to support land use planning decisions including location and timing of military training events, natural resources management, and prioritizing land rehabilitation and restoration efforts.

Military activities, such as cross-country maneuvers, digging of defensive fighting positions, snowplowing in winter, and bivouacs, can disturb training areas. The USARAK military exercise monitoring methodologies would focus on monitoring training areas where military exercises are being or have been conducted. Quantitative assessments by the AK LCTA program would document various types of use and physical damage to the landscape. Data would then be used to quantitatively assess the degree of disturbance to training areas and identify priority areas for rehabilitation.

Qualitative assessments would be conducted by USARAK Environmental Resources Department staff during large military field training exercises to prevent undue land damage and to ensure rapid and proper remediation techniques are employed if necessary. Assessments would include optical surveying of areas where military exercises have occurred and documenting presence/absence, type, and degree of disturbance. Monitoring efforts would focus on ensuring military requirements for minimizing natural resources impacts are being met during training exercises. Requirements aimed at minimizing impacts to soils are described in the SRA program above.

Through monitoring both vegetation and compliance with military regulations aimed at minimizing impacts to soils, the RTLA program is beneficial to soil resources on USARAK lands.

Alternative 2: Implement ITAM Program through a Management Plan (Proposed Action)

Under this alternative, the ITAM program would be implemented through a management plan, which would include standard operating procedures for LRAM and RTLA projects. Impacts to soil resources on USARAK lands due to TRI, LRAM, SRA, RTLA, and GIS activities would be similar to those described under the No Action alternative. Implementing standard operating procedures for the LRAM and RTLA programs would ensure consistent and efficient land management and monitoring practices. This would facilitate assessment and implementation of effective management strategies aimed at minimizing soil impacts. Standardizing procedures would benefit monitoring activities by reducing data collection error and variability, and providing consistent data collection methods required to assure long-term usability and applicability of data.

Alternative 3: Suspend ITAM Program

Under this alternative, all components of the ITAM program would discontinue operation. This would have minor to severe impacts. Training land rehabilitation, maintenance, and range improvements would cease despite continued use of USARAK lands for Army training. Environmental damage from training would not be monitored or rehabilitated and training lands would deteriorate over time, resulting in severe soil disturbance, increased erosion, and decreased capacity for soils to withstand ongoing use. Without a systematic approach to sustain its training lands, USARAK lands would result in a net loss of training capabilities and would not be able to fully support future training and mission requirements.

In particular, canceling the LRAM program, which is primarily responsible for the maintenance of natural resources on USARAK training lands, and the RTLA program, which is responsible for monitoring the

biological impacts of military training, would have an increasingly adverse impact on soil resources. Additionally, the ITAM program is often utilized as mitigation for other Army projects. Cancellation of this program would result in USARAK falling out of NEPA compliance on numerous other projects.

The following table presents a summary of qualitative impacts to soil resources resulting from each alternative. Descriptions of the qualitative terms are provided in Chapter 2, Description of Proposed Action and Alternatives.

Table 3.1 Summary of Impacts[1] to Soil Resources.

ITAM Activity	Alternative 1		Alternative 2		Alternative 3	
	Short Term	Long Term	Short Term	Long Term	Short Term	Long Term
TRI	Beneficial	Beneficial	Beneficial	Beneficial	Minor	Moderate
LRAM	Minor	Beneficial	Minor	Beneficial	Severe	Severe
SRA	Beneficial	Beneficial	Beneficial	Beneficial	Minor	Moderate
RTLA	Beneficial	Beneficial	Beneficial	Beneficial	Severe	Severe
GIS	Beneficial	Beneficial	Beneficial	Beneficial	Minor	Minor

[1] Short-term impacts are defined as impacts lasting from ten days up to one year, or until soils have stabilized.

Cumulative Impacts

Past impacts to soil resources resulted from munitions, maneuvers, stream crossings, construction, and use of roads and trails. Impacts included permafrost melting and soil erosion, rutting, and compaction (USARAK 2004). In 1994, USARAK began efforts to counteract the cumulative effects of military training by establishing the ITAM program.

The greatest impacts to soil resources on installation lands are from military training activities, resulting in similar impacts from past activities described above. Although all current and planned construction activities have the potential for minor adverse impacts to soils through disturbance or removal, best management practices would minimize and mitigate these impacts. Overall, the long-term cumulative impacts to soils resulting from ITAM activities under the proposed action would be beneficial.

3.2 VEGETATION

3.2.1 Affected Environment

Most lands used by the U.S. Army in Alaska were relatively undisturbed when they were withdrawn for military use in the early 1950s. Little or no data exist on most plant species prior to the last 15 years, and the effects of military presence on biological diversity are not known. Military activities may have resulted in localized changes in ecosystems and affected abundance of certain species for short periods, but probably have not affected the overall diversity of species. The greatest losses of habitat are associated with construction and urbanization of the cantonment areas.

USARAK lands are within the polar domain of Bailey's (1995) ecoregion classification system, which is characterized by low temperatures, severe winters, and relatively low precipitation. These lands are also classified within the subarctic division, which is influenced by cold snowy climate. Dominant forests in the subarctic division are boreal subarctic forests, open lichen woodlands, and taiga.

The Sikes Act requires USARAK to prepare and implement Integrated Natural Resources Management Plans, which include management of forest resources to protect, maintain, and enhance military training environments. Maintenance of tree density, ground cover, and forest ecosystem function are critical to the

accomplishment of the Army's mission. In addition, sustainable management of forest ensures maintenance of biological diversity, wildlife habitat, and continued development of outdoor recreation. Details for management of timber resources are found in the Integrated Natural Resources Management Plans for each post (USARAK 2002d,e,f).

Invasive species are defined as species that are either non-native to an ecosystem or whose introduction causes or is likely to cause economic or environmental harm or harm to human health (per Executive Order 13112). Title 11 Chapter 34 of the Alaska Administrative Code defines noxious weeds as "…any species of plants, either annual, biennial, or perennial, reproduced by seed, root, underground stem, or bulblet, which when established is or may become destructive and difficult to control by ordinary means of cultivation or other farm practices."

The Aleutian Shield Fern (*Polystichum aleuticum)* is the only plant species currently listed as federally threatened or endangered in Alaska (USFWS 2004.) This species is not found on Fort Richardson, Fort Wainwright, or Donnelly Training Area (USARAK 2002d,e,f).

Additional information can be found in the *Transformation of U.S. Army Alaska Final Environmental Impact Statement* (USARAK 2004).

Fort Richardson

Many different vegetative communities are present on Fort Richardson, from coastal salt marsh and boreal forest types to high alpine tundra, talus slopes, shrub lands, snow beds, heaths, and meadows. An ecological survey of Fort Richardson conducted by Jorgensen et al. (2002) indicates the installation is covered by forest (55.3%), scrub lands (23.7%), barren lands (5.5%), human disturbed lands (13.1%), bog and wetland (1.6%), meadow (0.7%) and water (0.5%). Forest types include white spruce, paper birch, and quaking aspen in upland sites; cottonwood and poplar along principle streams with black spruce in wetter areas; and white spruce, mountain hemlock, and balsam poplar along tree lines. A floristic inventory of Fort Richardson also conducted by Lichvar et al. (1997) included vascular plants, ferns and fern allies, the more common mosses, liverworts, and lichens. The inventory documented 561 vascular species (representing approximately 30% of Alaska's vascular flora types) and 239 non-vascular species. A complete inventory of flora found on Fort Richardson can be found in Fort Richardson's Integrated Natural Resource Management Plan (USARAK 2002e).

The Alaska Natural Heritage Program (2005) tracks rare vascular plant species in Alaska, approximately 21 of which are known to occur on Fort Richardson (USARAK 2002e). Some alpine and wetland areas contain plant species that are considered rare in Alaska or globally imperiled (Lichvar and Sprecher 1998b). USARAK also lists three types of vascular plants found on Fort Richardson as species of concern: *Viola selkirkii* is rare in Alaska, *Taraxacum carneocoloratum* is taxonomically questionable but is rare globally and in Alaska, and *Saxifraga adscendens oregonensis* whose status is secure globally but is considered to be rare and imperiled in Alaska. No legal protection is conferred by these listings.

Fort Wainwright

An ecological survey (Jorgensen et al. 1999) of Fort Wainwright (including Main Post, Tanana Flats Training Area and Yukon Training Area) identified 49 vegetation types and indicated the installation consisted primarily of forest (53.4%), scrub lands (17.5%), tundra (<0.1%), barren lands (0.4%), meadows, bogs, and fens (22.6%), miscellaneous plant community complexes (5.4%), and water (0.8%). Tanana Flats Training Area alone consisted of 41.5% forest and Yukon Training Area, 83.3%. Alder and

willow scrub communities are common at Main Post, Tanana Flats Training Area, and Yukon Training Area. Alpine tundra occurs above 2,500 feet in Yukon Training Area, with barren lands occurring at higher altitudes. Vegetation communities found at Fort Wainwright are also described in Racine et al. (1997). Due to the variable climate, as well as physiographic and geographic patterns throughout the region, a wide variety of forest types exist, including White Spruce, Paper Birch, Balsam Poplar, Black Spruce, Spruce/Hardwood, and Quaking Aspen.

A floristic inventory of Fort Wainwright Main Post, Tanana Flats Training Area, and Yukon Training Area identified 217 non-vascular species and 561 vascular species (plants, ferns and fern allies, common mosses, liverworts, and lichens) (Racine et al. 1997). The vascular species represent about 26% of Alaskan vascular plants, as identified by Hultén (1968).

At least 16 species of concern, as identified by the Alaska Natural Heritage Program (2005), are known to occur on Fort Wainwright (USARAK 2002f). USARAK has listed four plants of concern that are prioritized for Army posts in interior Alaska: *Apocynum androsaemifolium* is rare in Alaska, *Dodecatheon pulchellum pauciflorum* is taxonomically questionable but is imperiled in Alaska, *Festuca lenensis* is rare in Alaska and globally imperiled, and *Minuartia yukonensis* which is secure globally but is uncommon in Alaska.

Donnelly Training Area

An ecological survey (Jorgensen et al. 2001) reported vegetation cover as forest (29.0%), scrub lands (58.1%), tundra (4.4%), barren lands/partially vegetated (3.6%), human disturbed (0.6%), and water (4.3%). Forests cover at Donnelly Training Area is diverse and includes pure stands of spruce, hardwoods, and spruce/hardwood mixtures. The dominant types include white spruce, paper birch, quaking aspen, balsam poplar, black spruce, and spruce/hardwood. Scrub communities (typically composed of alder, willow, and dwarf birch) occur at high mountain elevations, in small stream-valley bottoms, and as pioneer vegetation on disturbed sites. Dense thickets of scrub communities exist along floodplains or disturbed sites such as gravel pits, road shoulders, rights-of-way, and military trails (USARAK 1980). Most barren areas on Donnelly Training Area are located on gravel bars along the Delta River, the Little Delta River Delta Creek, Jarvis Creek, and Granite Creek (Jorgensen et al. 2001). Barren lands also occur above tree line, along ridges, and adjacent to rivers and streams. Higher elevation sites along the southern portion of Donnelly Training Area support moist tundra, which grades into alpine tundra and then into barren land.

A floristic inventory of Donnelly Training Area (Racine et al. 2001) did not include all possible taxa on post but identified 497 vascular species, representing about 26% of Alaskan vascular plants, as identified by Hultén (1968). At least 18 species of rare vascular plants on Donnelly Training Area are being monitored by the Alaska Natural Heritage Program (2005). Two plant species of concern, *Carex sychnocephala and Dodecatheon pulchellum pauciflorum*, are ranked in USARAK's short list of species of concern for ecosystem management.

3.2.2 Environmental Consequences

Alternative 1: Continue ITAM Program without a Management Plan (No Action)

Under the No Action alternative, the ITAM program would continue without a management plan. The TRI, LRAM, SRA, RTLA, and GIS components of the ITAM program would continue to have beneficial impacts on vegetation resources on USARAK lands. GIS would provide spatial data and remote sensing capabilities for vegetative information collection, analysis, presentation, and storage. GIS staff would

support the management capabilities and effectiveness of all ITAM programs. Impacts of the LRAM, SRA, and RTLA programs on vegetation are discussed below.

TRI
The TRI program would ensure that land management practices meet the Army's needs while minimizing impacts on the environment. Range facility inventories, terrain analysis, training area configuration, and training land distribution are measures utilized under this program to integrate natural resource conditions, including vegetation, with range operations and training requirements.

LRAM
LRAM projects would reduce long-term impacts of training and testing by combining preventive and corrective land reclamation, reshaping, rehabilitation, repair, and maintenance practices. Although impacts to vegetation would be beneficial overall, generally, any projects involving clearing of vegetation or disturbing soils would have the possibility of encouraging establishment of invasive species. Such projects include gravel extraction; road hardening (which often results in road widening); vegetation thinning and clearing; and prescribed burning. However, revegetation and reclamation projects would also be used to restore native flora whenever appropriate.

The most common revegetation activity on USARAK lands is seeding exposed soils, and native seed type mixes are used whenever appropriate. The native seed mix recommendations and revegetation practices that would be utilized are developed by the University of Alaska, Fairbanks, Cooperative Extension Service's *A Revegetative Guide for Conservation Use in Alaska.* Gravel pit reclamation projects include recommendations for revegetation with native plants and monitoring for invasive species. Streambank stabilization practices would allow riparian vegetation to establish in previously degraded areas. Water bars installed on roads would slow water flows and help keep soil and vegetation from washing away during periods of high water flow. Temporary and permanent soil stabilization practices would allow vegetation to establish and thrive. Protecting natural vegetation during construction activities would allow their erosion control, storm water detention, biofiltration, and aesthetic services to persist.

Vegetation management practices, such as prescribed burning and hand or mechanical thinning/clearing, reduce tree stands and would primarily be utilized to maintain certain species compositions or seral stages (particularly for fire management purposes; see Section 3.6). Hand thinning results in limited residual tree damage while some mechanical operations require pulling trees or tree clumps, which results in the removal of the root balls and associated soil. Mowing would also be used for similar reasons, mainly to keep drop zones as grass areas and to prevent establishment of tall vegetation. Projected thinning projects for the next five years include approximately 20 acres impacted at Fort Richardson and 140 acres at Fort Wainwright. About 100 acres impacted by mowing and 800 impacted by burning are projected at Donnelly Training Area. Installation of a firebreak is projected at Fort Wainwright and would impact 37 acres (Appendix A). Fire suppression activities and installation of fire/fuel breaks and trenches would benefit vegetation by reducing wildfire risk and possible impacts of wildfire.

Off-road maneuver and recreation travel and driving on the sides of roads to avoid poor road conditions damages vegetation and encourages establishment of invasive species. This would be less likely to occur if roads were in good condition. Additionally, repeated use of firing points and bivouac sites often results in soil erosion and compaction and almost complete removal of shrub vegetation due to heavy vehicular traffic. Road crossings, maneuver trail upgrade and maintenance, and hardening of roads and pads would help reduce these impacts. Projected trail upgrade and road/pad hardening projects for the next five years include approximately 85 acres impacted at Fort Richardson, 245 acres at Fort Wainwright, and 135 acres at Donnelly Training Area (Appendix A). Since these projects involve upgrade and maintenance of existing range and training land infrastructure, the majority of acres affected would be previously

disturbed. Further, hardening low water crossings would concentrate vehicular impacts to a specified area and minimize impacts to vegetation along the rest of streambanks. Trail closure would allow areas with compacted or damaged vegetation to recover.

Best management practices for erosion control would be utilized in support of LRAM projects (Appendix B) and would have beneficial impacts to vegetation. The erosion control best management practices discussed in Section 3.1, Soil Resources, would also be beneficial to vegetation establishment and perseverance.

RTLA
By maintaining a balance between the use of training lands to maximize military preparedness and the conservation of biologically diverse and functioning ecosystems, RTLA would monitor the capability of training lands to meet multiple use demands on a sustainable basis. It would seek to help avoid excessive military use that exhausts natural resources. The RTLA program would include measures for monitoring invasive species; Alaska Land Condition Trend Analysis (AK LCTA) (described in Section 3.1); rare, threatened, and endangered species; and impacts to vegetation from military training.

Invasive species monitoring would include AK LCTA surveys and forestry surveys. The AK LCTA program would conduct annual natural resource monitoring of training lands and would document vegetation, including invasive species. Forestry inventories would be conducted during field seasons and would record invasive species in databases for future monitoring and management efforts.

Threatened, endangered, rare, uncommon, or priority flora species are identified through planning-level flora surveys, AK LCTA surveys, and forest monitoring. The Alaska Natural Heritage Program's Plant Tracking Database is used to guide efforts to locate uncommon plant taxa. Flora planning-level surveys are conducted every ten years and are large-scale monitoring efforts that span a variety of projects. Their main purpose is to document threatened and endangered species. AK LCTA conducts annual natural resource monitoring and documents threatened, endangered, rare, uncommon, or priority plant species. Rare plant surveys are conducted in areas of potential development when needed. Forest inventories record threatened, endangered, rare, uncommon, or priority forestry species.

Military activities, such as cross-country maneuvers, digging of defensive fighting positions, snowplowing in winter, and bivouacs, can disturb training areas. USARAK military exercise monitoring methodologies would focus on monitoring training areas where military exercises are being or have been conducted. Qualitative assessments by Environmental Resources Department staff would be conducted during large military field training exercises to prevent undue land damage and to ensure rapid and proper remediation measures. Assessments would include optical surveying of areas where military exercises have occurred and documenting presence/absence, type, and degree of disturbance. Monitoring efforts would focus on ensuring military requirements for minimizing impacts to natural resources are being met during training exercises. Requirements aimed at minimizing vegetation impacts are described in the SRA program above.

Through monitoring both vegetation and compliance with military regulations aimed at minimizing impacts to vegetation, the RTLA program is beneficial to vegetation resources on USARAK lands.

Alternative 2: Implement ITAM Program through a Management Plan (Proposed Action)

Under this alternative, the ITAM program would be implemented through a management plan, which would include standard operating procedures for LRAM and RTLA projects. Impacts to vegetation on USARAK lands due to TRI, LRAM, SRA, RTLA, and GIS activities would be similar to those described

under the No Action alternative. Implementing standard operating procedures for the LRAM and RTLA programs would ensure consistent and efficient land management and monitoring practices. This would facilitate assessment of effective management strategies aimed at minimizing vegetation impacts. Standardizing procedures would benefit monitoring activities by reducing data collection error and variability, and providing consistent data collection methods required to assure long-term usability and applicability of data.

Alternative 3: Suspend ITAM Program

Under this alternative, all components of the ITAM program would discontinue operation. Training land rehabilitation, maintenance, and range improvements would cease despite continued use of USARAK lands for Army training. Environmental damage from training would not be monitored or rehabilitated, and training lands would deteriorate over time, resulting in damage to vegetation, loss of vegetation, increased areas of soil disturbance amenable to invasive species, and altered composition of vegetative communities.

In particular, canceling the LRAM program, which is primarily responsible for the maintenance of natural resources on USARAK training lands, and the RTLA program, which is responsible for monitoring the biological impacts of military training, would have an increasingly adverse impact on vegetation.

The following table presents a summary of qualitative impacts to vegetation resulting from each alternative. Descriptions of the qualitative terms are provided in Chapter 2, Description of Proposed Action and Alternatives.

Table 3.2 Summary of Impacts[1] to Vegetation.

ITAM Activity	Alternative 1		Alternative 2		Alternative 3	
	Short Term	**Long Term**	**Short Term**	**Long Term**	**Short Term**	**Long Term**
TRI	Beneficial	Beneficial	Beneficial	Beneficial	Moderate	Severe
LRAM	Minor	Beneficial	Minor	Beneficial	Severe	Severe
SRA	Beneficial	Beneficial	Beneficial	Beneficial	Minor	Moderate
RTLA	Beneficial	Beneficial	Beneficial	Beneficial	Severe	Severe
GIS	Beneficial	Beneficial	Beneficial	Beneficial	Minor	Minor

[1] Short-term impacts are defined as impacts lasting from ten days up to one year, or until vegetation has stabilized.

Cumulative Impacts

Past impacts to vegetation resulted primarily from maneuver training exercises, construction of ranges, and construction of range and cantonment infrastructure. Impacts included clearing vegetation for roads, ranges, drop zones, landing strips, and camp sites. Constructed ranges have often required ongoing vegetation modification and some must remain free of high-standing vegetation, which prevents vegetation from progressing through successionary stages. Construction of designated roads has resulted in reduced off-road maneuver travel and vegetation disturbance (USARAK 2004). In 1994, USARAK began efforts to counteract the cumulative effects of military training by establishing the ITAM program.

The greatest impacts to vegetation on installation lands are from military training activities, resulting in similar impacts from past activities described above. The ITAM program was created to monitor, restore, and repair lands damaged by these activities in order to provide sustained use of military training lands while also achieving long-term environmental sustainability. ITAM activities also ensure military personnel are aware of requirements to minimize disturbances to vegetation. Although all current and planned construction activities have the potential for minor adverse impacts to vegetation through

disturbance or removal, best management practices would minimize and mitigate these impacts. Overall, the long-term cumulative impacts to vegetation resulting from ITAM activities under the proposed action would be beneficial.

3.3 WETLANDS

3.3.1 Affected Environment

Nearly one-half of Alaska is classified as wetlands (Ford and Bedford 1987). They are sociologically, ecologically, and economically important for the state. Alaskan wetlands are unique compared to wetlands in lower latitudes because of features such as permafrost and aufeis (overflows of ice that occur when a section of stream channel freezes completely). The presence of permafrost provides an impermeable layer, resulting in saturated surface soils.

Types of wetlands in Alaska include floodplains, lower elevation areas with standing water for at least 10% of the growing season, areas periodically flooded by tides, and other areas supporting wetland plant communities and hydric soils. Army lands in Alaska have both saltwater and freshwater wetlands. Saltwater wetlands include tidal flats and estuaries. Freshwater wetlands include freshwater marshes, bogs, and fens, which are distinguished by water source and/or vegetation type.

USARAK classifies wetlands as "high-function" or "low-function." Note that these classifications are used for management purposes and are not mandated by federal or state policies. High-function wetlands currently include riverine, permanent emergent, semi-permanent emergent areas, riparian areas, and other sensitive wildlife habitats that lie within any wetland areas. Low-function wetlands include all other wetland types. These classifications are undergoing review. Classification of wetlands will be under the guidance of the U.S. Army Corps of Engineers while classification of habitat will be under U.S. Fish and Wildlife Service. Revised classifications will be based on field visits and vegetation types using Alaska Vegetation Classification (Viereck et al.), Alaska Biological Research mapping, National Wetland Inventory wetland classifications (Cowardin et al. 1979), and trafficability. Vegetation types will be categorized as either high value or low value for both wetlands and wildlife habitat.

USARAK obtained a Clean Water Act Section 404 five-year wetland permit to conduct military training in wetlands at Fort Wainwright (2000 to 2005) including Fort Wainwright Main Post, Tanana Flats Training Area, Yukon Training Area, and Donnelly Training Area. This permit, which expired in March 2005, allowed limited maneuver or other military activities to occur in some wetland areas where, in the past, no activity was permitted at all. USARAK could not damage more than 40 acres of wetlands per year. If that amount was exceeded, training in wetlands would be prohibited and individuals would be liable for fines and other penalties. Restoration of all wetland damage was mandatory and completed under the LRAM program. USARAK proposes to reapply for a five-year Section 404 individual wetlands permit to continue conducting military operations on USARAK lands, including the potential impact to up to 40 acres of wetlands per year on Fort Wainwright and Donnelly Training Area.

Environmental limitations overlays were developed as a tool for planning military training activities, managing wetlands, and complying with the wetlands permit. Each overlay is available in a summer and winter version. They include approved and restricted activities listed in three color-coded categories and are used during military training activities.

Additional information regarding wetlands on USARAK lands can be found in the *Transformation of U.S. Army Alaska Final Environmental Impact Statement* (USARAK 2004).

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Fort Richardson

Wetlands comprise approximately 8% (4,990 acres) of Fort Richardson (Lichvar and Sprecher 1998b). Wetland types on the post include estuarine, marine, palustrine, riverine, and lacustrine. They are classified as Coastal Halophytic Zone, Lowland Forest Wetlands, Lacustrine Wetlands, Alpine, and Subalpine Wetlands.

Eagle River Flats is the largest expanse of wetlands at Fort Richardson (2,165 acres). This site was placed on the national priorities list for investigation and cleanup of hazardous substances (USARAK 1998). USARAK has not used white phosphorus munitions in wetlands since 1989, when a study was initiated to evaluate the ecological effects of these munitions. USARAK banned the use of white phosphorus munitions in all impact areas in Alaska in 1991, and this explosive is no longer used in any wetlands throughout the United States. Remediation throughout most of Eagle River Flats is complete, although two contaminated areas persist. Ongoing monitoring will assist in determining treatment options for the remaining contaminated areas (CRREL 2004).

Fort Wainwright

Approximately 42% (6,500 acres) of the Main Post is classified as wetlands, with palustrine, riverine, and lacustrine types (Lichvar and Sprecher 1998a). Bogs, fens, and marshes are distributed over the post.

Wetlands comprise about 74% (483,500 acres) of Tanana Flats Training Area (Lichvar and Sprecher 1998a). Most are classified as Lowland Wet Needleleaf Forest and Lowland Forest and Scrub Thermokarst Complexes.

Approximately 17% (42,600 acres) of Yukon Training Area is classified as wetlands (Lichvar and Sprecher 1998a). The prevalent wetland types include Shrub Wetlands, Lowland Wet Needleleaf Forest, Riverine and Lacustrine Complexes. Most middle and lower portions of north-facing slopes in the wetland/upland complex of Yukon Training Area are probably wetlands.

Donnelly Training Area

Approximately 68% (431,940 acres) of Donnelly Training Area is wetlands (Lichvar 2000), with palustrine, riverine, and lacustrine types included. The palustrine shrub wetlands are the most common found on the training area. The Delta River glaciated lowlands, lower Delta Creek lowlands, and upper Delta Creek lowlands ecosections support most of the wetlands on Donnelly Training Area. Most wetlands are classified as Lowland Wet Low Scrub and Lowland Tussock Scrub and Bog Lowland Wet Forests.

3.3.2 Environmental Consequences

Alternative 1: Continue ITAM Program without a Management Plan (No Action)

Under the No Action Alternative, ITAM projects would continue to take place without a management plan or standard operating procedures. SRA, TRI, RTLA, and GIS would continue to have beneficial impacts to wetlands. GIS would benefit wetlands by providing spatial information important for managing wetland areas. TRI would benefit wetlands by ensuring wetlands protection does not interfere with training needs. Environmental limitations maps would continue to be used to make military personnel aware of sensitive areas to avoid. SRA, RTLA, and LRAM impacts are discussed below.

SRA
Through the SRA program, soldiers would be educated on the types of activities that require a permit, including depositing soil or other materials into wetlands, extracting water from wetlands, refraining from digging in wetlands, and projects taking place in or near wetland areas. Environmental limitations maps would continue to be distributed to soldiers so they would be aware of sensitive areas, including wetlands.

RTLA
RTLA would benefit wetlands by monitoring wetlands use to prevent prohibited activities in these sensitive habitats and to assess the effectiveness of rehabilitation efforts. Military training activity and damage to wetlands would be tracked, recorded annually, and submitted to the U.S. Army Corps of Engineers if the five-year wetlands permit is renewed. Recreational impacts to wetlands would also be monitored under RTLA.

LRAM
Wetlands restoration under LRAM would have beneficial impacts. Wetlands restoration would include returning the soils, hydrology, vegetative community, and biological habitat to a natural condition to the extent practicable. This may require the use of biological and chemical controls to control undesirable plant species and pests. Use of biological controls, such as predator or parasitic species, would be implemented where available and feasible.

Road hardening, road crossings and maneuver trail upgrades would benefit wetlands by improving road conditions. This would encourage drivers to remain on the road and out of wetland areas. Drivers are more likely to remain on roads if they are in good condition.

Other LRAM projects are located so as to avoid wetlands whenever possible. Some LRAM activities, however, would have adverse impacts to wetlands if they cannot be avoided. These impacts include gravel pit development and mechanical cutting and clearing. This impact is considered minor adverse due to USARAK's preference to avoid wetlands for construction projects. Required permits would be secured prior to any dredging or filling of wetlands.

Alternative 2: Implement ITAM Program through a Management Plan (Proposed Action)

Impacts to wetlands from Alternative 2 would be similar to those described under Alternative 1. Standard procedures for all ITAM programs identified in the *USARAK ITAM Management Plan* will provide consistent and efficient work practices. This may improve wetlands by ensuring that contractors performing the work would adhere to the standard procedures designed to protect and restore wetland areas.

Alternative 3: Suspend ITAM Program

Under Alternative 3, ITAM activities would not continue on USARAK installations. This action would have severe adverse impacts to wetlands. The greatest impacts would result from maneuver vehicle damage if soldiers and trainers did not avoid sensitive wetland areas. Disturbed wetlands would not undergo remediation.

The following table presents a summary of qualitative impact to wetlands resulting from each alternative. Descriptions of the qualitative terms are provided in Chapter 2, Description of Proposed Action and Alternatives.

Table 3.3 Summary of Impacts[1] to Wetlands.

ITAM Activity	Alternative 1	Alternative 2	Alternative 3
TRI	Beneficial	Beneficial	Severe
LRAM	Minor to Beneficial	Minor to Beneficial	Severe
SRA	Beneficial	Beneficial	Severe
RTLA	Beneficial	Beneficial	Severe
GIS	Beneficial	Beneficial	Severe

[1]Short-term and long-term impacts are expected to be similar.

Cumulative Impacts

The region of influence for wetlands impacts resulting from the proposed action would be limited to installation lands. Past wetland disturbance due to maneuver training has been limited since most training has occurred during winter. Some wetland damage has occurred from training, munitions, and recreation impacts. Current and future construction, training, and non-military activities could impact some wetlands on all installations. Clean Water Act Section 404 permits have been issued for construction, training, and vegetation management activities within wetlands. Impacts are reduced by following conditions outlined in Section 404 permits or choosing sites where wetlands do not exist (which is part of USARAK's best management practices). The ITAM program further mitigates impacts by restoring damaged wetlands, protecting sensitive wetlands from damage by training or recreation, and monitoring wetland quality. Some projects involving road and trail widening or tree clearing would add to adverse cumulative wetland impacts, but they would be considered minor and insignificant.

3.4 WATER RESOURCES

3.4.1 Affected Environment

Waterways in Alaska are designated for one or more of the following uses:

Class A: Water supply
- (i) drinking, culinary, and food processing
- (ii) agriculture, including irrigation and stock watering
- (iii) aquaculture
- (iv) industrial

Class B: Water recreation
- (i) contact recreation
- (ii) secondary recreation

Class C: Growth and propagation of fish, shellfish, other aquatic life and wildlife

Water quality criteria were developed by the State of Alaska for each designated use (18 AAC 70). If a water body is designated as having more than one use class, the more stringent water quality criterion applies.

Fort Richardson

Fort Richardson has 12 named lakes and ponds and several unnamed water bodies. The combined area for the named lakes and ponds is 359 acres. Five relatively large lakes, Clunie, Otter, Gwen, Thompson, and Waldon, are managed for recreational fishing. The waters on Fort Richardson are protected by freshwater use classes A, B and C, as assigned by the State of Alaska.

Ship Creek (from the Glenn Highway bridge to the mouth) is listed on the state's 303 (d) list of impaired waters due to excess fecal coliform bacteria, petroleum hydrocarbon, oil, and grease. A total maximum daily load for fecal coliform has been determined. According to Alaska Department of Environmental Conservation studies, most of the pollutants entered Ship Creek as non-point sources from surface water runoff and groundwater downstream of the post, where the watershed is increasingly urbanized. After compiling and reviewing the data, the state concluded that no cumulative or increasing water quality degradation was occurring in the lower portion of Ship Creek (ADEC 1996). Water from Ship Creek is diverted for Fort Richardson, Elmendorf Air Force Base, and the Anchorage Municipality. Ship Creek leaves Fort Richardson at the border with Elmendorf Air Force Base.

Eagle River is a glacial waterway that ends at Eagle River Flats, a 2,200-acre estuarine tidal marsh. Eagle River Flats was removed from the state's list of impaired waters after extensive remediation efforts for white phosphorous were shown to be successful (ADEC 2002).

Industrial activities have had some effects on groundwater. Through monitoring, pollution was found to be associated with underground storage tanks, chemical storage facilities, and chemical dumpsites. Fort Richardson was identified as a CERCLA (Superfund) site. These areas are monitored intensively and no indication of deep groundwater pollution has been detected. Pollution has been minor and localized and no significant risks to human health were found. Water quality has improved recently due to Army restoration projects to mitigate previous damage to the groundwater quality (USARAK 2004).

Fort Wainwright

Overall surface water quality on Fort Wainwright is good. The Chena River has been designated for Class A, B, and C uses. Iron concentrations, which stem from natural sources, exceed state secondary water standards. The Chena River portion that runs through Fairbanks and Fort Wainwright is listed on the state's 303 (d) list for impaired waters. The pollutants of concern are petroleum, hydrocarbons, and sediment. The pollutant source is listed as urban runoff. A total maximum daily load for petroleum and hydrocarbons is expected this year (2005).

Due to its remote location, surface water quality data are not collected for much of Tanana Flats Training Area. Data for the Wood and Tanana rivers upstream and downstream of the training area are used to estimate water quality. However, since these streams are surface-water and spring-fed (not glacier-fed) it is expected that water quality would differ greatly between these rivers and the streams originating within the training area.

Due to lack of human development and activity on the training area, surface waters on Yukon Training Area are relatively pristine. Water bodies originating within Yukon Training Area flow into the Chena River. The waters meet all primary drinking water standards, and iron is the only parameter to exceed the Alaska state secondary drinking water standards. All of Yukon Training Area's surface waters have low rates of primary and secondary productivity and high water quality.

Groundwater in the Fort Wainwright area contains high levels of metals, especially iron. Elevated arsenic levels are prevalent in the upland areas. These are naturally occurring levels and are not related to human-caused pollution (U.S. Army Corps of Engineers 1994).

Industrial activity on Main Post has caused groundwater pollution associated with underground storage tanks, chemical storage facilities, and chemical dumpsites. These areas were identified and are monitored intensively. Pollution at the sites is localized, and monitoring indicates no deep groundwater pollution.

Army restoration projects have mitigated damage to groundwater quality, and practices that led to contamination have been discontinued.

Donnelly Training Area

Donnelly Training Area's surface waters are diverse and lie entirely within the Tanana River drainage basin. A majority of the larger streams flowing through the area, such as the Delta River and Jarvis Creek, are glacial.

The volume of surface water flow fluctuates dramatically by season. From October to May, flow is limited to groundwater seepage from aquifers into streams and many small streams freeze solid (zero discharge). Any additional streamflow is converted to winter ice overflow, or "aufeis." Aufeis is an ice sheet that forms on a floodplain in winter when channels freeze solid or are otherwise dammed. The additional water spreads out over the frozen surface and freezes. Aufeis can accumulate several meters in thickness and cover large areas of the floodplain in streams such as the Delta River and Jarvis Creek. Snowmelt typically begins in May and reaches its peak in June, coinciding with the peak melting of glaciers. Flows are greatest during June and July. After July, most of the snow has melted, and rainfall sustains a steady flow during August and September.

The State of Alaska has designated the streams on Donnelly Training Area for all use classes (Nancy Sonafrank, personnal communication 2005). Surface water quality values on Donnelly Training Area meet the state's primary drinking water standards. However, aluminum, iron, and manganese concentrations were higher than the state's secondary standards (USARAK 2004). High iron concentrations are typical in streams that drain wetland areas high in organic matter (Anderson 1970).

3.4.2 Environmental Consequences

Alternative 1: Continue ITAM Program without a Management Plan (No Action)

Under the No Action Alternative, ITAM projects would continue to take place without a management plan or standard operating procedures. SRA, TRI, RTLA, and GIS would continue to have beneficial impacts to water resources. SRA would benefit water resources by educating soldiers to minimize erosion (particularly near waterways), only cross streams at designated crossings during winter, never ford waterways, wash vehicles only at designated wash racks and never in any open body of water, use drip pans when vehicles are stopped, and spill kits during any fuel or oil releases. TRI would benefit water quality by ensuring that training does not interfere with measures taken to protect riparian areas. RTLA and GIS would benefit water quality by providing data collection, presentation, and storage capabilities related to water resource management. Soil and vegetation impacts can directly affect water quality; these impacts are discussed in Sections 3.1 and 3.2 respectively. LRAM impacts to water resources are discussed below.

LRAM
Gravel extraction, use of motorized vehicles, and vegetation management may have adverse impacts to water resources. Gravel extraction would have short-term minor adverse impacts to water quality if erosion into waterways occurs. The area of gravel extraction would be susceptible to erosion until the area undergoes reclamation. Berms, ditches, and culverts, however, would be strategically used to minimize these impacts. Inadvertent release of fuel or oil from vehicles used during LRAM activities would be adverse to water quality if released near waterways. Pond extraction of gravel would occur in existing man-made ponds that do not support fish or recreation. Side barrow excavation, while initially making the area susceptible to erosion, would undergo reclamation by refilling and shaping the area to provide for

effective site drainage. Required permits would be secured prior to any dredging or filling of waters of the U.S. under Section 404 of the Clean Water Act. In addition, necessary permits would be secured prior to the construction, excavation, or deposition of materials in, over, or under such waters, or any work which would affect the course, location, condition, or capacity of those waters as required under Section 10 of the Rivers and Harbors act.

Vegetation management, including thinning, clearing, mowing, and prescribed burning, may have temporary adverse impacts to water quality. Erosion from soil disturbance may occur with equipment use and tree removal. Erosion in riparian areas would be minimized by use of specialized equipment, such as a hydro-ax, which is designed to keep tree roots in place. The short-term impacts would be minor.

Other LRAM activities would have beneficial impacts to water resources. Maintenance and repair activities designed to reduce erosion would continue to have beneficial long-term impacts to water quality. Erosion prevention projects include road and pad hardening, maneuver trail upgrades, gabion installation, streambank stabilization, low water crossing hardening, tactical bridge installation, revegetation, temporary and permanent stabilization practices, water bars, trail closure, and protecting existing vegetation. Temporary minor adverse impacts may occur while the activities are taking place (approximately ten days). These impacts would result from minor erosion into waterways from vehicle use and short-term soil disturbance. Long-term beneficial impacts would result from decreased erosion into waterways.

Installation of culverts would benefit water resources by enhancing or maintaining area hydrology when roads or trails are constructed. Fish friendly culverts would be used as requested by Alaska Department of Natural Resources. These culverts would create a more natural velocity flow of water that is better suited for small fish fry traveling up or down the streambed.

Land grading and shaping would improve water quality by promoting adequate drainage. Installation of pre-fabricated latrines would benefit water quality by keeping human waste from entering waterways. Restoration of wetlands would benefit water quality since wetlands act as natural filters for some water pollutants and minimize flooding impacts.

Best management practices (Appendix B) would be used to divert storm water in areas where runoff from areas of higher elevation poses a threat of property damage or erosion. These practices would mitigate the impacts from military training and construction projects and may include storm water conveyance channels, level spreaders, outlet protection, paved flumes, gradient terraces, vegetated buffers, sediment traps, or check dams. Filter berms made of loose gravel, stone, or crushed rock would be used to slow, filter, and divert flow from exposed traffic areas. Storm drain inlets may be protected by gravel and cinder blocks or absorbent manufactured materials to prevent soil and pollutants from entering the storm water sewage system. For detailed descriptions of best management practices, see the *USARAK ITAM Management Plan*.

Alternative 2: Implement ITAM Program through a Management Plan (Proposed Action)

Impacts to water resources from Alternative 2 would be similar to those described under Alternative 1. Standard procedures for all ITAM programs identified in the ITAM management plan will provide consistent and efficient work practices. This would improve water quality by ensuring that contractors performing the work would adhere to the standard procedures designed to protect waterways.

Alternative 3: Suspend ITAM Program

Under Alternative 3, ITAM activities would not continue on USARAK installations. This action would have severe adverse impacts to water quality. Discontinuing TRI, SRA, and RTLA would have negative impacts to water resources by not allowing for monitoring of damage, not integrating training with environmental protection, and not educating soldiers about procedures for training near waterways. GIS would not be available to store and present spatial data relevant to water resources. Maintenance and repair activities under the LRAM program would not take place under Alternative 3. This would result in sediment in waterways from uncontrolled erosion.

The following table presents a summary of qualitative impacts to water resources resulting from each alternative. Descriptions of the qualitative terms are provided in Chapter 2, Description of Proposed Action and Alternatives.

Table 3.4 Summary of Impacts[1] to Water Resources.

ITAM Activity	Alternative 1		Alternative 2		Alternative 3	
	Short Term	Long Term	Short Term	Long Term	Short Term	Long Term
TRI	Beneficial	Beneficial	Beneficial	Beneficial	Severe	Severe
LRAM	Minor	Beneficial	Minor	Beneficial	Severe	Severe
SRA	Beneficial	Beneficial	Beneficial	Beneficial	Severe	Severe
RTLA	Beneficial	Beneficial	Beneficial	Beneficial	Severe	Severe
GIS	Beneficial	Beneficial	Beneficial	Beneficial	Minor	Minor

[1]Short-term impacts are defined as impacts lasting for the duration of a project (approximately ten days) or until vegetation is stabilized.

Cumulative Impacts

The region of influence for water resource impacts resulting from the proposed action would be limited to USARAK lands and areas immediately adjacent. Past impacts to water resources include sedimentation, explosive munitions training, and localized contamination (USARAK 2004). Current and future construction, training, and non-military activities may all impact water resources. The purpose of ITAM, however, is to monitor and repair the impacts caused by training and recreation. Additionally, best management practices serve to mitigate construction impacts to water quality. ITAM activities would therefore contribute long-term beneficial cumulative impacts to water resources.

3.5 WILDLIFE AND FISHERIES

3.5.1 Affected Environment

Wildlife and fisheries management on USARAK lands has traditionally supported recreational and subsistence use, maintenance of populations and habitats, and preservation of biological diversity. Wildlife and fish populations and their habitats are managed cooperatively by USARAK, the Alaska Department of Fish and Game, and the U.S. Fish and Wildlife Service.

No federal or state listed threatened or endangered species have been found on USARAK lands (USARAK 2002d,e,f). The State of Alaska maintains a list of sensitive species, endangered species, and species of special concern for wildlife. Table 3.5.a lists wildlife species of concern found on USARAK lands. These state listed species are not afforded legislative protection (Alaska Department of Fish and

Game 1998). More information on wildlife and fisheries can be found in the *Transformation of U.S. Army Alaska Final EIS* (USARAK 2004).

Table 3.5.a State of Alaska Listing of Species of Concern Found on USARAK Lands.

Common Name	Scientific Name	USARAK Lands
American peregrine falcon[1]	*Falco pereginus anatum*	Fort Richardson, Occasional Fort Wainwright, Donnelly Training Area
Northern goshawk (southeast population)	*Accipter gentiles laingi*	Occasional Fort Richardson
Olive-sided flycatcher[2]	*Contopus cooperi*	Fort Richardson, Fort Wainwright, Donnelly Training Area
Gray-cheeked thrush	*Catharus minimus*	Fort Richardson, Fort Wainwright, Donnelly Training Are,
Townsend's warbler	*Dendroica townsendii*	Fort Richardson, Fort Wainwright, Donnelly Training Area
Blackpoll warbler	*Dendroica striata*	Fort Richardson, Fort Wainwright, Donnelly Training Area
Brown bear (Kenai Peninsula population)	*Ursus arctos horribilis*	Possible Fort Richardson
Harbor seal	*Phoca vitulina*	Occasional Fort Richardson
Beluga whale (Cook Inlet population)	*Delphinapterus leucas*	Occasional Fort Richardson

Source: Alaska Department of Fish and Game 1998
[1]Downlisted from the Alaska Endangered Species List
[2]Category 2 Candidate Species Under Federal Endangered Species Act

Fort Richardson

Mammals
Large mammals on Fort Richardson include black bear, grizzly bear, moose, and Dall sheep. Small game and furbearers found on Fort Richardson include coyote, lynx, red squirrel, snowshoe hare, hoary marmot, pine marten, beaver, river otter, wolverine, red fox, porcupine, mink, beaver, muskrat, and ermine or short-tailed weasel.

Two wolf packs inhabit the east side of the Glenn Highway and another pack probably occupies the west side, near Eagle River Flats (Kellie Peirce, personal communication 2002). The Ship Creek pack occupies the eastern portion of Fort Richardson, and the Eagle River Flats pack occupies the western portion.

In recent years, beluga whales have been sighted within Eagle River Flats, as far as 1¼ miles up the Eagle River and in Cook Inlet adjacent to Elmendorf Air Force Base. Beluga whales have also been observed pursuing salmon along rivers (Quirk 1994). Harbor seals and orca whales are sighted occasionally.

Avian Species
Surveys have identified 75 species of birds in the tidal salt marsh, including 24 species of waterfowl (USARAK 2004). Additionally, approximately 40 species of passerines and neotropical migratory birds and 6 species of raptors are found at Fort Richardson (Gossweiler 1984; CH2M Hill 1994; Andres et al. 2001; USARAK 2002e; Schempf 1995).

Three species on the list of Priority Species for Conservation are confirmed to be on Fort Richardson (Boreal Partners in Flight Working Group 1999). These include the Northern shrike, varied thrush, and blackpoll warbler. The golden-crowned sparrow, also a priority species, is found on Fort Richardson.

Reptiles and Amphibians
One species of amphibian, the wood frog, is commonly found in bogs, freshwater and saltwater marshes, and lake margins on post. Wood frogs are important prey species for sandhill cranes (CH2M Hill 1994). No reptiles occur on Fort Richardson.

Fisheries
Ten species of fish are found in Fort Richardson's lakes and waterways. Four lakes on Fort Richardson (Clunie, Gwen, Otter, and Walden) are stocked under the Fort Richardson Army Base Subdistrict Plan (Alaska Department of Fish and Game 2002). In addition, chinook and coho salmon are stocked in Ship Creek under the Alaska Department of Fish and Game Enhancement Plan (Alaska Department of Fish and Game 2002)

Wild populations of game fish include king salmon, chum salmon, silver salmon, red salmon, pink salmon, and Dolly Varden. Fort Richardson's only significant nongame fish are the three-spine stickleback and the slimy sculpin.

Fort Wainwright

Mammals
Large mammals on Fort Wainwright include black bear, grizzly bear, moose, and caribou. Tanana Flats Training Area is particularly important for moose and supports the state's largest population. Caribou have historically used Yukon Training Area and Tanana Flats Training Area, but populations have declined over the years, possibly due to predation and severe winters (USARAK 2004).

Fifteen species of furbearers inhabit Tanana Flats Training Area and Yukon Training Area. These include wolverines, coyotes, lynx, red fox, pine marten, wolves, snowshoe hare, and red squirrel. Other species include muskrat, beaver, and four species of weasel. River otter exist, but they are not common (USARAK 2004).

Known small mammals include five vole species, two lemming species, two species of mice, and four species of shrew. The little brown bat is found in wooded areas and in abandoned buildings. Introduced mammals such as the house mouse, Norway rat, and woodchuck also exist in the cantonment area of Main Post.

Avian Species
Spruce grouse, ruffed grouse, and ptarmigan are common in the region. Grouse hunting is popular at Yukon Training Area and they are also harvested on Main Post. The variety of nongame birds on lands associated with Fort Wainwright includes at least 58 passerines. Benson (1999) observed 61 species of birds during a 1998 survey at Tanana Flats Training Area.

Although no threatened, endangered, or species of special concern were observed, several Priority Species for Conservation (Boreal Partners in Flight Working Group 1999) were observed. In addition, six species of woodpecker, the rock dove, Rufous hummingbird, and belted kingfisher have been observed on these lands.

At least 25 species of waterfowl and 20 species of raptors use Fort Wainwright (BLM and U.S. Army 1994). Twenty-six species of shorebirds, three gull species, and the Arctic tern have also been observed (USARAK 1999). Four species of loon and two types of grebes have been observed to use waterways on

Fort Wainwright and associated lands (USARAK 1999).

Reptiles and Amphibians
The wood frog is the only amphibian species found at Fort Wainwright. No reptiles exist on Fort Wainwright.

Fisheries
Most ponds or lakes on Fort Wainwright do not support fish populations during winter. However, a stocking program provides recreational fishing opportunities for the public during summer. Stocked lakes include River Road Pond, Monterey Lake, Weigh Station Ponds 1 and 2, and Manchu Lake.

The Tanana River supports seasonal populations of Arctic grayling, king salmon, chum salmon, sheefish, humpback whitefish, round whitefish, Arctic lamprey, least cisco, Alaska blackfish, burbot, longnose sucker, northern pike, slimy sculpin, and lake chub.

The Chena and Salcha rivers support Arctic grayling, king salmon, chum salmon, sheefish, humpback whitefish, round whitefish, Arctic lamprey, least cisco, Alaska blackfish, burbot, longnose sucker, northern pike, slimy sculpin, and lake chub. These rivers and clear-running tributaries are important spawning areas for summer chum and king salmon. Horseshoe Lake, located in the northwest corner of the Yukon Training Area, supports a native population of northern pike (BLM and U.S. Army 1994).

Donnelly Training Area

Mammals
Large mammals on Donnelly Training Area include black bear, grizzly bear, moose, Dall sheep, caribou, and bison. Donnelly Training Area typically has three or four wolf packs, although the structure, distribution, and numbers of packs in a given area are highly variable. Other furbearers on the training area include lynx, beaver, river otter, pine marten, muskrat, mink, coyotes, red fox wolverine and four species of weasel. Anderson et al. (2000) conducted a small mammal survey at Donnelly Training Area. Eleven species of small mammals were found in this study.

Avian Species
Several upland game species are found on Donnelly Training Area, including three species of both ptarmigan and grouse. Twenty-eight species of ducks and geese use lands and waterways on the training area. Approximately 300,000 sandhill cranes, a large portion of the world's population, migrate through Donnelly Training Area from late April through mid-May.

Anderson et al. (2000) reported sightings of black-backed woodpecker, gray-cheeked thrush, varied thrush, bohemian waxwing, Townsend's warbler, blackpoll warbler, Smith's longspur, and rusty blackbird. The dark-eyed junco, savanna sparrow, Wilson's warbler, and orange-crowned warbler were observed most frequently.

A variety of other bird species are found on Donnelly Training Area including three loon, two grebe, three gull, one tern, one dove, one hummingbird, one kingfisher, and six woodpecker.

Reptiles and Amphibians
Wood frogs are the only amphibians on Donnelly Training Area. No reptiles exist on Donnelly Training

Area.

Fisheries
Donnelly Training Area West is within the Fairbanks Management Area for fisheries and Donnelly Training Area East is within the Delta Junction Management Area. Sixteen lakes on Donnelly Training Area, ranging from three to 320 acres, are stocked. Naturally occurring populations of lake chub, northern pike, sculpin, and the northern longnose sucker are found in lakes at Donnelly Training Area (BLM and U.S. Army 1994).

Major streams on Donnelly Training Area are generally silt laden and do not support fisheries. Jarvis Creek and the Delta River are glacially fed and flow from the north side of the Alaska Range to the Tanana River. Downstream of Donnelly Training Area, the Tanana River provides year-round habitat for some species, overwintering habitat for others, and supports migratory species. The mouth of the Delta River is important to chum salmon. Grayling migrate through these glacial streams to clear tributaries to spawn, and a few clear streams provide summer habitat for grayling (Parker 2004).

3.5.2 Environmental Consequences

Alternative 1: Continue ITAM Program without a Management Plan (No Action)

TRI would maintain the environmental limitations inventory to protect sensitive habitats, including wetlands and riparian areas, from training impacts. GIS would assist wildlife and fisheries management by providing spatial data collection, analysis, presentation, and storage of natural resource data. The impacts of LRAM, SRA, and RTLA are discussed below.

SRA
SRA would benefit wildlife by educating soldiers to not harass fish or wildlife. Harassment is defined as pursuit with vehicles or aircraft, feeding, or shooting wildlife. Individuals who harass fish or wildlife would be subject to prosecution. Additionally, soldiers would be directed to report any injured animals or any wildlife encountered during live-fire exercises to Range Operations. All activity must be suspended until the animals leave the area.

Soldiers would be directed to not disrupt large areas of woody vegetation such as willows and birch saplings important for wildlife. Additionally, SRA would require that all barbed, commo, concertina, and trip wire is removed immediately after training exercises. These precautions would be beneficial for protecting wildlife habitat.

LRAM
LRAM projects would have minor short-term adverse impacts to wildlife and would last for the duration of project activities. Most projects, on average, last approximately ten days. Expansion of drop zones may take up to two summers to complete, but would be infrequent. Disturbance to wildlife during this time would result from increased noise from equipment and general human activity. Activities with short-term adverse impacts include gravel extraction, road and maneuver trail upgrades, road crossings, tactical bridge installation and vegetation removal. Estimated acres impacted from road and maneuver trail upgrades and pad hardening projects for the next five years are approximately 80 acres at Fort Richardson, approximately 200 acres at Fort Wainwright, and approximately 100 acres at Donnelly Training Area (Appendix A). Since LRAM projects involve maintenance and repair of existing range and training land infrastructure, the majority of acres affected would be previously disturbed. Long-term localized disturbance to habitat would result from projects intended to remove or alter vegetation for long periods of time. These projects include creation of new gravel pits, drop zones, or fire/fuel breaks.

Long-term beneficial impacts to wildlife and fisheries would result from habitat improvement projects including revegetation projects that prevent erosion, stabilize soils, and restore native flora and important forage and habitat for wildlife. Streambank stabilization practices, such as willow fascines and other bioengineering techniques, would greatly benefit fisheries habitat as well as provide increased forage and habitat for wildlife in riparian areas. Vegetation management practices would improve wildlife habitat by providing clearings important for edge species and by protecting existing vegetation. Estimated acres impacted from vegetation management activities over the next five years are approximately 20 acres at Fort Richardson, 140 acres at Fort Wainwright, and 900 acres at Donnelly Training Area (Appendix A). Of the 900 acres impacted at Donnelly Training Area, approximately 570 acres of impact would result from a prescribed burn at Buffalo Drop Zone, a previously cleared area.

Installation of barb dikes or thalweg deflectors would have short-term adverse impacts during construction due to downstream siltation. Once installed, they would improve fisheries habitat by creating increasing pools in streams. Gabion installation would benefit desired fish species by excluding non-desired fish from upstream migration (e.g. longnose sucker) and preventing them from out-competing desired fish species (e.g. salmon).

RTLA
The RTLA program would include avian, wetlands, vegetation, small mammal, and large mammal monitoring. Aerial monitoring would be conducted at Fort Wainwright and Donnelly Training Area and remote areas of Fort Richardson. Aerial surveys at Fort Wainwright and Donnelly Training Area are conducted mainly to monitor trumpeter swan nesting and broods and bison calving and tracking. The estimated flight time for swan surveys for 2005 is 80 hours (Kellie Peirce, personal communication 2005). Minor short-term adverse impacts may result from monitoring conducted by small plane or helicopter. For more information on noise impacts, see Section 3.11, Noise.

Long-term beneficial impacts to wildlife and fisheries result form RTLA monitoring. Monitoring data would be used by Army environmental staff to guide and prioritize natural resource management decisions. Initial monitoring data would be used as a baseline from which future studies can be compared. Long-term monitoring would provide data to study trends in habitat and wildlife and fish populations. This data can be used to adaptively manage Army training and testing activities.

Alternative 2: Implement ITAM Program through a Management Plan (Proposed Action)

Under this alternative, the ITAM program would be implemented through a management plan that would include standard operating procedures for LRAM and RTLA projects. Impacts to wildlife and fisheries on USARAK lands due to TRI, LRAM, SRA, RTLA, and GIS activities would be similar to those described under the No Action Alternative. Implementing standard operating procedures for the LRAM and RTLP programs would ensure consistent land management and monitoring practices. Standardizing procedures would especially benefit LRAM activities, since adherence to best management practices (Appendix B) would increase efficiency and may reduce short-term impacts to wildlife and fisheries during project construction.

Alternative 3: Suspend ITAM Program

Under Alternative 3, all components of the ITAM program would discontinue operation. Training land rehabilitation, maintenance, and range improvements would cease despite continued use of land for Army training. In the absence of LRAM and RTLA activities, wildlife would not be disturbed by construction and monitoring. However, the benefits of LRAM and RTLA for improving and monitoring habitat and

wildlife would also cease. Elimination of the SRA program would cause moderate adverse impacts due to unintended or negligent military activity. Similarly, eliminating the TRI program would adversely impact fish and wildlife by no longer informing military personnel to avoid or use caution in sensitive areas, including wetland and riparian areas.

The following table presents a summary of qualitative impacts to wildlife and fisheries resulting from each alternative. Descriptions of the qualitative terms are provided in Chapter 2, Description of Proposed Action and Alternatives.

Table 3.5.b Summary of Impacts[1] to Wildlife and Fisheries.

ITAM Activity	Alternative 1		Alternative 2		Alternative 3	
	Short Term	Long Term	Short Term	Long Term	Short Term	Long Term
TRI	Beneficial	Beneficial	Beneficial	Beneficial	Moderate	Moderate
LRAM	Minor	Beneficial	Minor	Beneficial	Severe	Severe
SRA	Beneficial	Beneficial	Beneficial	Beneficial	Moderate	Moderate
RTLA	Minor	Beneficial	Minor	Beneficial	Severe	Severe
GIS	Beneficial	Beneficial	Beneficial	Beneficial	Moderate	Moderate

[1]Short-term impacts are defined as impacts lasting for the duration of a project (approximately ten days).

Cumulative Impacts

Past activities on USARAK lands have adversely impacted wildlife and fisheries through gradual habitat loss, exposure to toxic materials, and noise (USARAK 2004). Current and new construction projects would have additional adverse impacts on wildlife and fisheries. For more information on changes to habitat, see Section 3.2, Vegetation. However, activities under the proposed action would add beneficial long-term effects to the overall cumulative impacts on this resource through habitat improvement projects such as revegetation, vegetation management, wetlands reclamation, streambank stabilization, and other stream habitat improvement activities. Monitoring the impacts of training activities and adapting management actions to accommodate changing conditions would also have a beneficial cumulative impact.

3.6 FIRE MANAGEMENT

3.6.1 Affected Environment

Fires are frequent in interior Alaska and are important to many ecosystems for function and productivity. Wildfires, however, are a concern for USARAK due to the potential impact on human activities, structures, and military operations. Incendiary devices and lightning are the two major causes of fires on installation lands. Other less common causes are field burning, exhaust, recreation, trash burning, and warming fires.

Fire management on USARAK installations is required by the Sikes Act and Army Regulation 200-3. Additional direction regarding fire management is stated in a 1995 Memorandum of Understanding between the Bureau of Land Management and USARAK as well as in the Army's wildland fire policy guidance document (Department of the Army 2002). Wildland fire management in Alaska requires multi-agency cooperation and is a joint effort by USARAK and the Bureau of Land Management, Alaska Fire Service. The Alaska Fire Service also has a Reciprocal Fire Management Agreement with the State of Alaska's Department of Natural Resources, Division of Forestry (Alaska Fire Service and State of Alaska

1998).

The Alaska Interagency Wildland Fire Management Plan (Alaska Wildland Fire Coordinating Group 1998), which is reviewed annually, designated wildland fire management areas and allowed land managers to establish fire management options according to land use objectives and constraints. The plan also established four fire management options used to determine the appropriate level of fire suppression: Critical, Full, Modified, and Limited. Land managers may select among these options for different parcels of land, based on evaluation of legal mandates, policies, regulations, resource management objectives, and local conditions. In addition, two fire management option categories have been developed specifically for lands managed by USARAK: Unplanned Areas and Restricted Areas or Hot Zones (USARAK 1999).

In fire-prone areas, climate, human activity, and types of vegetation (or fuels) determine the level of wildland fire risk. Common fuels found on USARAK installations include: black spruce (highly flammable, located in wetter and cooler sites, crown fires common); white spruce (less flammable, located in warmer and drier sites, crown fires less common); mixed spruce/hardwood stands (mostly white with occasional black spruce, hardwoods less flammable, moderate fire intensity); bluejoint reedgrass (patchy occurrence, fires can start and spread easily, and burn intensely); and tundra (grasses are typically highly flammable, slightly less so in alpine tundra areas) (Musitano and Hayes 2002).

Three management actions are used to prevent wildfires. First, the likelihood of starting a fire is reduced by limiting military activities according to fire danger as calculated by the Canadian Forest Fire Danger Rating System. Range Control uses these ratings to restrict munitions and pyrotechnics as fire danger increases. Second, wildfire danger is lessened by decreasing fuel hazard through the mechanical removal of fuels and through prescribed burning. The third management action involves stationing a wildland fire team and equipment from the Alaska Fire Service during some training activities conducted at times of high fire danger. Range Control already requires troops to carry firefighting tools during high fire danger, and a proposal is pending to station a wildland firefighting team at all training events conducted during high fire danger.

Additional information regarding fire management on USARAK lands can be found in the *Transformation of U.S. Army Alaska Final Environmental Impact Statement* (USARAK 2004).

Fort Richardson

Wildfires were found to be prevalent in the 1800s and early 1900s. Forty-eight percent of Fort Richardson over the past 200 years has been affected by fire (Jorgenson et al. 2002). Although fires were relatively small and localized due to the weather and climate, human settlement resulted in fire suppression and the development of road systems further reduced natural fire frequency at Fort Richardson. Although wildfires are a concern at Fort Richardson, they are rarely a significant problem.

The north post of Fort Richardson is classified for Full and Critical fire management options due to the high value of resources at risk from fire, in addition to the post's proximity to Anchorage, Eagle River, and Elmendorf Air Force Base (Alaska Wildland Fire Coordinating Group 1998). Most of the north post is classified for Critical fire management. The training areas along Knik Arm are classified for Full fire management. Many military resources at north post are at risk from wildland fire. Cultural resources staff identified sites in the north post area, but management options related to wildland fire have not been determined. The north post is bound by Elmendorf Air Force Base, private parcels, railroad lands, and Native Corporation lands (USARAK 2002b).

The south post has areas classified under Critical, Full, and Limited fire management. Most of the south post is under Full fire management because the area is mainly used for military training and small arms ranges. The alpine zones are classified for Limited fire management because of their remote location. Many military resources are at risk from wildland fire in the training areas of the south post, including two small arms complexes. Additional surveys are needed to ascertain sites where ordnance has been used and disposed. Cultural resources staff identified sites in the south post area, but management options related to wildland fire are pending. The south post is bound by private parcels and state lands (USARAK 2002b).

The spruce bark beetle has killed most of the larger white spruce in the north and south post training areas. For the most part, the infestation is over; now the dead spruce are starting to fall down, resulting in high fuel loads on the forest floor. Additionally, deaths of larger spruce trees have allowed areas to be taken over by bluejoint reedgrass, increasing potential fire risk. The absence of wildfires may be inhibiting the potential for optimal ecosystem development. Spruce bark beetle infestation in old-aged timber is one problem that may have been exacerbated by a lack of wildfires (USARAK 2002b). To reduce this threat, 60 acres of dead spruce were removed along the Stuckagain Heights residential area, and ten acres of dead spruce were removed near another housing area in 2003. Grezelka Range was treated with 20-acre prescribed burns in both 2003 and 2004, and removal of dead spruce from a 20-acre area behind Grezelka Range is being considered. Because of the extensive mortality of white spruce in the area, fire prevention activities were conducted in 1999 and 2000 to reduce fuel loads adjacent to the small arms ranges (USARAK 2002b).

Other fire management projects completed on Fort Richardson include a 20-acre prescribed burn on Grezelka Range and 10 acres of mechanical thinning near Fort Richardson housing areas. In 2004, four firefighter access trails were built behind the Small Arms Complex, and prescribed burns were conducted on Malamute DZ (100 acres) and again on Grezelka Range (20 acres). Future fire management projects include mechanical fuel load reduction at Grezelka Range and prescribed burns at the Infantry Squad Battle Course, Infantry Platoon Battle Course, and the Digital Multi Purpose Training Range.

Fort Wainwright

Approximately 30% of Fort Wainwright has burned since 1950, and a substantial portion of the area has burned more than once. Records of fire occurrences since 1950 indicate that about 1% of Fort Wainwright has burned annually (Jorgenson et al. 1999). The average interval for fire recurrence on any given area at Fort Wainwright varies from 100 to 150 years (USARAK 2002c).

The Fort Wainwright Fire Department is responsible for fire suppression on Main Post. The cantonment area is categorized as Critical fire management due to the urban and residential areas adjacent to it (Alaska Wildland Fire Coordinating Group 1998). On Tanana Flats Training Area, primary responsibility falls under the Alaska Fire Service. Currently the training area is classified for Limited fire suppression because relatively few resources are at risk from fire and because USARAK recognizes fire as a natural process in ecosystem function.

The eastern portion of Yukon Training Area is under Limited fire management because it is too close to an impact area, few resources are at risk, and USARAK recognizes fire as a natural and desirable process for ecosystem function. The western portion of the training area is assigned Full fire management due to its proximity to developed residential areas, in addition to resources of value on adjacent military lands. The central portion of the training area is listed for Modified fire management, and this area acts as a buffer between the Limited and Full management areas (USARAK 2002c).

Prescribed burns, mechanical thinning, and branch cutting are planned along the boundary of the cantonment area. The Small Arms Complex (2,000 acres) is burned annually, and Husky DZ (400 acres) was burned in 2004. Planning is underway for prescribed burning of Stuart Creek Impact Area, and mechanical hazard fuel reduction projects for the Infantry Platoon Battle Course and Multi-Purpose Training Range off of Manchu Road. Prescribed burns are also being planned for Alpha Impact Area, Ammo Bunker and Manchu Range, as well as at Tanana Flats and other assorted sites for habitat enhancement.

Donnelly Training Area

Fifty-nine percent of Donnelly Training Area has burned since 1950, and a considerable portion has burned more than once (Jorgenson et al. 2001.) Approximately 16% of Donnelly Training Area has burned within the past 30 years. Based on fires recorded on the installation since 1950, 1.2% of the area has burned annually. Fires in the outlying training areas include a 1994 fire that burned approximately 55% of the Gerstle River Training Area. The last wildfire in the Black Rapids Training Area is believed to have been in 1954 (Dan Rees, personal communication 2002).

Most of Donnelly Training Area West is classified for Limited fire management because few resources are at risk from fire and USARAK recognizes that fire is a natural process in ecosystem function (Alaska Wildland Fire Coordinating Group 1998). A private hunting lodge, located along the extreme western boundary of Donnelly Training Area West, is given Full fire suppression status. The northern boundary of Donnelly Training Area West is classified for Modified fire management to provide a buffer to adjacent state lands that are classified under Full management status. Donnelly Training Area West is bound by private parcels and state lands (USARAK 2002a).

Currently, Donnelly Training Area East is a Full fire management area due to the close proximity of the community of Delta Junction and the cantonment area of Fort Greely. This area is subject to high winds and extreme fire behavior, further supporting the Full fire suppression status. The northern portion of the Fort Greely Main Post is a Critical fire management area due to the life and property at risk (Alaska Wildland Fire Coordinating Group 1998). The Army does have structures at risk throughout Donnelly Training Area East. Donnelly Training Area East also surrounds a portion of private and state land known as the “Key Hole” (USARAK 2002a).

Gerstle River Training Area is classified as a Limited fire management area due to risks of unknown ordnance and other weapons used on the site (Alaska Wildland Fire Coordinating Group 1998). Adjacent lands are classified for Limited, Modified, and Full fire management status. Gerstle River Training Area is bound by state lands (USARAK 2002a). Black Rapids Training Area is classified under the Full fire management option in order to protect the resources of the site (Alaska Wildland Fire Coordinating Group 1998). The road corridor adjacent to Black Rapids is classified for Modified fire management status, while the training center is located within a Limited fire management area. The Army has mapped structures at Black Rapids Training Center and they fall under the Full management option. Black Rapids is bound by federal and state lands (USARAK 2002a).

Fuels management projects on Donnelly Training Area completed in 2004 include a 2,000-acre burn at Texas Range (a 3,000-acre burn was also conducted in 2003), approximately 300 acres of fuels reduction at Jarvis North along the north boundary of Donnelly Training Area, 40 acres of thinning at Bolio Lake Training Area, a fuels assessment at Gerstle River, and a prescribed burn for reduced fuel loading on 60,000 acres of Oklahoma Impact Area. Fire management projects are also being planned for Lakes

Impact Area, Wills Range Complex, Buffalo DZ, Eddy DZ, Donnelly West, Hays Lake, Delta River Bison Range, and Bolio Lake Impact Area.

3.6.2 Environmental Consequences

Alternative 1: Continue ITAM Program without a Management Plan (No Action)

Under the No Action Alternative, the ITAM program would continue without a management plan. The TRI, LRAM, SRA, RTLA and GIS components of the ITAM program would continue to have beneficial impacts on fire management. The TRI program would improve fire management by helping ensure land management practices that integrate consideration of natural resource conditions (including fire risk) with range operations and training requirements. Impacts of the LRAM, SRA, RTLA, and GIS programs on fire management are discussed below.

LRAM
LRAM projects would reduce long-term impacts of training and testing by combining preventive and corrective land reclamation, reshaping, rehabilitation, repair, and maintenance practices. Some of these projects would have the added benefit of improving fire management. Road crossings, road and pad hardening, and maneuver trail upgrade and maintenance would provide flatter, more solid surfaces for fire fighting vehicle movement and may allow faster response times. Hardening low water crossings would also improve vehicle passage over waterways. Projected maneuver trail upgrade and road/pad hardening projects for the next five years include approximately 85 acres impacted at Fort Richardson, 245 acres at Fort Wainwright, and 135 acres at Donnelly Training Area (Appendix A). Since these projects involve maintenance and repair of existing range and training land infrastructure, the majority of these projects would be improvements to existing roads and not creation of new ones.

Revegetation practices would also result in reduced fire risk. Revegetation would use native seed mix recommendations from the University of Alaska, Fairbanks, Cooperative Extension Service. Deliberate use of these native mixes would prevent invasive species, which tend to be more fire prone, from establishing in areas with disturbed soils. Vegetation thinning and clearing (hand or mechanical) would be conducted for fuel reduction and fuel break projects. Prescribed burns in areas with woody vegetation and grasses greater than one acre in size would be used to reduce fuels and release plant nutrients into the soil. Installation of berms behind firing targets would minimize ricochet, capture munitions, and reduce accidental fire starts. Installation of fire/fuel breaks and trenches would assist fire-fighting efforts. Fire suppression would involve using shovels and pulaskis to extinguish small fires, or spraying water or chemicals using backpack sprayers, trucks or helicopters. Projected thinning projects for the next five years include approximately 20 acres impacted at Fort Richardson and 140 acres at Fort Wainwright. About 100 acres impacted by mowing and 800 impacted by burning are projected at Donnelly Training Area. Installation of a firebreak is projected at Fort Wainwright and would impact 37 acres (Appendix A).

SRA
This program would ensure soldiers are aware of specific environmental concerns, regulations and restrictions intended to minimize natural resource impacts. SRA guidelines would include procedures for using fire during training events, such as burning excess powder charges in burn pans and using only fallen shrubs/trees for firewood. Guidelines would also remind soldiers that clearance from Range Control is required before any burning activity takes place; open fires are prohibited except in emergencies or as part of an approved training exercise; fires are prohibited from June to October when fire danger is high; use of pyrotechnics, smoke pots, and grenades may be restricted when fire danger is high; and smoke grenades and star cluster flares are only to be used in case of emergency when fire danger is high. For

unplanned fires, soldiers are directed to report the fire immediately and assist firefighters except when in impact areas. The SRA program would help ensure these military requirements are followed.

RTLA
Under the RTLA program, field crews would conduct forest inventory and fire suppression work during field seasons. Invasive species, which are often more fire prone than native species, would be recorded in databases for future monitoring and management efforts. Additionally, RTLA would conduct military exercise monitoring to ensure military requirements, including those discussed under SRA above, would be met during training exercises. This would help ensure that any high-risk fire behavior or unplanned fires would be spotted and reported immediately.

GIS
GIS would provide spatial data and remote sensing capabilities to help identify and map fire-prone areas and degree of fire risk by allowing spatial representation of vegetation type, weather conditions, and road and building infrastructure. It would also aid prioritization of areas in need of fuels management activities. In the event of wildfire, GIS would be an important tool for implementing effective and efficient firefighting strategy.

Alternative 2: Implement ITAM Program through a Management Plan (Proposed Action)

Under this alternative, the ITAM program would be implemented through a management plan that would include standard operating procedures for LRAM and RTLA projects. Standardizing operating procedures would ensure that fuels reduction, fire/fuel breaks and trenches, and fire suppression efforts would be completed to specification. Impacts to fire management due to TRI, LRAM, SRA, RTLA, and GIS activities would be similar to those described under the No Action Alternative.

Alternative 3: Suspend ITAM Program

Under this alternative, all components of the ITAM program would discontinue operation. Training land rehabilitation, maintenance, and range improvements would cease despite continued use of USARAK lands for Army training. Absence of the RTLA program would not affect fire management. The TRI program would not be present to ensure the integration of environmental considerations with training requirements. This would impede USARAK's ability to consider fire risk when planning training operations. The SRA program would not exist to ensure military personnel are aware of fire restrictions and regulations. This may increase the occurrence of unintended fires. Eliminating the GIS program could make fire management and firefighting activities less efficient and thus less effective.

Discontinuation of the LRAM program would not allow fire management to benefit from access improvements such as low water crossings and road and trail hardening. Fuels reduction, fire suppression activities, and installation of fire/fuel breaks and trenches would not exist and would result in severe fire risk. Overall, fire management would be severely impacted by this alternative.

The following table presents a summary of qualitative impacts to fire management resulting from each alternative. Descriptions of the qualitative terms are provided in Chapter 2, Description of Proposed Action and Alternatives.

Table 3.6 Summary of Impacts[1] to Fire Management.

ITAM Activity	Alternative 1	Alternative 2	Alternative 3
TRI	Beneficial	Beneficial	Moderate
LRAM	Beneficial	Beneficial	Severe
SRA	Beneficial	Beneficial	Moderate
RTLA	Beneficial	Beneficial	Minor
GIS	Beneficial	Beneficial	Minor

[1] Short-term and long-term impacts are expected to be similar.

Cumulative Impacts

Past activities have had adverse impacts to fire management through inadvertent fire starts, both on and off installation lands, and aggressive fire suppression. However, military fires were usually quickly controlled. The importance of fire to Alaskan ecosystems is recognized and decisions to control a fire or let it burn are made on a case-by-case basis (USARAK 2004). The establishment of cooperative agreements between the Bureau of Land Management's Alaska Fire Service has improved fire management on USARAK lands.

All current and planned training activities have the potential to adversely impact fire management through increased risk of fire. The ITAM program would help minimize this potential through ensuring fire danger is considered when training plans are created, reducing fire danger through reduction of fuel loads and construction of fuel breaks, preventing occurrence of accidental fire starts, and monitoring for fire-prone areas. The overall cumulative impact to fire management resulting from ITAM activities under the proposed action would be beneficial.

3.7 PUBLIC ACCESS AND RECREATION

3.7.1 Affected Environment

U.S. Army Alaska's primary mission is to maintain and enhance the combat readiness of its soldiers. USARAK also recognizes the responsibility to allow public access to military lands in compliance with the Sikes Act, which requires public access to military installations to the extent that such use is consistent with the military mission and the protection of fish and wildlife resources. Public access is subject to requirements deemed necessary to ensure safety and military security.

Military lands in Alaska provide desirable areas for recreational activities. They contain many stocked lakes and significant game populations in relatively close proximity to the more highly populated areas in Alaska. These lands include the immediate post lands and adjoining lands under military control for training. Recreational uses include hunting, fishing, trapping, off-road recreational vehicle use, hiking, boating, picnicking, berry picking, bird-watching, skiing, and dog sledding.

The Integrated Natural Resource Management Plans (USARAK 2002d,e,f) discuss specific actions to manage and improve public access and recreation on USARAK lands. These include implementation of an outdoor recreation management plan to maintain and enhance recreational opportunities, outdoor recreation monitoring to determine impacts of recreation on ecosystems, and specific measures to manage outdoor recreation in light of increased recreational use. Updating recreational vehicle use policies and implementing a Training Area Recovery Plan program to rest, rehabilitate, and control erosion are examples of such measures.

USARAK also implemented the USARTRAK system to facilitate access to military lands by allowing recreational users to use their Recreation Access Permit to remotely check in to installations and training areas. USARTRAK message systems are maintained by Range Control and have information on the latest training area closures and construction. This information is also listed in weekly bulletins and radio announcements.

Fort Richardson, Fort Wainwright, and Donnelly Training Area have four primary categories of recreation use areas: Open Use, Modified Use, Limited Use, and Off-Limits areas. All recreational categories are subject to periodic change or restrictions. The categories are defined as follows:

- *Open Use* – areas open year-round to all forms of recreation, unless closed by the Range Control office. Ground and off-road recreational vehicle (ORRV) use is permissible here.
- *Modified Use* – areas available to all non-motorized forms of recreation year-round but limited to areas where frozen conditions exist (more than six inches of ice or snow cover present). Modified Use restrictions are largely applicable to USARAK's wetlands.
- *Limited Use* – areas open to all non-motorized forms of recreation year-round. No ORRV use is permitted in these areas at any time. Limited Use areas relate primarily to locations with high average use levels, such as in or near cantonment areas.
- *Closed* – areas closed to all forms of recreation at all times. This is due primarily to either conflicts with military use and the primary military mission, or to human health and safety concerns.

Additional information regarding public access and recreation on USARAK lands can be found in the *Transformation of U.S. Army Alaska Final Environmental Impact Statement* (USARAK 2004).

Fort Richardson

At Fort Richardson, moose is the most favored game species and salmon the number one fish species. Other outdoor activities include hiking, camping, small game hunting, berry picking, woodcutting, and dog sledding. Road access onto Fort Richardson is possible primarily from the Glenn Highway, the main gate, or along Arctic Valley Road. The post is also accessible via Richardson Drive from Elmendorf Air Force Base. Additionally, USARAK allows Eagle River rafting traffic to enter Fort Richardson lands. Paved and unimproved roads cover much of the northern and central portions of the post. Two ORRV access trails exist on post and connect green spaces near the cantonment area to more remote locations. Trails also connect the post to Chugach State Park and the Municipality of Anchorage's Far North Bicentennial Park, which share Fort Richardson's southern boundary.

Fort Wainwright

Hunting and fishing are the main recreational activities occurring on Fort Wainwright lands. Data show that 21% of the interior Alaska moose harvest occurs on military lands, while 2.3% of the Interior caribou harvest and 2.1% of the sheep harvest are also on military-controlled lands (ADFG 2001). The most popular fish species are salmon and trout. Other recreational activities include hiking, camping, small game hunting, berry picking, and dog sledding.

Access is allowed on many parts of Fort Wainwright Main Post. Roads and trails are both plentiful, and the open spaces remaining in the Fort Wainwright cantonment area are important contributors to recreation opportunities for post inhabitants. The core cantonment area consists of landscaped yards,

office buildings, ball fields and open fields. Hunting and ORRV use is not permitted in the cantonment area.

Access to Tanana Flats Training Area is more difficult than to other parts of Fort Wainwright. Tanana Flats Training Area is bordered by the Tanana and Wood rivers and there are no bridges into the training area. Ground vehicles can access Tanana Flats Training Area in winter on constructed ice bridges. Summer access is by boat or plane only. Most of the training area is wetlands and largely categorized as a Modified Use area. Yukon Training Area is readily accessible from the ground. Access is primarily available via Manchu Road through Eielson Air Force Base. Additional access is possible via Johnson Road, which connects to the Richardson Highway.

Donnelly Training Area

Recreational opportunities at Donnelly Training Area are similar to those found on Fort Wainwright. In addition to ground access and roads, much of Donnelly Training Area is available to ORRVs and aerial access. ORRV and winter trails exist across both the eastern and western training areas. The 33-Mile Loop Road is one of the more popular trail systems on Donnelly Training Area East. Donnelly Training Area West is accessible in winter when the Delta River is frozen over, or by air or boat in summer.

Donnelly Training Area East is primarily managed as Open Use. The exception is Jarvis Creek and some isolated wetland areas that are considered Limited Use areas. As portions of Donnelly Training Area West are primarily designated as impact area, most of the central training area is Off-Limits. Modified and Open Use areas exist to the north and south, along the northern boundary of the training area and the foothills of the Alaska Range.

3.7.2 Environmental Consequences

Alternative 1: Continue ITAM Program without a Management Plan (No Action)

Under the No Action Alternative, the ITAM program would continue without a management plan. The TRI, LRAM, SRA, RTLA, and GIS components of the ITAM program would continue to have beneficial impacts on public access and recreation. Prior to public use of USARAK lands, Recreational Access Permits would continue to be required in addition to use of the USARTRAK system to check in and obtain information on range closures.

TRI
By integrating consideration of natural resources with range operations and training requirements, the TRI program would ensure land management practices that both meet the Army's needs while minimizing impacts on the environment. Minimizing the impacts of Army training on USARAK lands would enhance the quality of Army lands for public recreation.

LRAM
LRAM projects would reduce long-term impacts of training and testing by combining preventive and corrective land reclamation, reshaping, rehabilitation, repair, and maintenance practices. While these efforts would be specifically designed to maintain quality military training lands, they would also maintain quality lands for public recreation. Recreational activities would be temporarily disallowed in some areas where LRAM projects would be conducted. However, these access closures would be temporary, localized, and have minor adverse effects on public access and recreation. Historically, LRAM construction projects are completed in ten days on average. The longest projects (such as expansion of a drop zone) could take up to two summers to complete, but this would be infrequent.

LRAM projects beneficial to public access and recreation would include road crossings; hardening of roads, pads, and low water crossings; maneuver trail upgrade and maintenance; trail closures; installation of water bars; revegetation and protection of existing vegetation; vegetation thinning or clearing; and installation of education kiosks, signs, and Seibert stakes.

Driving conditions for public recreation would be improved by maneuver trail upgrades and maintenance; road crossings; and hardening of roads, pads, and low water crossings. These improvements would also allow the public to access more installation land. Installation of water bars to prevent rill erosion by draining water from roadways would also reduce road damage and improve accessibility. Projected trail upgrade and road/pad hardening projects for the next five years include approximately 85 acres impacted at Fort Richardson, 245 acres at Fort Wainwright, and 135 acres at Donnelly Training Area (Appendix A). Since these projects involve maintenance and repair of existing range and training land infrastructure, the majority of these projects would be improvements to existing roads and not the creation of new ones. These projects would improve availability of installation lands previously difficult to access for both recreation and military training. This would possibly result in increased training exercises and more frequent public access closures in those areas. Additionally, trail closures and restoration projects used to prevent trail proliferation and degradation of existing trails would reduce both military and public access in some areas.

Revegetation, protection of existing vegetation, and vegetation thinning or clearing could improve wildlife forage and habitat, resulting in improved hunting opportunities. Projected thinning projects for the next five years include approximately 20 acres impacted at Fort Richardson and 140 acres at Fort Wainwright. About 100 acres of mowing is planned at Donnelly Training Area (Appendix A). Installation of signs, Seibert stakes, and education kiosks would improve both public communication of recreation policies and demarcation of areas with restricted public access. Plans to install signage at unmarked entrance points and underutilized, stocked lakes on Donnelly Training Area would impact approximately one acre (Appendix A).

Overall, LRAM activities would be expected to have minor adverse short-term impacts and beneficial long-term impacts to public access and recreation.

SRA
This program would ensure soldiers are aware of specific environmental concerns (for example, sensitivity of wetlands and permafrost areas) and regulations and restrictions intended to minimize natural resource impacts. SRA guidelines would detail procedures for field operations (litter removal, waste disposal, camouflage, fire, excavation, snow removal, etc.), on- and off-road vehicle movement, handling of hazardous wastes, harassment of wildlife, off-limits areas, and noise. The SRA program would be beneficial to public access and recreation by encouraging a land stewardship ethic among military personnel to help minimize unintended or unnecessary and negligent natural resource damage due to military training.

RTLA
By maintaining a balance between the use of training lands to maximize military preparedness and the conservation of biologically diverse and functioning ecosystems, RTLA would monitor the capability of training lands to meet multiple use demands on a sustainable basis. It would seek to help avoid excessive military use that would exhaust natural resources. The RTLA program includes avian, wetlands, vegetation, and both small and large mammal monitoring. Monitoring would be generally scheduled around training activities and would not require public access restrictions.

Aerial wildlife monitoring would continue at all installations but would not close airspace or incur airspace restrictions that would affect the general aviation community. At Fort Richardson, historical average total flight time is approximately ten hours annually. At Fort Wainwright and Donnelly Training Area, flight time is 2004 totaled 53 hours and is projected at 80 hours for 2005. Occasionally (once every 5-10 years), remote sites would be accessed for monitoring by helicopter and would generally be short in duration (15-30 minutes).

While RTLA monitoring activities would not directly affect public access, they would benefit public recreation by helping monitor and maintain healthy ecosystems. Additionally, wildlife monitoring would provide information necessary to minimize impacts of training on wildlife and recreational hunting opportunities.

GIS
GIS support would be provided to all components of the ITAM program as an important asset for both military training and natural and cultural resources management. It would allow all components of the ITAM program to be more effective at managing and sustaining natural resources on USARAK lands, thus providing better recreational opportunities for the public.

Alternative 2: Implement ITAM Program through a Management Plan (Proposed Action)

Under this alternative, the ITAM program would be implemented through a management plan that would include standard operating procedures for LRAM and RTLA projects. Impacts to public access and recreation due to TRI, LRAM, SRA, RTLA, and GIS activities would be similar to those described under the No Action Alternative.

Alternative 3: Suspend ITAM Program

Under this alternative, all components of the ITAM program would discontinue operation. Training land rehabilitation, maintenance, and range improvements would cease despite continued use of USARAK lands for Army training. Environmental damage from training could cause safety hazards, loss of vegetation, and loss of useable land for both training and public recreation. Training lands would deteriorate over time, resulting in reduced aesthetics and increased impediments to public access due to poor environmental conditions and lack of road and trail maintenance. Areas could increasingly be closed to public access due to poor training land condition and its inability to sustain multiple uses. In particular, canceling the LRAM program, which is primarily responsible for the maintenance of natural resources on USARAK training lands, and the RTLA program, which is responsible for monitoring the biological impacts of military training, would have an increasingly adverse impact on public access and recreation.

The following table presents a summary of qualitative impacts to public access and recreation resulting from each alternative. Descriptions of the qualitative terms are provided in Chapter 2, Description of Proposed Action and Alternatives.

Table 3.7 Summary of Impacts[1] to Public Access and Recreation.

ITAM Activity	Alternative 1		Alternative 2		Alternative 3	
	Short Term	Long Term	Short Term	Long Term	Short Term	Long Term
TRI	Beneficial	Beneficial	Beneficial	Beneficial	Minor	Minor
LRAM	Minor	Beneficial	Minor	Beneficial	Moderate	Severe
SRA	Beneficial	Beneficial	Beneficial	Beneficial	Minor	Minor
RTLA	Beneficial	Beneficial	Beneficial	Beneficial	Minor	Moderate
GIS	Beneficial	Beneficial	Beneficial	Beneficial	Minor	Minor

[1] Short-term impacts are defined as impacts lasting from ten days up to one year, or for the duration of a project.

Cumulative Impacts

Past military activities have had adverse impacts to public access and recreation through permanent closure of some areas (such as impact areas) and temporary closures of lands for training. However, construction of roads and trails on Army properties have led to beneficial impacts by improving public accessibility to USARAK lands for recreational purposes (USARAK 2004).

All current and planned construction activities have the potential to adversely impact public access and recreation. Construction activities typically result in temporary closures of certain areas for the duration of construction projects. The ITAM program includes many activities requiring construction activity. However, as construction projects last an average of ten days, the cumulative impact of these construction activities would be minor. Several ITAM projects would also result in improvements to public access.

The largest impacts to public access and recreation result from military training activities. In comparison, the overall cumulative impact of ITAM activities to public access and recreation under the proposed action would be minor adverse to beneficial.

3.8 CULTURAL RESOURCES

3.8.1 Affected Environment

Cultural resources include features and objects dating to the prehistoric and historic periods that are found or are likely to be found as defined by the National Historic Preservation Act of 1966 (as amended). Management of cultural resources on federal lands depends on eligibility of resources for inclusion in the National Register of Historic Places (NRHP). Additionally, properties of traditional and religious importance relating to Alaska Native villages may be determined eligible for listing in the NRHP. Such sites may also be considered sacred sites and are generally referred to as traditional cultural properties (TCPs). TCPs are expected to closely relate to traditional subsistence, cultural, and religious practices on lands managed by USARAK.

Subsistence has been legally defined to include the customary and traditional uses of fish, plant materials and game for Alaska's rural residents. Food is one of the most important subsistence uses of wild resources. However, there are other important uses of subsistence products, such as clothing, fuel, transportation, construction, home goods, sharing, customary trade, ceremony, arts and crafts. Harvesting of non-game resources, such as edible or medicinal plants, is determined by public access (when and where). There are no federal restrictions on the season, take, and eligibility of rural residents for non-game resources. Additional sections in this EA related to subsistence include Section 3.5, Wildlife and Fisheries, and Section 3.7, Public Access and Recreation.

Additional information on cultural resources and subsistence on USARAK lands can be found in the *Transformation of U.S. Army Alaska Final EIS* (USARAK 2004) and *the Draft EIS for the Construction and Operation of a Battle Area Complex and Combined Arms Collective Training Facility* (USARAK 2004).

Fort Richardson

Cultural Resources
Archeological surveys suggest the existence of several prehistoric sites, most likely contained within the moraine features scattered across Fort Richardson. Several potential locations of both historical and ethnographic significance exist, including portions of the Iditarod Historic Trail.

Historic building surveys on Fort Richardson have addressed only the Nike Site Summit and select Cold War-era buildings. As a result of these surveys' findings, the Nike Site Summit was nominated and approved for inclusion in the NHRP as a historic district.

Subsistence
Fort Richardson lies within the traditional lands of the Dena'ina, Athabaskans. The closest Dena'ina village to Fort Richardson is the Native Village of Eklutna, located approximately 25 miles north of the cantonment area and post entrance. The Native Village of Knik and many other communities from further up Knik Arm traditionally traveled to the Anchorage area with the June king salmon runs. It is known that many communities in the Cook Inlet region traditionally used a wide variety of subsistence resources that are present today on Fort Richardson. It is hoped that a better understanding of subsistence use and traditional use areas on Fort Richardson will be gained through ongoing coordination efforts.

The Federal Subsistence Board delineated a Fort Richardson and Elmendorf Air Force Base Management Area (consisting of Fort Richardson and Elmendorf military reservations). Under the "special provisions" for Management Unit 14, the Fort Richardson and Elmendorf Management Area is closed to subsistence taking of wildlife per the 2004-2005 Subsistence Management Regulations. Subsistence take under the customary and traditional use determinations are permitted for areas in Management Unit 14C other than Fort Richardson and Elmendorf Air Force Base. Hunting and fishing on For Richardson is permitted under State of Alaska general hunting and fishing regulations.

Fort Wainwright

Cultural Resources
Archaeological surveys conducted on Fort Wainwright located six archaeological sites on Main Post. Only one site has been evaluated for eligibility for NRHP listing and it was determined not eligible. The remaining five sites have not been evaluated.

The entire Fort Wainwright Main Post has been inventoried and evaluated for eligibility for inclusion in the NRHP under the World War II and the Cold War historic contexts. Under the World War II context, Ladd Field, which has been designated a National Historic Landmark, includes 38 buildings and structures.

Under the Cold War context, Main Post has been identified and determined eligible for inclusion, but has not been formally nominated for listing. A study of Ladd Air Force Base's historic context was completed in 2000 (Price 2000). All buildings on Fort Wainwright were evaluated under the Cold War context. This resulted in the identification of the Ladd Air Force Base Historic District, which includes 71 buildings and structures.

Seven surveys conducted in the Yukon Training Area identified fifteen archaeological sites. Thirteen of the sites are not eligible for listing in the NHRP because they were located in highly disturbed areas. Two sites have not been evaluated for eligibility.

No building surveys have been conducted in Tanana Flats Training Area. Based on studies conducted by U.S. Army Alaska, no historic buildings are expected to exist on the training area (Neely 2001; Neely 2002; Price 2002).

Two surveys conducted on Yukon Training Area revealed eight archaeological sites. Six of the sites are not eligible for listing in the NHRP because they were located in highly disturbed areas. Two sites have not been evaluated for eligibility.

Two Nike Missile sites existed on Yukon Training Area, Site Mike and Site Peter. Each site consisted of a Battery Control Area and a Launch Area. Due to clean-up activities in the late 1980s and early 1990s, these sites no longer have historic integrity and are not eligible for inclusion in the NHRP (Denfeld 1988, 1994).

An early mining study indicates that no significant mining activities occurred on Yukon Training Area (Neely 2001). The Pine Creek mining complex in the northeastern corner of Yukon Training Area was listed as a potential historic property (Higgs et al. 1999); however, based on the early mining study (Neely 2001), it is ineligible for listing in the NHRP. No other historic buildings are expected to exist on Yukon Training Area.

Subsistence
Fort Wainwright training areas fall within the traditional lands of Tanana and Tanacross Athabaskans. Traditional settlement patterns focused on a widely mobile and seasonal lifestyle, with the fall caribou and moose hunt playing a pivotal role in subsistence preparations for the winter while summer activities were focused on fish camps, berry/root collecting and sheep hunting (McKennan 1981). Fish and moose continue to play a primary role in Interior communities near Fort Wainwright training area lands, including Gerstle River and Black Rapids training areas (Martin 1983, Marcotte 1991, personal communication with tribal representatives from the Interior 2000 and 2001). Plant gathering continues to be a focus in the spring, summer and fall, with residents from Dot Lake, for example, traveling as far as Donnelly Dome, Delta Junction and Eielson Air Force Base to collect berries, roots, and plant resources (Martin 1983).

Due to the size and relatively remote location of Fort Wainwright, natural resources and wildlife populations are fairly well preserved. Customary and traditional use has been determined for the following species: brown bear, moose, beaver, coyote, red fox, hare, lynx, marten, mink and weasel, muskrat, otter, wolf, wolverine, grouse, and ptarmigan. Subsistence permits can be obtained for the take of these species.

Donnelly Training Area

Cultural Resources
Twenty-three archaeological investigations have been conducted on Donnelly Training Area to date. Three hundred twenty sites were identified, with 13 of these comprising two archaeological districts. Sixty-six sites have been evaluated for NRHP listing, 25 of which are eligible. These investigations have covered 45,810 acres (approximately 8%) of Donnelly Training Area. The majority of the archaeological surveys conducted in Donnelly Training Area have been limited to Donnelly Training Area East, which makes up only 25% the training area. Because of its remote setting, the archaeology of Donnelly Training Area West is poorly understood and represents a gap in the understanding of the area's prehistory.

A study on early trails identified a number of historic trails on Donnelly Training Area (Neely 2002). This study, however, only identified the Donnelly-Washburn Winter Cut-Off Trail as having potential eligibility for inclusion in the NRHP.

It is expected that traditional cultural properties will be identified on Donnelly Training Area and will consist of sites and landmarks that reflect the seasonality of subsistence activities. USARAK and the U.S.

Air Force 611th CES have an ongoing project, contracted to Tanana Chiefs Conference, Inc., to identify and evaluate TCPs that may be present on military managed lands in the interior of Alaska, including Donnelly Training Area. No information has been provided to date on USARAK managed lands. A final report is expected at the end of 2005.

Subsistence
Donnelly Training Area is situated within federal subsistence management unit (or GMU) 20. GMU 20 is subdivided into six large subunits. Donnelly Training Area East is in subunit 20D and makes up approximately 2.5% of the subunit. Federal subsistence management regulations apply to all of GMU 20. Immediately south of Donnelly Training Area East, and running along the length of the Richardson Highway to the town of Glennallen, are vast tracks of federal land. Much of this federal land is similar to that found in Donnelly Training Area East, and is managed to allow a subsistence harvest preference for large game animals. The close proximity of these lands to a major public highway also offers ready access to game and plant resources.

Regional populations with recognized subsistence interests (rural status) on USARAK lands include Healy Lake Village, Village of Dot Lake, Native Village of Tanacross, Native Village of Tetlin, Northway Village, Delta Junction, Big Delta, Deltana, and Dry Creek. Data gathering on subsistence activities on (and around) USARAK lands is currently ongoing.

3.8.2 Environmental Consequences

Alternative 1: Continue ITAM Program without a Management Plan (No Action)

Under the No Action Alternative, ITAM projects would continue to take place without a management plan or standard operating practices. SRA, TRI, and GIS would continue to have no adverse effects on cultural resources, if properly applied. SRA would benefit cultural resources by educating soldiers to stay away from known cultural resource sites and to immediately report any cultural sites found during training events. If cultural artifacts are discovered while digging, excavation is to be halted at once and the Environmental Resources Department contacted. TRI would compile known cultural resource data and incorporate the information into overlays to ensure trainers do not disturb cultural resources. However, exact locations of sites are not placed on maps. GIS would assist cultural resources management by storing and presenting cultural resources spatial data. Remote sensing tools additionally help staff to identify possible cultural resource sites. RTLA activities would not involve cultural resources management nor pose any risks to cultural sites or subsistence. LRAM impacts are discussed below.

SRA, TRI, GIS, and RTLA activities would not impact subsistence resources nor restrict access to subsistence resources. For specific impacts to wildlife and fisheries and public access, see Sections 3.5 and 3.7 respectively.

LRAM
LRAM would not involve cultural resources management. LRAM projects, however, could have adverse impacts to cultural resources, particularly if previously unknown sites are disturbed from earth-moving activities. Activities with potential cultural resource impacts include gravel extraction; road, pad, firing point, and forward operations base hardening; maneuver trail upgrades; revegetation; fire suppression; vegetation management; gabion installation; latrine installation; streambank stabilization; low water crossing hardening; water bars; guard rail installation; tactical bridge installation; and wetland restoration. In compliance with Section 106 of the National Historic Preservation Act, specific LRAM projects would undergo a review by cultural resources staff before implementation.

LRAM activities under Alternative 1 would benefit subsistence by improving habitat for important wildlife and fish subsistence resources. Habitat improvements would be made through vegetation management, wetlands restoration, and streambank stabilization projects. Improvement of roads and trails would also improve access for subsistence resources. Trail closures due to repair would reduce certain areas for subsistence access until the area is restored. This is considered a minor adverse impact since other areas equal in subsistence value would remain open for access.

LRAM projects involving road maintenance and upgrades would also improve access to subsistence resources. However, increased human activity during maintenance and repair projects would temporarily disturb wildlife.

Alternative 2: Implement ITAM Program through a Management Plan (Proposed Action)

Cultural resource impacts from Alternative 2 would be the same as those described under Alternative 1. While the standard procedures for all ITAM programs identified in the *USARAK ITAM Management Plan* would provide consistency and efficient work practices, these are not expected to create noticeably different affects to cultural resources or subsistence.

Alternative 3: Suspend ITAM Program

Under Alternative 3, ITAM activities would not continue on USARAK lands. This action would have adverse impacts to cultural resources and subsistence. Soldiers would not be educated about the importance of avoiding cultural sites and the proper notification for newly discovered sites under the SRA program. TRI would not ensure that mission requirements do not interfere with cultural resources. GIS would not exist to provide spatial data to support cultural resources programs. Suspending RTLA would not affect cultural resources or subsistence.

LRAM
Maintenance and repair activities under the LRAM program would not take place under Alternative 3. Discontinuing LRAM programs could benefit cultural resources by reducing the amount of ground disturbance. Discontinuing road improvement, however, may increase risk to cultural resources. If adequate roads do not exist, soldiers and the recreating public would be more likely to drive off-road and increase areas disturbed.

Subsistence would be adversely impacted from discontinuing the LRAM program because training lands would not undergo repair after damage. This would greatly degrade habitat for species important for subsistence. Additionally, roads and trials would not be repaired or upgraded. This would hinder access to many areas for subsistence resources.

The following table represents a summary of qualitative impacts to cultural resources that would result from each alternative. Descriptions of the qualitative terms are provided in Chapter 2, Description of Proposed Action and Alternatives.

Table 3.8 Summary of Impacts[1] to Cultural Resources and Subsistence.

ITAM Activity	Alternative 1		Alternative 2		Alternative 3	
	Cultural Resources	Subsistence	Cultural Resources	Subsistence	Cultural Resources	Subsistence
TRI	Beneficial[2]	None	Beneficial[2]	None	Severe	None
LRAM	Minor	Beneficial	Minor	Beneficial	Beneficial	Moderate
SRA	Beneficial[2]	Beneficial	Beneficial[2]	Beneficial	Severe	None
RTLA	None	None	None	None	None	None
GIS	Beneficial[2]	None	Beneficial[2]	None	Minor	None

[1]Short-term and long-term impacts are expected to be similar.
[2]Impacts would be beneficial only if properly applied. TRI, SRA, and GIS could have adverse impacts if they identify site locations and make them publicly available.

Cumulative Impacts

Cultural Resources
Past activities may have impacted cultural resources by disturbing or destroying undocumented or undiscovered cultural sites. Additional impacts could result from current and planned construction projects, training activities, and recreation. Activities under the proposed action would add beneficial to minor adverse cumulative impacts to cultural resources on USARAK lands. The proposed action, if properly applied, would serve to prevent adverse impacts through TRI, SRA, and GIS programs. However, these same programs could have adverse impacts if site locations become public knowledge. LRAM projects would contribute to the negative cumulative impacts of all other ground-disturbing activities. Since each LRAM project will undergo further cultural resources review, the cumulative impacts to cultural resources from these projects would be minor.

Subsistence
Past activities have impacted subsistence resources by altering habitat, restricting access, and military training. Additional impacts could result from current and planned construction projects, training activities, and recreation. Activities under the proposed action would add long-term beneficial impacts to subsistence resources by improving access roads and trails and by improving habitat.

3.9 HUMAN HEALTH AND SAFETY

Human health and safety includes those facets of military activities and materials that potentially pose a risk to the health, safety, and well-being of the public, military personnel, and civilian employees and dependents. Risks involve hazardous materials and wastes. Hazardous materials include petroleum-contaminated absorbent pads, batteries, light ballasts, mercury-containing light bulbs, non-recyclable oils and fuels, compressed gas, non-recyclable hydraulic fluid, lead-based paint, paint, paint thinners and solvents, pesticides, photo-developing chemicals, sandblast residue, solvents and degreasers, thermostats with mercury ampoules, and non-recyclable transmission fluid. Asbestos, radon, polychlorinated biphenyls (PCBs), and pesticides are also considered hazardous wastes.

Unexploded ordnance, vehicular accidents, and other occupational safety hazards can occur with USARAK activities. More information on human health and safety can be found in the *Transformation of U.S. Army Alaska Final EIS* (USARAK 2004).

3.9.1 Affected Environment

Fort Richardson

Fort Richardson is registered with the EPA as a "Large Quantity Generator" of hazardous waste, per the Resource Conservation and Recovery Act. Hazardous wastes at Fort Richardson are associated with equipment maintenance (e.g., vehicles, boats, aircraft) and facilities operation. The wastes are temporarily stored in drums at satellite accumulation points located around post. Satellite accumulation points are located where wastes are generated on a continual basis. Other locations or facilities that do not generate wastes are subject to on-call collection of hazardous wastes.

Currently, Building 45-125 on Fort Richardson serves as the centralized hazardous waste collection site. All hazardous wastes collected on post are brought to this facility for processing and off-post disposal. During 2001, Fort Richardson generated 4,959,080 pounds of hazardous waste. The amount of hazardous waste was artificially high due to off-site disposal of 4,895,467 pounds of PCB-contaminated soil. On average, hazardous waste generated at Fort Richardson is less than 100,000 pounds.

Fort Richardson has 22 aboveground storage tanks with capacities ranging from 300 to 50,000 gallons. All of these tanks are located within the cantonment area and contain diesel fuel, gasoline, aviation fuels (JP-8), and heating oil. Because the total fuel capacity stored at Fort Richardson does not exceed 420,000 gallons, an Oil Discharge and Contingency Plan is not required. However, Fort Richardson does have a Spill Prevention, Control and Countermeasures Plan that details spill response and prevention measures for all fuel storage areas.

Forty-two underground storage tanks are located at Fort Richardson. All of the underground storage tanks conform to the applicable Army, State of Alaska, and EPA guidelines. These tanks are monitored monthly and are equipped with electronic monitoring devices designed to detect leaks and overfills.

Fort Wainwright

Fort Wainwright is registered with the EPA as a Large Quantity Generator of hazardous waste, per the Resource Conservation and Recovery Act. Hazardous wastes at Fort Wainwright are associated with equipment maintenance (e.g., vehicles, boats, aircraft) and facilities operation.

Currently, Building 3489 on Fort Wainwright serves as the centralized hazardous waste collection site for the post. All hazardous wastes collected on post are brought to this facility for processing and off-post disposal. During 2001, Wainwright generated 468,500 pounds of hazardous waste.

Fort Wainwright has 13 aboveground storage tanks with capacities ranging from 300 to 13,000 gallons. All of these tanks are located within the cantonment area and contain diesel fuel, gasoline, aviation fuels (JP-8), and heating oil. Because the total fuel capacity stored at Fort Wainwright does not exceed 420,000 gallons, an Oil Discharge Prevention and Contingency Plan is not required. However, Fort Wainwright does have a Spill Prevention, Control and Countermeasures Plan that details spill response and prevention measures for all fuel storage areas.

Fifty-nine underground storage tanks are located on Fort Wainwright. All underground storage tanks conform to the applicable Army, State of Alaska, and EPA guidelines. Each tank is monitored monthly and is equipped with electronic monitoring devices designed to detect leaks and overfills.

Donnelly Training Area

DTA has few issues relating to human health and safety. Due to the lack of a cantonment area, housing, and potential waste-generating facilities, Donnelly Training Area is not considered a USARAK property having significant human health and safety issues.

Petroleum, oils, and lubricants are used during construction and training events. Fuel distribution points and refueling operations are constructed and operated in accordance with USARAK Regulation 200-4, *Hazardous Waste, Used Oil, and Hazardous Materials Management*.

3.9.2 Environmental Consequences

Alternative 1: Continue ITAM Program without a Management Plan (No Action)

Under the No Action Alternative, ITAM projects would continue to take place without a management plan or standard operating procedures. TRI and GIS would not have any impacts to human health and safety. RTLA may occasionally require monitoring within impact areas. This would pose some risks to monitoring personnel. LRAM and SRA impacts are discussed below.

LRAM
Equipment operators would wear appropriate hearing protection. If any pesticides or herbicides are used, adherence to all DOD and Army guidance for handling and use will be required. Benefits to human health and safety include latrine installation, road hardening, and berm installation. Installation of latrines will protect human health by properly disposing of human waste. Road hardening, maneuver trail upgrades, and guard rail installation improve safe driving conditions for both soldiers and recreationists. Berm installations behind targets prevent ricochet and improve the safety of training ranges.

SRA
SRA would continue to have beneficial impacts to human health and safety. Through the SRA program, soldiers are directed to properly dispose of or recycle wastes, properly dispose of human waste, keep records up to date, properly label hazardous waste, never mix hazardous products–not even for the purpose of disposal–and turn in hazardous waste to the Department of Public Works. Additionally, soldiers are instructed to immediately report petroleum, oil, and lubricants and all other hazardous material spills to 911 and then to Range Control. Any remnants of hazardous materials found in the field (e.g., fuel-soaked soil, asbestos-contaminated structures, and abandoned drums) are to be reported to the Environmental Resources Department.

Alternative 2: Implement ITAM Program through a Management Plan (Proposed Action)

Impacts to human health and safety from Alternative 2 would be similar to those described under Alternative 1. Standard operating procedures for all ITAM programs identified in the *USARAK ITAM Management Plan* would provide consistent and efficient work practices. This may improve human health and safety by ensuring that contractors would adhere to standard procedures, particularly those related to inadvertent petroleum, oil, or lubricant releases during LRAM projects. Overall, impacts under Alternative 2 would be beneficial.

Alternative 3: Suspend ITAM Program

Under Alternative 3, ITAM activities would not continue on USARAK installations. This action would have adverse impacts to human health and safety. Moderate impacts would result from discontinuing the

SRA program, which educates soldiers about proper handling and disposal of hazardous wastes and procedures to follow for inadvertent fuel releases.

RTLA, TRI and GIS would not affect human health and safety. Additional regulations, not related to ITAM but related to human health and safety issues, would continue to take place and benefit human health and safety. These include, but are not limited to, Army Regulation 55-2, *Transportation and Travel*; Army Regulation 200-1, *Environmental Protection and Enhancement*; and Army Regulation 200-5, *Pest Management*.

The following table presents a summary of qualitative impacts to human health and safety resulting from each alternative. Descriptions of the qualitative terms are provided in Chapter 2, Description of Proposed Action and Alternatives.

Table 3.9 Summary of Impacts[1] to Human Health and Safety.

ITAM Activity	Alternative 1	Alternative 2	Alternative 3
TRI	None	None	None
LRAM	Beneficial	Beneficial	Minor
SRA	Beneficial	Beneficial	Moderate
RTLA	Minor	Minor	None
GIS	None	None	None

[1]Short-term and long-term impacts are expected to be similar.

Cumulative Impacts

Past human health and safety impacts on USARAK lands involved the use of explosive munitions, convoy use of public roadways, and inadvertent releases of hazardous materials (USARAK 2004). Since human health and safety issues are so highly regulated, current and proposed actions are not likely to add to adverse cumulative impacts. Programs are in place to minimize impacts resulting from current or future construction or training activities and from the proposed action. The ITAM program would further benefit existing programs mainly through educating personnel on human health and safety measures. Additionally, best management practices (Appendix B) for managing storm water during construction would serve to prevent inadvertent contaminant releases from entering storm sewers or waterways.

3.10 SOCIOECONOMICS

3.10.1 Affected Environment

U.S. Army Alaska continues to play an important role in the regional economies surrounding its three main installations/training lands: Fort Richardson (Anchorage), Fort Wainwright (Fairbanks), and Donnelly Training Area (Delta Junction). Total payroll for statewide U.S. Army operations at these installations are about $331 million while the non-payroll expenditures account for about $297 million (Department of Defense, Directorate for Information Operations and Reports 2004). Together, these contribute approximately $1.3 billion in direct and indirect economic activity for the state of Alaska. Additional information regarding socioeconomics surrounding USARAK installations can be found in the *Transformation of U.S. Army Alaska Final Environmental Impact Statement* (USARAK 2004).

The Anchorage Area and Fort Richardson

Anchorage is the largest city in Alaska with approximately 40% of the state's population residing within its municipality (Alaska Department of Commerce, Community, and Economic Development 2004). Total government employment in the Anchorage area is noticeably high at 26%. Uniformed military at Fort Richardson and Elmendorf Air Force Base add about 8,500 employees to the area's workforce and comprise almost 23% of government employment. The pay differential between private and public sectors runs opposite to the nationwide pattern with uniformed military earnings somewhat below the government average.

Including employment and income multipliers, Fort Richardson contributed approximately $588 million and 9,900 jobs to the local economy in 2000 (Department of Defense, Directorate for Information Operations and Reports 2004.)

The Fairbanks North Star Borough and Fort Wainwright

The Fairbanks North Star Borough is the second largest population area after Anchorage. It includes the organized municipalities of Fairbanks and North Pole within its boundaries. Eielson Air Force Base and Fort Wainwright are also located within its boundaries and comprise the borough's largest economic engine. Average monthly employment and earnings in the Fairbanks North Star Borough indicate the influence of public expenditures is remarkably high with total government employment comprising approximately 44% of the area's workforce (Alaska Department of Labor and Workforce Development 2004). Uniformed military at Fort Wainwright and Eielson Air Force Base contribute 7,000 employees and comprise almost 40% of the total government workforce (Department of Defense, Directorate for Information Operations and Reports 2004).

Including employment and income multipliers, Fort Wainwright contributed approximately $655 million and 14,400 jobs to the local economy in 2000 (Department of Defense, Directorate for Information Operations and Reports 2004.)

Southeast Fairbanks Census Region and Donnelly Training Area

Donnelly Training Area is located within the Southeast Fairbanks Census Area, an area that is mostly unincorporated and not a well-defined region in terms of political, economic, or social boundaries. For census purposes, the Southeast Fairbanks Area includes the region surrounding the Alaska Highway between the Fairbanks North Star Borough and the Canadian border. At one time, Fort Greely was the largest single employer in the region, stationing some 300 non-uniformed personnel (in addition to uniformed personnel). As a result of Base Re-Alignment and Closure in the 1990s, Fort Greely was transferred to the Space Missile Defense Command and the number of uniformed military personnel at Donnelly Training Area was dramatically reduced. In 2000, there were only 13 uniformed personnel and 100 non-uniformed personnel in residence at Donnelly Training Area. Currently, approximately 40% of total jobs in the census area are governmental (Alaska Department of Labor and Workforce Development 2004).

Including employment and income multipliers, Donnelly Training Area contributed approximately $50 million and 500 jobs to the local economy in 2000 (USARAK Public Affairs Office 1995-2002.)

3.10.2 Environmental Consequences

Alternative 1: Continue ITAM Program without a Management Plan (No Action)

Under the No Action Alternative, the ITAM program would continue without a management plan. The TRI, LRAM, SRA, RTLA, and GIS components of the ITAM program would continue to have a minor beneficial impact on local economies through employment of approximately two or three full-time civilian positions (and some part-time and seasonal employment) and their associated payroll expenditures at each installation. Additionally, LRAM projects would utilize private contractors to complete 98% of their projects. Projected projects for the next five years include approximately 1,000 acres of vegetation management projects and 500 acres of trail upgrades and road and pad hardening. Contracting with local companies would contribute approximately $1 million annually to the Anchorage economy and $2,000,000 annually to the Fairbanks economy. Projects conducted at Donnelly Training Area typically utilize contractors from Fairbanks.

Alternative 2: Implement ITAM Program through a Management Plan (Proposed Action)

Under this alternative, the ITAM program would be implemented through a management plan that would include standard operating procedures for LRAM and RTLA projects. Employment numbers would be unaffected by this alternative. Implementing standardized operating procedures for the LRAM program would have the possibility of causing some projects to cost slightly more or less (and/or take a little more or less time to complete), depending on the project. However, these impacts would not be noticeable at the regional level. Impacts to socioeconomics due to TRI, LRAM, SRA, RTLA, and GIS activities would be similar to those described under the No Action Alternative.

Alternative 3: Suspend ITAM Program

Under Alternative 3, all components of the ITAM program would discontinue operation. This would remove all employment positions required for implementing the ITAM program. The absence of LRAM would also discontinue use of local contractors for completion of LRAM projects. Due to the relative size of the Anchorage and Fairbanks economies, impacts would be minor and adverse but would not be expected to have a noticeable impact at the regional level.

Suspending the ITAM program would severely hamper USARAK's ability to meet mission training requirements. USARAK lands would degrade and become less able to sustain training activities without the ITAM program. As a result, the need to acquire new lands in order to fulfill mission requirements becomes a possibility. Acquisition of new lands could take place through land transfer or outright purchase and would likely come at taxpayer expense.

The following table presents a summary of qualitative impacts to socioeconomics resulting from each alternative. Descriptions of the qualitative terms are provided in Chapter 2, Description of Proposed Action and Alternatives.

Table 3.10 Summary of Impacts[1] to Socioeconomics.

ITAM Activity	Alternative 1	Alternative 2	Alternative 3
TRI	None	None	None
LRAM	Beneficial	Beneficial	None-Minor
SRA	None	None	None
RTLA	None	None	None
GIS	None	None	None

[1] Short-term and long-term impacts are expected to be similar.

Cumulative Impacts

All current and future programs and activities resulting in employment of personnel have both beneficial and adverse socioeconomic impacts. Beneficial impacts result from providing employment opportunities that contribute to the local economy through payroll expenditures. Beneficial impacts also result from activities that stimulate economic activity, such as contracting work to local businesses. However, increased populations can also result in adverse impacts similar to those from past activities described above. The ITAM program currently employs two to three civilians per installation and the proposed action would not result in additional employment. Projects contracted to local business would have positive socioeconomic effects. Overall, cumulative impacts of the proposed action to socioeconomics would be none to beneficial.

3.11 NOISE

3.11.1 Affected Environment

The Federal Interagency Committee on Urban Noise (FICUN) has developed guidelines for considering noise in land use planning and control. Using the A-Weighted Day-Night Average Sound Level (ADNL), an average measure of noise events occurring over a 24-hour period with a 10-decibel penalty added to noise events between 10 p.m. and 6 a.m., three noise zones were developed (FICUN 1980). Land uses such as residential areas, schools, and hospitals (noise-sensitive land uses) are not compatible within certain zones unless measures such as double-paned windows have been included in construction to lower interior noise levels. In other zones, noise-sensitive land uses are not at all compatible (FICUN 1980).

USARAK provides a two-week notice to the public for noise generated during late firing training operations (between 10 p.m. and 6 a.m.) through local newspapers and television. Notices are intended as an additional safety measure to keep the public informed regarding areas to avoid during training events.

Noise from transportation sources, such as vehicles and aircraft, and from continuous sources, such as generators, are assessed using the ADNL and are measured in A-weighted decibels (dBA). Impulse noises resulting from armor, artillery, and demolition activities are assessed using the C-Weighted Day-Night Average Sound Level and are measured in C-weighted decibels (dBC). Impacts of noise on wildlife are addressed in Section 3.5, Wildlife and Fisheries.

In fulfillment of Army regulations (AR 200-1), which implement federal law concerning environmental noise generated by Army activities including aircraft operations, range firing, and weapons testing, USARAK developed an Environmental Noise Management Plan for each installation (in 2001) that assessed the noise environments and associated impacts. Although Army vehicles tend to be louder than typical passenger cars, noise impacts are localized.

Additional information regarding noise on USARAK lands can be found in the *Transformation of U.S. Army Alaska Final Environmental Impact Statement* (USARAK 2004).

Fort Richardson

The existing noise environment at Fort Richardson is documented in its Installation Environmental Noise Management Plan (Montgomery et al. 2001a) and includes noise sources from traffic, aircraft, and small and large caliber weapons. The plan concluded that no significant noise problems were associated with existing operations.

Fort Richardson receives few complaints each year from the surrounding community regarding environmental noise. Most calls are from people with questions or requests for information. The few complaints recently logged are due to noise from rotary-wing flights and fixed-wing aircraft, typically from other installations in or approaching Fort Richardson airspace. To lessen noise-related problems, Fort Richardson has adopted newer, quieter equipment and changed timing and location of training activities to reduce noise impact on the public (Montgomery et al. 2001a).

Fort Wainwright

The existing noise environment for Fort Wainwright Main Post, Yukon Training Area, and Tanana Flats Training Area is documented in its Installation Environmental Noise Management Plan (Montgomery et al. 2001b). Noise sources include traffic, aircraft, and large and small caliber weapons. Fort Wainwright receives relatively few noise complaints each year from the surrounding community. Most documented complaints are inquiries about noise sources and when noise is expected to cease. Fort Wainwright staff has found that advanced public notice of training schedules decreases the number of calls to the Public Affairs Office, the department responsible for managing noise complaints.

Donnelly Training Area

The current noise environment at Donnelly Training Area is documented in the Environmental Noise Management Plan that was prepared for Fort Greely (Montgomery and Watson 2001). Routine noise generating operations at Donnelly Training Area involve small arms training, artillery training and rotary-wing and fixed-wing aircraft. Minor sources of noise include construction, traffic, and recreation. Aircraft activity takes place throughout the airspace above Donnelly Training Area, with the highest concentration of aircraft operations in the immediate vicinity of Allen Army Airfield. Other existing aircraft noise is attributed to Air Force operations over Donnelly Training Area airspace.

Donnelly Training Area receives relatively few environmental noise complaints each year from the surrounding community. Most calls are from people with questions or requests for information. The few recently-logged complaints stem from noise of large-scale training activities such as Northern Edge and Cope Thunder.

3.11.2 Environmental Consequences

Alternative 1: Continue ITAM Program without a Management Plan (No Action)

Under the No Action Alternative, the ITAM program would continue without a management plan. The TRI component of the ITAM program would have no noise impacts. GIS would provide for spatial data collection, analysis, presentation, and storage. For example, noise contours created by GIS staff would assist analysis of USARAK noise impacts to wildlife and neighboring communities. Noise impacts of the LRAM, SRA, and RTLA programs are discussed below.

LRAM
Temporary and local noise impacts from vehicle traffic and construction activities would be expected during most LRAM projects. Gravel pits would typically be located within three miles of proposed construction activity. Historically, LRAM construction projects are completed in ten days on average. The longest projects (such as expansion of a drop zone) could take up to two summers to complete, but this would be infrequent.

Due to the lack of adequate gravel sources in Yukon Training Area, gravel pit development in this training area would include blasting bedrock with explosives and subsequent crushing and mixing to create gravel. The proposed quarry area, pending drill core testing, would be the northern Bravo Battery in the northwest area of Fort Wainwright. This location is remote (approximately ten miles east of Eielson Air Force Base) and not near any human occupation, so noise impacts due to blasting would be temporary and localized. Impacts to wildlife are addressed in Section 3.5, Wildlife and Fisheries.

SRA
SRA guidelines inform soldiers of military procedures regarding noise. These procedures include prohibiting training activities that generate noise (firing blanks, pyrotechnics, simulators, etc.) in areas adjacent to populated areas between 10p.m. and 6 a.m., unless granted by Range Control. Additionally, all areas within one-half mile of the installation boundaries are closed to training activities to buffer adjacent, non-military lands from military activities. The SRA program would help reduce military noise impacts by encouraging a land stewardship ethic and minimizing unintended or unnecessary and negligent noise due to military training.

RTLA
Aerial monitoring under the RTLA program would result in minimal noise impacts. Much of the wildlife aerial monitoring would be conducted at Fort Wainwright and Donnelly Training Area. Historically, a 180 horsepower, single engine, 2-seat aircraft has been used, and 53 hours of flight time were logged at Tanana Flats Training Area in 2004. In 2005, approximately 80 hours of flight time is projected for aerial monitoring at both Tanana Flats and Donnelly Training Areas. At Fort Richardson, a 200 horsepower, single engine, 4-seat aircraft has been historically used for about 10 hours of flight time annually. The most recent surveys were conducted in 2003 on the north post of Fort Richardson, which is remote and not near any human occupation.

Occasionally (once every 5-10 years) remote sites would be accessed by helicopter. These flights would generally be short in duration (15-30 minutes) and in remote areas. Overall, noise impacts from RTLA monitoring activities would be infrequent, temporary, and localized.

Alternative 2: Implement ITAM Program through a Management Plan (Proposed Action)

Under this alternative, the ITAM program would be implemented through a management plan that would include standard operating procedures for LRAM and RTLA projects. Noise impacts due to TRI, LRAM, SRA, RTLA, and GIS activities would be similar to those described under the No Action Alternative.

Alternative 3: Suspend ITAM Program

Under this alternative, all components of the ITAM program would discontinue operation. Training land rehabilitation, maintenance, and range improvements would cease despite continued use of USARAK lands for Army training. In the absence of LRAM and RTLA activities, temporary noise impacts due to construction and monitoring would discontinue. However, elimination of the SRA program could cause minor adverse noise impacts due to unintended or negligent military activity.

The following table presents a summary of qualitative impacts to noise resulting from each alternative. Descriptions of the qualitative terms are provided in Chapter 2, Description of Proposed Action and Alternatives.

Table 3.11 Summary of Impacts[1] to Noise.

ITAM Activity	Alternative 1		Alternative 2		Alternative 3:	
	Short Term	Long Term	Short Term	Long Term	Short Term	Long Term
TRI	None	None	None	None	None	None
LRAM	Minor	None	Minor	None	Beneficial	None
SRA	Beneficial	Beneficial	Beneficial	Beneficial	Moderate	Moderate
RTLA	None-Minor	None-Minor	None-Minor	None-Minor	Beneficial	None
GIS	Beneficial	Beneficial	Beneficial	Beneficial	Minor	Minor

[1] Short-term impacts are defined as impacts lasting from ten days up to one year, or for the duration of a project.

Cumulative Impacts

Past activities have had adverse noise impacts through construction activities and use of weapons, vehicles, and air support during training on USARAK lands. Most construction occurred on cantonment areas, and noise impacts from training were generally considered minor (USARAK 2004).

All current and planned construction activities have the potential for cumulative impacts to noise. Construction activities under the ITAM program would contribute localized, short-term and minor impacts from increased vehicular traffic and construction equipment for the duration of projects (ten days on average). Noise impacts from gravel blasting on Yukon Training Area may be audible off installation boundaries, but this would occur infrequently and at locations distant from residences (10 miles east of Eielson Air Force Base, and 20-30 miles east of the cities of North Pole and Fairbanks). Aerial monitoring would contribute minor noise impacts during monitoring overflights. ITAM would also help minimize noise impacts from military training activities.

The largest noise impacts on installations result from military training activities. In comparison, the overall impact of ITAM activities under the proposed action to noise would be none to beneficial.

3.12 AIR QUALITY

3.12.1 Affected Environment

The Clean Air Act (CAA) authorizes the Environmental Protection Agency (EPA) to establish national ambient air quality standards (NAAQS) to protect public health and the environment. Standards for the six criteria air pollutants have been adopted by the State of Alaska. These include ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, inhaleable particulate matter, and lead. Carbon monoxide (CO) and particulate matter (PM) are specific pollutants of concern for Alaskan communities. More information on air quality can be found in the *Transformation of U.S. Army Alaska Final EIS* (USARAK 2004).

Fort Richardson

While the city of Anchorage is subject to maintenance plan requirements for CO and the Eagle River area is in a nonattainment area for PM_{10}, Fort Richardson is not within either of these areas.

Fort Richardson is in attainment with the NAAQS for all the criteria air pollutants.

Fort Wainwright

The Fairbanks North Star Borough nonattainment area for CO was redesignated from nonattainment to attainment for CO by the EPA on 27 September 2004 (Fed. Reg. 27 July 2004 (69FR44601-44607). Areas classified as attainment but operating under a maintenance plan are referred to as maintenance areas. Areas of Fort Wainwright located within the North Star Borough maintenance area are subject to general conformity regulations to ensure that federal activities do not interfere with the pollutant limits set in state implementation plans. A portion of Fort Wainwright is located within this maintenance area.

Ice fog is an air pollution problem in interior Alaska caused by man-made sources of water vapor. It can occasionally occur for weeks at a time, whenever temperatures go below -35° F. Cooling waters from power plants are the largest single source. Automobiles are next in importance because of their wide-ranging mobility and exhaust pipes close to ground level. Also, many cars are left with engines idling for hours at a time during very cold weather (Benson 1970).

Donnelly Training Area

Donnelly Training Area is designated as an attainment area for the six regulated NAAQS and is permitted as a separate facility from Fort Wainwright. Since the annual potential emission is less than 100 tons for any of the criteria pollutants, no air quality operating permit is required at this time.

Fugitive dust is typically generated from daily industrial activities such as bulk material handling, storage, and construction projects. The Delta River and Jarvis Creek are large sources of fugitive dust during wind events in summer, and sometimes during winter months. Driving heavy machinery, construction equipment, and personal and tactical vehicles on unpaved surfaces can also generate fugitive dust.

No air quality monitoring data exists for Donnelly Training Area or for any of the surrounding communities. Particulate sampling equipment was recently installed at Fort Greely, but insufficient data have been collected to provide an accurate measure of air quality relative to this pollutant. Air quality at Donnelly Training Area approximates natural baseline conditions, given the low density of human development and emission sources present. While Donnelly Training Area does experience periodic episodes of ice fog, they are generally short in duration. Strong and persistent temperature inversions do occur but, due to the limited number of emission sources, the inversions are unlikely to cause pollutant levels that exceed the NAAQS.

3.12.2 Environmental Consequences

Alternative 1: Continue ITAM Program without a Management Plan (No Action)

Under the No Action Alternative, ITAM projects would continue to take place without a management plan or standard operating procedures. Overall, impacts to air quality under Alternative 1 are minor due to LRAM activities.

SRA, TRI, and GIS programs would not have any impacts to air quality. RTLA would contribute an insignificant amount of emissions from vehicles used during monitoring activities. LRAM impacts are discussed below.

LRAM
Maintenance and repair activities under all LRAM projects requiring vehicles would contribute to minor emissions through vehicle exhaust and from generation of dust. Dust may be generated from travel on dirt

roads and hauling fill and rock materials. These impacts would be temporary, lasting for the duration of the maintenance activity (approximately ten days).

CO emissions from construction and maintenance vehicles would be expected to be below the 100 tons per year threshold within the maintenance area of Fort Wainwright. A record of non-applicability would likely be prepared, along with supporting NEPA analysis, for projects that occur within the maintenance area.

Prescribed burning would contribute to temporary air quality impacts. Prescribed burning requires prior written Alaska Department of Environmental Conservation approval if the intent is to burn more than 40 acres a year. Over the next five years, approximately 800 acres may be burned at Donnelly Training Area. These burns will require written approval.

Chemical soil stabilizers or water may be used as a best management practice (Appendix B) to reduce fugitive dust emissions during training and construction exercises. Additionally, wind fences and sand fences may be used to reduce the off-site movement of fine sediments transported by wind. These practices would be beneficial to local air quality during dust generating activities, particularly at Donnelly Training Area where fine loess soils are prone to wind erosion.

Alternative 2: Implement ITAM Program through a Management Plan (Proposed Action)

The air quality impacts from Alternative 2 would be the same as those described under Alternative 1. While the standard operating procedures for all ITAM programs identified in the *USARAK ITAM Management Plan* would provide consistent and efficient work practices, these are not expected to change air quality.

Alternative 3: Suspend ITAM Program

Under Alternative 3, ITAM activities would not continue on USARAK installations. Decreased maintenance and repair activities would take place under this alternative. This could cause slightly decreased emissions from using less construction and maintenance vehicles. Air quality would most noticeably be affected under Alternative 3 by not implementing dust control best management practice. This would cause moderate adverse impacts to air quality.

The following table presents a summary of qualitative impacts to air quality resulting from each alternative. Descriptions of the qualitative terms are provided in Chapter 2, Description of Proposed Action and Alternatives.

Table 3.12 Summary Impacts[1] to Air Quality.

ITAM Activity	Alternative 1		Alternative 2		Alternative 3	
	Short Term	**Long Term**	**Short Term**	**Long Term**	**Short Term**	**Long Term**
TRI	None	None	None	None	None	None
LRAM	Minor to Beneficial	None	Minor to Beneficial	None	Moderate	Moderate
SRA	None	None	None	None	None	None
RTLA	None	None	None	None	None	None
GIS	None	None	None	None	None	None

[1]Short-term impacts are defined as impacts lasting for the duration of a project (approximately ten days).

Cumulative Impacts

All past, current, and planned construction projects and training activities have local air quality impacts. These impacts consist of dust generated from ground and vegetation disturbance due to construction and training, increased use of unimproved roads for Stryker training, and use of motorized construction equipment. Emissions generated by construction equipment would be temporary and insignificant. The proposed action would mitigate dust generation through use of dust control best management practices during construction activities. Therefore, the overall impact of the proposed action to cumulative air quality at all locations would be minor.

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APPENDIX A: LRAM FIVE-YEAR PROJECT LIST

This is a proposed project list that will be continually updated. All projects may not be implemented within five years and additional projects may be added.

Project Name	Project Description	Approximate Acres Impacted
Fort Richardson		
Training Area Rotation Plan Implementation for Training Areas 1B & 1C	These areas, located at Fort Richardson, Alaska, are used by troops to maintain military readiness and preparedness. Impacts from the use of the area are typical of military training exercises and include trail proliferation, vegetation damage, exposure of soil, road and trail degradation and impaired access. These impacts, if left untreated, can decline and result in erosion and impaired drainage/hydrology. This project will mitigate training impacts by improving the health of existing vegetation through mowing, hydro-axing and fertilizing; the establishment of new vegetation in exposed area by hydro-seeding; the closing of unnecessary trails; the improvement of drainage through grading and the installation of water bars and culverts; and the reshaping and restoration of areas damaged by vehicles and equipment.	5
Bunker Hill Maneuver Corridor Thinning Phase 3	This project will create maneuverable lanes through the forested area to provide realistic overland training opportunities for soldiers. The tree thinning treatments are designed specifically for the Stryker vehicle. The treatments used will be designed to minimize stump height and residual slash, maintain a safe operation width between trees, and maximize concealment and cover.	Not Yet Determined
M16 Record Range (widen service roads to 20 feet)	This project will improve the existing roads and will re-establish hardened road surfaces and drainage features, including crowns, out/in slopes, ditches, water bars and culverts. These sections of road network within the range are characterized by poor drainage, insufficient and inappropriate road base and cap material, rutting and large erosion features, which impede access. These projects will improve access and control erosion by improving drainage through grading, ditching, installing geotextile and fill material and confining activities to hardened surfaces.	2.47
M16 Record Range Berm erosion control (144) berms	This project will re-establish 144 existing range berms at the M16 Record Range. These berms are characterized by eroding features that impede training opportunities. This project will improve training by restoring and revegetating the eroded berms to a state suitable for training.	1
Engineer Expressway Widening Phase 1	This project will improve the existing road and will re-establish hardened road surfaces and drainage features, including crowns, out/in slopes, ditches, water bars and culverts. These sections of road are characterized by poor drainage, insufficient and inappropriate road base and cap material, rutting and large erosion features, which impede access. These projects will improve access and control erosion by improving drainage through grading, ditching, installing geotextile and fill material and confining activities to hardened surfaces.	5.70
Bulldog Trail Widening Phase 2	This project will improve the existing road and will re-establish hardened road surfaces and drainage features, including crowns, out/in slopes, ditches, water bars and culverts. These sections of road are characterized by poor drainage, insufficient and inappropriate road base and cap material, rutting and large erosion features, which impede access. These projects will improve access and control erosion by improving drainage through grading, ditching, installing geotextile and fill material and confining activities to hardened surfaces.	6.06
Training Area Rotation Plan Implementation for Training Areas 2A & 2B	These areas, located at Fort Richardson, Alaska, are used by troops to maintain military readiness and preparedness. Impacts from the use of the area are typical of military training exercises and include trail proliferation, vegetation damage, exposure of soil, road and trail degradation and impaired access. These impacts, if left untreated, can decline and result in erosion and impaired drainage/hydrology. This project will mitigate training impacts by improving the health of existing vegetation through mowing, hydro-axing and fertilizing; the establishment of new vegetation in exposed area by hydro-seeding; the closing of unnecessary trails; the improvement of drainage through grading and the installation of water bars and culverts; and the reshaping and restoration of areas damaged by vehicles and equipment.	Not Yet Determined
Engineer Expressway Widening Phase 2	This project will improve the existing road and will re-establish hardened road surfaces and drainage features, including crowns, out/in slopes, ditches, water bars and culverts. These sections of road are characterized by poor drainage, insufficient and inappropriate road base and cap material, rutting and large erosion features, which impede access. These projects will improve access and control erosion by improving drainage through grading, ditching, installing geotextile and fill material and confining activities to hardened surfaces.	12.2

Project Name	Project Description	Approximate Acres Impacted
Bulldog Trail Widening Phase 3	This project will improve the existing road and will re-establish hardened road surfaces and drainage features, including crowns, out/in slopes, ditches, water bars and culverts. These sections of road are characterized by poor drainage, insufficient and inappropriate road base and cap material, rutting and large erosion features, which impede access. These projects will improve access and control erosion by improving drainage through grading, ditching, installing geotextile and fill material and confining activities to hardened surfaces.	6.06
Training Area Rotation Plan Implementation for Training Areas 3, 4, 5	These areas, located at Fort Richardson, Alaska, are used by troops to maintain military readiness and preparedness. Impacts from the use of the area are typical of military training exercises and include trail proliferation, vegetation damage, exposure of soil, road and trail degradation and impaired access. These impacts, if left untreated, can decline and result in erosion and impaired drainage/hydrology. This project will mitigate training impacts by improving the health of existing vegetation through mowing, hydro-axing and fertilizing; the establishment of new vegetation in exposed area by hydro-seeding; the closing of unnecessary trails; the improvement of drainage through grading and the installation of water bars and culverts; and the reshaping and restoration of areas damaged by vehicles and equipment.	Not Yet Determined
Engineer Expressway Widening Phase 3	This project will improve the existing road and will re-establish hardened road surfaces and drainage features, including crowns, out/in slopes, ditches, water bars and culverts. These sections of road are characterized by poor drainage, insufficient and inappropriate road base and cap material, rutting and large erosion features, which impede access. These projects will improve access and control erosion by improving drainage through grading, ditching, installing geotextile and fill material and confining activities to hardened surfaces.	9.09
Fire Tower Ridge Road Widening Phase 1	This project will improve the existing road and will re-establish hardened road surfaces and drainage features, including crowns, out/in slopes, ditches, water bars and culverts. These sections of road are characterized by poor drainage, insufficient and inappropriate road base and cap material, rutting and large erosion features, which impede access. These projects will improve access and control erosion by improving drainage through grading, ditching, installing geotextile and fill material and confining activities to hardened surfaces.	5.64
Bulldog Trail Widening Phase 4	This project will improve the existing road and will re-establish hardened road surfaces and drainage features, including crowns, out/in slopes, ditches, water bars and culverts. These sections of road are characterized by poor drainage, insufficient and inappropriate road base and cap material, rutting and large erosion features, which impede access. These projects will improve access and control erosion by improving drainage through grading, ditching, installing geotextile and fill material and confining activities to hardened surfaces.	6.06
Training Area Rotation Plan Implementation for Training Areas 6A, 6B, 7A, 7B	These areas, located at Fort Richardson, Alaska, are used by troops to maintain military readiness and preparedness. Impacts from the use of the area are typical of military training exercises and include trail proliferation, vegetation damage, exposure of soil, road and trail degradation and impaired access. These impacts, if left untreated, can decline and result in erosion and impaired drainage/hydrology. This project will mitigate training impacts by improving the health of existing vegetation through mowing, hydro-axing and fertilizing; the establishment of new vegetation in exposed area by hydro-seeding; the closing of unnecessary trails; the improvement of drainage through grading and the installation of water bars and culverts; and the reshaping and restoration of areas damaged by vehicles and equipment.	Not Yet Determined
Infantry Platoon Battle Course Range Berm erosion control	This project will re-establish existing range berms at the IPBC Range. These berms are characterized by eroding features that impede training opportunities. This project will improve training by restoring and revegetating the eroded berms to a state suitable for training.	Not Yet Determined
Infantry Squad Battle Course Range Berm erosion control	This project will re-establish existing range berms at the ISBC Range. These berms are characterized by eroding features that impede training opportunities. This project will improve training by restoring and revegetating the eroded berms to a state suitable for training.	Not Yet Determined
Fire Tower Ridge Road Widening Phase 2	This project will improve the existing road and will re-establish hardened road surfaces and drainage features, including crowns, out/in slopes, ditches, water bars and culverts. These sections of road are characterized by poor drainage, insufficient and inappropriate road base and cap material, rutting and large erosion features, which impede access. These projects will improve access and control erosion by improving drainage through grading, ditching, installing geotextile and fill material and confining activities to hardened surfaces.	5.27

Project Name	Project Description	Approximate Acres Impacted
Clunie Lake Road Widening Phase 1	This project will improve the existing road and will re-establish hardened road surfaces and drainage features, including crowns, out/in slopes, ditches, water bars and culverts. These sections of road are characterized by poor drainage, insufficient and inappropriate road base and cap material, rutting and large erosion features, which impede access. These projects will improve access and control erosion by improving drainage through grading, ditching, installing geotextile and fill material and confining activities to hardened surfaces.	5.15
Bulldog Trail Widening Phase 5	This project will improve the existing road and will re-establish hardened road surfaces and drainage features, including crowns, out/in slopes, ditches, water bars and culverts. These sections of road are characterized by poor drainage, insufficient and inappropriate road base and cap material, rutting and large erosion features, which impede access. These projects will improve access and control erosion by improving drainage through grading, ditching, installing geotextile and fill material and confining activities to hardened surfaces.	2.06
Training Area Rotation Plan Implementation for Training Areas 8A, 8B, 8C, 8D, 8E, 9A, 9B, 10A, 10B	These areas, located at Fort Richardson, Alaska, are used by troops to maintain military readiness and preparedness. Impacts from the use of the area are typical of military training exercises and include trail proliferation, vegetation damage, exposure of soil, road and trail degradation and impaired access. These impacts, if left untreated, can decline and result in erosion and impaired drainage/hydrology. This project will mitigate training impacts by improving the health of existing vegetation through mowing, hydro-axing and fertilizing; the establishment of new vegetation in exposed area by hydro-seeding; the closing of unnecessary trails; the improvement of drainage through grading and the installation of water bars and culverts; and the reshaping and restoration of areas damaged by vehicles and equipment.	Not Yet Determined
Fire Tower Ridge Road Widening Phase 3	This project will improve the existing road and will re-establish hardened road surfaces and drainage features, including crowns, out/in slopes, ditches, water bars and culverts. These sections of road are characterized by poor drainage, insufficient and inappropriate road base and cap material, rutting and large erosion features, which impede access. These projects will improve access and control erosion by improving drainage through grading, ditching, installing geotextile and fill material and confining activities to hardened surfaces.	4.55
Clunie Lake Road Widening Phase 2	This project will improve the existing road and will re-establish hardened road surfaces and drainage features, including crowns, out/in slopes, ditches, water bars and culverts. These sections of road are characterized by poor drainage, insufficient and inappropriate road base and cap material, rutting and large erosion features, which impede access. These projects will improve access and control erosion by improving drainage through grading, ditching, installing geotextile and fill material and confining activities to hardened surfaces.	5.39
Clunie Lake Road Widening Phase 3	This project will improve the existing road and will re-establish hardened road surfaces and drainage features, including crowns, out/in slopes, ditches, water bars and culverts. These sections of road are characterized by poor drainage, insufficient and inappropriate road base and cap material, rutting and large erosion features, which impede access. These projects will improve access and control erosion by improving drainage through grading, ditching, installing geotextile and fill material and confining activities to hardened surfaces.	9.09
Fort Wainwright		
Yukon Training Area Observation Point Shack Upgrade	This project is located in the Yukon Training Area and will improve1900 m of an existing road to a 24-ft width, all-season surface with adequate slope and drainage. In addition, a 30 m by 30 m hardened pad will be installed and a line of sight will be cleared from the OP to the Impact Area. This facility will be used to allow units to observe firing in the Stuart Creek Impact Area. This project will improve access and control erosion by improving drainage through grading, establishing ditches, installing geotextile and fill material and confining activities to hardened surfaces.	3.8
Bravo Battery Forward Operations Base	The project is located in the Yukon Training Area adjacent to FP New Bravo and will improve an area approximately 4.5 acres to accommodate year-round vehicular traffic. In addition, an access road will be established to support entry and exit of this facility. An area approximately 2 acres will be thinned and trails improved to allow access to a tent area. A latrine will be installed on site, along with several bermed areas for POL and maintenance activities. This project will improve access and control erosion by improving drainage through grading, establishing ditches, installing geotextile and fill material and confining activities to hardened surfaces.	6.5
Combined Arms Collective Training Facility Trail Upgrade	This project is located within the cantonment area and will improve a network of existing trails approximately 1500 m in length to an all-season surface and width of 24 feet with adequate slope and drainage. This project will improve access to the Fort Wainwright CACTF and control erosion by improving drainage through grading, establishing ditches, installing geotextile and fill material and confining activities to hardened surfaces.	2.7

Project Name	Project Description	Approximate Acres Impacted
Yukon Training Area Demolition Range Phase 1	This project is located in the YTA and will improve an 1800 m existing trail to a 24-ft width all-season surface. This road will be used as the access route for YTA Demolition Range Phase 2 and 3, which will harden a 15.5-acre clearing. This project will improve access and control erosion by improving drainage through grading, establishing ditches, installing geotextile and fill material and confining activities to hardened surfaces.	18.8
Yukon Training Area Demolition Range Phase 2	This project is located in the YTA and will improve an existing clearing into a 15.5-acre hardened pad. This facility will be used as a Light Demolition Range and will include a series of berms to separate the different demolition stations. This project will extend upgrades made in YTA Demolition Range Phase 1 and will improve access and control erosion by improving drainage through grading, ditching, removing overburden to gravel or bedrock, installing fill material and confining activities to hardened surfaces.	18.8
Yukon Training Area Demolition Range Phase 3	This project is located in the YTA and will improve a15.5-acre hardened pad installed in Phase 2. Phase 3 will complete the Light Demolition Range through the installation of native seed and demo range training features, including a hardened road section, chain link and plywood. This project will extend upgrades made in YTA Demolition Range Phase 1 and 2 and will improve range use and control erosion by confining specific demolition activities to appropriate areas and the seeding of berms and exposed soil areas.	18.8
Yukon Training Area Firing Point Direct Fire	This project is located in the YTA and will improving a 1000 m existing trail to a 24-ft width, all-season surface. In addition, a 2.5-acre pad will be hardened. This facility will be used to allow units to fire their direct fire system, Javelins and TOWs into the Stuart Creek Impact Area. This project will improve access and control erosion by improving drainage through grading, ditching, removing overburden to gravel or bedrock, installing fill material and confining activities to hardened surfaces.	4.3
Drivers Training Course Phases 1-5	The project is located in the cantonment area within the Local Training Areas 113 and 114 and will improve 11 km of existing roads and trails and install concrete and earthen obstacle proficiency stations. The project will be installed in five 2.2 km phases and will provide basic and proficiency training opportunities through the negotiation of several different types of obstacles, such as side slopes, inclines, declines and self recovery areas. This project will improve access and control erosion by improving drainage through grading, re-establishing ditches, installing geotextile and fill material and confining activities to hardened surfaces.	25.9
Yukon Training Area Firing Point Latrines	This project is located in the YTA and will install pre-fabricated ROMTEC SST Single Restroom latrines at previously constructed Firing Points in the YTA, including FP Charlie, FP Bravo 1, FP Bravo 2 and FP Bravo 3. Installing permanent latrines will eliminate the need for units from contracting portable latrines when conducting firing activities.	1
Husky Drop Zone Access Road Phase 2	This project will improve a 1200 m by 10 m section along the east side of Husky Drop Zone to a permanent year round access route and extend upgrades made in Husky DZ Road Access Phase 1. This project will also provide a base for additional access improvements and the addition of an upgraded Battalion Staging Area adjacent to the drop zone. This project will improve access and control erosion by improving drainage through grading, establishing ditches, installing geotextile and fill material and confining activities to hardened surfaces.	3
Latrine - Birch Hill Biathlon Range	This project is located in the cantonment area and will install ROMTEC SST Single Restroom pre-fabricated latrine at the newly constructed Birch Hill Biathlon Range. The facility currently has no latrine associated with it and is in an area open to public recreational use. This project will provide for appropriate and sanitary human waste disposal.	0.4
Small Arms Complex Firebreak	This project will install approximately 37 acres of hazardous fuel reduction fire breaks on the west and east borders of the Small Arms Complex (SAC). The 5000m by 30m (total of both sections) fire break will be mechanically cleared of all vegetation to the ground surface.	37
Warrior Forward Operations Base Phase 3	This project is located in the cantonment area and will upgrade 7 acres of existing pads and roads with an additional 6" of cap fill material, approximately 17,000 cy. This project will expand upgrades made in Warrior FOB Phase 2 and improve year round access to the site. In addition, it will facilitate erosion control by confining activities to hardened surfaces.	7
BDE CQM 25-Meter Range	This project is located in the Small Arms Complex adjacent to Range Road and will upgrade approximately 9 acres between the M203 Range and the MRFR by mechanically removing vegetation from a 100 m by 350 m section, hardening an access trail from the Range Road to the Range Area will be hardened and installing a 100 m x 20 m x 5 m berm along the edge of the MRFR range. This project will improve access and control erosion by improving drainage through grading, installing geotextile and fill material and confining activities to hardened surfaces. In addition, range operation safety will be improved through a containment berm.	9.1

Project Name	Project Description	Approximate Acres Impacted
Brigadier Road Upgrade	This project is located in the YTA and will improve a 1200 m section of existing road. This road is a major access route for the eastern portion of the YTA and is characterized by a steep grade exceeding an 18% slope, significant concentrated rill erosion and unsafe winter driving condition, including tracked vehicles. This project will re-establish a hardened road base with a maximum slope of 12% by installing re-routes, geotextile material and fill material and will improve access and erosion control through grading, ditching and the confinement of activity to hardened surfaces. In addition, this project will significantly improve safety during winter driving conditions.	3
Charlie Battery Forward Operations Base	This project is located in the YTA adjacent to Johnson Road will improve a 4.5-acre section associated with FP Charlie by hardening a 30 m by 30 m pad and a 300 m access road and thinning a 2-acre tent area. A latrine will be constructed on site along with several bermed areas for POL and maintenance activities. This project will improve access and control erosion by improving drainage through grading, establishing ditches, installing geotextile and fill material and confining activities to hardened surfaces.	4.5
Yukon Training Area Convoy Live Fire Range Phase 1	This project is located in the YTA adjacent to the Stuart Creek Impact Area and will upgrade a 4 km section of existing road by spot hardening, clearing lines of sight and installing 2 target objective areas. This area is characterized by steep slopes, rill erosion, poor drainage and rutting. This project will improve access and control erosion by improving drainage through grading, establishing ditches, installing geotextile and fill material and confining activities to hardened surfaces.	9.9
Yukon Training Area Convoy Live Fire Range Phase 2	This project is located in the YTA adjacent to the Stuart Creek Impact Area and will upgrade a 4 km section of existing road by spot hardening, clearing lines of sight and installing 3 target objective areas. This area is characterized by steep slopes, rill erosion, poor drainage and rutting. This project expands upgrades made in Convoy Live Fire Range Phase 1 and will improve access and control erosion by improving drainage through grading, establishing ditches, installing geotextile and fill material and confining activities to hardened surfaces.	10.1
Digital Multi-Purpose Training Range/Infantry Platoon Battle Course Forward Operations Base Phase 1	This project is located in the YTA within an area formally known as Lower Winter Camp. This project will include initial road/pad base hardening of a 500 m by 10 m access trail and a 150 m by 150 m pad. The DMPTR/IPBC FOB will expand upgrades made on previous Lower Winter Camp projects and will support bivouac activities associated with the DMPTR and IPBC Ranges. This project will improve access and control erosion by improving drainage through grading, establishing ditches, installing geotextile and fill material and confining activities to hardened surfaces.	6.8
Digital Multi-Purpose Training Range/Infantry Platoon Battle Course Forward Operations Base Phase 2	This project is located in the YTA within an area formally known as Lower Winter Camp. This project will expand upgrades from DMPTR/IPBC Fob Phase 1 by installing an intermediate cap on a 500 m by 10 m access trail and a 150 m by 150 m pad. This project will improve access and control erosion by improving drainage through grading, establishing ditches, installing geotextile and fill material and confining activities to hardened surfaces.	6.8
Digital Multi-Purpose Training Range/Infantry Platoon Battle Course Forward Operations Base Phase 3	This project is located in the YTA within an area formally known as Lower Winter Camp. This project will complete upgrades from DMPTR/IPBC Fob Phase 1 and 2 by installing a final cap on a 500 m by 10 m access trail and a 150m by 150m pad. This project will improve access and control erosion by improving drainage through grading, establishing ditches, installing geotextile and fill material and confining activities to hardened surfaces.	6.8
Yukon Training Area Firing Point 11 Upgrade	This project is located in the YTA TA 7 and will improve an existing firing point that is no longer in useable condition. This project will upgrade approximately 2.5 acres by clearing vegetation and hardening a 100 m by 100 m pad and a 100 m by 10 m access road. This project will improve access and control erosion by improving drainage through grading, establishing ditches, installing geotextile and fill material and confining activities to hardened surfaces.	2.5
Yukon Training Area Firing Point 12 Upgrade	This project is located in the YTA Stuart Creek Impact Area and will improve an existing firing point that is no longer in useable condition. This project will upgrade approximately 2.5 acres by clearing vegetation and hardening a 100 m by 100 m pad and a 100 m by 10 m access road. This project will improve access and control erosion by improving drainage through grading, establishing ditches, installing geotextile and fill material and confining activities to hardened surfaces.	2.5

Project Name	Project Description	Approximate Acres Impacted
Yukon Training Area Firing Point 13 Upgrade	This project is located in the YTA Stuart Creek Impact Area and will improve an existing firing point that is no longer in useable condition. This project will upgrade approximately 2.5 acres by clearing vegetation and hardening a 100 m by 100 m pad and a 100 m by 10 m access road. This project will improve access and control erosion by improving drainage through grading, establishing ditches, installing geotextile and fill material and confining activities to hardened surfaces.	2.5
NBC Parking Upgrade	This project is located within the cantonment area and will upgrade the existing parking area and trail network, approximately 2 acres, to accommodate the Stryker Brigade. This area is currently only accessible during frozen soils conditions. This project will harden the existing pad and trails and will improve access and control erosion by improving drainage through grading, establishing ditches, installing geotextile and fill material and confining activities to hardened surfaces.	2
Husky Drop Zone Forward Operations Base – Phase 1	This project is located in the YTA adjacent to Husky DZ and will upgrade an existing 24-acre clearing to accommodate large scale brigade training exercises by hardening a 22-acre pad and a 30 m by 20 m looping access road by installing an initial road/pad base. This project will be installed in three phases and will expand upgrades made in previous Husky DZ projects. In addition, this project will improve access and control erosion by improving drainage through grading, establishing ditches, installing geotextile and fill material and confining activities to hardened surfaces.	24
Husky Drop Zone Forward Operations Base – Phase 2	This project is located in the YTA adjacent to Husky DZ and will upgrade an existing 24-acre clearing to accommodate large scale brigade training exercises by hardening an intermediate cap on a 22-acre pad and a 30 m by 20 m looping access road. This project will expand upgrades made in Husky DZ FOB Phase 1. In addition, this project will improve access and control erosion by improving drainage through grading, establishing ditches, installing geotextile and fill material and confining activities to hardened surfaces.	24
Husky Drop Zone Forward Operations Base – Phase 2	This project is located in the YTA adjacent to Husky DZ and will upgrade an existing 24-acre clearing to accommodate large scale brigade training exercises by hardening a final cap on a 22 acre pad and a 30m by 20m looping access road. This project will expand upgrades made in Husky DZ FOB Phase 1. In addition, this project will improve access and control erosion by improving drainage through grading, establishing ditches, installing geotextile and fill material and confining activities to hardened surfaces.	24
Multi Purpose Machine Gun Firing Positions Upgrade	This project is located on the Small Arms Complex and will upgrade the existing firing positions on the MPMG Range to accommodate Stryker access and provide for stable platform fire. This project will allow marksmanship training on all weapon system inherent to the Stryker vehicle at a home station. Upgrades will include pad hardening and the installation of concrete on the west and east sides of the MPMG Range access road. This project will improve access and control erosion by improving drainage through grading, establishing ditches, installing geotextile, fill material and concrete and confining activities to hardened surfaces.	5
Yukon Training Area Road Improvements – General	This series of projects will improve sections of existing road within the YTA and will re-establish hardened road surfaces and drainage features, including crowns, out/in slopes, ditches, water bars and culverts. These sections of road are characterized by poor drainage, insufficient and inappropriate road base and cap material, rutting and large erosion features, which impede access. These projects will improve access and control erosion by improving drainage through grading, ditching, installing geotextile and fill material and confining activities to hardened surfaces.	Not Yet Determined
Priority 1 – Johnson, Quarry and Brigadier Intersection		5
Priority 2 – Skyline Road		10
Priority 3 – Brigadier Road		10
Priority 4 – Quarry Road		10
Stuart Creek Impact Area Survey Line	This project is located in the YTA and will cut a 40,000 m by 6 m survey line around the permanent impact area. This project will create a mechanically treated, highly visible impact area perimeter that will improve safety during training exercises and other operations adjacent to the impact area. It will also provide a moderate firebreak.	59.3
Alpha Impact Area Survey Line	This project is located in the Tanana Flats and will cut a 30,000 m by 6 m survey line around the permanent impact area. This project will create a mechanically treated, highly visible impact area perimeter that will improve safety during training exercises and other operations adjacent to the impact area. It will also provide a moderate firebreak.	44.5

Project Name	Project Description	Approximate Acres Impacted
Donnelly Training Area		
Buffalo Drop Zone Access Phase 1	This project will improve a 1500 m section of an existing road leading into the Buffalo Drop Zone off of 33 Mile Loop Road. The road intersects the Richardson Highway and is the main entry point for troop activities within 6 major training areas. This section of road is characterized by relatively flat slopes that are poorly drained with two significant erosion features and has received significant impacts from Stryker traffic. This project will improve access and control erosion by improving drainage through grading, re-establishing ditches and the installation of geotextile and fill material.	3.7
Buffalo Drop Zone Access Phase 2	This project will improve a 5000 m section of an existing road leading into the Buffalo Drop Zone off of 33 Mile Loop Road. This road is the main route for troop activities within 6 major training areas. This section of road is characterized by long open flat portions with soft areas that are insufficiently drained and has received significant impacts from Stryker traffic. This project will extend the length of improvements from BDZ Access PH 1 and will improve access and control erosion by improving drainage through grading, re-establishing ditches and the installation of geotextile and fill material.	12.4
Buffalo Drop Zone Access Phase 3	This project will improve a 6500 m section of an existing road leading away from the Buffalo Drop Zone off of 33 Mile Loop Road. This road is the main route for troop activities within 6 major training areas. This section of road is characterized by insufficient outsloped curves and low soft areas that are poorly drained and have received significant impacts from Stryker traffic. This project will extend the length of improvements from BDZ Access PH 2 and will improve access and control erosion by improving drainage through grading, re-establishing ditches and the installation of geotextile and fill material.	16.1
Meadows Road Upgrade and Repair Phase 1	This project will improve a 4500 m section of an existing road. Meadows Road is a major route for troop activities within the OP and Bolio training areas and the Collective Training Range. This section of road is characterized by poorly drained areas prone to rutting and potholes and has received significant impacts from Stryker traffic. This project will improve access and control erosion by improving drainage through grading, re-establishing ditches and the installation of geotextile and fill material.	11.2
Meadows Road Upgrade and Repair Phase 2	This project will improve a 7000 m section of an existing road. Meadows Road is a major route for troop activities within the OP and Bolio training areas and the Collective Training Range. This section of road is characterized by poorly drained areas prone to rutting and potholes and has received significant impacts from Stryker traffic. This project will extend the length of improvements from Meadows Road Upgrade and Repair PH 1 and will improve access and control erosion by improving drainage through grading, re-establishing ditches and the installation of geotextile and fill material.	17.3
Windy Ridge Road Upgrade and Repair Phase 1	This project will improve a 2250 m section of an existing road. Windy Ridge Road is a major route for troop activities associated with the Texas and Washington Impact Ranges. This section of road is characterized by rill erosion, poor drainage and wind erosion and has received significant impacts from Stryker traffic. This project will improve access and control erosion by improving drainage through grading, re-establishing ditches and the installation of geotextile, fill material and water bars.	5.6
Windy Ridge Road Upgrade and Repair Phase 2	This project will improve a 3000 m section of an existing road. Windy Ridge Road is a major route for troop activities associated with the Texas and Washington Impact Ranges. This road is characterized by rill erosion, poor drainage and wind erosion and has received significant impacts from Stryker traffic. This project will extend the length of improvements from Windy Ridge Road Upgrade and Repair PH 1 will improve access and control erosion by improving drainage through grading, re-establishing ditches and the installation of geotextile, fill material and water bars.	7.5
Buffalo Drop Zone Vegetation Management – Burn	This project will provide for effect vegetation management within the Buffalo Drop Zone through a 12-year rotational burning cycle, with burning taking place on years 1 and 7**.** Maintaining safe drop zone condition requires the removal of woody vegetation in favor of native grasses. Burning will be combined with rotational mowing to remove live stem and woody debris from within the drop zone boundaries. This project will provide for the propagation of native grasses by improving soil conditions through the introduction of burn residue and will maintain effective plant based erosion control by leaving root masses intact.	576
Buffalo Drop Zone Vegetation Management – Mow	This project will provide for effect vegetation management within the Buffalo Drop Zone through a 12-year rotational mowing cycle, with mowing taking place on years 4 and 10**.** Maintaining safe drop zone condition requires the removal of woody vegetation in favor of native grasses. Mowing will be combined with rotational burning to remove live stem and woody debris from within the drop zone boundaries. This project will provide for the propagation of native grasses by improving soil conditions through the introduction of decomposing mulch-type residue and will maintain effective plant based erosion control by leaving root masses intact.	576

Project Name	Project Description	Approximate Acres Impacted
Eddy Drop Zone Vegetation Management – Burn	This project will provide for effect vegetation management within the Eddy Drop Zone through a 12-year rotational burning cycle, with burning taking place on years 1 and 7**.** Maintaining safe drop zone condition requires the removal of woody vegetation in favor of native grasses. Burning will be combined with rotational mowing to remove live stem and woody debris from within the drop zone boundaries. This project will provide for the propagation of native grasses by improving soil conditions through the introduction of burn residue and will maintain effective plant based erosion control by leaving root masses intact.	207
Eddy Drop Zone Vegetation Management – Mow	This project will provide for effect vegetation management within the Buffalo Drop Zone through a 12-year rotational mowing cycle, with mowing taking place on years 4 and 10**.** Maintaining safe drop zone condition requires the removal of woody vegetation in favor of native grasses. Mowing will be combined with rotational burning to remove live stem and woody debris from within the drop zone boundaries. This project will provide for the propagation of native grasses by improving soil conditions through the introduction of decomposing mulch-type residue and will maintain effective plant based erosion control by leaving root masses intact.	207
Bison Plot Vegetation Management – Burn	This project will provide for effect vegetation management within the Bison Plots located off of Meadows Road through a 6-year rotational cycle of burning, mowing and fertilizing, with burning taking place on year 1**.** Maintaining healthy grass stands requires the removal of thatch and non-desired plant species. Burning will improve soil conditions and promote the propagation of mono-type grass stands through the introduction of burn residue and will maintain effective plant based erosion control by leaving root masses intact.	48
Bison Plot Vegetation Management – Mow	This project will provide for effect vegetation management within the Bison Plots located off of Meadows Road through a 6-year rotational cycle of mowing, burning and fertilizing, with mowing taking place on year 4**.** Maintaining healthy grass stands requires periodic stem length reduction. Mowing will improve soil conditions and promote the propagation of mono-type grass stands through the introduction of decomposing stem debris and will maintain effective plant based erosion control by leaving root masses intact.	48
Bison Plot Vegetation Management – Fertilize	This project will provide for effect vegetation management within the Bison Plots located off of Meadows Road through a 6-year rotational cycle of fertilizing, mowing and burning, with fertilizing taking place on years 1 and 4**.** Maintaining healthy grass stands requires the periodic introduction of the essential plant nutrients nitrogen, phosphorous, potassium and sulfur. Fertilizing will improve soil conditions and promote the propagation of mono-type grass stands through the introduction of additional plant nutrients and will maintain effective plant based erosion control by promoting root growth.	48
Ober Training Area Training Area Rotation Plan	The Ober Training Area, located within the Donnelly Training Area, Alaska, is used by troops to maintain military readiness and preparedness. Impacts from the use of the area are typical of military training exercises and include trail proliferation, vegetation damage, exposure of soil, road and trail degradation and impaired access. These impacts, if left untreated, can decline and result in erosion and impaired drainage/hydrology. This project will mitigate training impacts by improving the health of existing vegetation through mowing, hydro-axing and fertilizing; the establishment of new vegetation in exposed area by hydro-seeding; the closing of unnecessary trails; the improvement of drainage through grading and the installation of water bars and culverts; and the reshaping and restoration of areas damaged by vehicles and equipment.	27
Butch Training Area Training Area Rotation Plan	The Butch Training Area, located within the Donnelly Training Area, Alaska, is used by troops to maintain military readiness and preparedness. Impacts from the use of the area are typical of military training exercises and include trail proliferation, vegetation damage, exposure of soil, road and trail degradation and impaired access. These impacts, if left untreated, can decline and result in erosion and impaired drainage/hydrology. This project will mitigate training impacts by improving the health of existing vegetation through mowing, hydro-axing and fertilizing; the establishment of new vegetation in exposed area by hydro-seeding; the closing of unnecessary trails; the improvement of drainage through grading and the installation of water bars and culverts; and the reshaping and restoration of areas damaged by vehicles and equipment.	27
Observation Post Training Area Training Area Rotation Plan	The Observation Post Training Area, located within the Donnelly Training Area, Alaska, is used by troops to maintain military readiness and preparedness. Impacts from the use of the area are typical of military training exercises and include trail proliferation, vegetation damage, exposure of soil, road and trail degradation and impaired access. These impacts, if left untreated, can decline and result in erosion and impaired drainage/hydrology. This project will mitigate training impacts by improving the health of existing vegetation through mowing, hydro-axing and fertilizing; the establishment of new vegetation in exposed area by hydro-seeding; the closing of unnecessary trails; the improvement of drainage through grading and the installation of water bars and culverts; and the reshaping and restoration of areas damaged by vehicles and equipment.	27

Project Name	Project Description	Approximate Acres Impacted
Jarvis East Training Area Training Area Rotation Plan	The Jarvis East Training Area, located within the Donnelly Training Area, Alaska, is used by troops to maintain military readiness and preparedness. Impacts from the use of the area are typical of military training exercises and include trail proliferation, vegetation damage, exposure of soil, road and trail degradation and impaired access. These impacts, if left untreated, can decline and result in erosion and impaired drainage/hydrology. This project will mitigate training impacts by improving the health of existing vegetation through mowing, hydro-axing and fertilizing; the establishment of new vegetation in exposed area by hydro-seeding; the closing of unnecessary trails; the improvement of drainage through grading and the installation of water bars and culverts; and the reshaping and restoration of areas damaged by vehicles and equipment.	27
Jarvis West Training Area Training Area Rotation Plan	The Jarvis West Training Area, located within the Donnelly Training Area, Alaska, is used by troops to maintain military readiness and preparedness. Impacts from the use of the area are typical of military training exercises and include trail proliferation, vegetation damage, exposure of soil, road and trail degradation and impaired access. These impacts, if left untreated, can decline and result in erosion and impaired drainage/hydrology. This project will mitigate training impacts by improving the health of existing vegetation through mowing, hydro-axing and fertilizing; the establishment of new vegetation in exposed area by hydro-seeding; the closing of unnecessary trails; the improvement of drainage through grading and the installation of water bars and culverts; and the reshaping and restoration of areas damaged by vehicles and equipment.	27
Donnelly Training Area Training Area Rotation Plan	The Donnelly Training Area, located within the Donnelly Training Area, Alaska, is used by troops to maintain military readiness and preparedness. Impacts from the use of the area are typical of military training exercises and include trail proliferation, vegetation damage, exposure of soil, road and trail degradation and impaired access. These impacts, if left untreated, can decline and result in erosion and impaired drainage/hydrology. This project will mitigate training impacts by improving the health of existing vegetation through mowing, hydro-axing and fertilizing; the establishment of new vegetation in exposed area by hydro-seeding; the closing of unnecessary trails; the improvement of drainage through grading and the installation of water bars and culverts; and the reshaping and restoration of areas damaged by vehicles and equipment.	27
OP Road Drainage Upgrades	This project will improve a 7000 m section of an existing road. OP Road is a major route for troop activities occurring along the western edge of the Donnelly East Training Areas. This section of road is characterized by steep hilly terrain, adverse slope concentrated rill erosion and soft wet areas in poorly drained road saddles. This project will improve access and control erosion by improving drainage through grading, re-establishing ditches, road crown, out/in slopes and the installation of water bars.	17.3
33 Mile Loop Road Phase 8A	This project will improve a 2250 m section of an unimproved existing road base on the southern end of 33 Mile Loop Road. This road is the main route for troop activities within 6 major training areas. This section of road is essentially inaccessible to military vehicles due large erosion features from poor drainage and deep ruts. This project will extend the length of improvements from 33 Mile Loop Road Phase 7B and will improve access and control erosion by improving drainage through grading, re-establishing ditches, cutouts and the installation of geotextile and fill material. This project will also minimize impacts to sensitive cultural sites by controlling off road access through the installation of rock barriers.	2.3
33 Mile Loop Road Phase 8B	This project will improve a 2000 m section of an unimproved existing road base on the southern end of 33 Mile Loop Road. This road is the main route for troop activities within 6 major training areas. This section of road is essentially inaccessible to military vehicles due large erosion features from poor drainage and deep ruts. This project will extend the length of improvements from 33 Mile Loop Road Phase 8A to the Jarvis Creek low water crossing and will improve access and control erosion by improving drainage through grading, re-establishing ditches and the installation of geotextile and fill material.	2
33 Mile Loop Road Phase 1 Repair	This project will improve a 1750 m section of previously improved road on the northern end of 33 Mile Loop Road adjacent to Eddy Drop Zone. This road is the main route for troop activities within 6 major training areas. This section of road was impaired from a significant flood overflow event from Jarvis Creek that washed away the majority of road base material exposing geotextile. In addition, ditches, low water crossings and culverts were compromised. This project will re-establish the road and drainage features through grading, ditching and the installation of geotextile, fill material, culverts and mortared low water crossings.	4.4

Project Name	Project Description	Approximate Acres Impacted
33 Mile Loop Road Shortcut Upgrade	This project will improve a 2250 m section of an unimproved existing road base on the southern end of 33 Mile Loop Road. This road is a shortcut route for troop activities in the southern portion of 33 Mile Loop Road. This section of road is inaccessible to military vehicles due a large erosion feature in a probable wetland area at the midpoint and several smaller poorly drained soft areas along the entire length. This project will connect the improvements from 33 Mile Loop Road Phase 1 with Phase 5 and will improve access and control erosion by improving drainage through grading, establishing ditches and the installation of a culvert, geotextile and fill material. This project will also minimize impacts to sensitive wetland areas by controlling off road access.	2.3
J Lake Access Control	J Lake is accessed from Windy Ridge Road and is a stocked with game fish by the Alaska Department of Fish and Game. This lake receives significant recreational use. A previously installed gabion project at the western end of the lake resulted in a construction access trail that has proliferated into a vehicle route to the lake shore. This access was not intended for vehicular use post construction and is eroding due to inappropriate use. This project will block the access route at its intersection with Windy Ridge Road, allowing only pedestrian traffic. The blockade will be constructed from large boulders.	0.1
J Lake Gabion Repair	J Lake is accessed from Windy Ridge Road and is a stocked with game fish by the Alaska Department of Fish and Game. This lake receives significant recreational use. A rock basket gabion with woven filter fabric was installed at the western end of the lake to control the highly competitive long nose sucker fish from entering the lake from a seasonal stream. The woven filter fabric has been pulled and frayed from the gabion wire, mostly due to inappropriate recreational access across and behind the structure. This project will remove the existing fabric and replace it with a seamed higher tensile strength fabric that will better resist recreational impacts.	0.1
Observation Point 2A Forward Operations Base Upgrade	This project will improve approximately 2 acres of unimproved trails adjacent to the Battalion Forward Operations Base on South Beales Road with a network of hardened trails and tent pads. The area is accessed from OP Road adjacent OP2A and will connect to the bivouac pad within the FOB. The area is characterized by relatively flat slopes with poorly drained sections of trails and is covered by a mix of small spruce and aspen. This project will improve access and control erosion by confining bivouac activities to hardened surfaces through grading and the installation of geotextile and fill material.	2
Dome Road Upgrade and Repair	This project will improve a 7000 m section of an existing road. Dome Road is a major route for troop activities within the Donnelly training area. This section of road is characterized by poorly drained areas prone to rutting and potholes and has received significant impacts from Stryker traffic. This project will improve access and control erosion by improving drainage through grading, re-establishing ditches and the installation of geotextile and fill material.	Not Yet Determined
Big Lake Road Upgrade and Repair	This project will improve a 500 m section of an existing road. Big Lake Road provides access to a series of trails within the Bolio Training Area. This section of road is impassible accept during frozen soils and light snow conditions and is characterized by areas of deep organics and silts that are poorly drained with significant erosion features that are prone to severe rutting and width proliferation. This project will improve access and control erosion by improving drainage through grading, establishing ditches and the installation of geotextile and fill material.	1.3
Big Lake/Windy Ridge Trail Upgrade Phase 1	This project will improve a series of unimproved trails between Big Lake and Windy Ridge Road. This area is used during field training exercises and provides a wide variety of terrain from low flat areas to steep hills and ridge lines. This area of trails is characterized by poorly-drained low spots, narrow trail widths and adverse slope rill erosion. This project will improve access and control erosion by improving drainage through grading and the installation of geotextile and fill material in selected areas.	7.2
33 Mile Loop Road Phase 1B	This project will improve a 1250 m section of an unimproved existing road base between 33 Mile Loop Phases 1 and 2. This road is the main route for troop activities within 6 major training areas. This section of road is essentially inaccessible to military vehicles due large erosion features from poor drainage, deep ruts and adverse hilltop slopes, which result in high centering. This project will connect the improvements previously completed on 33 Mile Loop Road Phase 1 and 2 and will improve access and control erosion by improving drainage through grading, re-establishing ditches and the installation of geotextile and fill material. This project will also minimize impacts to sensitive cultural sites by confining access to a hardened road surface.	3.1

Project Name	Project Description	Approximate Acres Impacted
Old Richardson Highway Upgrade	This project will improve a 5000 m section of an existing road. The Old Richardson Highway connects to Windy Ridge Road and is a major route for troop activities associated with the Texas and Washington Impact Ranges. This section of road lies on military lands south of the keyhole and is characterized by areas of transect rill erosion and poorly defined ditches and has received impacts from Stryker traffic. This project will improve access and control erosion by improving drainage through grading, re-establishing ditches and the installation of geotextile, fill material, water bars and culverts.	12.4
Institutional Controls – General Phase 1	Donnelly Training East has numerous unmarked entrance points throughout its perimeter, especially along 33 Mile Loop Road and the Richardson Highway. It is vitally important that the public, especially recreational users, know where the training area boundaries are located along the trails and roads that enter military land. In addition, there are a series of unmarked stocked lakes that provide excellent recreational opportunities for military and non-military land users. This project will install institutional control signs at significant points throughout the training area to control and confine access and ensure appropriate recreational use of military lands. In addition, this project will help prevent military personnel from accidentally moving outside of military lands during training exercises.	1
Vegetation Management – General Phase 1	Donnelly Training Area East has numerous areas that require minor vegetation management through mowing, fertilizing and reseeding. These areas include firing and impact berms and small cleared areas within the Wills Range Small Arms Complex, 33 Mile Loop Road, the CTR, the UAV, and Windy Ridge Road. This project will provide as needed management activities to promote vegetation stand health, sustainability and height/spread control.	100

APPENDIX B: BEST MANAGEMENT PRACTICES

Best Management Practice	Best Management Practice Description
Asphalt	Asphalt can be used as a structural material for erosion control much like reinforced concrete. It can be used at stream crossings or to reinforce specific erosion prone areas along roadways or within training areas.
Brush Barrier	Brush barriers are perimeter sediment control structures used to prevent soil in storm water runoff from leaving a construction site. Brush barriers are constructed of material such as small tree branches, root mats, stone, or other debris left over from site clearing and grubbing.
Check Dams	Check dams are small, temporary dams constructed across a swale or channel. Check dams can be constructed using gravel, rock, sandbags, logs, or straw bales and are used to slow the velocity of concentrated flow in a channel. By reducing the velocity of the water flowing through a swale or channel, check dams reduce the erosion in the swale or channel. As a secondary function, check dams can also be used to catch sediment from the channel itself or from the contributing drainage area as storm water runoff flows through the structure.
Chemical Stabilization	Chemical stabilizers, also known as soil binders or soil palliatives, provide temporary soil stabilization. Examples of chemical adhesives include anionic asphalt emulsion, latex emulsion, resin-water emulsions, and calcium chloride. Materials are sprayed onto the surface of exposed soils to hold the soil in place and protect against erosion from runoff and wind.
Cobble Drains	Cobble drains are typically installed underneath roads crossing sub-surface water flows to prevent fill material saturation and impairment. Cobble drains typically run to a downhill slope and are installed perpendicular to the road base. The outlet is left open.
Construction Entrances	The purpose of stabilizing entrances to a construction site is to minimize the amount of sediment leaving the area as mud attached to motorized vehicles. Installing a pad of gravel over filter cloth where construction traffic leaves a site can help stabilize a construction entrance. As a vehicle drives over the gravel pad, mud and sediment are removed from the vehicle's wheels and offsite transport of soil is reduced.
Construction Sequencing	Construction sequencing requires creating and following a work schedule that balances the timing of land disturbance activities and the installation of measures to control erosion and sedimentation, in order to reduce on-site erosion and off-site sedimentation.
(General) Construction Site Waste Management	Building materials and other construction site wastes must be properly managed and disposed of to reduce the risk of pollution from materials such as surplus or refuse building materials or hazardous wastes.
(Permanent) Diversions	Diversions can be constructed by creating channels across slopes with supporting earthen ridges on the bottom sides of the slopes. The ridges reduce slope length, collect storm water runoff, and deflect the runoff to acceptable outlets that convey it without erosion.
(Temporary) Diversion Dikes, Earth Dikes, & Interceptor Dikes	Earthen perimeter controls usually consist of a dike or a combination dike and channel constructed along the perimeter of a disturbed site. Simply defined, an earthen perimeter control is a ridge of compacted soil, often accompanied by a ditch or swale with a vegetated lining, located at the top or base of a sloping disturbed area.
Drainage Swales	A drainage swale is a channel with a lining of vegetation, riprap, asphalt, concrete, or other material and is used to intercept and divert flow to a suitable outlet. It is constructed by excavating a channel and applying the appropriate stabilization. They can be used to convey runoff from the bottom or top of a slope. For swales draining a disturbed area, the outlet can be to a sediment trapping device prior to its release.

Filter Berms	A gravel or stone filter berm is a temporary ridge made up of loose gravel, stone, or crushed rock that slows, filters, and diverts flow from an open traffic area and acts as an efficient form of sediment control. A specific type of filter berm is the continuous berm, a geosynthetic fabric that encapsulates sand, rock, or soil.
Gabions	Gabions consist of coarse aggregates set in wire gabion baskets and are aligned in a terraced wall formation. They are installed to prevent non-desired fish passage between water bodies while maintaining water flow and to control erosive seasonal water flows.
Geotextiles	Geotextiles are porous fabrics also known as filter fabrics, road rugs, synthetic fabrics, construction fabrics, or simply fabrics. Geotextiles are manufactured by weaving or bonding fibers made from synthetic materials such as polypropylene, polyester, polyethylene, nylon, polyvinyl chloride, glass, and various mixtures of these materials. As a synthetic construction material, geotextiles are used for a variety of purposes such as separators, reinforcement, filtration and drainage, and erosion control.
Gradient Terraces	Gradient terraces are made of either earthen embankments or ridge and channel systems that are properly spaced and are constructed with an adequate grade. They reduce damage from erosion by collecting and redistributing surface runoff to stable outlets at slower speeds and by increasing the distance of overland runoff flow.
Grass-Lined Channels	Grass-lined channels convey storm water runoff through a stable conduit. Vegetation lining the channel reduces the flow velocity of concentrated runoff. Grassed channels usually are not designed to control peak runoff loads by themselves and are often used in combination with other BMPs, such as subsurface drains and riprap stabilization.
Grid Pavers	Cement or plastic grid pavers can be used to line ditches or stream bottoms where vehicles cross in order to control erosion, stabilize stream bottoms, and minimize rutting or shifting of material. Grid pavers also reduce storm water runoff, help prevent flooding, reduce non-point source pollution, reduce imperviousness of the area, and minimize site disturbance.
Land Grading	Land grading involves reshaping the ground surface to planned grades as determined by an engineering survey, evaluation, and layout. Land grading provides more suitable topography for buildings, facilities, and other land uses and helps to control surface runoff, soil erosion, and sedimentation during and after construction.
Log Cribbing	Log cribbing is an erosion control technique specifically used to retain soil or gravel firmly to its original place or to confine it as much as possible within the site boundary.
Mulching	Mulching is a temporary erosion control practice in which materials such as grass, hay, wood chips, wood fibers, straw, or gravel are placed on exposed or recently planted soil surfaces.
Preserving Natural Vegetation	The principal advantage of preserving natural vegetation is the protection of desirable trees, vines, bushes, and grasses from damage during project development. Vegetation provides erosion control, storm water detention, biofiltration, and aesthetic values to a site during and after construction activities.
Reinforced Concrete	Reinforced concrete can be used to control erosion at stream crossings, or to reinforce specific erosion prone areas along roadways or within the training areas.
Riprap	Riprap is a permanent, erosion-resistant layer made of stones. It is intended to protect soil from erosion in areas of concentrated runoff. Riprap may also be used to stabilize slopes that are unstable because of seepage problems.
Sediment Basins and Rock Dams	Sediment basins and rock dams are two ways to capture sediment from storm water runoff before it leaves a construction site. Both structures allow a shallow pool to form in an excavated or natural depression where sediment from storm water runoff can settle.

Sediment Trap	Sediment traps are small impoundments that allow sediment to settle out of runoff water. They are usually installed in a drainage way or other point of discharge from a disturbed area.
(Permanent) Seeding	Permanent seeding is used to control runoff and erosion on disturbed areas by establishing perennial vegetative cover from seed. It is used to reduce erosion, to decrease sediment yields from disturbed areas, and to provide permanent stabilization.
Silt Fence	Silt fences are used as temporary perimeter controls around sites where there will be soil disturbance due to construction activities. They consist of a length of filter fabric stretched between anchoring posts spaced at regular intervals along the site perimeter.
(Temporary) Slope Drain	A temporary slope drain is a flexible conduit extending the length of a disturbed slope and serving as a temporary outlet for a diversion.
Sodding	Sodding is a permanent erosion control practice that involves laying a continuous cover of grass sod on exposed soils. In addition to stabilizing soils, sodding can reduce the velocity of storm water runoff. Sodding can provide immediate vegetative cover for critical areas and stabilize areas that cannot be vegetated by seed. It also can stabilize channels or swales that convey concentrated flows and can reduce flow velocities.
Soil Retention	Soil retention measures are structures or practices that are used to hold soil in place or to keep it contained within a site boundary. They may include grading or reshaping the ground to lessen steep slopes or shoring excavated areas with wood, concrete, or steel structures.
Soil Roughening	Soil roughening is a temporary erosion control practice often used in conjunction with grading. Soil roughening involves increasing the relief of a bare soil surface with horizontal grooves, stair-stepping (running parallel to the contour of the land), or tracking using construction equipment.
Spill Prevention and Control Plan	Spill prevention and control plans should clearly state measures to stop the source of a spill, contain the spill, clean up the spill, dispose of contaminated materials, and train personnel to prevent and control future spills.
Stand Pipes	Stand pipes, also known as drop inlets, are used in areas where ponding water levels must be maintained without being allowed to overtop a road or pad. The height of a vertical pipe inlet is set at an elevation that maintains desired water levels, and a trash rack-rate assembly is typically installed on the top of the vertical pipe to prevent coarse debris from entering it.
(Temporary) Storm Drain Diversion	Temporary storm drain diversions are storm drain pipes which redirect an existing storm drain system or outfall channel to discharge into a sediment trap or basin.
Storm Drain Inlet Protection	Storm drain inlet protection measures are controls that help prevent soil and debris due to site erosion from entering storm drain drop inlets.
(Temporary) Stream Crossings	A temporary steam crossing is a structure erected to provide a safe and stable way for construction vehicle traffic to cross a running watercourse. The primary purpose of such a structure is to provide streambank stabilization, reduce the risk of damaging the streambed or channel, and reduce the risk of sediment loading from construction traffic.
Subsurface Drains	These are perforated pipe or conduit placed beneath the surface of the ground at a designated depth and grade. They are used to drain an area by lowering the water table. A high water table can saturate soils and prevent the growth of certain vegetation. Drains can help prevent soil from "slipping" down the hill.
Vegetated Buffer	Vegetated buffers are areas of either natural or established vegetation that are maintained to protect the water quality of neighboring areas. Buffer zones reduce the velocity of storm water runoff, provide an area for the runoff to permeate the soil, contribute to ground water recharge, and act as filters to catch sediment.

Wind Fences and Sand Fences	Sand fences are barriers of small, evenly spaced wooden slats or fabric erected to reduce wind velocity and to trap blowing sand. They can be used effectively as perimeter controls around open construction sites to reduce the off-site movement of fine sediments transported by wind. They also prevent off-site damage to roads, streams, and adjacent properties.

APPENDIX C: SAMPLE RECORD OF ENVIRONMENTAL CONSIDERATION (REC)

RECORD OF ENVIRONMENTAL CONSIDERATION

TITLE: Prescribed Fire at the Stuart Creek Impact Area, Yukon Training Area, Fort Wainwright, Alaska

DESCRIPTION OF PROPOSED ACTION: The Bureau of Land Management's Alaska Fire Service (AFS) proposes to conduct a prescribed burn on lands within the Stuart Creek Impact Area on the Fort Wainwright Army Installation (FWA), Yukon Training Area (YTA). The prescribed burn is intended to minimize the risk of wildfire starts by reducing grass and fine fuel loading in the impact area. The proposed burning activity also provides for firefighter and public safety and offers training on prescribed burning techniques for AFS personnel.

The Stuart Creek Impact Area is located 15 miles east of the Eielson Air Force Base airfield, with its center of mass located at the approximate Universal Transverse Mercator (UTM) coordinates of WS 522537, WS 7176153. The Stuart Creek Impact Area burn would cover approximately 2,900 acres. The burn area is bounded to the south by the Brigadier Road, to the west by Skyline Road and to the north and east by a number of access trails into the impact area. The area will be sectioned into 3 units. Improved roads and two track trails intersect and bound the three units to the north, east and south. Vegetation within the burn units consist of areas dominated by grass, forbs, willow, aspen, spruce and birch. Smoke impacts on off-site values are expected to be low due to the desired wind transport of a south, west or northwest-dominated wind. Risk of fire escaping the area will be low due to the prescribed environmental conditions of the burn (which are based on set weather parameters that allow for optimum burning), and pre-treating adjacent fuels with water prior to ignition. Since this burn will be conducted within a dedicated impact area, a helicopter will be used for ignition and will be available for suppression, if necessary.

ANTICIPATED DATE AND/OR DURATION OF THE PROPOSED ACTION: Burning activities are anticipated to begin in early to mid-May of 2005, depending on green-up conditions. Vegetation must not have too much fuel moisture (green-up), as it does not allow for optimum burning. This project may be postponed until the fall of 2005 or spring of 2006, due to unfavorable weather conditions and/or AFS scheduling conflicts. The duration of the prescribed burn is anticipated to be no longer than one week. This prescribed burn is scheduled for maintenance burning at two to five year intervals.

MITIGATION AND/OR SPECIAL CONDITIONS: U.S. Army Alaska Range Control must be contacted at (907) 353-1265 prior to any burning activities. If poor air mixing heights or air quality conditions exist, all burning activities must be postponed until conditions improve. All AFS personnel will be briefed on the potential and hazards of unexploded ordnance within the immediate area. Existing roads and trails should be used for site access if needed. The AFS has prepared a Prescribed Fire Burn Plan for this action and should be consulted prior to burning activities. Public notification procedures are outlined in the Prescribed Fire Burn Plan, which typically involves placing notices in local newspapers. This project will not create any sub-surface ground disturbance. In the event that sub-surface disturbance is required, the Environmental Resources Department archeologist will be notified prior to any digging or earthwork. In the event that cultural resources are disturbed or discovered without digging or earthwork during this project, the Environmental Resources Department archeologist shall be notified. Both the U.S. Air Force and U.S. Army Alaska Range Controls have been notified, and actions have been taken to avoid scheduling conflicts.

CATEGORICAL EXCLUSION: The project has undergone NEPA review and qualifies for categorical exclusion g(2) as listed in Appendix B, Part 651 of 32 CFR (Environmental Analysis of Army Actions) and that no extraordinary circumstances exist as defined in paragraph 651.29. All screening criteria have been met.

Prepared by: _____

Reviewed by: _____

Chief, Environmental Department
Directorate of Public Works

Approved by: _____

Director
Directorate of Public Works

APPENDIX D: ITAM PROJECT ASSESSMENT CHECKLIST

PROJECT: _____

DESCRIPTION AND LOCATION: _____

_____

_____

_____

FORM COMPLETED BY: _____ **DATE:** _____

In reference to the above project, check yes or no for each item below. If "yes" is indicated for any of the questions, additional NEPA analysis may be needed for the project. If "yes" is not indicated for any of the questions, the sample Record of Environmental Consideration (REC) should be used. USAGAK NEPA staff should be provided a copy of this checklist and consulted prior to project activity. Project managers should maintain this checklist as part of the project administrative record.

Project

Yes	No	
☐	☐	Is this project in addition to those listed in Appendix A (LRAM Five-Year Project List) of the *USARAK ITAM Program Management Plan EA*?
☐	☐	Is this project in addition to those listed in Table 5-2 (Standard LRAM Projects) of the *USARAK ITAM Program Management Plan*?
☐	☐	Is a procedure, method, practice, or technique being used for this project that is not listed in either Table 2.1 or Appendix B of the *USARAK ITAM Program Management Plan EA*, or Table 5-1 (LRAM Standard Practices) of the *USARAK ITAM Program Management Plan?*
☐	☐	Is the project or its potential impacts considered environmentally controversial?
☐	☐	Could the project result in high or uncertain environmental risks?

Soil Resources

Yes	No	
☐	☐	Is permafrost present within the project or construction footprint?
☐	☐	Has the Department of Public Works (DPW) determined that a dig permit is necessary?
☐	☐	Could impacts to soils resulting from this project be greater than those described in Section 3.1, Soil Resources, of the *USARAK ITAM Program Management Plan EA*?

Vegetation

Yes	No	
☐	☐	Could the project significantly contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area (E.O. 13112)?
☐	☐	Will the project occur in an area where there are federally listed, endangered, or threatened vegetation?
☐	☐	Could impacts to vegetation resulting from this project be greater than those described in Section 3.2, Vegetation, of the *USARAK ITAM Program Management Plan EA*?

Wetlands

Yes	No	
☐	☐	Is the project located within a wetland?
☐	☐	Will the project involve dredging, disposal of dredged material, excavation, or filling of a wetland as described under Section 404 of the Clean Water Act?
☐	☐	Could the project result in modifications or adverse effects to wetlands?
☐	☐	Could impacts to wetlands resulting from this project be greater than those described in Section 3.3, Wetlands, of the *USARAK ITAM Program Management Plan EA*?

Water Resources

Yes	No	
☐	☐	Is the project located within a floodplain (E.O. 11988)?
☐	☐	Is any part of the project footprint depicted as a red area on the environmental limitations overlay?
☐	☐	Will the project expose one or more acres of soil?
☐	☐	Will the project involve discharge (or runoff) of sediment into a waterway or storm sewer?
☐	☐	Will the project result in diversion or obstruction of stream flow?
☐	☐	Will the project impact a wild or scenic river?
☐	☐	Will the project involve dredging or filling of a water body as described under Section 404 of the Clean Water Act?
☐	☐	Will the project involve construction, excavation, or deposition of materials in, over, or under a water body, or would any work affect the course, location, condition, or capacity of a water body as described under Section 10 of the Rivers and Harbors Act?
☐	☐	Could the project result in potential impacts to surface water quality?
☐	☐	Could impacts to waters resulting from this project be greater than those described in Section 3.4, Water Resources, of the *USARAK ITAM Program Management Plan EA*?

Wildlife and Fisheries

Yes	No	
☐	☐	Will the project occur in an area where there are migratory birds or federally listed, endangered, or threatened wildlife or habitat?
☐	☐	Could the project affect the marine environment?
☐	☐	Could impacts to wildlife and fisheries resulting from this project be greater than those described in Section 3.5, Wildlife and Fisheries, of the *USARAK ITAM Program Management Plan EA*?

Fire Management

Yes	No	
☐	☐	Could this project interfere with Alaska Fire Service or military firefighting efforts?
☐	☐	Could impacts to fire management resulting from this project be greater than those described in Section 3.6, Fire Management, of the *USARAK ITAM Program Management Plan EA*?

Public Access and Recreation

Yes	No	
☐	☐	Will the project significantly hinder compliance with the Sikes Act?
☐	☐	Could impacts to public access and recreation resulting from this project be greater than those described in Section 3.7, Public Access and Recreation, of the *USARAK ITAM Program Management Plan EA*?

Cultural Resources

Yes	No	
☐	☐	Could the project involve disturbance of previously undisturbed ground?
☐	☐	Has the project undergone Cultural Resource Management staff review?
☐	☐	Could impacts to cultural resources resulting from this project be greater than those described in Section 3.8, Cultural Resources, of the *USARAK ITAM Program Management Plan EA*?
☐	☐	Could impacts to subsistence resulting from this project be greater than those described in Section 3.8, Cultural Resources, of the *USARAK ITAM Program Management Plan EA*?

Human Health and Safety

Yes	No	
☐	☐	Will the project involve the demolition of a structure?
☐	☐	Could impacts to human health and safety resulting from this project be greater than those described in Section 3.9, Human Health and Safety, of the *USARAK ITAM Program Management Plan EA*?

Socioeconomics

Yes	No	
☐	☐	Could the project have disproportionately high and adverse effect on low income or minority populations (E.O. 12898)?
☐	☐	Could impacts to socioeconomics resulting from this project be greater than those described in Section 3.10, Socioeconomics, of the *USARAK ITAM Program Management Plan EA*?

Noise

Yes	No	
☐	☐	Could the project generate significant short-term or long-term noise impacts?
☐	☐	Could impacts to noise resulting from this project be greater than those described in Section 3.11, Noise, of the *USARAK ITAM Program Management Plan EA*?

Air Quality

Yes	No	
☐	☐	Could emissions resulting from the project cause the installation to exceed regulated air pollutant criteria?
☐	☐	Could impacts to air quality resulting from this project be greater than those described in Section 3.12, Air Quality, of the *USARAK ITAM Program Management Plan EA*?

Cumulative Impacts

Yes	No	
☐	☐	Could the project have a direct relationship to other actions with individually insignificant but cumulatively significant environmental effects?
☐	☐	Could cumulative impacts resulting from this project be greater than those described in Section 3.13, Cumulative Impacts, of the *USARAK ITAM Program Management Plan EA*?

APPENDIX E: AGENCY COMMENTS

The following comments have been made by the U.S. Army Corps of Engineers, Fairbanks Regulatory Field Office addressing general concerns with the EA and ITAM Plan.

Comments on Specific Sections of the EA.

A review of the EA document by this office indicates that the evaluation of Wetland and Water Resources Sections are incomplete or inadequate.

3.3 Wetlands

1) USARAK does not have a current wetland permit to conduct military training in wetlands at Fort Wainwright, Tanana Flats Training Area, Yukon Training Area or in Donnelly Training area as noted on page 30.
2) USARAK classifies wetlands as “high-function” and “low-function”. It states that high-function wetlands include riverine, permanent emergent, semi- permanent emergent areas, riparian areas, and other sensitive wildlife habitats that lie in wetland areas. It does not state how the classifications were developed, or what “functions” are being reviewed for a given area. Wetlands reviewed under this functional assessment were obtained from the NWI mapping.
3) CE/EPA wetland definition not included in EA.
4) Consideration should be given to the relationship between the CE technical guideline for wetlands and the classification system developed for the Fish and Wildlife Service (FWS), U.S. Department of the Interior, by Cowardin et al. (1979). The FWS classification system was developed as a basis for identifying, classifying, and mapping wetlands, other special aquatic sites, and deepwater aquatic habitats. Using this classification system, the National Wetland Inventory (NWI) is mapping the wetlands, other special aquatic sites, and deepwater aquatic habitats of the United States. The technical guideline for wetlands under the1987 *Corps of Engineers Wetlands Delineation Manual* includes most, but not all, wetlands identified in the FWS system. The difference is due to two principal factors:

   a. The FWS system includes all categories of special aquatic sites identified in the EPA Section 404 b. (l) guidelines. All other special aquatic sites are clearly within the purview of Section 404; thus, special methods for their delineation are unnecessary.

   b. The FWS system requires that a positive indicator of wetlands be present for any one of the three parameters, while the technical guideline for wetlands requires that a positive wetland indicator be present for each parameter (vegetation, soils, and hydrology), except in limited instances identified in the manual.

3.4 Water Resources

The EA does not address waters regulated under Section 10 of the Rivers and Harbor Act and “other waters” regulated under Section 404 of the Clean Water Act.

APPENDIX B: Best Management Practices

Asphalt is noted as a structural material for erosion control that can be used in stream crossings.

APPENDIX D: ITAM Project Assessment Checklist

Wetland Checklist addresses an impact threshold on wetlands that does not exist.

Water Resources Checklist does not address Section 10 and Section 404 impacts to waters of the United States (waters not regulated as wetlands).

Comments on Specific Sections of the Integrated Training Area Management (ITAM) Five-Year Management Plan.

4.2.7.1 Five Year Wetlands Maneuver Permit

USARAK does not have a current five-year general wetland permit from the Corps of Engineers.

United States Department of the Interior
FISH AND WILDLIFE SERVICE
Fairbanks Fish and Wildlife Field Office
101 12th Avenue, Room 110
Fairbanks, Alaska 99701
May 26, 2005

Attn: Carrie Barta
USAG-AK NEPA Coordinator
IMPA-FWA-PWE
1060 Gaffney Rd. #6500
Fort Wainwright, AK 99703

Re: Integrated Training Area Management Plan
Environmental Assessment

Dear Ms. Barta:

The U.S. Fish and Wildlife Service has reviewed the referenced U.S. Army Alaska Environmental Assessment (EA) for the Integrated Training Area Management Program (ITAM) for Fort Richardson, Fort Wainwright, and Donnelly Training Area. The proposed action (Alternative 2) from the EA would institute standard operating procedures and best management practices for all ITAM component programs and projects to provide consistency among management approaches, increase oversight and streamline processes and procedures to improve ITAM program efficiency.

The Service supports the concept of standardizing operating procedures and best management practices by implementing ITAM. We believe that ITAM will not significantly impact fish and wildlife resources, and therefore have no comment.

We appreciate this opportunity for comment. Please contact Bob Henszey at 907-456-0323 should you have any questions.

Sincerely,

Larry K. Bright
Branch Chief, Project Planning

rjh/rjh

STATE OF ALASKA

DEPARTMENT OF NATURAL RESOURCES
Office of Habitat Management and Permitting

FRANK H. MURKOWSKI, GOVERNOR

550 West 7th Ave., Suite 1420
Anchorage, AK 99501-3566
PHONE: (907) 269-8690
FAX: (907) 269-5673

May 27, 2005

Carrie Barta
NEPA Coordinator
United States Army Garrison - Alaska
IMPA-FWA-PWE
1060 Gaffney Rd. #6500
Fort Wainwright, AK 99703

Dear Ms. Barta:

Re: Comments – Integrated Training Area Management Program EA and Draft FNSI

The Alaska Department of Natural Resources, Office of Habitat Management and Permitting (OHMP) has reviewed the U.S. Army Garrison – Alaska's (USAG-AK) Environmental Assessment (EA) and Draft Finding of No Significant Impact (FNSI) of a management plan for the Integrated Training Area Management program at Fort Richardson. The purpose of the ITAM is to repair, maintain and improve training prevention, revegetation, wetlands reclamation, streambank stabilization, habitat improvement, fuel load reduction, improvements for public access and cultural resource protection.

The proposed action alternative is to implement the ITAM program through a management plan. Under the proposed action alternative the ITAM program would continue to operate, but would follow a management plan that outlines goals, objectives, measures of effectiveness, policy, procedures, and projects for each of the five components of the ITAM program. Standard operating procedures (SOP's) and best management practices (BMP's) would be implemented for the Land Rehabilitation and Maintenance (LRAM) and Range and Training Land Assessment (RTLA) programs through the USAG-AK ITAM Management Plan. Under the no action alternative, the ITAM program would continue without a management plan nor development of SOP's or BMP's. The third action alternative is to discontinue the ITAM program completely.

The proposed action alternative would facilitate the assessment of impacts for ITAM project NEPA compliance by making impacts more predictable through implementation of SOP's and BMP's. Although the implementation of SOP's and BMG's may facilitate and streamline the permitting process for future ITAM projects it would not noticeably affect environmental resources.

The OHMP finds the LRAM program to be thorough and informative. To achieve the goal of streamlining the permitting process the developed SOP's and BMG's must meet the standards used by the OHMP to permit projects in fish bearing streams. Therefore, the OHMP suggests the LRAM SOP's consider the following:

1. Culverts installed in fish bearing streams should have a width that is at least 120% of the ordinary high water width of the stream and should be bedded 20% of the diameter.
2. Installed culverts should follow, as best possible, the natural contour of the stream.
3. Sufficient depth of flow and appropriate water velocities for fish passage should be provided in culvert installations. A minimum of 200 mm of depth should be maintained. Depending upon the grade of the culvert and/or its length, it may be necessary to construct a downstream step pool or install baffles within the culvert to achieve the 200 mm minimum depth throughout the culvert.
4. Culverts should be installed during low flow periods whenever possible. Where significant flow is present, generally acceptable techniques to isolate the construction site from stream flow include, but are not limited to channel bypasses, temporary flumes, sheet pile or sandbag walls, water filled coffer dams, or pumping the stream flow around the work site.
5. The LRAM should contain SOP's on temporary water diversions.
6. If water withdrawals from fish bearing waters are planned within the ITAM, then a SOP should be added for this.

We appreciate the opportunity to comment on this proposal. Please contact Mark Somerville at (907)-269-6969 or by e-mail at mark_somerville@dnr.state.ak.us if you have any questions.

Sincerely,

Stewart Seaberg

Stewart Seaberg
Habitat Biologist
ADNR/OHMP

Cc: R. Winn, COE
M. Miller, ADF&G
W. Dolezal, ADF&G
P. Brna, USFWS
L. Peltz, NMFS
T. Tobish, MOA

FRANK H. MURKOWSKI, GOVERNOR

DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

REGIONAL DIRECTOR - CENTRAL REGION

4111 AVIATION AVENUE
P.O. BOX 196900
ANCHORAGE, ALASKA 99519-6900
(907) 269-0770 (FAX 248 -1573)
(TTY 269-0473)

May 27, 2005

Carrie Bartha,
USAG-AK NEPA Coordinator,
IMPA-FWA-PWE
1060 Gaffney Road #6500
Fort Wainwright, AK 99703

Dear Ms. Bartha:

Thank you for the opportunity to comment on the Integrated Training Area Management Plan and Environmental Assessment. The preferred alternative given in the Environmental Assessment is to implement a management plan for the Integrated Training Area Management Program. The Glenn Highway does not appear to be adversely affected by any of the projects within the plan. ADOT&PF, Central Region, has no objection to the implementation of the preferred alternative within the Environmental Assessment for Fort Richardson. The public notice seeks comments on projects at Fort Wainwright, the Donnelly Training Area and Fort Richardson. Fort Wainwright and the Donnelly Training Area are outside of ADOT&PF's Central Region.

Thank you for involving us in your planning process.

Sincerely,

Gordon C. Keith, P.E.
Regional Director

MP/lm

cc: Andrew Niemic, Regional Director, Northern Region

"Providing for the movement of people and goods and the delivery of state services."

Sent: Monday, June 13, 2005 5:00 PM
To: Barta Carrie L MS DPW NEPA COORDINATOR
Subject: Integrated Training Area Mgmt Plan EA

Carrie:
The ADNR, Office of Habitat Management and Permitting (OHMP) has reviewed the above referenced document and has the following comments on the Environmental Assessment:

- Table 4-3. Definition ... Summer Months:

-- RED (page 38). Under the third column, "ADF&G permit" needs to be replaced with "ADNR-OHMP permit."

- Table 4-4. Definition ... Winter Months:

-- YELLOW (page 39). Under the third column, "ADF&G permit" needs to be replaced with "ADNR-OHMP permit."

-- RED (page 39). Under the third column, "ADF&G permit" needs to be replaced with "ADNR-OHMP permit."

- Table 5-1. LRAM Standard Practices:

-- Training Area Management. Culvert Installation (page 58). The last sentence says, "USARAK utilizes both Anadromous and non-anadromous culverts." What does this mean? Whether the stream supports anadromous or resident fish, the culvert must be designed for fish passage design flows and flood flows.

-- Training Area Management. Gravel Extraction (page 58). In the past, gravel material has been obtained from Jarvis Creek for Ft. Greeley projects. Will in-stream (i.e., gravel bar) material sites not be used in the future?

-- Training Area Repair. Dust Control (page 59). What is the source for water for most dust control projects? If the water is withdrawn from a stream, a permit is required from the OHMP and the ADNR, Division of Mining, Land and Water (i.e., Temporary Water Use Permit).

-- Training Area Repair. Streambank Repair (Interior Alaska) (page 60). This paragraph states, "The three main bio-engineering stabilization practices used on Fort Richardson..." I assume this is a typo and that the last two sentences of this paragraph can be deleted. As far as I know, the military has not constructed a bank stabilization project on Fort Wainwright or Greeley.

-- Training Area Repair. Sreambank Repair (South Central Alaska) (page 61).
The last sentence, "Specific methods for streambank stabilization are used in interior Alaska" can be deleted.

If you have any questions regarding the comments above, please call. I will try and get comments on Appendix C2. of the EA to you as soon as possible.
I am sorry for the delay and appreciate your patience.

Thank you,

Nancy Ihlenfeldt
Habitat Biologist
AK Department of Natural Resources
Office of Habitat Management & Permitting Fairbanks Office
907-459-7287

Sent: Tuesday, June 21, 2005 3:18 PM
To: Barta Carrie L MS DPW NEPA COORDINATOR
Cc: bob_henszey@fws.gov
Subject: Integrated Training Area Mgmt Plan

Carrie:
In addition to the comments sent on June 13, 2005 regarding the above referenced Environmental Assessment, the ADNR, Office of Habitat Management and Permitting (OHMP) has the following comments regarding Appendix C2 of the EA:

(1) I think an introduction paragraph stating that all activities described in this document require a permit(s) from one or more state and/or federal agency.

(2) Page C2-1 through C2-2. C2-3. Culvert Installation. Using the headings "Non Anadromous Fish Culverts" and "Anadromous Fish Culverts" is confusing.
Culverts placed for maintaining area hydrology should be called "wetland" or "drainage" culverts. Culverts placed in streams to allow fish passage are required in streams that support both anadromous and resident fish (i.e., not just streams designated as anadromous). The width of the stream will designate the diameter of the culvert and if a bridge would be more appropriate than a culvert(s).

(3) Page C2-2 through C2-5. Dust Control. The water source should be a consideration -- if withdrawing water from a stream, lake or pond a Fish Habitat Permit as well as a Temporary Water Use Permit from the ADNR, Division of Mining, Land and Water may be required.

(4) Page C2-5. Erosion and Sediment Control Structures.

A. Asphalt. What would be the application of asphalt at a stream crossing?

B. Barbed Dike or Thalweg Deflector Devices. In-stream structures should be the last resort at solving stream bank erosion problems, especially in streams that have been designated as anadromous. In addition, these structures must be designed by an experienced engineer/hydrologist. If these structures are not designed and constructed properly, they can be destructive. What is "Alaska Streambank Repair #27", the last sentence in the paragraph?

(5) Page C2-13. I. Gabions. First paragraph, second sentence - Why/when would you want to prevent fish passage from one waterbody to another?

Second paragraph - I do not understand what is being described, is the structure going all the way across the stream?

(6) Page C2-18. III. Outlet Protection. Are these outlets draining directly into streams that support fish? If so, the design and construction methods need to keep that in mind.

(7) Page C2-19. Q. Reinforced Concrete. The first sentence states that reinforced concrete can be used to control erosion at stream crossings....
what is the application for this? More details would be nice.

(8) Page C2-20. R. Rip Rap. Third paragraph, second sentence - what other materials (other than riprap) and what methods can be employed on slopes steeper than 2:1 for erosion protection? Riprap structures placed on the bottom of a stream to create riffles and pools must be designed by an engineer/hydrologist who has experience with these types of projects. If installed and/or designed improperly, these structures can be very destructive to a stream and the existing fish habitat.

(9) Page C2-21. R. Rip Rap. First bullet - "Riprap limits. The riprap should extend for the maximum flow depth, or to a point where vegetation will be satisfactory to control erosion." What is meant by "maximum flow depth"? Should this be "ordinary high water elevation"? Third bullet - "Riprap Size. The size of riprap to be installed depends on site-specific conditions." Please add at the end of the sentence, "...(e.g., hydrology, bank steepness, cause of erosion, etc.)"

Second paragraph, second sentence - Please add at the end of the sentence, "...(i.e., when water levels are at there lowest)." The statement, "Bypassing base flows or temporarily blocking base flows are two possible methods." is not really a true statement. As stated above, the OHMP prefers that this type of work be conducted when water levels are low and the introduction of sediment can be minimized. Installing temporary in-stream structures and/or blocking streams should be a last option for this type of work. And, the last sentence in this paragraph I do not believe is a true statement - it really depends on the cause of erosion and the stream type.

Third paragraph, last sentence reads "Control of weed and brush growth may be needed in some locations." It has been documented that root structures (e.g., grass, willows, shrubs) on and above a stream bank, especially within a riprap structure, immensely helps strengthen the structure and bank. If there are willows growing in the riprap, I strongly suggest not disturbing them.

(10) Page C2-35. Y. Sediment Trap. Fourth paragraph - just to reiterate, even though a structure placed in a stream is "temporary" it will still require a Fish Habitat Permit from the OHMP.

(11) Page C2-36. Y. Sediment Trap. First paragraph, the third sentence reads "Fords are appropriate in steep areas subject to flash flooding..."
The OHMP would include the following stipulations in a vehicle stream crossing permit: (1) stream crossings shall be made from bank to bank in a direction substantially perpendicular to the direction of stream flow;

(2) stream crossings shall be made only at locations with gradually sloping banks, not at sheer or cut banks. Timing restrictions for crossing a stream may apply depending on type of fish species present and habitat type.

Second paragraph, second sentence reads, "The expected load and frequency of a stream crossing, however, will govern the selection of a bridge as the correct choice for a temporary stream crossing." Fish habitat and fish species present in the stream should also be a strong factor when deciding.
The third sentence states that "bridges usually cause minimal disturbance to a stream's bank" and then the figure states "properly installed stream crossings can prevent destruction of stream habitat". These are both true statements, but the bridge structure displayed in the figure would be very destructive to a stream bank.

(12) Page C2-37. First paragraph, second sentence reads "The culvert ...
should be of sufficient diameter to allow for complete passage of flow during peak flow periods". In addition, if fish are present in the stream, the culvert diameter should be designed in relation to the stream width and depth and fish use in that portion of the waterbody.

Third paragraph, first sentence reads, "Fords should be constructed of stabilizing material such as large rocks." Fish passage must be maintained at all times when a structure is placed across a stream, so material amount and size needs to be considered carefully.

(13) Page C2-39 through 41. C2-10. Gravel Extraction. Overburden should be stockpiled and kept separated from mining activities; it can be a valuable tool when used for reclamation once the material site has been exhausted.

(14) Page C2-41. C2-12. Gravel Pit Reclamation. Please change the last sentence to read, "Slopes within a reclaimed pit do not exceed 2:1 and are track walked (parallel to the pit) for re-seeding and/or fertilizing."

(15) Page C2-50. C. Live Staking. Third paragraph - we have found that longer (than 10-24 inches) willow stakes have higher success rates - the more length of a stake you can get into the ground the better.

(16) Page C2-58. A. Brush Layering. I do not believe that the brush layering technique would do well on "...steep slopes and stream banks..."
Slopes steeper than 2:1 are difficult to work on and to get vegetation to grow on, even with the use of a fabric. In the last sentence of this paragraph, the word "needed" needs to be changed to "seeded." Also note that over-seeding with grass can lead to low success of willows due to competition for water and nutrients.

(17) Page C2-63. H. Vegetative matting. The first sentence should read, "A vegetative mat is a large transplant of plants with roots and soil intact."

(18) Page C2-67. M. Spruce Tree Revetment. A suggestion for the second

sentence could read, "The trees are secured tightly to the bank with cable and earth anchors, and preferably to the stream bed below the water level."
If the structure(s) is not secured properly (i.e., tightly against the bank and bed) they can cause more damage than good.

(19) Page C2-67 through 68. N. Root Wads. Please add to the end of the paragraph, "The root fan of the structure is placed in a dredged channel parallel to the toe of the bank so 1/3 of the fan is below the stream bed and the tree trunk (or bole) is resting at stream bed elevation. The bole of the tree is securely anchored and set into the bank (often the existing bank is removed and back filled over the boles). The boles are placed close enough so the root fans over lap.

(20) Page C2-68. O. Vegetative Buffer. I think a different name for this section would be appropriate and then it needs to be maintained throughout this section. I am assuming you are referring to a permanent, preferably natural "structure"?? Maybe "Riparian Buffer".

First paragraph, end of second sentence please add "...catch sediment and toxic chemicals (e.g., pesticides, fertilizers)."

Second paragraph, last sentence should read, "...potential sources of non point source pollution."

Third bullet - please change sentence to read, "...of storm water pollutants, annual rainfall, and primary land use of adjacent property."

(21) Page C2-69. O. Vegetative Buffer. I do not agree with the second paragraph, especially if the buffer is near a waterbody. This area (buffer) should be kept as natural as possible with no use of fertilizers, lime, or mowing.

(22) Page C2-70. A. Buffer Zones. The name of this section needs to be used and kept separate from Section O. Vegetative Buffer. The third paragraph, fourth sentence has two miss-spelled words: "moving" should be "mowing" and "irrigatin" should be "irrigating". The third and fourth sentences talk about maintaining and maintenance of these areas -- is maintenance really important? I could see maintenance needs in a "city"
type atmosphere, but not in most places in Alaska.

(23) Page C2-79. F. Temporary Stream Crossings. Can you make reference in this section to the previous section on temporary stream crossings where more information is given?

(24) Page C2-79. Streambank Repair (Interior Alaska). First paragraph, third sentence please change the word "can" to "may" be utilized in the interior.

A. Riprap - please add "...usually to the ordinary high water line" at the end of the sentence.

B. Gabions - are usually used in place of riprap to construct an apron and prevent further erosion of the toe of the bank, not usually to create a new stream bank.

Third paragraph should read, "These types of stream bank stabilization techniques may be used..."

Fourth paragraph, the sentence that reads, "Riprap protects soil from erosion and is often used on steep slopes built with fill materials that are subject to harsh weather or seepage." Riprap will not remain stable on slopes steeper than 1.5:1 and must be a gradation of size and shape.

Sentence, "It is used where water is turbulent and fast flowing and where soils may erode under the design flow conditions." I have seen many rip rap structures fail under these conditions - it is not a fix all and should not be represented as such! Rip rap structures speed up water energy, harden the bank and bed surface and can have negative effects on downstream banks.
The OHMP would like to consider all other options, before agreeing to a rip rap structure.

Page C2-80. The first sentence on this page should read, "...is usually applied in an even layer along the stream bank." The second sentence of this paragraph is confusing - should it be in this section?

General comment for this section - vegetation (e.g., live willow staking, fascine bundles, brush mats and layering) above the rip rap is always recommended and a preferred technique for these types of projects.

(25) Page C2-81. B. Rock Armoring. Within the first paragraph, please include language stating that these structures are always "keyed-in" at both the upstream and downstream end of the structure and most often, placed on top of permeable geotextile fabric.

Second paragraph, please add to the end of the first sentence, "...(CAT 320) from the top of the bank." The next sentence should be deleted -- all work should be conducted from the top of the bank and equipment in-stream (working or crossing) should be minimized if allowed at all.

Last paragraph, please change to read, "...and cutting a trench at the toe of the bank below..."

(26) Page C2-82. II. Geotextile. First sentence change the word "toe" to "trench" and delete the word "cut".

(27) Page C-82. C. Barb Dikes or Thalweg Deflectors. Could we give this structure one name and use it throughout? Most agencies recognize this type of structure as a "rock barb."

First paragraph - Please state somewhere in this paragraph that these structures must be designed by an experienced hydrologist/engineer.

Second paragraph, the second sentence should read, "Silt fences may be installed during construction to prevent downstream siltation." Silt fencing is not the only, and not always the best, erosion control method available. Please add to the end of the third sentence, "...and to ensure correct placement."

The third paragraph seems too specific; it includes information that would be site specific and probably different at every site. Again, that kind of information/design would need to come from the engineer. If you feel it needs to be included, maybe more general information would be better.

(28) Page C2-83. D. Root Wad Stabilization. The first paragraph refers to "damaged road area" - this is confusing - I assume you mean stream bank.
Again, the text in this section may be too detailed/specific and will be different from site to site. General information like including riprap for a base or to help anchor the boles and anchoring boles with deadman anchors or other such devices should be included.

(29) Page C2-85. F. Vegetative Matting. Please see (17) comments above.

(30) Page C2-86. G. Brush Layering. Please see (16) comments above.

(31) Page C2-87. C2-31. Vegetation Cutting and Clearing (Mechanical). Please add to this section text referring to maintaining a riparian buffer near water bodies when clearing if possible.

One last general comment, brush mattressing has proven to be a successful bank stabilization method as well.

If these comments are acceptable, please incorporate them into the BMP table (Appendix C3) as well.

Thank you for the opportunity to comment and I apologize for the lateness.

Sincerely,

Nancy Ihlenfeldt
Habitat Biologist
AK Department of Natural Resources
Office of Habitat Management & Permitting Fairbanks Office
907-459-7287

APPENDIX F: RESPONSES TO COMMENTS

COMMENT	RESPONSE
U.S. Army Corps of Engineers, Fairbanks Regulatory Field Office	
EA Comments	
USARAK does not have a current wetland permit to conduct military training in wetlands at Fort Wainwright, Tanana Flats Training Area, Yukon Training Area or in Donnelly Training area as noted on page 30.	Accepted. Text corrected in Section 3.3.
USARAK classifies wetlands as "high-function" and "low-function". It states that high-function wetlands include riverine, permanent emergent, semi-permanent emergent areas, riparian areas, and other sensitive wildlife habitats that lie in wetland areas. It does not state how the classifications were developed, or what "functions" are being reviewed for a given area. Wetlands reviewed under this functional assessment were obtained from the NWI mapping.	Accepted. Text clarified in Section 3.3.
CE/EPA wetland definition not included in EA.	Noted
Consideration should be given to the relationship between the CE technical guideline for wetlands and the classification system developed for the Fish and Wildlife Service (FWS), U.S. Department of the Interior, by Cowardin et al. (1979). The FWS classification system was developed as a basis for identifying, classifying, and mapping wetlands, other special aquatic sites, and deepwater aquatic habitats. Using this classification system, the National Wetland Inventory (NWI) is mapping the wetlands, other special aquatic sites, and deepwater aquatic habitats of the United States. The technical guideline for wetlands under the1987 *Corps of Engineers Wetlands Delineation Manual* includes most, but not all, wetlands identified in the FWS system. The difference is due to two principal factors: a. The FWS system includes all categories of special aquatic sites identified in the EPA Section 404 b. (l) guidelines. All other special aquatic sites are clearly within the purview of Section 404; thus, special methods for their delineation are unnecessary. b. The FWS system requires that a positive indicator of wetlands be present for any one of the three parameters, while the technical guideline for wetlands requires that a positive wetland indicator be present for each parameter (vegetation, soils, and hydrology), except in limited instances identified in the manual.	Accepted. Text clarified in Section 3.3.
The EA does not address waters regulated under Section 10 of the Rivers and Harbor Act and "other waters" regulated under Section 404 of the Clean Water Act.	Accepted. Text clarified in Section 3.4.
Asphalt is noted as a structural material for erosion control that can be used in stream crossings.	Noted
Wetland Checklist addresses an impact threshold on wetlands that does not exist.	Accepted. Text clarified in checklist
Water Resources Checklist does not address Section 10 and Section 404 impacts to waters of the United States (waters not regulated as wetlands).	Accepted. Text clarified in checklist
ITAM Management Plan Comments	

USARAK does not have a current five-year general wetland permit from the Corps of Engineers.	Accepted. See changes in ITAM Management Plan.
State of Alaska, Department of Natural Resources, Office of Habitat Management and Permitting, Anchorage	
ITAM Management Plan Comments	
Culverts installed in fish bearing streams should have a width that is at least 120% of the ordinary high water width of the stream and should be bedded 20% of the diameter.	Accepted. See changes in ITAM Management Plan.
Installed culverts should follow, as best possible, the natural contour of the stream.	Accepted. See changes in ITAM Management Plan.
Sufficient depth of flow and appropriate water velocities for fish passage should be provided in culvert installations. A minimum of 200 mm of depth should be maintained. Depending upon the grade of the culvert and/or its length, it may be necessary to construct a downstream step pool or install baffles within the culvert to achieve the 200 mm minimum depth throughout the culvert.	Accepted. See changes in ITAM Management Plan.
Culverts should be installed during low flow periods whenever possible. Where significant flow is present, generally acceptable techniques to isolate the construction site from stream flow include, but at not limited to, channel bypasses, temporary flumes, sheet pile or sandbag walls, water filled coffer dams, or pumping the stream flow around the work site.	Accepted. See changes in ITAM Management Plan.
The LRAM should contain SOP's on temporary water diversions.	Accepted. See changes in ITAM Management Plan.
If water withdrawals from fish bearing waters are planned within the ITAM, then a SOP should be added for this.	Accepted. See changes in ITAM Management Plan.
State of Alaska, Department of Natural Resources, Office of Habitat Management and Permitting, Fairbanks	
Pages E-7 through E-13	Accepted. See changes in ITAM Management Plan.

STAFF SUMMARY

DATE 24 Jun 05

TO	**FROM**	
Garrison Commander	Directorate of Public Works	
SUBJECT Integrated Training Area Management (ITAM) EA and Final Finding of No Significant Impact	**ACTION OFFICER (SIGNATURE)** Kevin Gardner **TYPED NAME, RANK & PHONE** Kevin Gardner, GS-13, 384-3331	**SUSPENSE** 30 Jun 05

Reason for Action: To obtain Garrison Commander's approval of Final Finding of No Significant Impact (FNSI) for the subject EA.

FACTS/DISCUSSION

Description of Action. Institute a management plan for the Integrated Training Area Management (ITAM) Program at USARAK. This management plan would provide a systematic approach to maintaining and improving its range and training land infrastructure in support of USARAK's mission to provide ready combat forces for worldwide joint military operations, crisis response and peacetime engagements.

Alternatives Considered. This EA examines three alternatives: 1) Continue ITAM program without a Management Plan (No Action), 2) Implement ITAM program through a Management Plan (Proposed Action), and 3) Suspend ITAM program. The preferred alternative is Alternative 2.

Anticipated Environmental Effects. Under Alternative 2, minor temporary adverse impacts to soil, vegetation, wetlands, water resources, wildlife and fisheries, human health and safety, noise, and air quality will occur. These impacts will be short-term, lasting for the duration of the project activities (approximately 10 days). Alternative 2 will have long-term beneficial impacts to all resources, as the purpose of the ITAM program is to repair, maintain, and improve training lands disturbed by military training. Long-term beneficial impacts will include erosion prevention, revegetation, wetlands reclamation, streambank stabilization, habitat improvement, fuel load reduction, improvements for public access, and cultural resource protection. These actions will serve to mitigate impacts from training, construction, and recreation activities. Overall, no significant impacts to the human environment are anticipated as a result of the Preferred Alternative (Alternative 2).

Public Comment Period. Public comments were solicited following public announcements in the *Fairbanks Daily News Miner* and the *Anchorage Daily News* during the comment period that ran from 27 Apr 05 to 27 May 05. Comments were received from two state and two federal agencies. No comments were received from the public. All comments were positive and provided clarifications relating to specific regulatory requirements for the ITAM Plan.

Conclusions. Based on a review of the information contained in this EA, it is concluded that the proposed project is not a major federal action that would significantly affect the quality of the environment within the meaning of Section 102(2)(C) of the National Environmental Policy Act of 1969, as amended. Accordingly, the preparation of an Environmental Impact Statement for this Proposed Action is not required.

RECOMMENDATIONS: Garrison Commander sign EA and Final FNSI at signature tabs.

COORDINATION

OFFICE	**SIGNATURE**	**CONCUR**	**NONCONCUR**
DPW	Allen D. Luedtke	27 Jun 05	
SJA	[signature]	1 Jun 05	

ENCLOSURES	**APPROVED (SIGNATURE)**	**DISAPPROVED (SIGNATURE)**
USARAK ITAM Plan EA and Final FNSI	[signature]	
	TYPED NAME & RANK ~~Donna G. Boltz~~ COL, MP Commander, U.S. Army Garrison, Alaska	**TYPED NAME & RANK** Donna G. Boltz COL, MP Commander, U. S. Army Garrison, Alaska

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